QUADREL
LABELING SYSTEMS

Operating & Maintenance
Manual
For

## MARS PETCARE

# Q34 LEADING PANEL
## Automatic Labeling System

Labeler Model #: Q34 PRINT & APPLY
Serial #: 84254-100

QUADREL LABELING SYSTEMS
7670 Jenther Drive
Mentor, Ohio 44060
440.602.4700

customerservice@quadrel.com
parts@quadrel.com

# TERMS AND CONDITIONS OF SALE
# QUADREL, INC
# D/B/A Quadrel Labeling Systems Hereinafter Referred to as Quadrel

**PERFORMANCE GUARANTEE:**

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

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

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

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

**GENERAL WARRANTY (EXCLUDES TABLETOP LABELERS)**

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

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

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

**(a) Which were not specified or sufficiently described in the Proposal: or**

**(b) With respect to which Purchaser fails to provide Quadrel the samples specified herein, even if such labels or items to be labeled were specified in the Proposal. Further, Quadrel shall have no liability for delays caused by Purchaser's failure to furnish samples as specified herein.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**INDEMNIFICATION:**
The purchaser of this product ("Customer") hereby agrees to release, indemnify and hold harmless Quadrel and its agents, assignees and representatives for any and all liabilities, losses, costs, damages and expenses (including attorneys' fees and expenses) arising, directly or indirectly, from any and all manner of claims, demands, actions and proceedings that may be instituted against Quadrel on any grounds.
The Customer agrees to, at the Customer's own expense, promptly defend and continue the defense of any such claim, demands, actions or proceeding that may be brought against Quadrel, provided that Quadrel shall, within thirty (30) days of Quadrel receiving notice thereof, notify the Customer of such claims, demand, action or proceeding.
Quadrel shall at all times retain the right to defend itself and/or to otherwise participate in the defense of any such claim or action, and no settlement or other resolution of any such claims or action shall be finalized without Quadrel's written approval. Any failure by Quadrel to give prompt notice or provide copies of documents or furnish relevant data shall not constitute a defense in whole or in part to any claim by Quadrel against the Customer except to extend that such failure by Quadrel shall result in a material prejudice to the Customer.
The forgoing notwithstanding, if suit shall have been against Quadrel and the Customer shall have failed, after the lapse of a reasonable time after written notice to it of such suit, to take action to defend the same. Quadrel shall have the sole right to

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

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

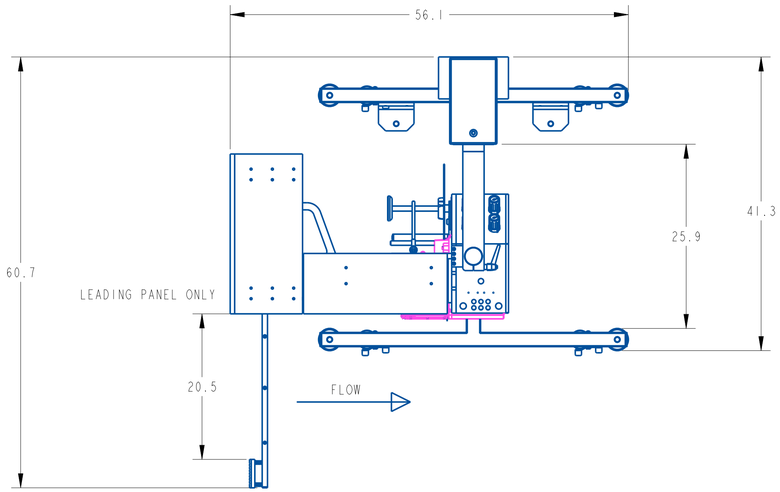
Any order put on hold or left dormant for any reason for 90 days will be considered cancelled. See Cancellation Policy below.

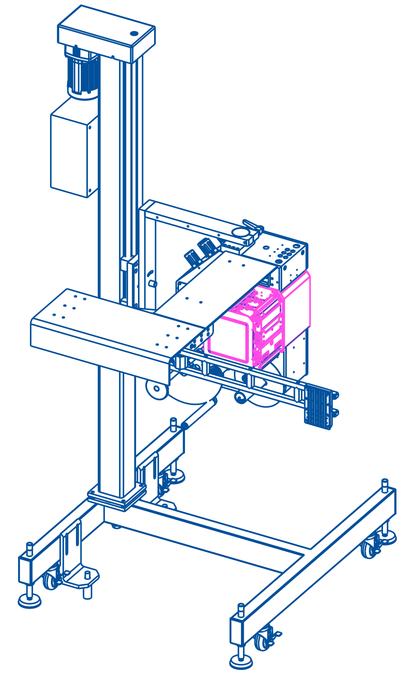
**CANCELLATION POLICY:**

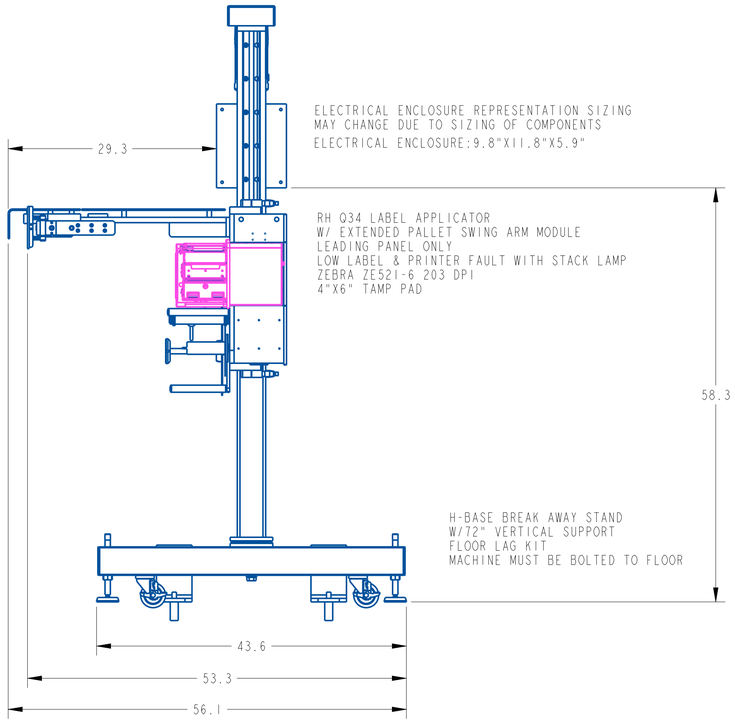
In the event of order cancellation, the 50% down payment is non-refundable. Customer may also be responsible for additional charges covering engineering resources expended and committed materials depending upon the custom nature of the project and the point in the order process in which the cancellation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

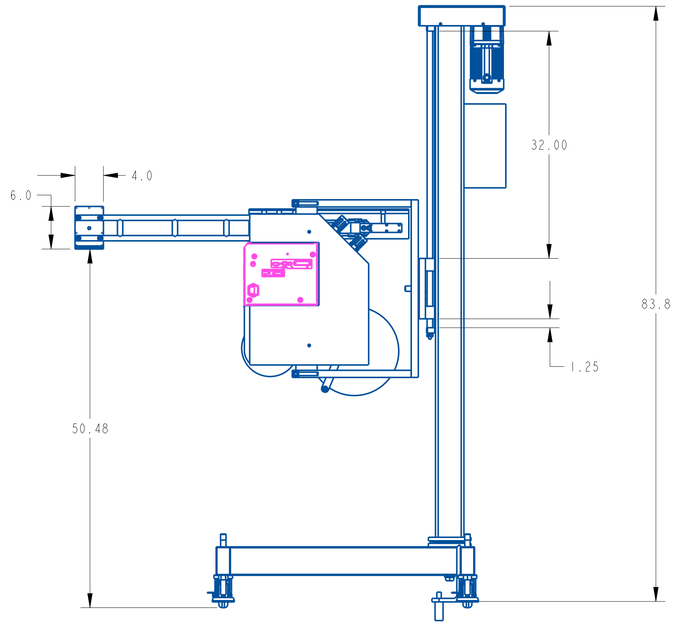
**NOTE.** No salesman, representative or agent of Quadrel is authorized to give a guarantee, warranty or make any representation contrary to above.

Please sign and acknowledge acceptance to these terms and conditions_____Date_____






| REV | DATE | DESCRIPTION | BY |
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| A | Dec-05-25 | NEW DRAWING | RDL |

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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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RH Q34 LEADING PANEL WITH BREAK-AWAY STAND

MAT'L FOTH PRODUCTION SOLUTIONS / MARS PETCARE APPROVAL DRAWING

84254-100

SHEET 1 OF 1

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# Quadrel Labeling Systems
# Quality Manual

## Quality Statment:

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

100% on-time delivery

zero defects

Value added service and support

Engineered solutions

Employee development and diversity

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

C. Wepl

Chuck Wepler
General Manager / President

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

# 1 MANUAL PREFACE

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

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

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

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

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

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

**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.

**ASSEMBLY TITLE: Q34 SYSTEM OVERVIEW**

The Q34 Printer Applicator consists of two major components:

A) Applicator/Controller
B) Print Engine (Thermal Printer) or Apply Only module

The Print Engine performs the function of printing and dispensing labels. The applicator performs the function of feeding labels to the print engine, applying the dispensed label to the product, and removing the waste liner from the print engine.
There are two microprocessors that communicate with each other and both have operator interfaces. One Microprocessor is manufactured by Quadrel Labeling Systems, The other internal to the printer, is manufactured by the print engine manufacturer.
The Quadrel PLC controls the sequencing of the applicator and communicates with the printer microprocessor to print labels and monitor the printing status and fault outputs.
Attached to this manual is the operator manual provided by the printer manufacturer. In this manual, you will find the programming instructions for the operator display, maintenance procedures, threading of ribbon and labels, and troubleshooting procedures for the print engine; please refer to the printer manual for warranty information and matters concerning the print engine. For matters concerning the applicator and the interface, the following manual is provided.

**Operation:**

**Printer** - Interface to Computer
The interface for the printer to receive label formats can be either through the Centronics port- the simplest, or through the RS232 port- to ensure baud, bits, flow control, etc., are the same. Please refer to the printer manual for specific details.

**Printer** - Interface to Applicator
This interface is either through a DB9 connector for “S” Sato and 14 Pin Centronics for the “Se” & Datamax or DB15 for the Zebra. The interface communications consist of the M3.0 telling the printer when to print and the printer responding to the M3.0 when the printer is printing. In addition, the printer is informing the PLC with the printer’s fault status.

**NOTE:** not all printers have the same system faults, check the printer documentation for details. Refer to the Q34 electrical print for wiring details.

# 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: _____120_ Volts, _SINGLE (1)_Phase, __60__Hz, ___5___Amps.
  While installing make sure it's properly configured and connected by a qualified electrical technician.
- **DO NOT** by pass any of the safety circuits or safety features designed into this equipment.



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

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



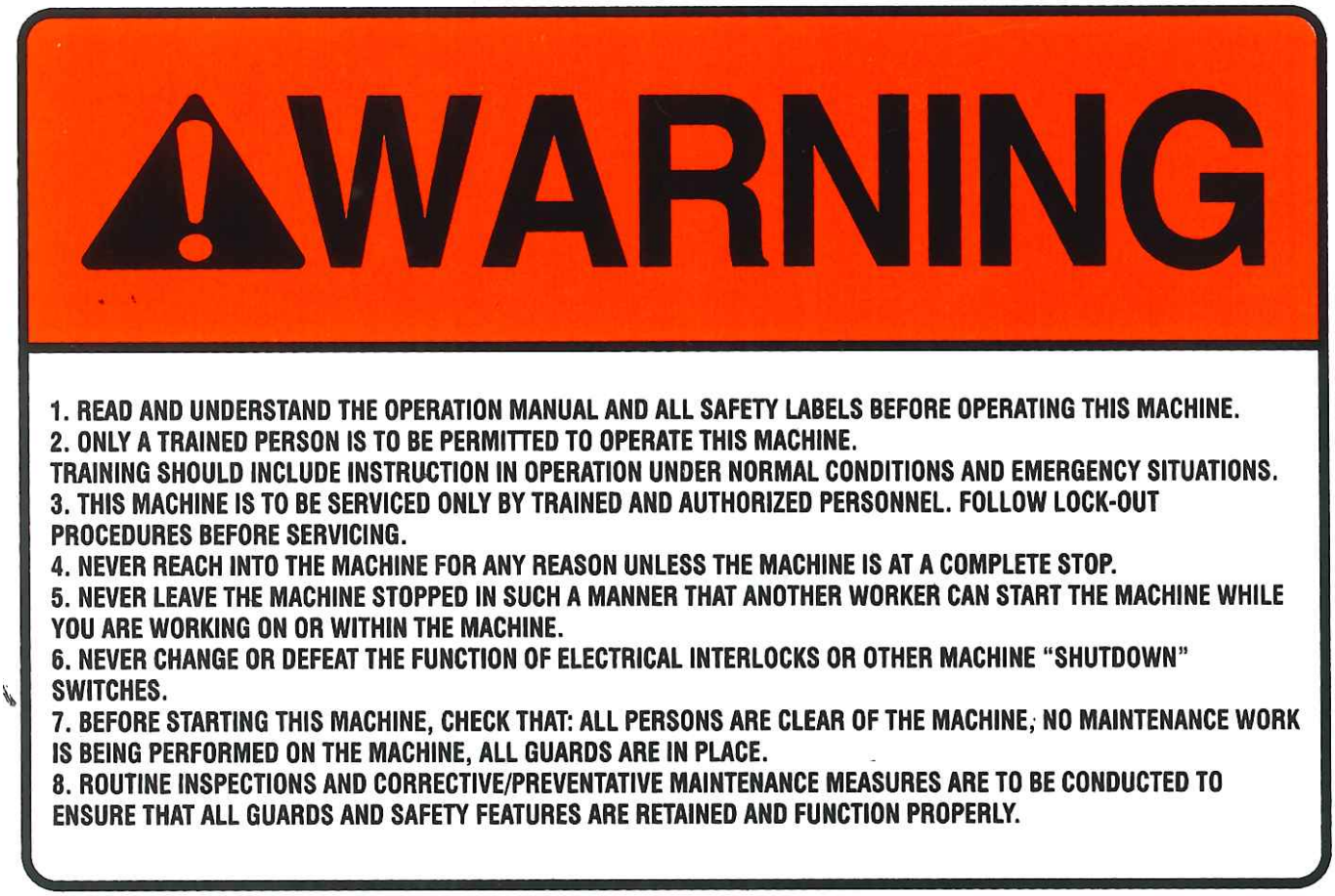
- Do not stand, sit, or allow any personnel to be within reach of the tamp cylinder/ swing arm activation (if so equip).
- Report any malfunctions, or problems with the equipment to qualified maintenance personnel for repair or adjustments that may be required.
- Keep hands clear of moving parts. Do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

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

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

***FOR PROLINE SYSTEMS ONLY***

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



# Using VFDs On GFCI Devices

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

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

**What is a VFD?**

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

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

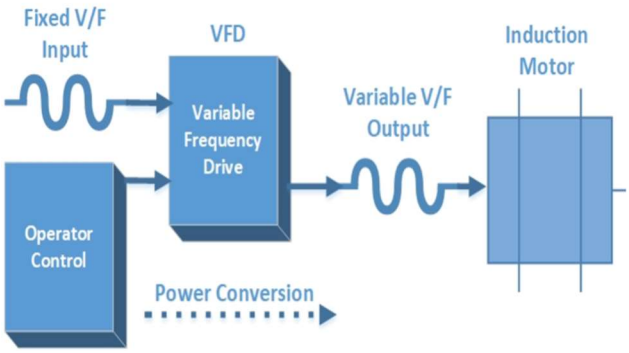



*Figure-1: Typical VFD System*

**What is a GFCI?**

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

*Figure-2: Typical GFCI Outlet*

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

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

**Why Nuisance Trips Occur with Standard VFDs**

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

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

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

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

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

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

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

**KB's GFCI Solution**

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

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

**Conclusion**

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

*Figure-3: VFDs Available from KB Electronics*

# Unboxing & Installation of your

# Quadrel Labeling Systems Machine

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

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

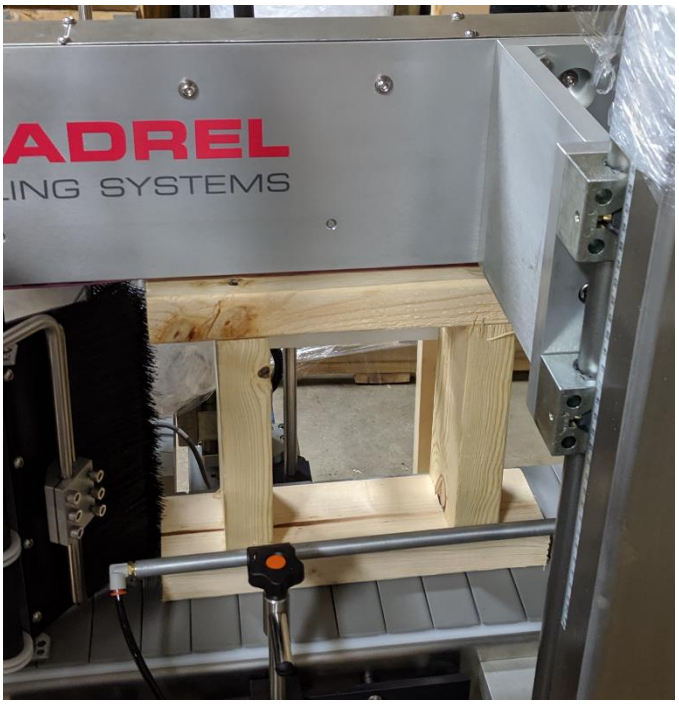
Let's get started…

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

Carefully remove all banding on the legs, misc. boxes and assemblies in the crate or on the pallet. If your machine is wrapped in bubble wrap or plastic wrap go ahead and carefully cut and remove that as well. Ensure you are wearing the appropriate safety gear when removing your machine from the crate.

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

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



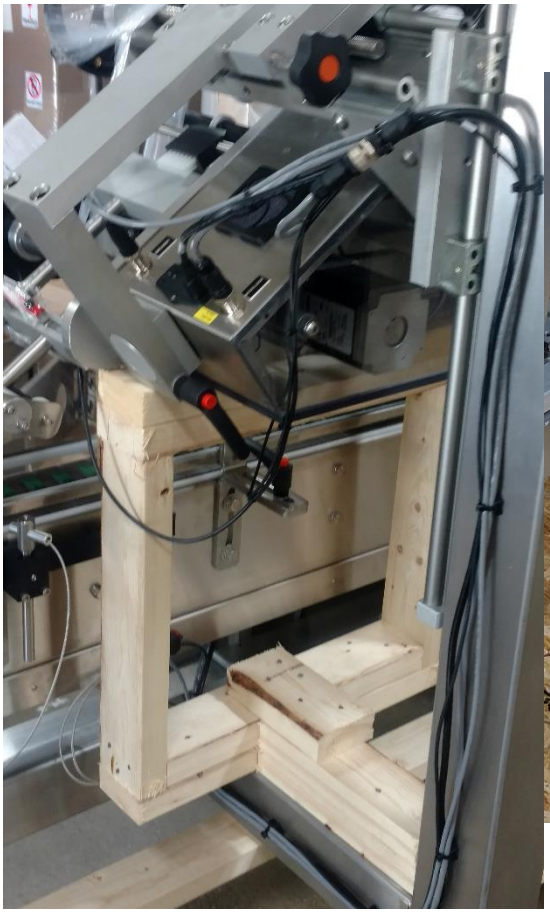

Most assemblies supported have a tool-less vertical adjustment using a knob or hand wheel.

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

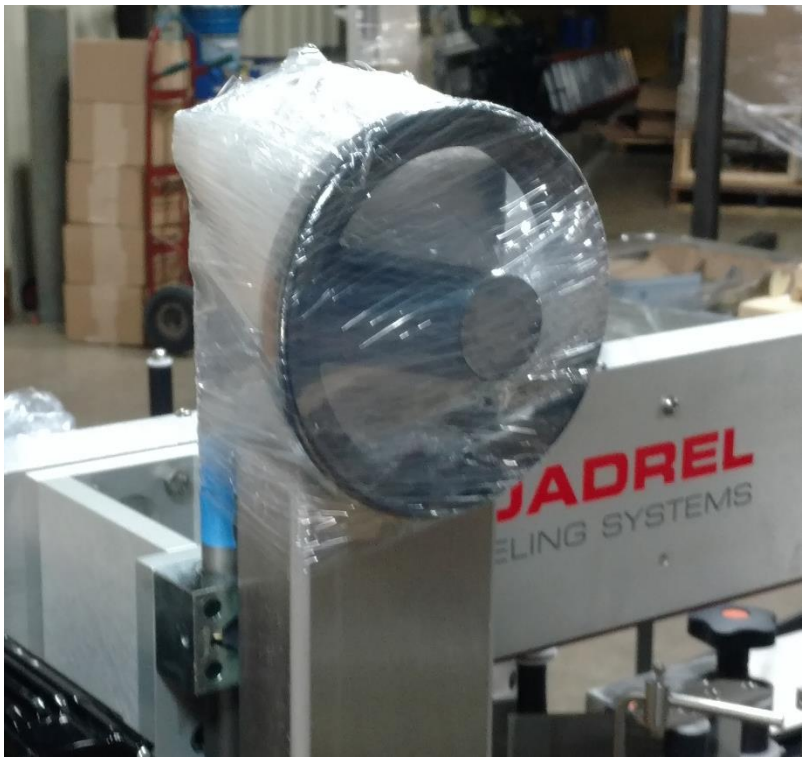
Remove the hand wheel from the wrap, then fasten the hand wheel to the square end on the lead screw using a 3/32 “L” handle Allen wrench.

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

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



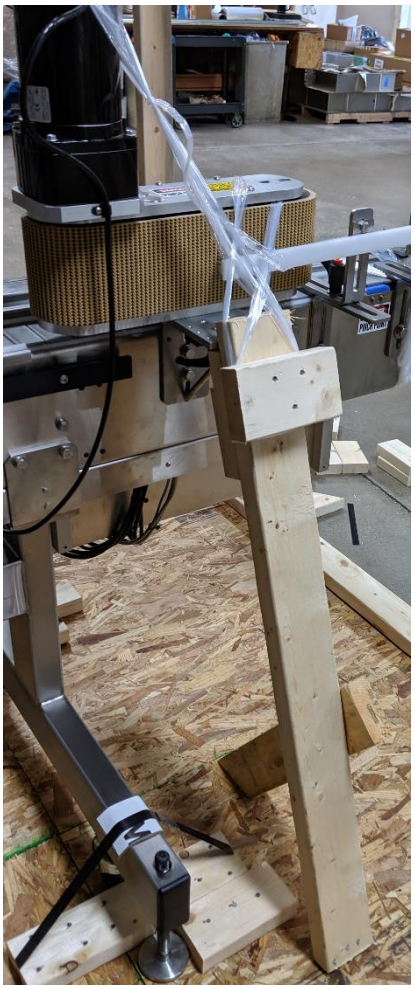
All top and bottom labeling heads will be supported



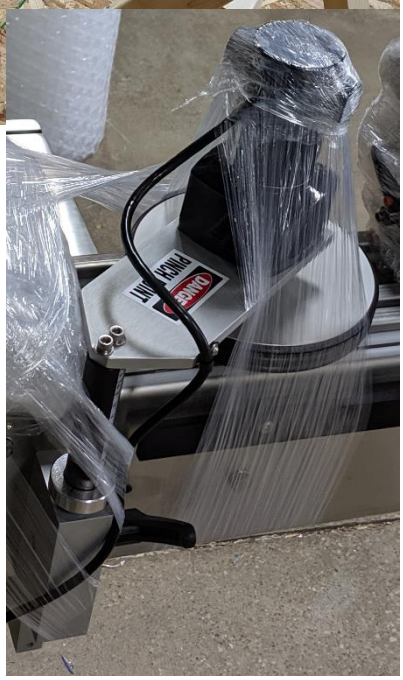

similar to the image shown on the left.

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

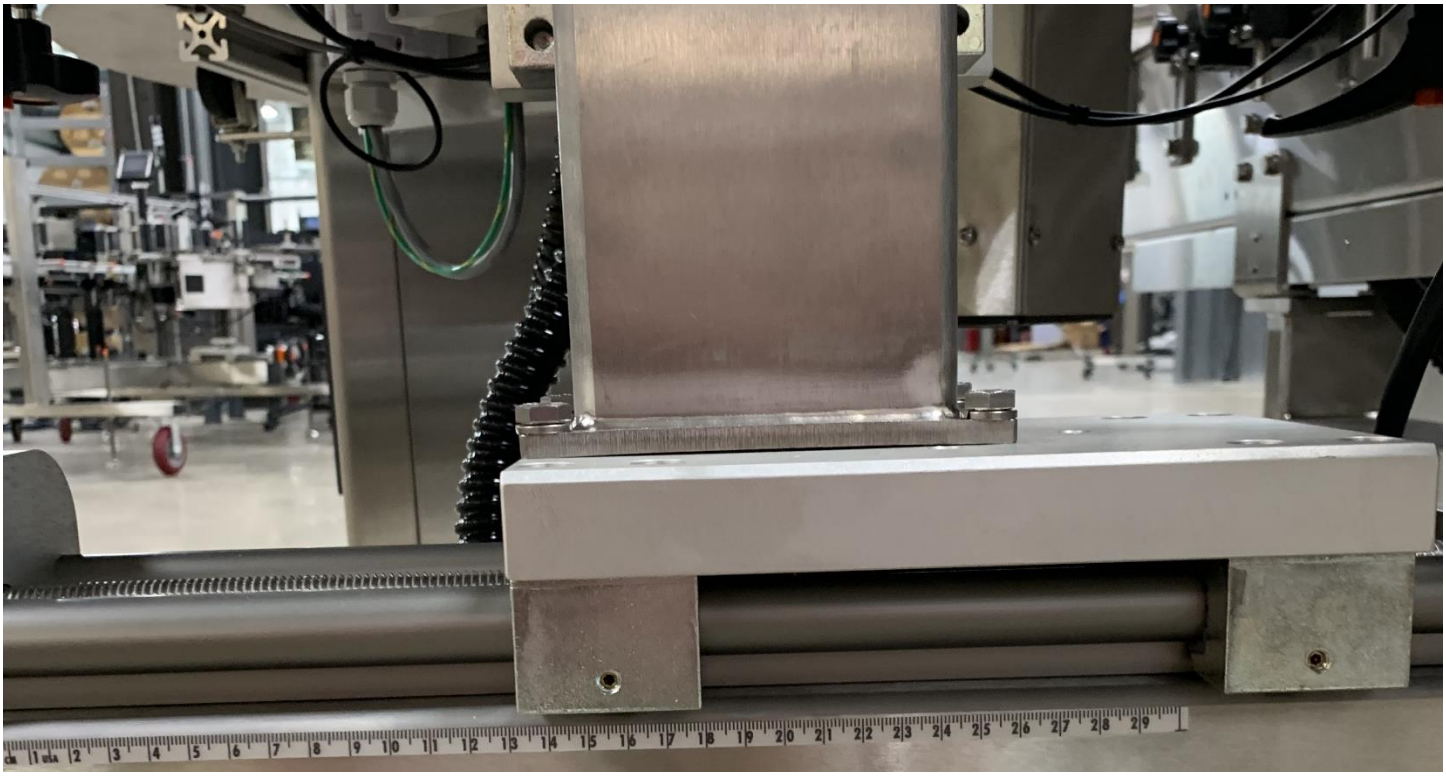

Pacing belt assembly supports can be removed will be without raising the assembly.



Pacing wheels supported as shown



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



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

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

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

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

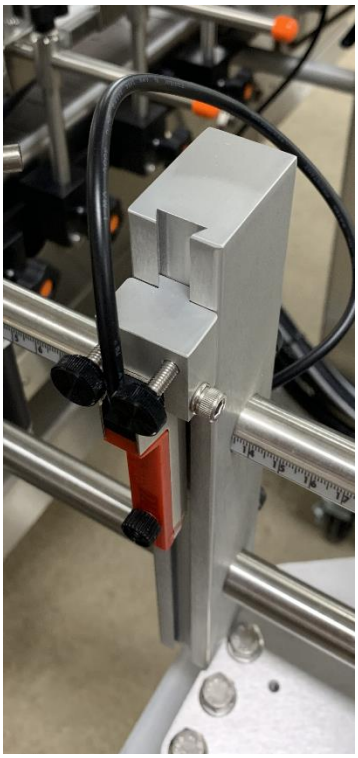
If you have the peel plate rods removed with the peel plate assembly and the label detect assembly (as shown below).

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

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


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

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



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

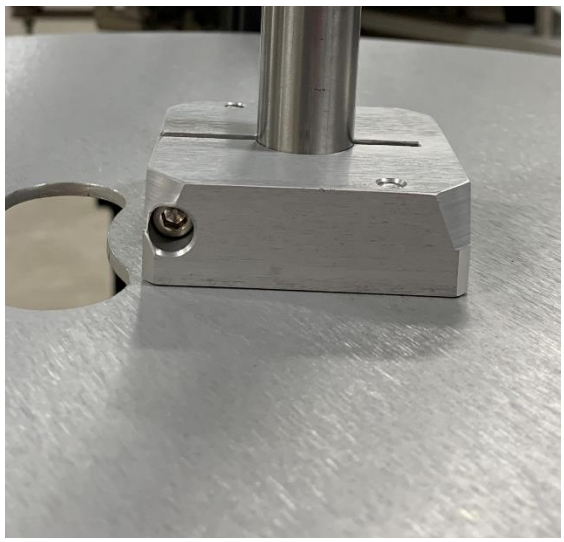

Some machines may have the unwind flange (shown in image to the right) removed to protect the flange during shipping do to the width of the machine.

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

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

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

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



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

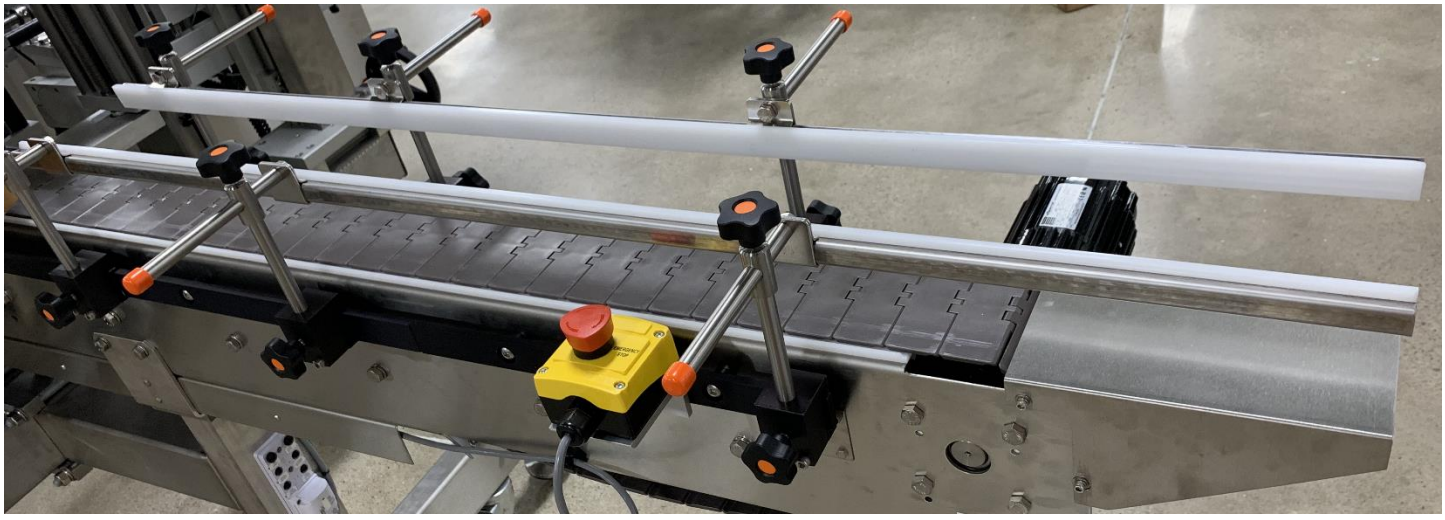
All assemblies removed will be bubble wrapped then plastic wrapped to the machine or in box on the pallet the machine is on.

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

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

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

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



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

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

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

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

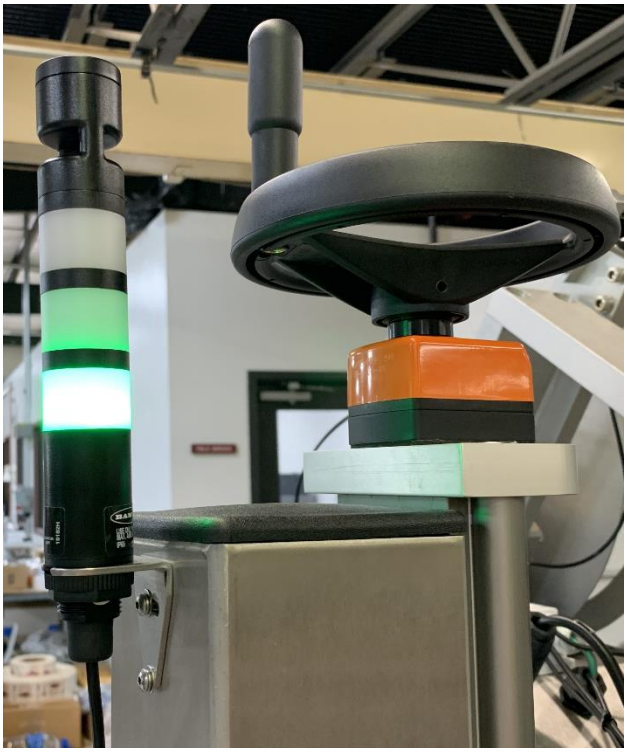
-3/32 L handle Allen wrench

-1/8 L handle Allen wrench

-5/32 L handle Allen wrench

-3/16 L handle Allen wrench

-1/2 open end wrench

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

Carefully remove the plastic wrap and bubble wrap.

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

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


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

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

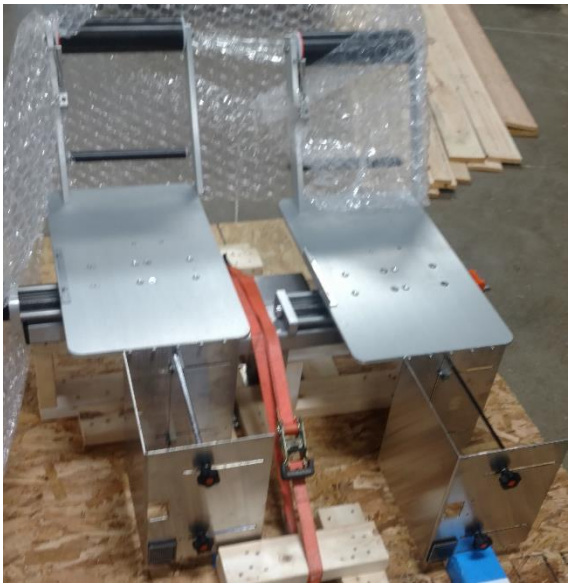
If so, carefully remove the supports and you are done.

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

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



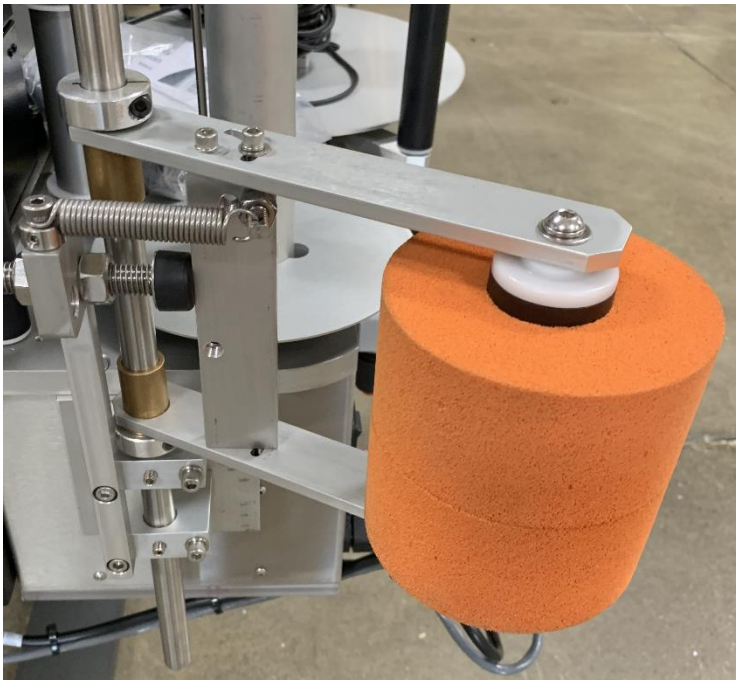
Table top printers with printer tables will ship in separate boxes or pallets (as shown to the left) the printer will be disconnected and placed in the manufacturer's box. The table will either get banded to the pallet with the machine or a separate pallet tethered to the machine pallet. Printer tables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




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

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

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

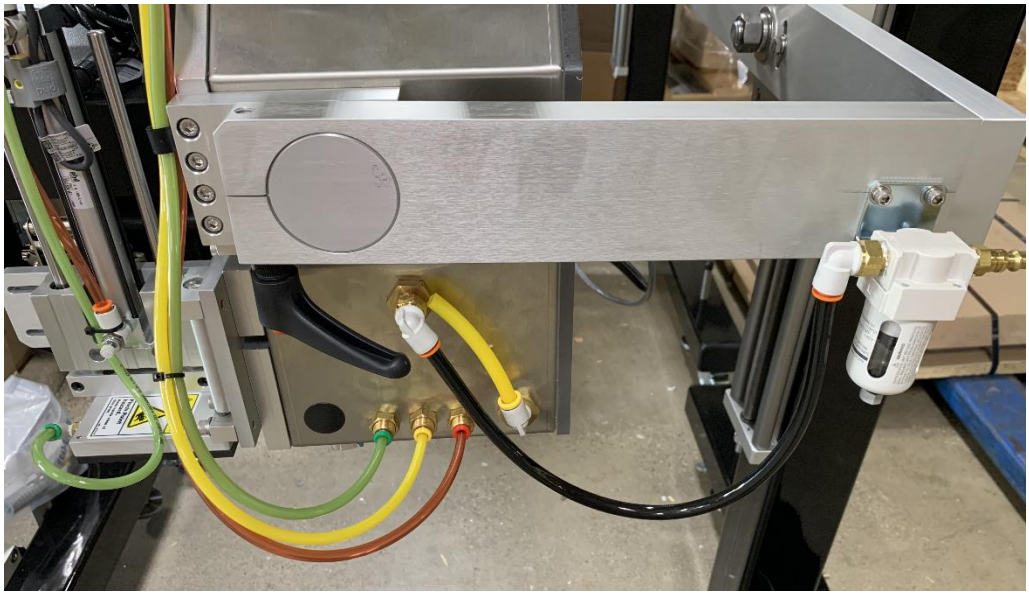



The corner wrap modules will be removed for shipping purposes. They will be wrapped in bubble wrap, plastic wrap, and placed into the box with the labeler.

Take out of the box, carefully remove the wrapping.

Then mount to the labeling head with (4) ¼-20 bolts using a 3/16 L handle Allen wrench.

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



Rotary accumulation tables are banded to a pallet and wrapped.

These tables usually operate independently to the machine.

Carefully un-band and unwrap the table.

Line it up to the transfer plate on the conveyor.

Level the table using the leveling pads.

Plus in and adjust speed through the control box.

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

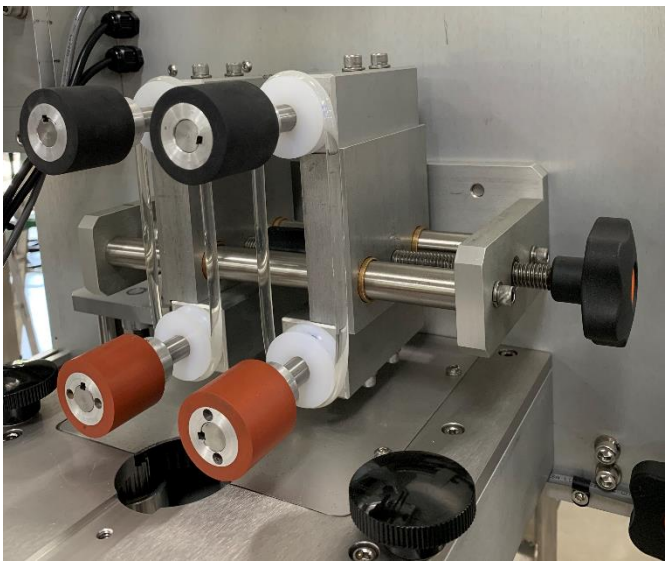

Carefully remove the banding and wrapping.

Raise the head and remove the supports.

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

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

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

Carefully remove the mandrel from the packaging.

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

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

Rotate the black handle to move the throw down rollers closer to the mandrel pinching it in the middle. DO NOT OVER TIGHTEN THE THROW DOWN ROLLERS INTO THE MANDREL. They need to be just tight enough that the bearing spins and a label feeds through.

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

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

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

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

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

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

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

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

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

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


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

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

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

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

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

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

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

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

BEFORE

AFTER

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

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

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

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

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

# HMI GUIDE

QUADREL
LABELING SYSTEMS

# Operator Interface Guide
# For files SD22600-002_v002
# Q34 Printer / Applicator

## Delta DOP 103 color touch screen with AB Micro850 PLC
## For use with Zebra or Sato Print Engines in Tamp Only, Swing Only, Swing then Tamp, Tamp then Swing, and Wipe On Modes

**General Overview:**

The Operator interface communicates to one PLC through a serial 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 splash screen displays the model of the machine (the picture below may not reflect your actual equipment). Touch the screen to continue.


**Button / Indicator Reference:**
**Menu Navigation Buttons:** Any button that navigates to another screen will be purple in color with white text. Most of the Menu buttons will also have icons to help reflect the target menu.
**Standard Buttons:** Standard buttons are used to turn features on/off, reset faults, clear counters, or various other functions that require operator control. These buttons are typically accompanied by text reflecting the status or action of the related button.
**Numeric and Text Displays**: Numbers or Text displays will have a light orange background with black text, surrounded by a dark orange border. These are used to reflect numbers or recipe descriptions.
**Numeric and Text Inputs:** If a number or text can be entered, the button will have a dark green background with white text.

**Main Screen:**
After touching the splash screen, the touch screen will display the Main screen.


**Menu/Setup Navigation Buttons:**
These purple buttons across the top allow the operator to access the various screens that make up the entire touchscreen application.

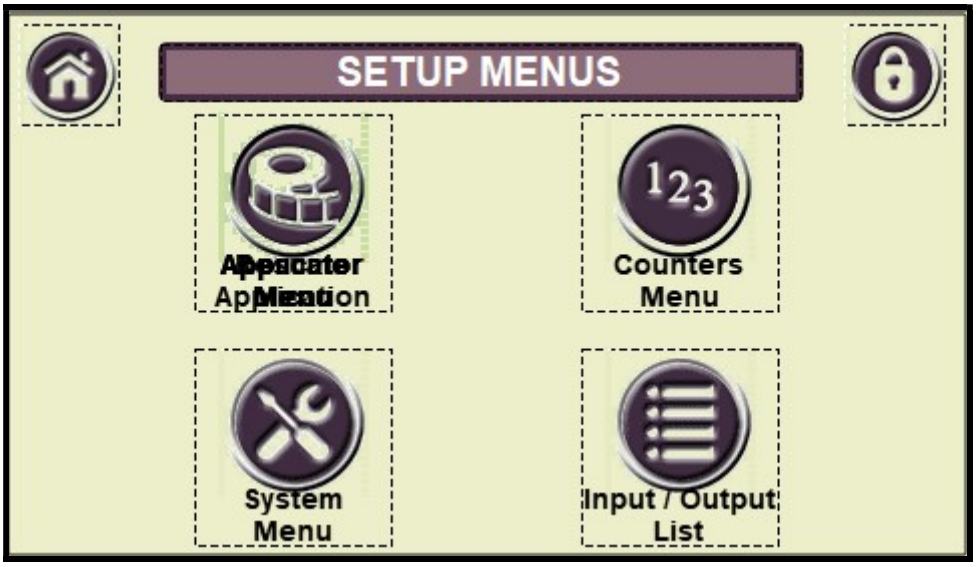
**Fault/Message window:**
The box towards the top of the screen will display any fault or status messages that are active on the machine. The Faults Menu button can be used to display more messages if needed. The blue button with white "R" on it will reset any active faults.

**Applicator Run/Stop:**
The 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 "Started" Button: This indicates the applicator is currently running and cannot be manually cycled. To **stop** the applicator, press this button. A sequence of Run events can be found in the Mode Menu pages.
Red "Stopped" Button: This indicates the applicator is currently stopped and can be manually cycled. To **run** the applicator, press this button.

**Manual Cycle Buttons:**
The applicator can be manually cycled when it is stopped to test print, tamp duration, etc.
Green "Cycle" Button: This indicates the system can be manually cycled.
The action this button will perform will be reflected by the text below it:
"Print Label" or "Cycle Cylinder"

Pressing the Reset button will clear the current status of the applicator. Once cleared, the system will default to the "Print Label" status.

**Setup Menus:**
The Setup Menu provides shortcuts to individual menus and two commonly changed parameters.




**Back Menu:**
Returns to the Main Menu.

**Applicator Menu:**
Navigates to a menu containing parameters specific to the Applicator.

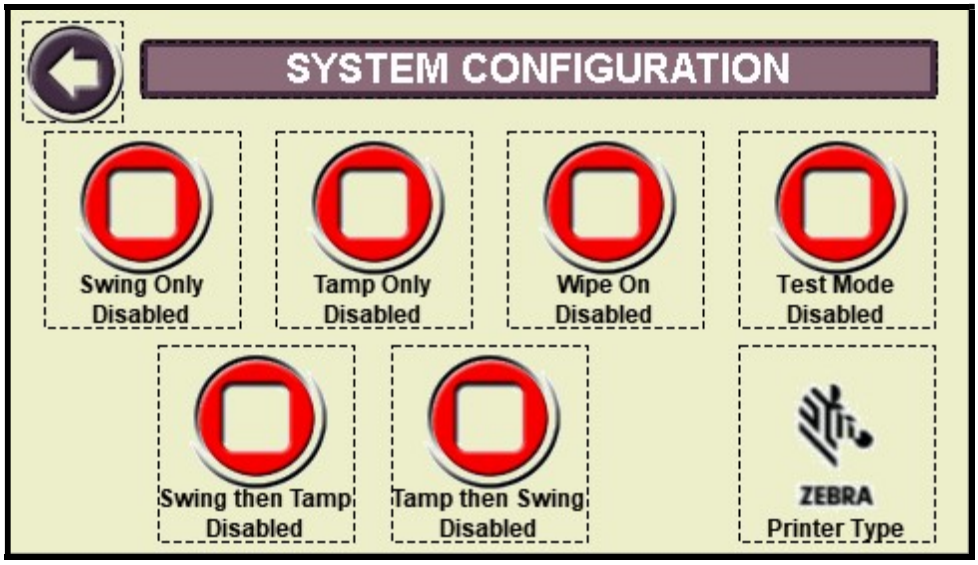
**Counters Menu:**
Navigates to a menu containing product and label counters.

**System Setup:**
Navigates to a menu that changes the function of the applicator and selects the printer type.

**I / O List:**
Navigates to a menu containing input output status.

**User Login:**
Navigates to a menu containing user login.

**System Configuration Menu:**
The System Setup Menu allows the user to change the mode of the machine.




**Swing Only:**
Swing Only mode is used to apply a label to the front side of a passing product. The machine can be top mounted or side mounting pending the label configuration.
To **Run** the system in **Swing Only** Mode:

- Thread the applicator and printer with labels. Make sure the printer has ribbon installed and threaded properly as well.
- Send a print job to the printer and place **Online**.
- Press the **Feed** button to print and dispense a label onto the tamp pad.
- Press the **Cycle Cylinder** button to extend the cylinder.
- Press the **Run** button to place the applicator in the Run mode.
    - Once the smart tamp sensor (installed on the tamp pad) is triggered by an incoming product, the Retract Delay and Air Blast timers will start.
        - While the Air Blast timer is active, the vacuum holding the label on the tamp pad stops and air is then pushed out of the pad. This helps labels get applied to irregular surfaces like shrink wrap.
        - Once the Retract Delay timer expires, the cylinder will return to the home position.
        - Note that the Product Detect sensor is typically triggered by the product at this time.
    - Once the Retract Delay timer expires, the cylinder will return to the home position.
    - When the cylinder returns home, a Tamp Home sensor will be triggered. Once triggered, the printer will print another label.
    - The system will monitor the product detect signal to make sure a product has passed it.
    - Once a product passes the product detect sensor, the Extend Delay timer will start.
    - After the Extend Delay timer expires, the Tamp cylinder will extend and

wait for the next product to trigger the Smart Tamp sensor.
    - If the product has passed before a label is fully dispensed by the printer, the Extend Delay timer will not start until the label is on the tamp pad.

**Tamp Only:**
Tamp Only is used to apply a label to the top or side of a product depending on how the machine is physically mounted.
To **Run** the system in **Tamp Only** Mode:

- Thread the applicator and printer with labels. Make sure the printer has ribbon installed and threaded properly as well.
- Send a print job to the printer and place **Online**.
- Press the **Feed** key to print and dispense a label onto the tamp pad.
- Press the **Run** button to place the applicator in the Run mode.
    - Once the product detect sensor is triggered, the Application Delay timer starts.
    - After the Application Delay timer expires, the Tamp Duration timer will start.
    - The Tamp Cylinder will extend once the Tamp Duration timer starts.
        - Smart Tamp option: If the Tamp Duration timer is counting and the Smart Tamp sensor is triggered, the Retract Delay and Air Blast timers will start.
        - While the Air Blast timer is active, the vacuum holding the label on the tamp pad stops and air is then pushed out of the pad. This helps labels get applied to irregular surfaces like shrink wrap.
        - Once the Retract Delay timer expires, it will stop the Tamp Duration timer and the cylinder will return to the home position.
    - Once the Tamp Duration timer expires, the tamp cylinder will return to the home position.
    - When the cylinder returns home, a Tamp Home sensor will be triggered.
    - Once triggered, the printer will print another label and wait for a product detect signal.

**Wipe On:**
Wipe on is used to apply a label to the side of a product without a tamp or swing cylinder. The label "flag" is set manually by the operator as opposed to being set automatically by print engine.
To **Run** the system in **Wipe On** Mode:

- Thread the applicator and printer with labels. Make sure the printer has ribbon installed and threaded properly as well.
- Send a print job to the printer and place **Online**.
- Press the **Feed** key multiple times until a printed label is staged at the sharpened edge of the peel plate assembly.
- Press the **Run** button to place the applicator in the Run mode.

o Once the product detect sensor is triggered, the Application Delay timer starts.

o After the Application Delay timer expires, the print engine will print another label, causing the label at the peel plate to be dispensed onto the product.

**Swing then Tamp:**

Swing then Tamp mode is used to apply a label to the top and front side of a passing product. The machine can be top mounted or side mounting pending the label configuration.

To **Run** the system in **Swing then Tamp** Mode:

- Thread the applicator and printer with labels. Insure the printer has ribbon installed and threaded properly.
- Send a print job to the printer and place **Online**.
- Press the **Feed** button to print and dispense a label onto the tamp pad.
- Press the **Cycle Cylinder** button to extend the swing cylinder.
- Press the **Run** button to place the applicator in the Run mode.

o Once the smart tamp sensor (installed on the tamp pad) is triggered by an incoming product, the Retract Delay and Air Blast timers will start.

- While the Air Blast timer is active, the vacuum holding the label on the tamp pad stops and air is then pushed out of the pad. This helps labels get applied to irregular surfaces like shrink wrap.
- Once the Retract Delay timer expires, the cylinder will return to the home position.

o Once the Retract Delay timer expires, the Swing cylinder will return to the home position.

o When the Swing cylinder returns home, a Swing Home sensor will be triggered.

Once triggered, the printer will print another label. Print completion will trigger the Tamp Duration timer.

o The Tamp Cylinder will extend once the Tamp Duration timer starts.

- Smart Tamp option: If the Tamp Duration timer is counting and the Smart Tamp sensor is triggered, the Retract Delay and Air Blast timers will start.
- While the Air Blast timer is active, the vacuum holding the label on the tamp pad stops and air is then pushed out of the pad. This helps labels get applied to irregular surfaces like shrink wrap.
- Once the Retract Delay timer expires, it will stop the Tamp Duration timer and the cylinder will return to the home position.

o Once the Tamp Duration timer expires, the tamp cylinder will return to the home position.

o When the cylinder returns home, a Tamp Home sensor will be triggered.

o Once triggered, the printer will print another label.
o The system will monitor the product detect signal to make sure a product has passed it.
o Once a product passes the product detect sensor, the Extend Delay timer will start.
o After the Extend Delay timer expires, the Swing cylinder will extend and wait for the next product to trigger the Smart Tamp sensor.
    - If the product has passed before a label is fully dispensed by the printer, the Extend Delay timer will not start until the label is on the tamp pad.
o After the Extend Delay timer expires, the Tamp cylinder will extend and wait for the next product to trigger the Smart Tamp sensor.
    - If the product has passed before a label is fully dispensed by the printer, the Extend Delay timer will not start until the label is on the tamp pad.

Once the smart tamp sensor (installed on the tamp pad) is triggered by an incoming product, the Retract Delay and Air Blast timers will start.
    - While the Air Blast timer is active, the vacuum holding the label on the tamp pad stops and air is then pushed out of the pad. This helps labels get applied to irregular surfaces like shrink wrap.
    - Once the Retract Delay timer expires, the cylinder will return to the home position.

o Once the Retract Delay timer expires, the Swing cylinder will return to the home position.
o When the Swing cylinder returns home, a Swing Home sensor will be triggered.

Once triggered, the printer will print another label. Print completion will trigger the Tamp Duration timer.

**Tamp then Swing:**

Tamp then Swing mode is used to apply a label to the front and top side of a passing product. The machine can be top mounted or side mounting pending the label configuration.

To **Run** the system in **Tamp then Swing** Mode:

- Thread the applicator and printer with labels. Ensure the printer has ribbon installed and threaded properly.
- Send a print job to the printer and place **Online**.
- Press the **Feed** button to print and dispense a label onto the tamp pad.
- Press the **Cycle Cylinder** button to extend the swing cylinder.
- Press the **Run** button to place the applicator in the Run mode.

o The Tamp Cylinder will extend once the Tamp Duration timer starts.
    - Smart Tamp option: If the Tamp Duration timer is counting and the Smart Tamp sensor is triggered, the Retract Delay and Air Blast timers will start.
    - While the Air Blast timer is active, the vacuum holding the label on the tamp pad stops and air is then pushed out of the

pad. This helps labels get applied to irregular surfaces like shrink wrap.
    - Once the Retract Delay timer expires, it will stop the Tamp Duration timer and the cylinder will return to the home position.

o Once the Tamp Duration timer expires, the tamp cylinder will return to the home position.
o When the cylinder returns home, a Tamp Home sensor will be triggered.
o Once triggered, the printer will print another label. Print complete will trigger the Swing Duration timer.
o Once a product passes the product detect sensor, the Extend Delay timer will start.
o After the Extend Delay timer expires, the Swing cylinder will extend and wait for the next product to trigger the Smart Tamp sensor.
    - If the product has passed before a label is fully dispensed by the printer, the Extend Delay timer will not start until the label is on the tamp pad.

o After the Extend Delay timer expires, the Tamp cylinder will extend and wait for the next product to trigger the Smart Tamp sensor.
    - If the product has passed before a label is fully dispensed by the printer, the Extend Delay timer will not start until the label is on the tamp pad.

Once the smart tamp sensor (installed on the tamp pad) is triggered by an incoming product, the Retract Delay and Air Blast timers will start.
    - While the Air Blast timer is active, the vacuum holding the label on the tamp pad stops and air is then pushed out of the pad. This helps labels get applied to irregular surfaces like shrink wrap.
    - Once the Retract Delay timer expires, the cylinder will return to the home position.

o Once the Retract Delay timer expires, the Swing cylinder will return to the home position.
o When the Swing cylinder returns home, a Swing Home sensor will be triggered.
Once triggered, the printer will print another label.

o Once the smart tamp sensor (installed on the tamp pad) is triggered by an incoming product, the Retract Delay and Air Blast timers will start.
    - While the Air Blast timer is active, the vacuum holding the label on the tamp pad stops and air is then pushed out of the pad. This helps labels get applied to irregular surfaces like shrink wrap.
    - Once the Retract Delay timer expires, the cylinder will return to the home position.

o Once the Retract Delay timer expires, the Swing cylinder will return to the home position.
o When the Swing cylinder returns home, a Swing Home sensor will be triggered.

Once triggered, the printer will print another label. Print completion will trigger the Tamp Duration timer.

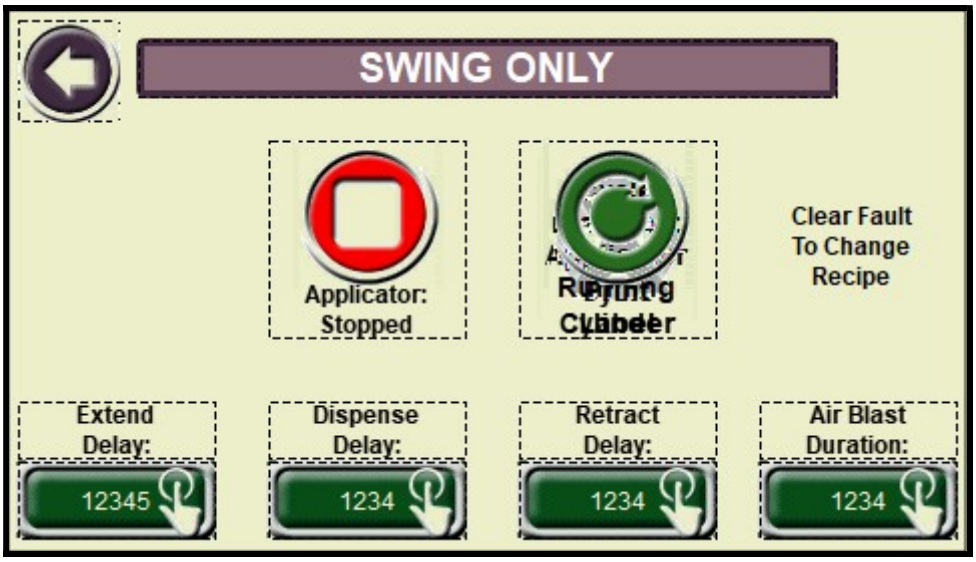
- The system will monitor the product detect signal to make sure a product has passed it.

**Test Mode Enabled / Disabled:**
This button is login level access protected. It will navigate to output status screen with control buttons for all outputs, this machine mode is for test purpose only.

**Printer Type:**
This button will toggle between Zebra and Sato to select what type of printer is installed on the system. Selecting the wrong type of printer will result in faults that cannot be cleared.

**Swing Only Menu**

The Applicator Menu contains the parameters that are associated with the various components that make up the Applicator.




**Extend Delay:**
The Extend Delay (entered in milliseconds) is the timer from when a product passes the product detect sensor until the tamp cylinder activates. This timer is used to ensure a product has passed the applicator before activating the tamp cylinder.

**Dispense Delay:**
The Dispense Delay (entered in milliseconds) is the timer for setting down the swing arm after it returns to home position. This timer is used to ensure a label is dispensed properly on the label pad.

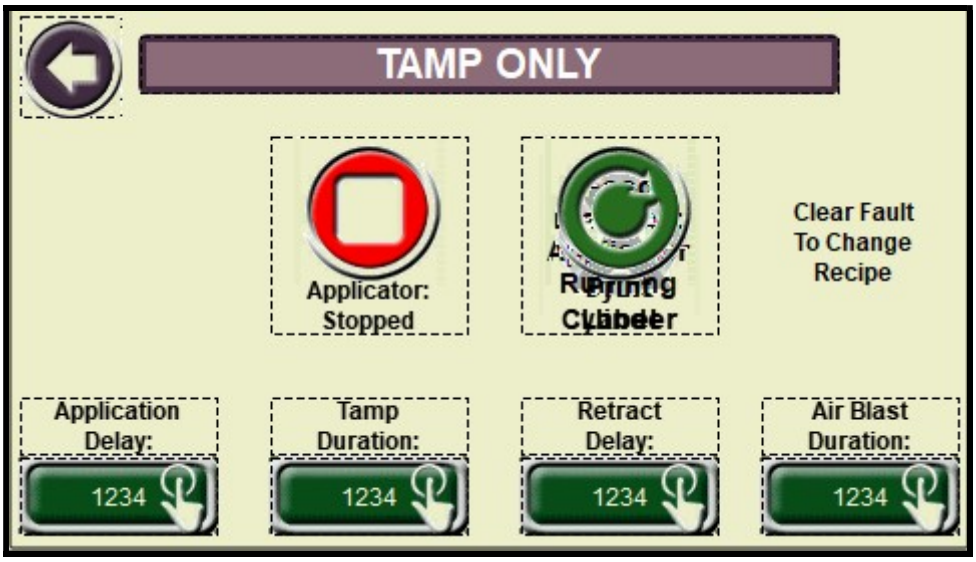
**Retract Delay:**
The Retract Delay (entered in milliseconds) is used to adjust when the cylinder returns after the Smart Tamp sensor (installed on the tamp pad) has become activated. A lower value may prevent the tamp pad from actually touching the product as it comes towards the pad. A value that is too high may cause the product to push the entire applicator out of alignment.

**Air Blast Duration:**
The Air Blast Duration (entered in milliseconds) is used to adjust how long the tamp cylinder will blow air out of it once the Retract Delay timer starts. This is used to help labels get tacked around irregular surfaces like shrink wrap.

**Recipe:**
The system is capable of storing 20 Recipe. The Recipe will store the Application Delay, Tamp Duration, Retract Delay, and Air Blast Duration. These parameters are automatically saved under the current recipe when changed. To load a new recipe, simply enter a new recipe number.

## Tamp Only Menu

The Tamp Only Menu contains the parameters that are associated with the various components that make up the Applicator.




**Application Delay:**
The Application Delay (entered in milliseconds) is the timer from when the product detect is triggered until the tamp cylinder activates. This timer is used to center the label on the product.

**Tamp Duration:**
The Tamp Duration (entered in milliseconds) is used to adjust how long the tamp cylinder is active when triggered. Too low of a value may prevent the cylinder from fully extending, while a value that is too high may cause the cylinder to damage products.

**Retract Delay:**
The Retract Delay (entered in milliseconds) is used to adjust when the cylinder returns after the Smart Tamp (optional) sensor has become activated. A lower value may prevent the tamp pad from actually touching the product below it. If no Smart Tamp sensor is used (or the sensor is not set up properly), the cylinder will return after the Tamp Duration expires.

**Air Blast Duration:**
The Air Blast Duration (entered in milliseconds) is used to adjust how long the tamp cylinder will blow air out of it once the Tamp Duration or Retract Delay expires. This is used to help labels get tacked around irregular surfaces like shrink wrap.

**Recipe:**
The system is capable of storing 20 Recipe. The Recipe will store the Application Delay, Tamp Duration, Retract Delay, and Air Blast Duration. These parameters are automatically saved under the current recipe when changed. To load a new recipe, simply enter a new recipe number.

**Wipe on Menu**

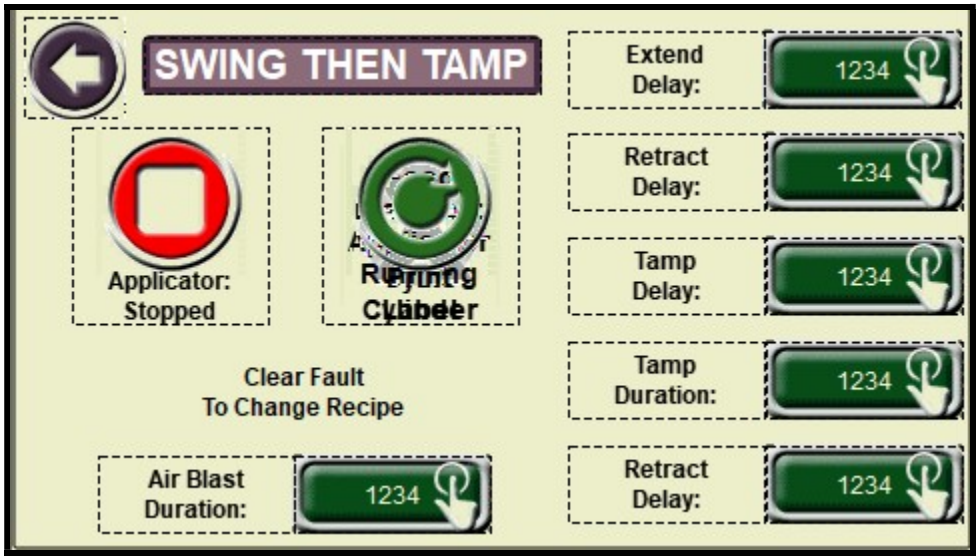
The Tamp Only Menu contains the parameters that are associated with the various components that make up the Applicator.


**Application Delay:**
The Application Delay (entered in milliseconds) is the timer from when the product detect is triggered until the label is applied to the product. This timer is used to center the label on the product.

**Recipe:**
The system is capable of storing 20 Recipe. The Recipe will store the Application Delay, Tamp Duration, Retract Delay, and Air Blast Duration. These parameters are automatically saved under the current recipe when changed. To load a new recipe, simply enter a new recipe number.

**Swing then Tamp Menu**

The Applicator Menu contains the parameters that are associated with the various components that make up the Applicator.




**Extend Delay:**
The Extend Delay (entered in milliseconds) is the timer from when a product passes the product detect sensor until the tamp cylinder activates. This timer is used to ensure a product has passed the applicator before activating the tamp cylinder.

**Retract Delay:**
The Retract Delay (entered in milliseconds) is used to adjust when the cylinder returns after the Smart Tamp sensor (installed on the tamp pad) has become activated. A lower value may prevent the tamp pad from actually touching the product as it comes towards the pad. A value that is too high may cause the product to push the entire applicator out of alignment.

CAUTION: THE RETRACT DELAY MUST BE NUMERICALLY SMALLER THEN THE TAMP DURATION.

**Tamp Duration:**
The Tamp Duration (entered in milliseconds) is used to adjust how long the tamp cylinder is active when triggered. Too low of a value may prevent the cylinder from fully extending, while a value that is too high may cause the cylinder to damage products.

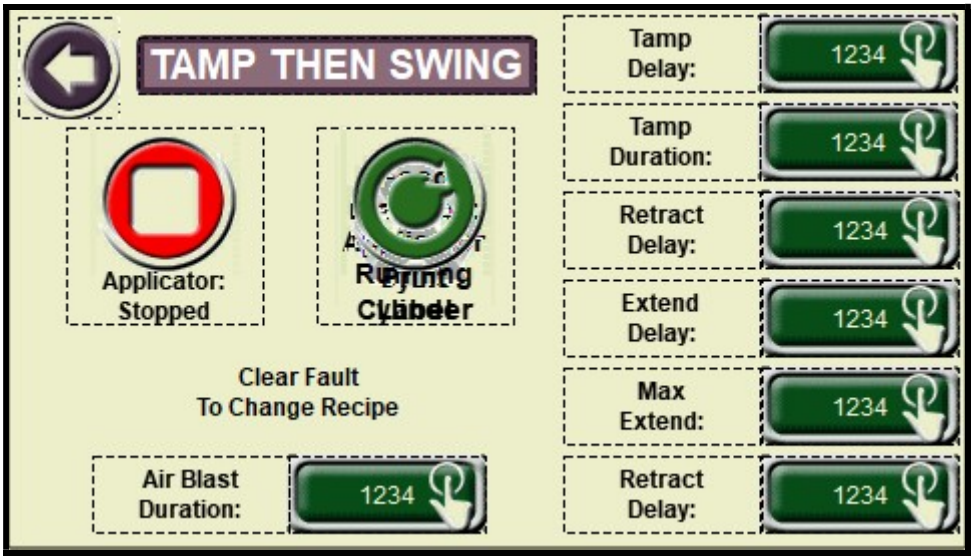
**Tamp Delay:**
The Tamp Delay (entered in milliseconds) is the timer from when the Swing Arm returns home until the tamp cylinder activates. This timer is used to center the label on the product before activating the tamp cylinder.

**Retract Delay:**
The Retract Delay (entered in milliseconds) is the timer for the Swing Arm holding extended position before it returns home.

**Air Blast Duration:**
The Air Blast Duration (entered in milliseconds) is used to adjust how long the tamp cylinder will blow air out of it once the Retract Delay timer starts. This is used to help labels get tacked around irregular surfaces like shrink wrap.

**Recipe:**
The system is capable of storing 20 Recipe. The Recipe will store the Application Delay, Tamp Duration, Retract Delay, and Air Blast Duration. These parameters are automatically saved under the current recipe when changed. To load a new recipe, simply enter a new recipe number.

**Tamp Then Swing:**




**Tamp Duration:**
The Tamp Duration (entered in milliseconds) is used to adjust how long the tamp cylinder is active when triggered. Too low of a value may prevent the cylinder from fully extending, while a value that is too high may cause the cylinder to damage products.

**Tamp Delay:**
The Tamp Delay (entered in milliseconds) is the timer from when the Swing Arm returns home until the tamp cylinder activates. This timer is used to center the label on the product before activating the tamp cylinder.

**Retract Delay:**
The Retract Delay (entered in milliseconds) is the timer for the Swing Arm holding extended position before it returns home.

**Extend Delay:**
The Extend Delay (entered in milliseconds) is the timer from when a product passes the product detect sensor until the tamp cylinder activates. This timer is used to ensure a product has passed the applicator before activating the tamp cylinder.

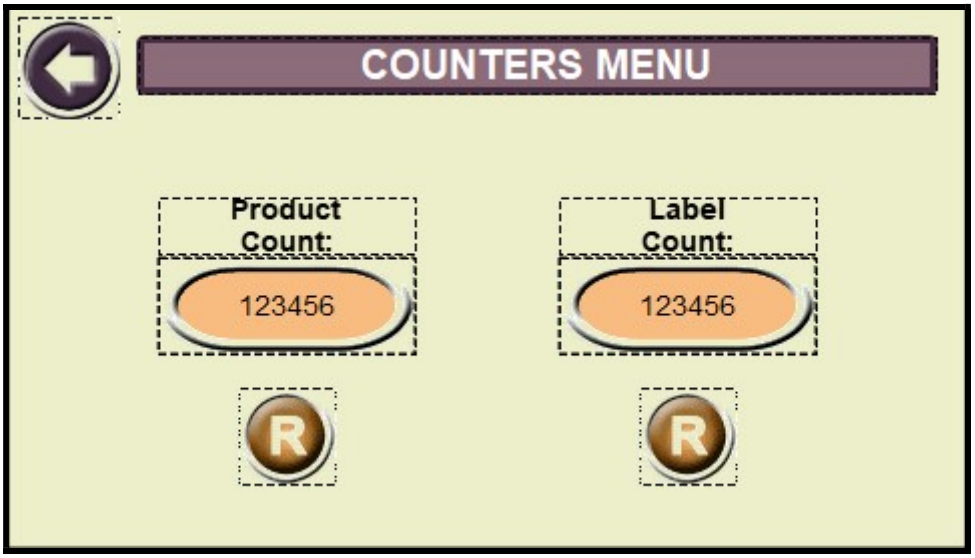
**Max Extend Time:**
The Extend Delay (entered in milliseconds) is the timer ensure swing arm holding max extension position.

**Retract Delay:**
The Retract Delay (entered in milliseconds) is used to adjust when the cylinder returns after the Smart Tamp sensor (installed on the tamp pad) has become activated. A lower value may prevent the tamp pad from actually touching the product as it comes towards the pad. A value that is too high may cause the product to push the entire applicator out of alignment.

**Air Blast Duration:**
The Air Blast Duration (entered in milliseconds) is used to adjust how long the tamp cylinder will blow air out of it once the Retract Delay timer starts. This is used to help labels get tacked around irregular surfaces like shrink wrap.

**Recipe:**
The system is capable of storing 20 Recipe. The Recipe will store the Application Delay, Tamp Duration, Retract Delay, and Air Blast Duration. These parameters are automatically saved under the current recipe when changed. To load a new recipe, simply enter a new recipe number.

## Counters Menu:




**Product Count:**
This counter reflects how many products the system has detected while the Applicator was/is running.

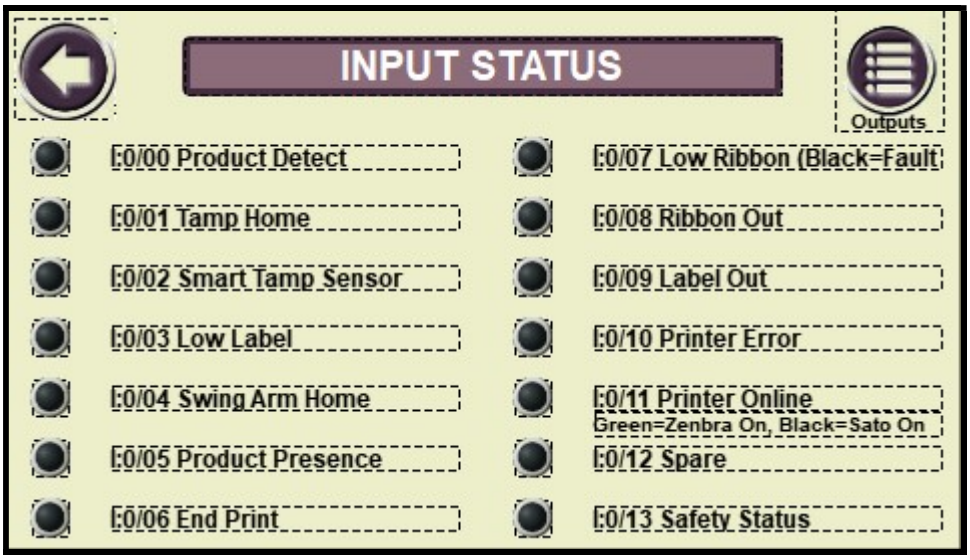
**Label Count:**
This counter reflects how many labels the printer has dispensed, regardless of Applicator status.

**Reset Buttons:**
Pressing the Reset Button under each counter will reset that counter to 0.

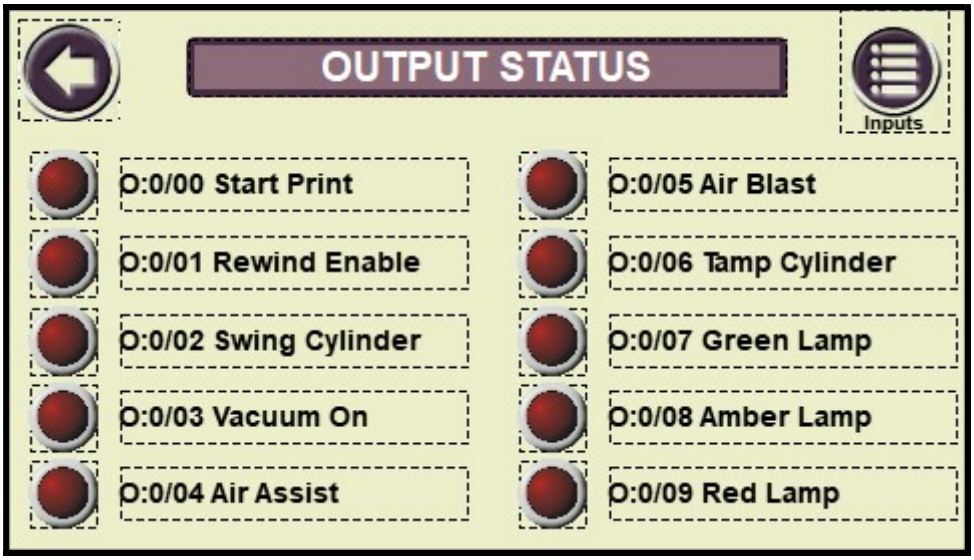
## Input / Output Status:

There are three I/O status screens which allow operator to observe / control the system.

**PLC Input Status**




**PLC Output Status**




**PLC Input Status:**
Display PLC input status

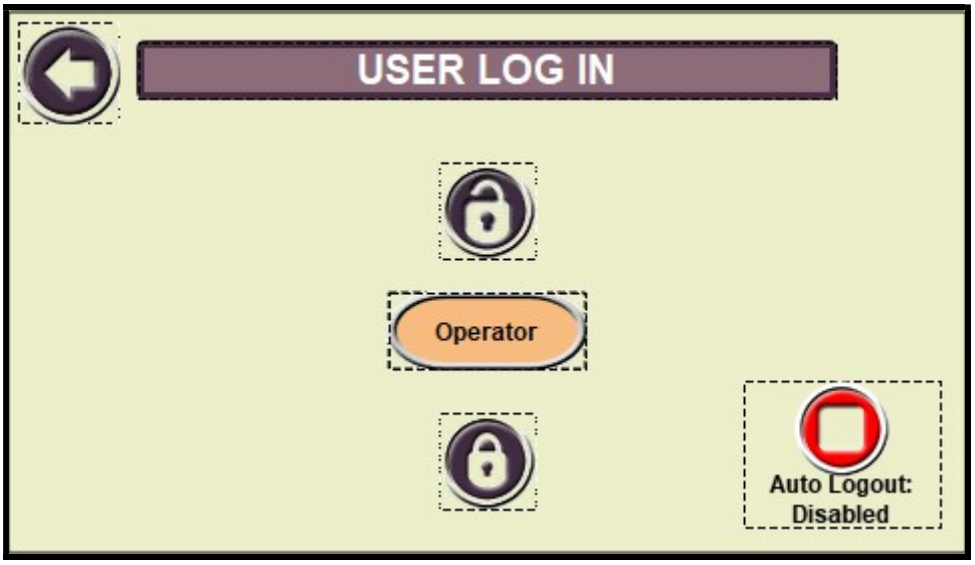
.

**PLC Output Status:**
It will display PLC output either status indicator or control buttons based on login user, with an authorize user login, it can toggle all outputs to check output wiring.

## User Screen:

The User Menu enables alternate login levels to access protected screens and buttons. Certain screens can only be accessed by users that have Logged In using a user name and 4-digit password. Press the Log In box to enter user name and numeric password in the pop up window. System is defaulted auto log out any non-default users.

Default: No User name & Password required.
Maintenance: Ask your supervisor.



**Fault Messages and Indicators:**

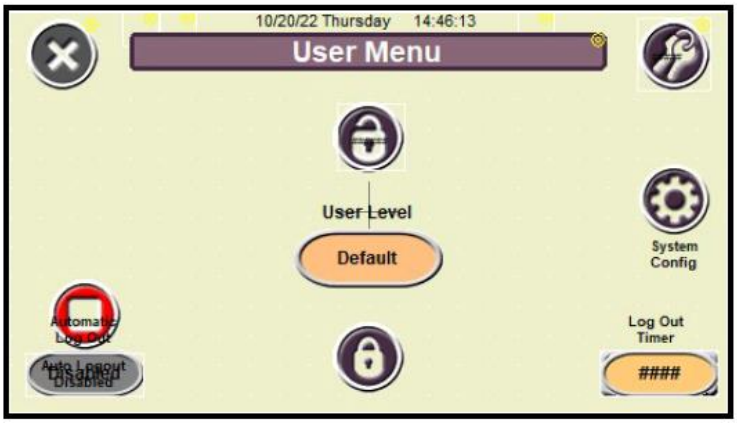
An Amber lamp will signal that there is a warning condition present on the system. Warning conditions typically allow the system to function normally, but action will be needed soon to replace labels, ribbon, etc. Some warning messages will turn into fatal faults if they are not addressed before taking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

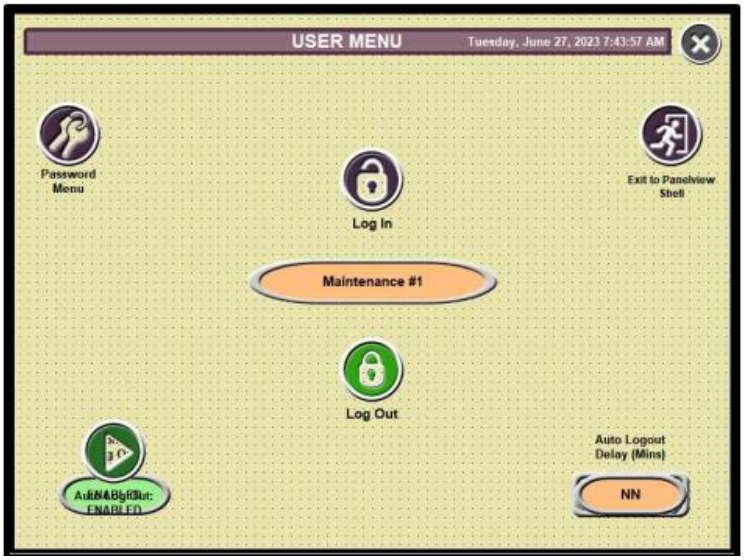
Red Lamp: A Red lamp indicates that a fatal fault occurred and the system is unable to run properly. This lamp will always flash.

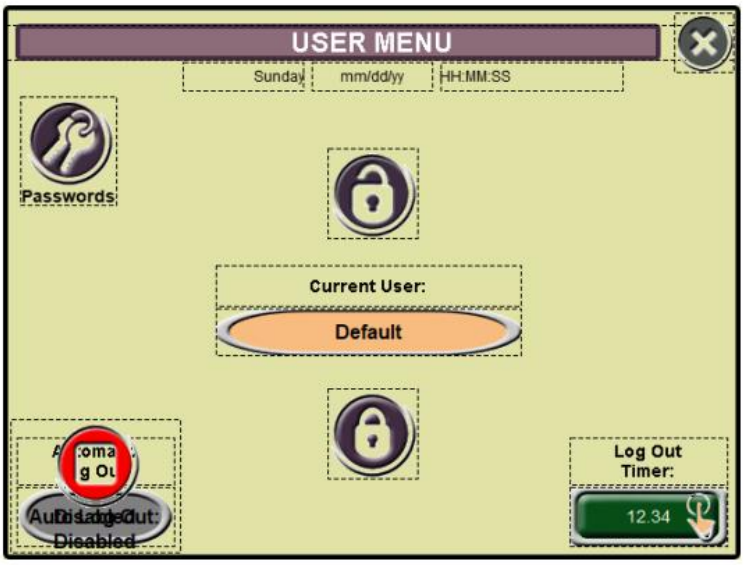
| Messages | Cause/Solution |
|---|---|
| **Warning Messages** | |
| **Low Label Supply** | The label supply on the applicator has been determined low by the sensor fiber under the flange. |
| **Low Ribbon Supply** | The printer has given the system a signal that it is low on ribbon material. |
| **Ribbon Out Warning** | The printer has given the system a signal that it does not detect any ribbon. This will turn into a fatal fault if a product is detected. |
| **Label Out Warning** | The printer has given the system a signal that it does not detect any labels threaded through it. This will turn into a fatal fault if a product is detected. |
| **Printer Offline / No Job Loaded Warning** | The printer is currently paused, offline, or does not have a job loaded into it while a product has been detected. This will start the “Timeout Delay” before it turns into a fatal fault. |
| **Printer Error / Faulted Warning** | The printer currently has a fault or error on it such as the cover is open or the ribbon is out. This will turn into a fatal fault if a product is detected. |

| Faults | |
|---|---|
| **End of Ribbon Supply Fault** | The printer has given the system a signal that it does not detect any ribbon. This could be due to a ribbon break, improper installation, or the end of the supply. |
| **End of Label Supply Fault** | The printer has given the system a signal that it does not detect any labels threaded through it. This could be due to the labels breaking, the end of the supply, or improper sensor (internal printer gap sensor) setup. |
| **Printer Offline / No Job Loaded** | The printer has been paused, offline, faulted, or does not have a job loaded into it while a product has been detected for the duration of the "Timeout Delay". Reset and check the printer to verify it is receiving labels, not paused, or not faulted. |
| **Printer Error / Faulted** | The printer currently has a fault or error on it such as the cover is open or the ribbon is out. |
| **Product Presence Fault** | The applicator is attempting to actuate the swing cylinder with the product presence sensor blocked. This prevents damage to the swing arm. |

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




USER MENU
Sunday
mm/dd/yy
HH:MM:SS
Passwords
Current User:
Default
Log Out
Timer:
12.34
Disabled

# Setup Sheets

SERIAL # 84254-100

## Q34 SETUP
## SYSTEM CONFIG

| | |
|---|---|
| ☐ SWING ONLY | |
| ☐ SWING then TAMP | |
| ☑ TAMP ONLY | |
| ☐ TAMP then SWING | |
| ☐ WIPE ON | |
| PRINTER TYPE | ☑ ZEBRA ☐ SATO |

| TAMP ONLY | Factory Values | User Values |
|---|---|---|
| RECIPE | 1 | |
| APPLICATION DELAY | 100 | |
| TAMP DURATION | 1000 | |
| RETRACT DELAY | 250 | |
| AIR BLAST DURATION | 250 | |

| SWING ONLY | Factory Values | User Values |
|---|---|---|
| RECIPE | | |
| EXTEND DELAY | | |
| DISPENSE DELAY | | |
| RETRACT DELAY | | |
| AIR BLAST DURATION | | |

| SWING then TAMP | Factory Values | User Values |
|---|---|---|
| RECIPE | | |
| EXTEND DELAY | | |
| RETRACT DELAY | | |
| TAMP DELAY | | |
| TAMP DURATION | | |
| RETRACT DELAY | | |
| AIR BLAST DURATION | | |

| TAMP then SWING | Factory Values | User Values |
|---|---|---|
| RECIPE | | |
| TAMP DELAY | | |
| TAMP DURATION | | |
| RETRACT DELAY | | |
| EXTEND DELAY | | |
| MAX EXTEND TIME | | |
| RETRACT DELAY | | |
| AIR BLAST | | |

| WIPE ON | Factory Values | User Values |
|---|---|---|
| RECIPE | | |
| APPLICATION DELAY | | |

**AIR PRESSURE GAUGES**

| | Factory Settings | User Settings |
|---|---|---|
| AIR BLOW | | |
| VACUUM PAD | | |
| TAMP CYLINDER | | |
| AIR ASSIST | | |

# Fuji Frenic Mini v.006

For Single Drive Enclosures

**Job:** 84159-00 **Drive:** 1 **Motor:** Bodine

**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<br>1 (10V): Pot, M2 | 0 | Freq. Command |
| F02 | 2 | 1 (Terminals) | 1 | Operation |
| F03* | 60.0 | 60.0 | 60 | Max Frequency |
| F07 | 6.0 | 3.0 | 3.0 | Accel Time |
| F08 | 6.0 | 3.0 | .50 | Decel Time |
| F15 | 70.0 | 70.0 | 70 | Frequency Limit |
| F42 | 0 | 2 | 20 | Control Mode |
| E99 | 99 | 6 | 0 99 | 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**

**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 | |

**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.

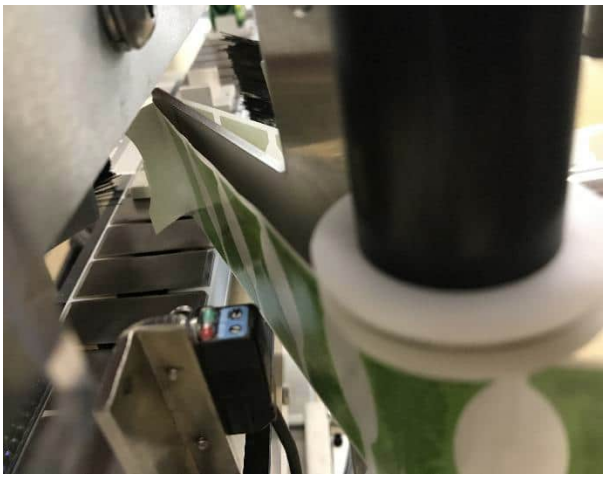
You will also find the threading diagram directly on the labeling head.

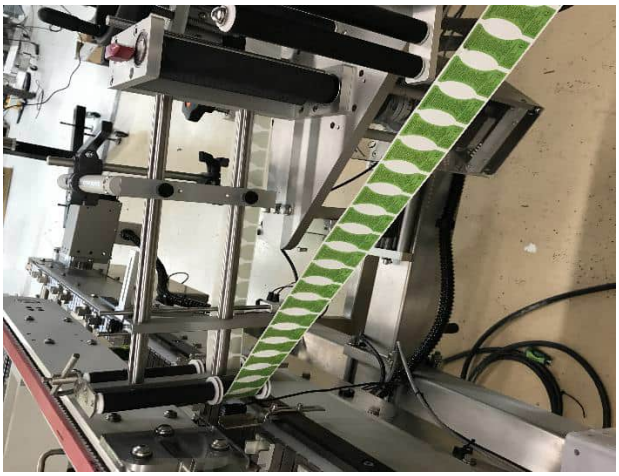
1) Place the label stock roll on the unwind shaft. Press the roll firmly against the flange. Then slide the locking collar over the unwind shaft aligning the set screw with the shaft. Press into the roll and twist to lock the collar in place.

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

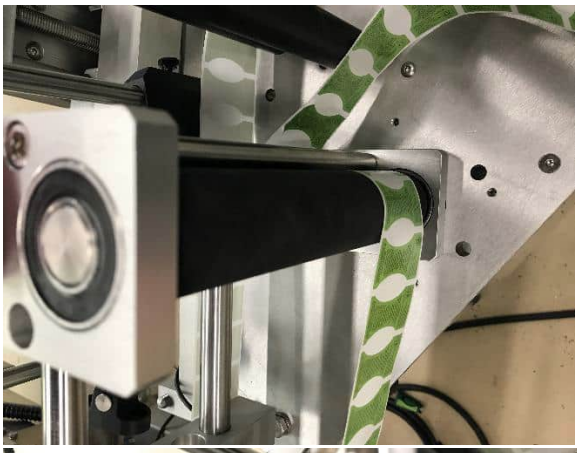
3) Follow the threading diagram on the labeling head for routing the web.
4) Thread through the dancer to the peel plate.

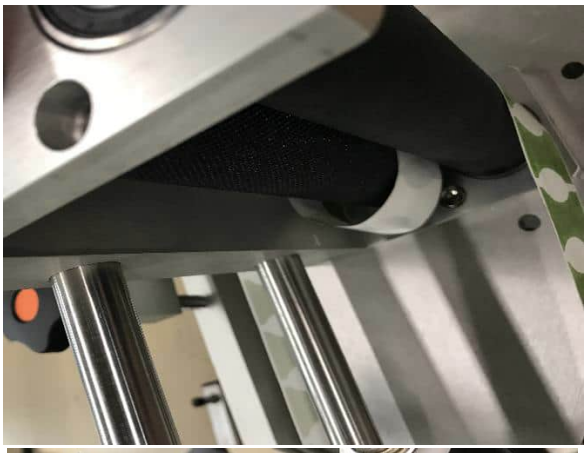
5) Feed the label around the peel plate and under the pressure shoe if ( if there is one). Feed the label up the head to the pull roll. Pull all the slack out.

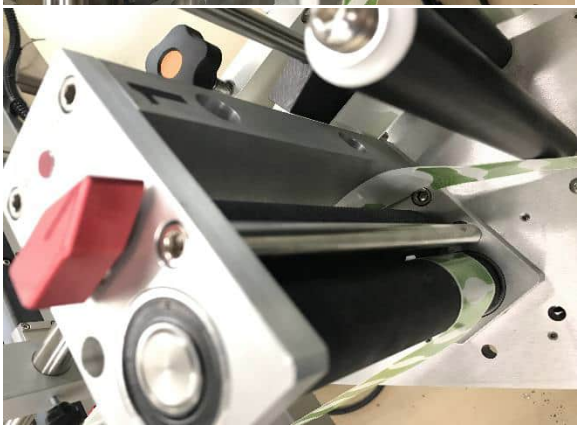




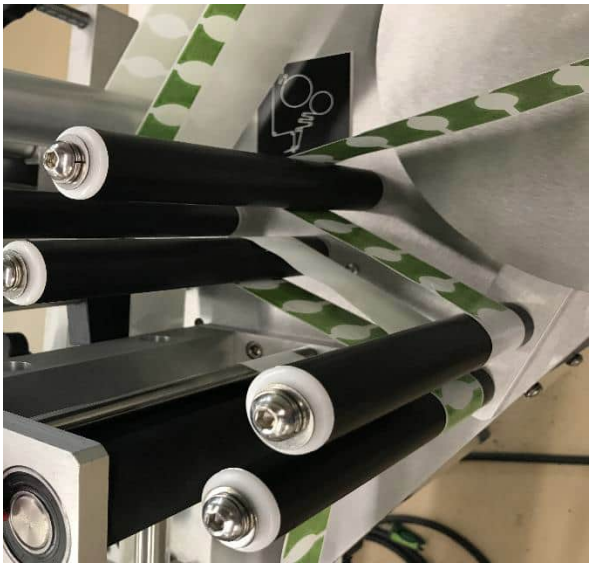
6) Wrap labels around the rubber roller as shown, then around the knurled roller. Make sure the knurled roller is not locked in by turning the red knob to the left or right of the red dot on the drive roll. When you have the labels completely threaded you can turn the knob to the red dot.



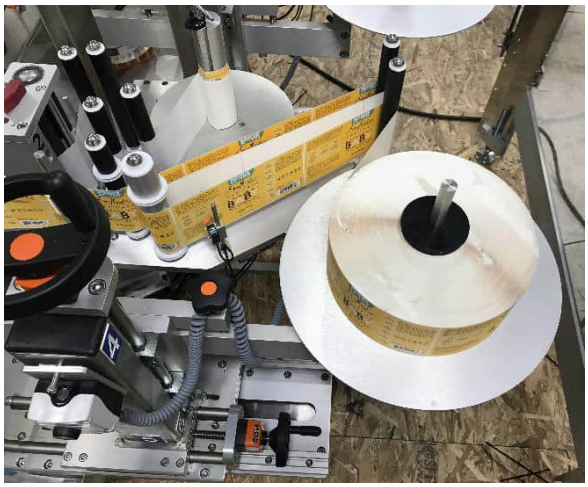




7) Thread the labels through the rewind dancers to the rewind shaft. Place the end of the label through the clip and rotate the rewind hub to take up the slack.



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.

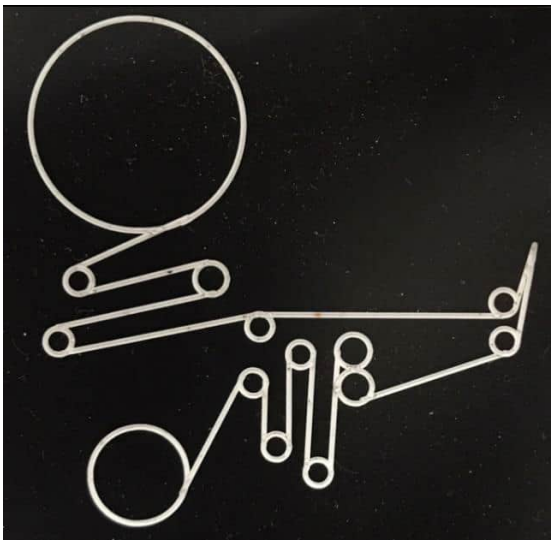


9) To unload the rewind loosen (counter clockwise) the “clevis” bolt on the top of the rewind hub. this will collapse the rewind and you can pull the liner off the hub.

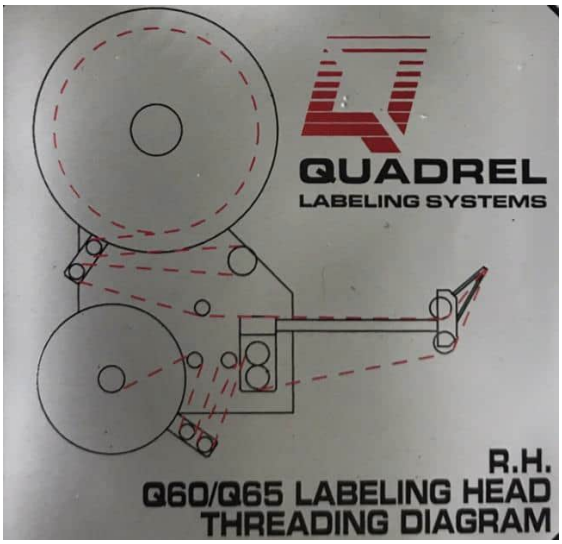
⚠ CAUTION There are many pinch points on a labeler. to avoid injury read and understand the owner’s manual before operating.

## 6.1.2 THREADING DIAGRAMS

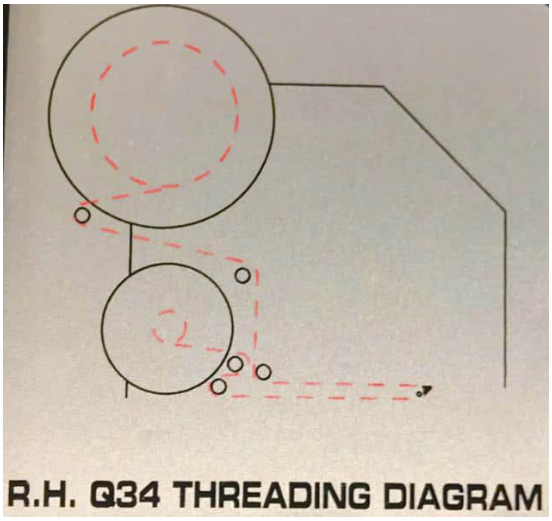
Here are the following threading diagrams for our standard labeling heads.



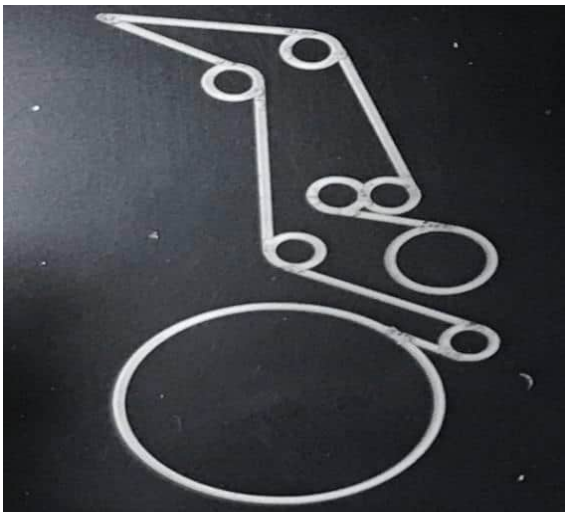
Q120/Q125/Q115/Q110




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 with move the labeler out.


To adjust the angle of the labeling head you first need to loosen the large ¾-10 nut with a 1 ¼ “wrench and the 5/16-18 hex head bolt. The angular adjustment is very important to increase the repeatability of the process. A good adjustment is when the exit of the label is tangent with the surface of the application.

⚠ CAUTION DO NOT remove the nut & bolt.

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


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

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

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

# Q34 Labeling Head

**ASSEMBLY TITLE: Q34 SYSTEM OVERVIEW**

The Q34 Printer Applicator consists of two major components:

A) Applicator/Controller
B) Print Engine (Thermal Printer) or Apply Only module

The Print Engine performs the function of printing and dispensing labels. The applicator performs the function of feeding labels to the print engine, applying the dispensed label to the product, and removing the waste liner from the print engine.
There are two microprocessors that communicate with each other and both have operator interfaces. One Microprocessor is manufactured by Quadrel Labeling Systems, The other internal to the printer, is manufactured by the print engine manufacturer.
The Quadrel PLC controls the sequencing of the applicator and communicates with the printer microprocessor to print labels and monitor the printing status and fault outputs.
Attached to this manual is the operator manual provided by the printer manufacturer. In this manual, you will find the programming instructions for the operator display, maintenance procedures, threading of ribbon and labels, and troubleshooting procedures for the print engine; please refer to the printer manual for warranty information and matters concerning the print engine. For matters concerning the applicator and the interface, the following manual is provided.

**Operation:**

**Printer** - Interface to Computer
The interface for the printer to receive label formats can be either through the Centronics port- the simplest, or through the RS232 port- to ensure baud, bits, flow control, etc., are the same. Please refer to the printer manual for specific details.

**Printer** - Interface to Applicator
This interface is either through a DB9 connector for “S” Sato and 14 Pin Centronics for the “Se” & Datamax or DB15 for the Zebra. The interface communications consist of the M3.0 telling the printer when to print and the printer responding to the M3.0 when the printer is printing. In addition, the printer is informing the PLC with the printer’s fault status.

**NOTE:** not all printers have the same system faults, check the printer documentation for details. Refer to the Q34 electrical print for wiring details.

**ASSEMBLY TITLE:** **Q34 LABELING HEAD - THREADING**

**GENERAL FUNCTION:**

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

**SET UP AND ADJUSTMENTS:**

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

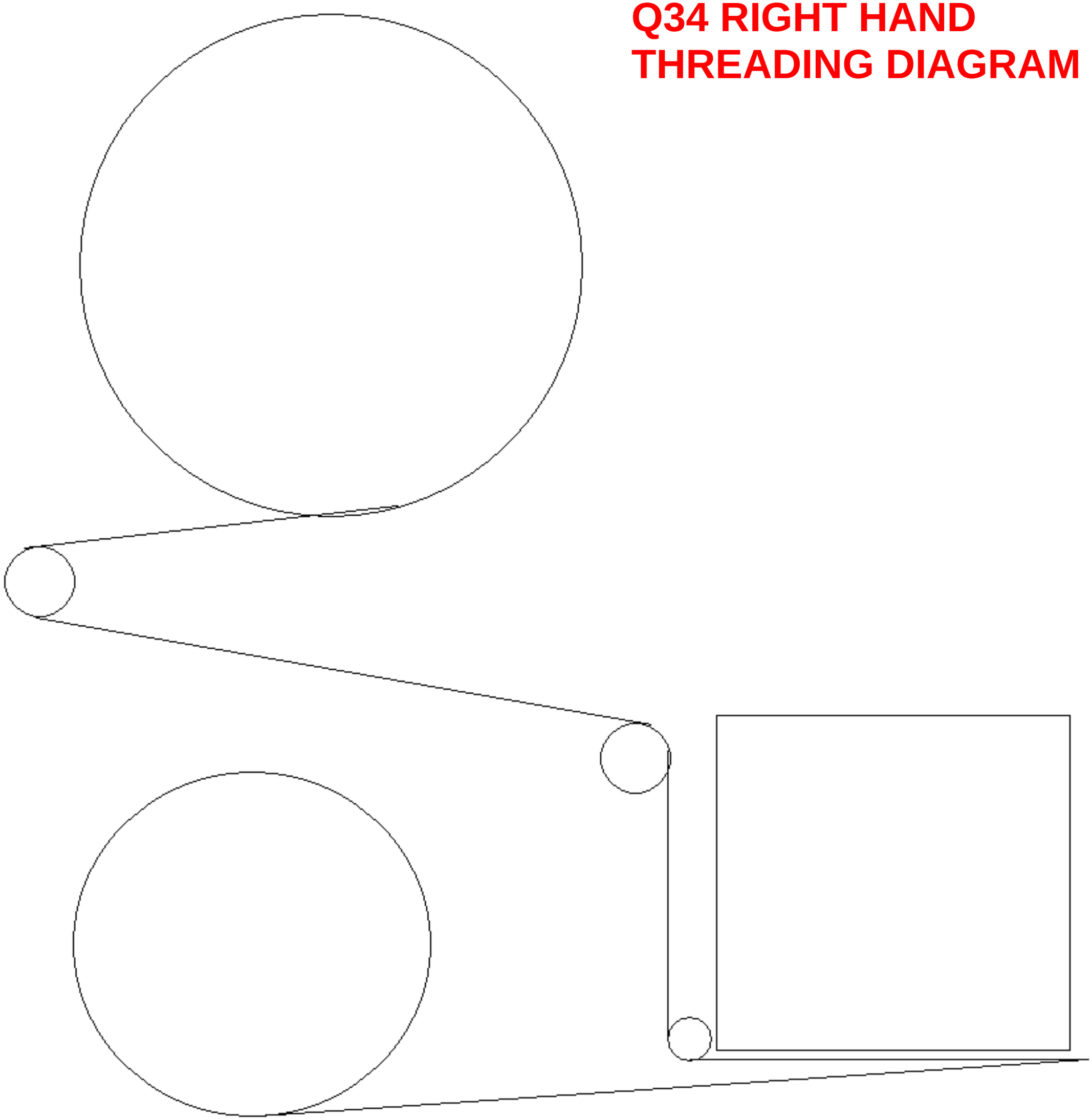
**MAINTENANCE:**

- None this section.

**TROUBLESHOOTING**:

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

# Q34 RIGHT HAND THREADING DIAGRAM



**ASSEMBLY TITLE:** **Q34 SIDE PLATE**

**GENERAL FUNCTION:**

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

**SET UP AND ADJUSTMENTS:**

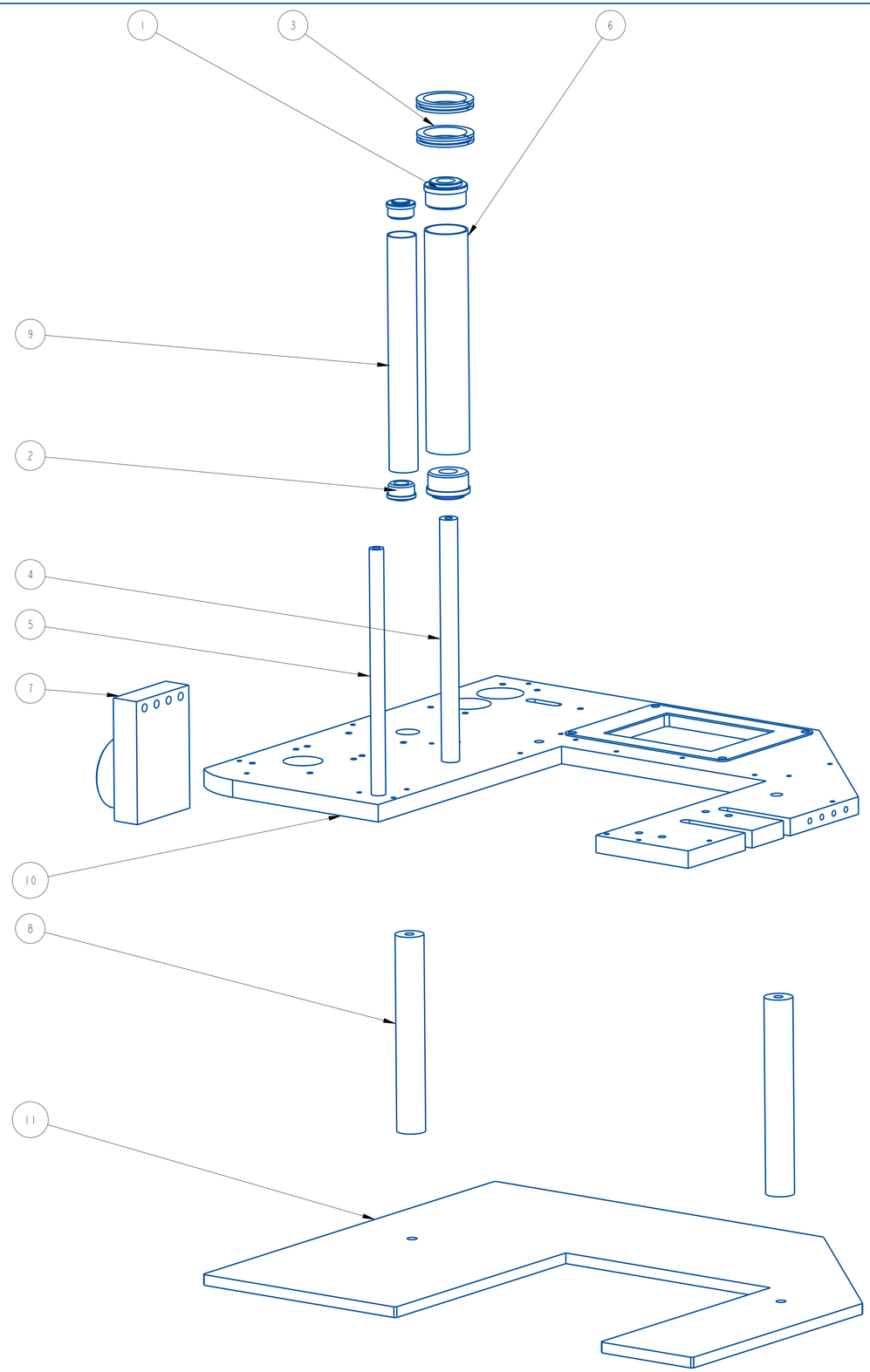
- None

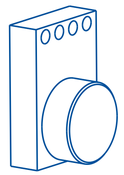
**MAINTENANCE:**

- None

**TROUBLESHOOTING:**

- None



| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 2 | 181062-000 | BEARING, ROLL END | 22600SP-000 |
| 2 | 2 | 181063-000 | BEARING, ROLL END | 22600SP-000 |
| 3 | 2 | 361199-000 | COLLAR, GUIDE, 1-1/2 IN. ID | 22600SP-000 |
| 4 | 1 | A21618-001 | IDLER SHAFT | 22600SP-000 |
| 5 | 1 | A21811-000 | ROLLER SHAFT | 22600SP-000 |
| 6 | 1 | A22291-006 | ROLLER | 22600SP-000 |
| 7 | 2 | A24905-112 | PIVOT PIN MOUNTING PLATE | 22600SP-000 |
| 8 | 2 | A26147-000 | COVER STAND OFF | 22600SP-000 |
| 9 | 1 | B20073-000 | IDLER ROLLER | 22600SP-000 |
| 10 | 1 | D24990-000 | Q34 SIDE PLATE | 22600SP-000 |
| 11 | 1 | D24990-034 | COVER | 22600SP-000 |

NOT SHOWN:

770214-RHH PRINTER, 203DPI ZE521 6"

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DATE: 11-26-13
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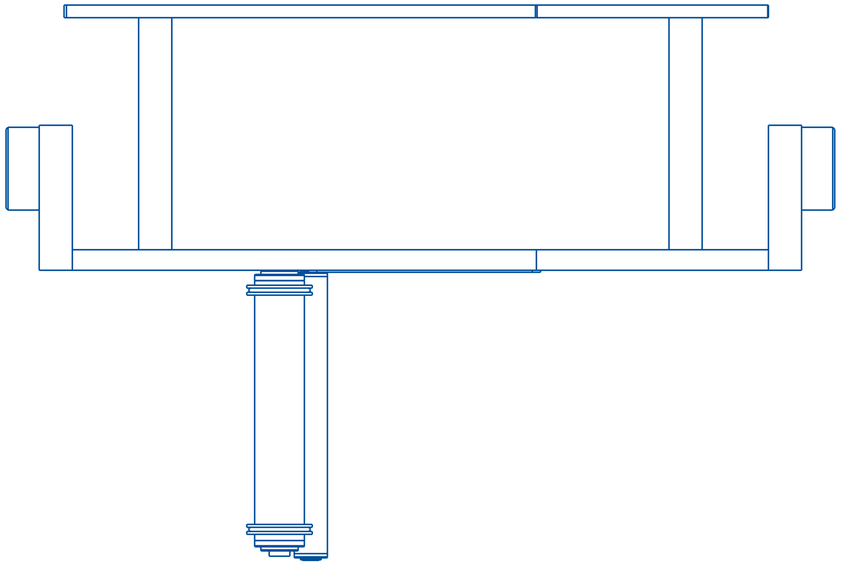
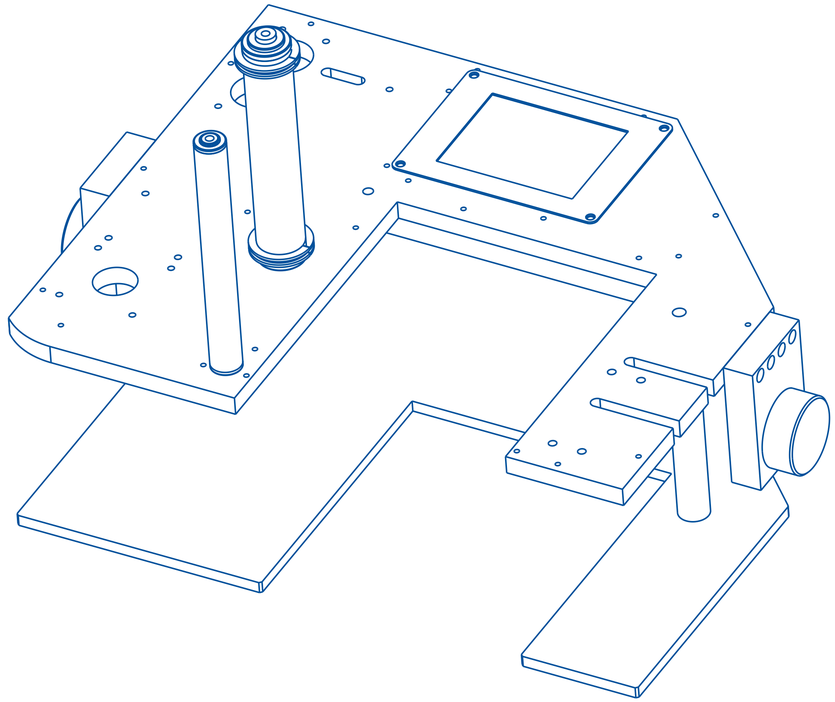
APPR BY:

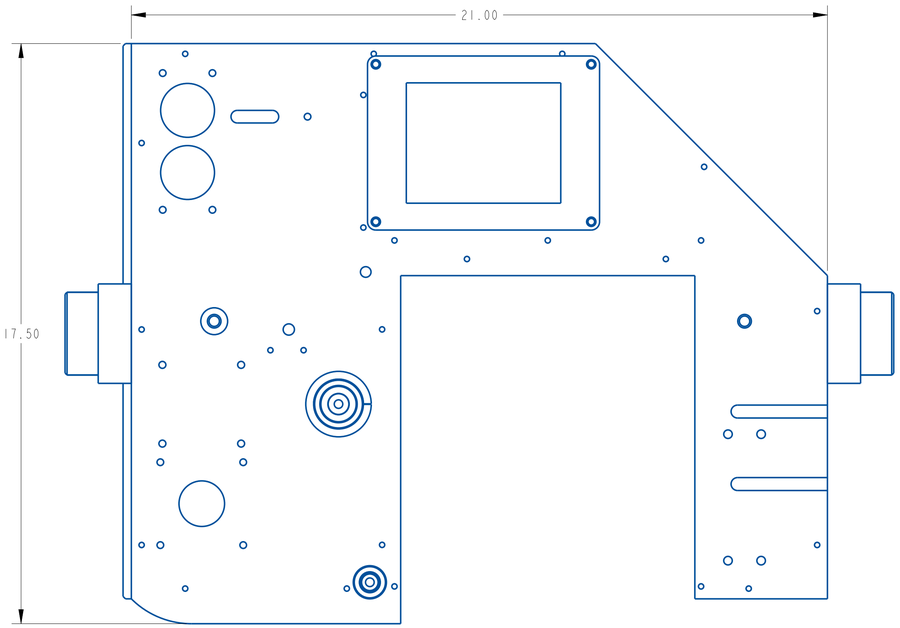
Q34 SIDE PLATE

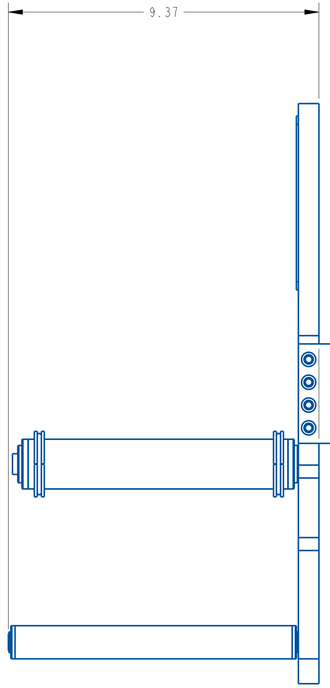
MAT'L

22600SP-000





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ALL ANGLES ARE 90°

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| DRW BY: | MAW |
| CHK BY: | |
| APPR BY: | |

Q34 SIDE PLATE

MAT'L

22600SP-000

**ASSEMBLY TITLE:** **Q34 UNWIND**

**GENERAL FUNCTION:**

- Unwind flange provides support for label rolls
- Dancer arm prevents roll run-away.
- Idler roller with guide collars guides web.

**SET UP AND ADJUSTMENTS:**

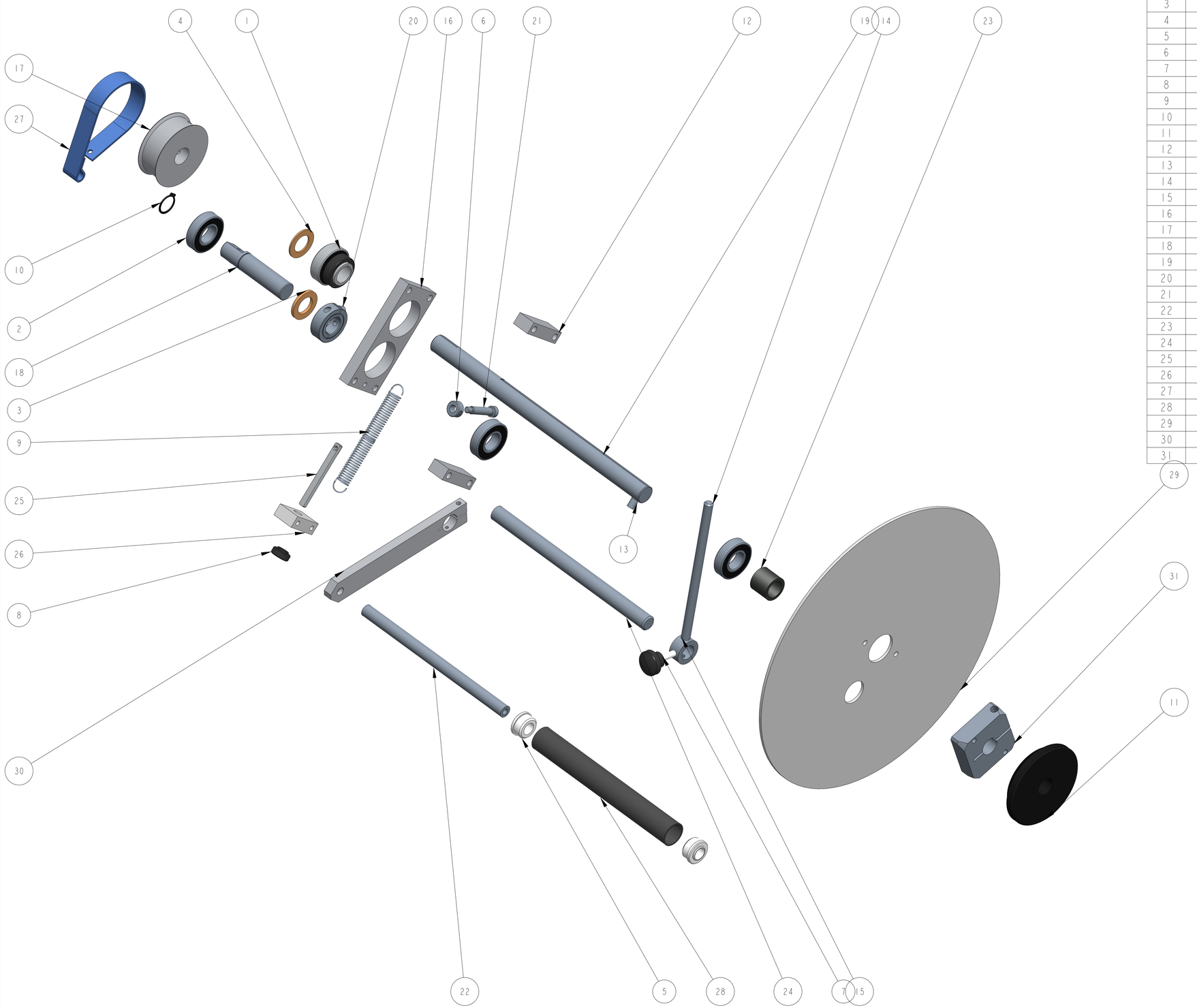
- Move flange to required height and tighten set screw in the flange hub, approximately 7/8” off side plate.
- Adjust dancer tension by turning check nut so that dancer roll snaps back to braking position when labeling head is threaded.
- Position guide collars on idler roll, one slightly above, and the other slightly below the web.
- The unwind tension adjustment is located on the backside of the Q33 head. Use the knurled ring to adjust the dancer tension.

**MAINTENANCE:**

- Clean all the parts that may acquire glue residue
- Replace dancer spring if final spring tension is too soft.

**TROUBLESHOOTING:**

| **PROBLEM** | **WHAT TO DO** |
|---|---|
| - Unwind roll run-away | - Tighten dancer spring, check locking nut, replace dancer spring if necessary. |
| - Unwind roll not stopping | - Replace brake ring-belt if broken, or unevenly worn. |
| - Web break | - Lower spring tension on dancer arm |
| - Dancer arm hits supply flange | - Correct dancer arm final position by loosening the brake cam. |




| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 1 | 111044-000 | BEARING, 3/4 ID CLAMP TYPE | 22600U-000 |
| 2 | 3 | 111074-000 | BEARING, BALL | 22600U-000 |
| 3 | 1 | 151001-000 | BEARING, THRUST WASHER | 22600U-000 |
| 4 | 1 | 151006-000 | BEARING, THRUST WASHER | 22600U-000 |
| 5 | 2 | 181063-000 | BEARING, ROLL END | 22600U-000 |
| 6 | 1 | 361165-000 | COLLAR, SETSCREW, 5/16" BORE | 22600U-000 |
| 7 | 1 | 801261-000 | KNOB, 1/4-20 X 1 | 22600U-000 |
| 8 | 1 | 801601-000 | CHECK NUT | 22600U-000 |
| 9 | 1 | 811100-000 | EXTENSION SPRING | 22600U-000 |
| 10 | 1 | 871025-000 | EXTERNAL SNAP RING | 22600U-000 |
| 11 | 1 | A20583-000 | QUICK LOCK COLLAR REWORK | 22600U-000 |
| 12 | 2 | A20585-000 | SUPPORT SPACER | 22600U-000 |
| 13 | 1 | A20586-000 | WHITE NYLON SLUG | 22600U-000 |
| 14 | 1 | A20588-000 | ROLL GUIDE ROD | 22600U-000 |
| 15 | 1 | A20589-001 | SHAFT COLLAR (MODIFICATION) | 22600U-000 |
| 16 | 1 | A20590-000 | BEARING PLATE | 22600U-000 |
| 17 | 1 | A20591-000 | UNWIND BRAKE DRUM | 22600U-000 |
| 18 | 1 | A20592-000 | UNWIND DANCER SHAFT | 22600U-000 |
| 19 | 1 | A20593-001 | UNWIND SHAFT | 22600U-000 |
| 20 | 1 | A20595-000 | DANCER COLLAR | 22600U-000 |
| 21 | 1 | A20596-000 | DANCER BOLT | 22600U-000 |
| 22 | 1 | A20928-002 | ROLLER SHAFT | 22600U-000 |
| 23 | 1 | A21330-000 | SPACER | 22600U-000 |
| 24 | 1 | A21813-000 | GUIDE ROD MOUNTING POST | 22600U-000 |
| 25 | 1 | A23131-000 | STUD | 22600U-000 |
| 26 | 1 | A23298-000 | BLOCK, SPRING TENSION | 22600U-000 |
| 27 | 1 | A25825_000 | BRAKE BAND | 22600U-000 |
| 28 | 1 | B20071-003 | IDLER ROLLER (DANCER) | 22600U-000 |
| 29 | 1 | B20972-001 | UNWIND FLANGE | 22600U-000 |
| 30 | 1 | B21113-034 | DANCER ARM, UNWIND Q34 | 22600U-000 |
| 31 | 1 | B21931-001 | CORE HUB | 22600U-000 |

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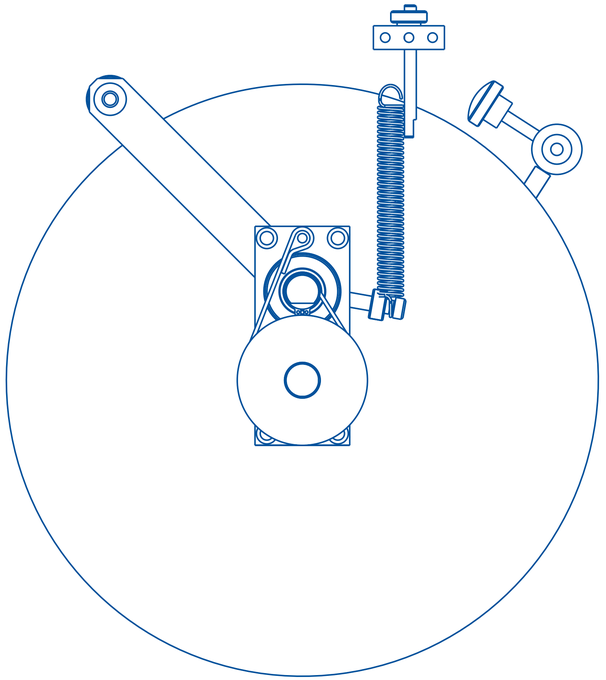
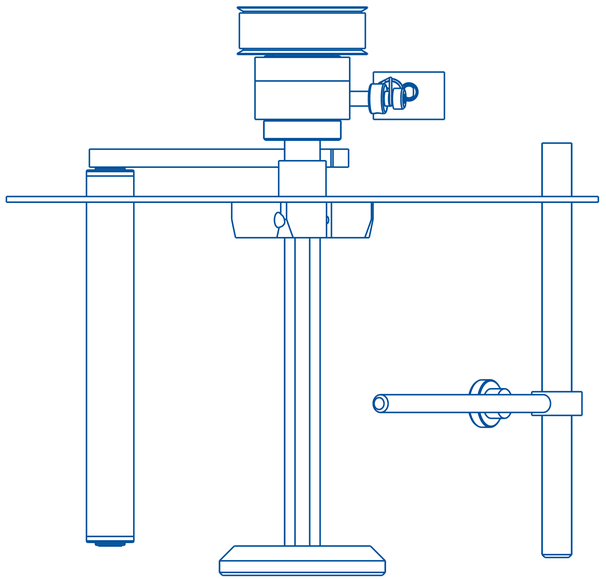
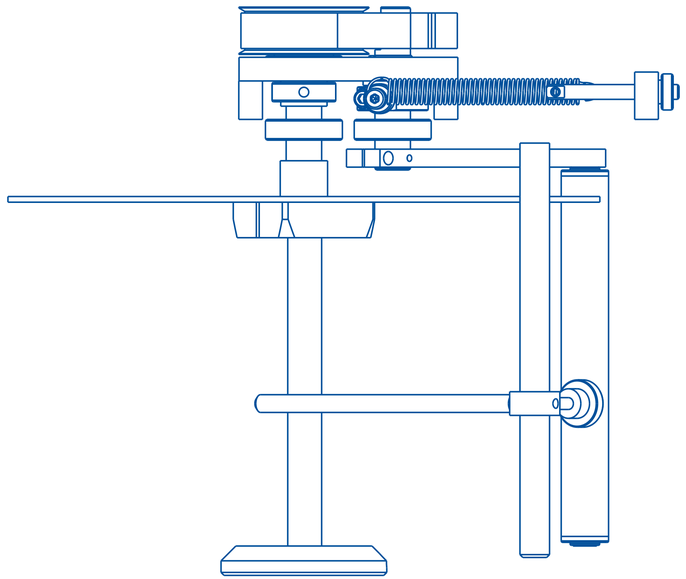
UNWIND ASSEMBLY Q34

MAT'L: BOM 22600U-000

22600U-000







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UNWIND ASSEMBLY Q34

MAT'L

22600U-000

**ASSEMBLY TITLE:** **Q34 REWIND**

**GENERAL FUNCTION:**

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

**SET UP AND ADJUSTMENTS:**

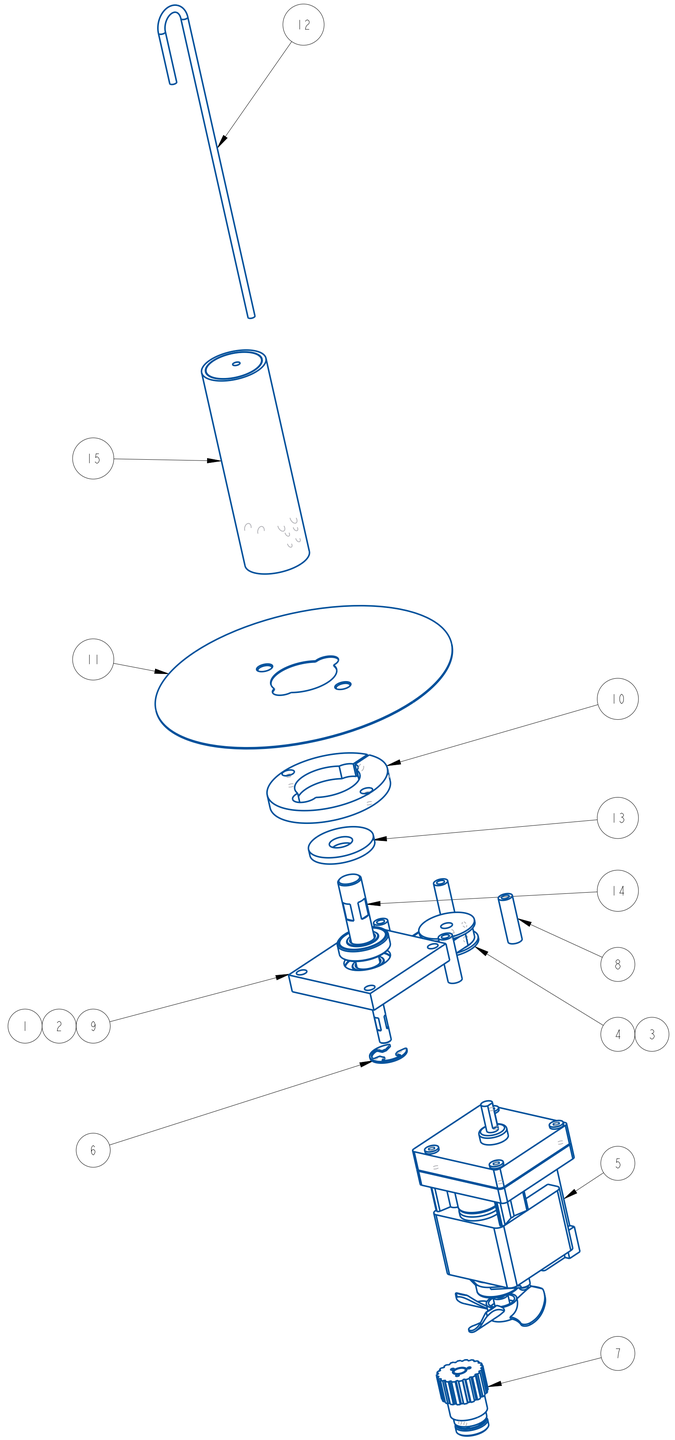
- Position the rewind flange slightly below the web path and lock with the set screw in the hub.
- When threading liner to the rewind, place the liner between the drum and pin.
- Tighten adjusting knob just enough to allow the rewind drum to keep up with the drive roll. Excessive tightening will cause the web to be wound very tight, causing difficulty in removal and possible motor stall.

**MAINTENANCE:**

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

**TROUBLESHOOTING:**

| **PROBLEM** | **WHAT TO DO** |
|---|---|
| - Rewind drum not rotating motor is running. | - Replace beveled gear set from when motor to clutch. |
| - Rewind drum not keeping up with drive roll. | - Tighten adjusting knob |
| - Web winding too tight on hub | - Loosen adjusting knob |
| - Narrow labels have erratic label stop position in printer | - Add optional rewind dancer and loosen rewind clutch |




| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 2 | 111075-000 | BEARING, BALL | 22600R-134 |
| 2 | 1 | 151008-000 | BEARING, THRUST WASHER | 22600R-134 |
| 3 | 1 | 191658-20-20 | TIMING BELT | 22600R-134 |
| 4 | 1 | 352070-020 | PULLEY | 22600R-134 |
| 5 | 1 | 412164-000 | MOTOR, DAYTON 1MBG6 | 22600R-134 |
| 6 | 1 | 791776-000 | E-RING, RETAINING | 22600R-134 |
| 7 | 1 | A20101-034 | REWIND CLUTCH ASSEMBLY | 22600R-134 |
| 8 | 4 | A20568-034 | MOTOR RISER | 22600R-134 |
| 9 | 1 | A20573-000 | REWIND BEARING PLATE | 22600R-134 |
| 10 | 1 | A21226-000 | REWIND FLANGE HUB COLLAR | 22600R-134 |
| 11 | 1 | A23112-001 | COLLAPSIBLE REWIND FLANGE | 22600R-134 |
| 12 | 1 | A23739-001 | SPRING LATCH | 22600R-134 |
| 13 | 1 | A26211-000 | SPACER, LEATHER | 22600R-134 |
| 14 | 1 | B20142-134 | REWIND SHAFT | 22600R-134 |
| 15 | 1 | B22211-001 | HUB ASSEMBLY | 22600R-134 |

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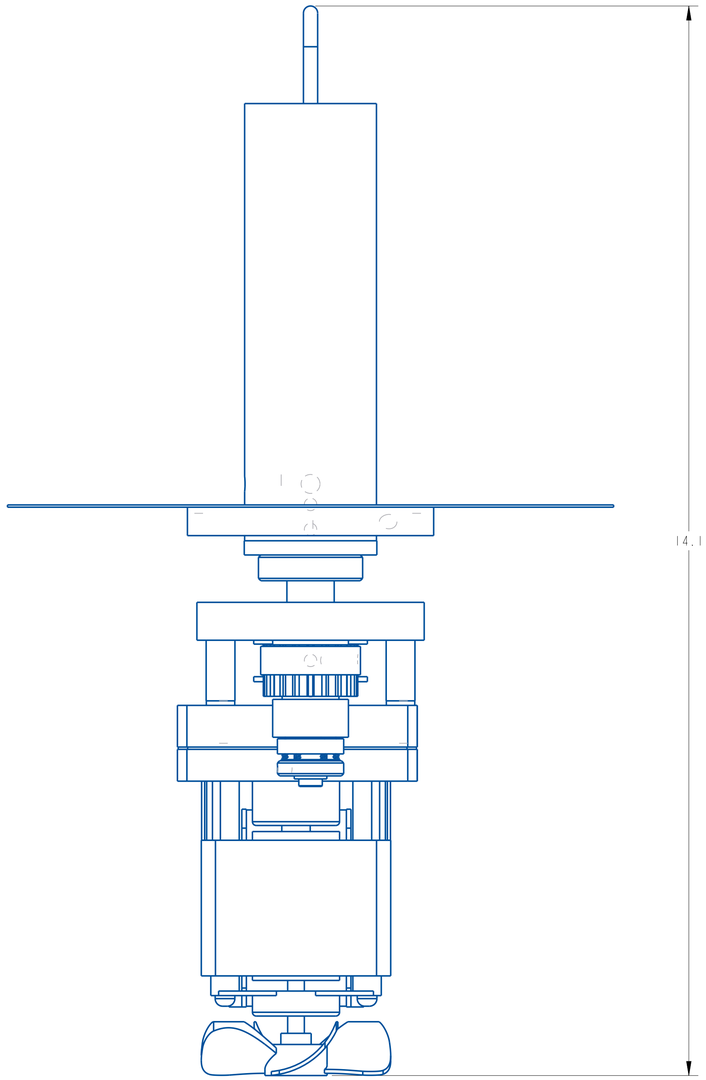
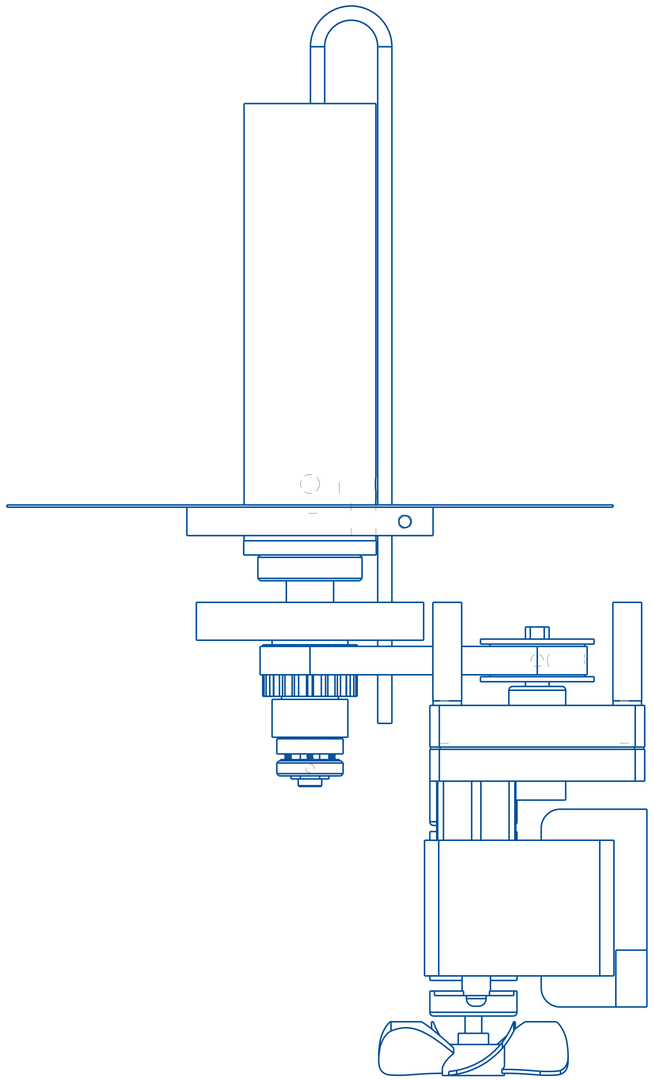
APPR BY:

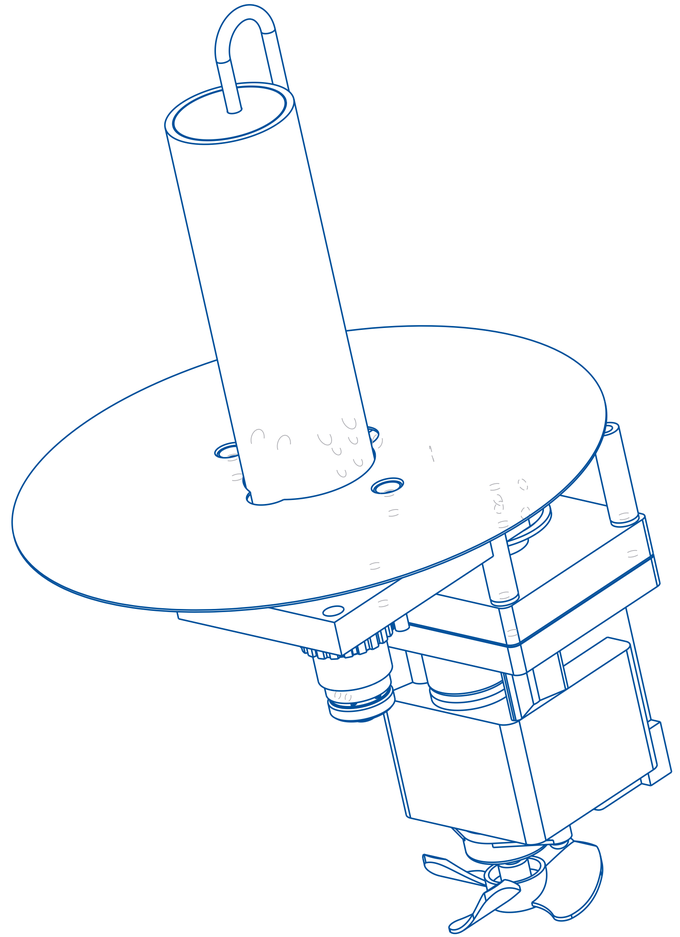
Q34 REWIND ASSEMBLY

MAT'L 22600R-134

22600R-134





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| CHK BY: | 05/20/2024-SEM |
| APPR BY: | |

Q34 REWIND ASSEMBLY

MAT'L 22600R-134

22600R-134

**ASSEMBLY TITLE:** **Q33 APPLICATOR LOW LABEL FAULT SYSTEM**

**DRAWING NO:** **NONE**

**DESCRIPTION:**
At some point before the label supply roll runs out of labels, the low label sensor will trigger a low label fault.

**OPERATION:**
There is an optical fiber optic sensor monitoring the condition of reflectivity at the core of the label supply. If there is no reflection, the sensor produces an NPN output. The M3.0 will illuminate the optional yellow lamp if a low label condition exists.

**NOTE:** The red lamp indicates to the operator the applicator requires attention soon and the red lamp indicates the printer is not printing and requires immediate attention.

**Fault Monitoring**
The Low Label sensor is located on the unwind support of the applicator. It is important that the fibers be firmly seated in the sensor. The fiber mount should hold the fibers firm and be positioned about 1/8" away from the unwind flange. The amplifier is located inside the enclosure; this sensor is set at the factory and should require no adjustments. When the fibers do not see a reflection from the label supply, the sensor will output to the M3.0 a low label condition. To clear the low label fault, depress the left button on the M3.0.

**Sensor mounting:**


**NOTE:**
Low ribbon is controlled by the printer.
Both low label and low ribbon will activate the amber stack lamp

**ASSEMBLY TITLE:** **LOW LABEL FAULT ASSEMBLY**

**DRAWING NO.:** **C21187-000**

**GENERAL FUNCTION:**

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

**SET UP AND ADJUSTMENTS:**

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

**MAINTENANCE:**

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

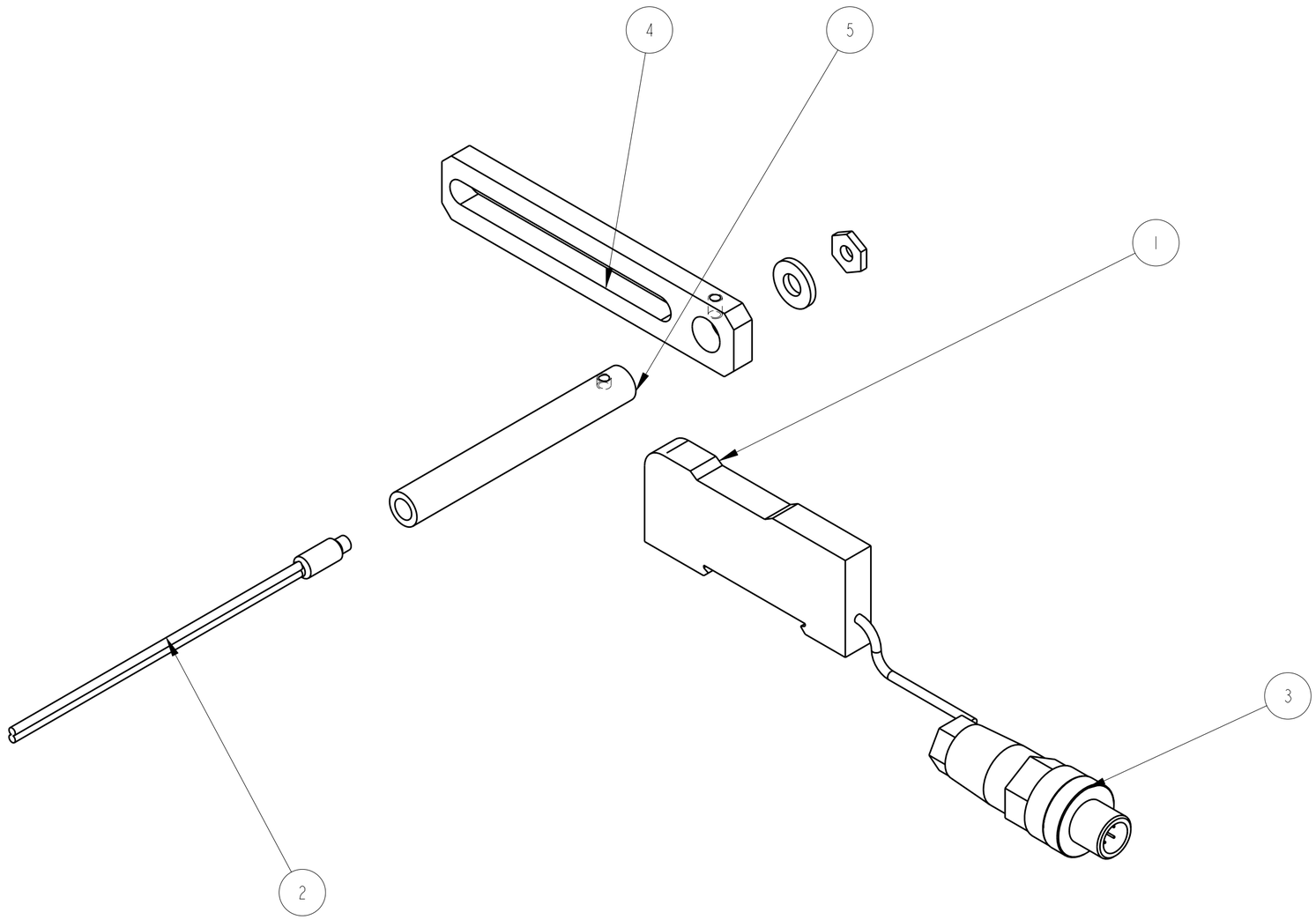
**TROUBLESHOOTING:**

| PROBLEM | WHAT TO DO |
|---|---|
| - No power to the sensor | - Check male connector and tightly secure connection to the head. |

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

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

| ITEM | QTY | PART NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | 202958-000 | DUAL DIGITAL FIBER AMPLIFIER |
| 2 | 1 | 203170-000 | CABLE,FIBER UNIT, REFLECTIVE, KEYENCE #FU-67V |
| 3 | 1 | 252019-000 | 4 PIN MALE CONNECTOR |
| 4 | 1 | A23727-000 | LOW LEVEL BRACKET |
| 5 | 1 | A23728-000 | LOW LEVEL SENSOR TUBE |




SHEET 1 OF 2

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| A | 02/25/2010 | NEW DRAWING |

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE

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

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

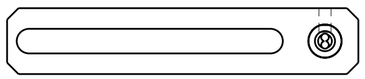
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

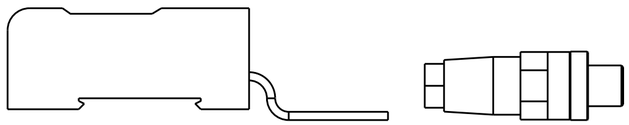
| | |
|---|---|
| SCALE: | 1/1 |
| DATE: | 02/25/2010 |
| DRW BY: | SEM |
| CHK BY: | |
| APPR BY: | |

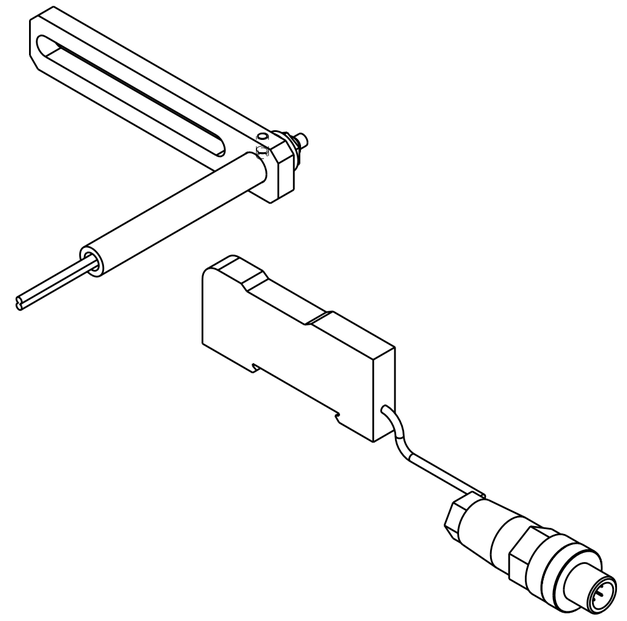
# LOW LABEL DETECT

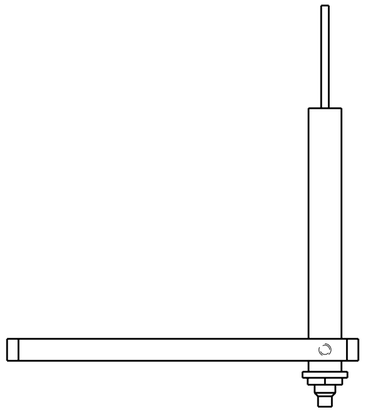
MAT'L

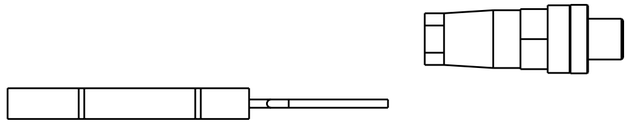
C21187-000

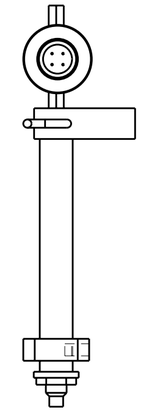












SHEET 2 OF 2

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| A | 02/25/2009 | NEW DRAWING |

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

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

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

| | |
|---|---|
| SCALE: | 3/4 |
| DATE: | 02/25/2009 |
| DRW BY: | SEM |
| CHK BY: | |
| APPR BY: | |

LOW LABEL DETECT

MAT'L

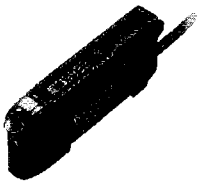
C21187-000

KEYENCE

96M14746

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

# Digital Fiberoptic Sensor
# FS-N40 Series
# Instruction Manual



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

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

### ■ Symbols

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

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

# 1 Before Operation

## Safety Precautions

| | |
|---|---|
| DANGER | • This product is only intended to detect objects. Do not use this product for the purpose of protecting a human body or a part of a human body.<br>• This product is not intended for use as an explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere. |
| WARNING | • This is a direct current (DC) power supply type sensor. Application of an alternating current may result in explosion or fire. |
| NOTICE | • Use separate conduits for power lines and high-voltage lines. Use of a common conduit may result in device malfunction due to noise or damage to the sensor.<br>• Always ground the frame ground terminal when using an off-the-shelf switching regulator.<br>• Do not use this product outdoors. |

## Precautions on Regulations and Standards

### ■ CE Marking

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

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

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

### ■ UL Certificate

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

Be sure to consider the following specifications when using this product as a UL/c-UL certified product.
- Use a power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Connect the power supply, external input, and control output to a single power supply with Class 2 output.
- Use OP-73864, OP-73865 or OP-85498 cable with FS-N41C when the field wiring is required.

### ■ FCC Regulations

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

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

## Package Contents

- Main unit
- Instruction manual

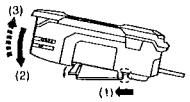
# 2 Installation and Wiring

## Mounting the Main Unit

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

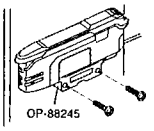
**1** **Align the claw at the bottom of the main unit with the DIN rail, as shown in the figure. While pushing the main body in the direction of arrow 1, push down in the direction of arrow 2.**

**2** **To remove the sensor, raise the main body in the direction of arrow 3 while pushing the main body in the direction of arrow 1.**




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

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

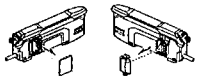



## Connecting Multiple Amplifiers

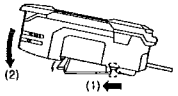
Up to 16 expansion units can be connected to 1 main unit. However, each dual output type will be treated as 2 expansion units.

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

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



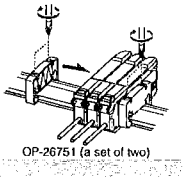
**2** **Install the amplifiers on the DIN rail one at a time.**




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

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

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



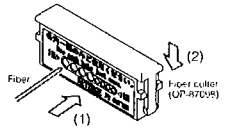
OP-26751 (a set of two)

## Fiber Unit Installation

### ■ Using a fiber cutter

**1** **Insert the fiber into the cutter hole.**

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



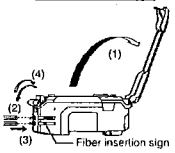

Always insert fiber from the side with writing

### ■ Connecting to the amplifier unit

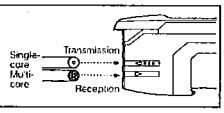
**1** **Open the cover (1), and then lower the lever in the direction indicated by (2).**

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

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

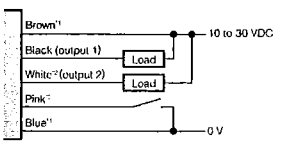



| | |
|---|---|
| NOTICE | **When installing a coaxial reflective fiber in the main unit, install the single-core fiber in the transmission installation hole and the multi-core fiber in the reception installation hole.** |



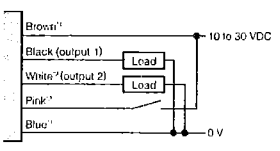

## Wiring (Cable Type)

**● FS-N41N/N42N/N43N/N44N**




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

**● FS-N41P/N42P/N43P/N44P**




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

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

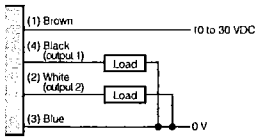
Select NPN or PNP and the function of I/O pin (2) during the initial settings.

Sensor pin layout 

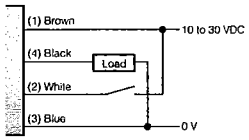

FS-N41C supports "IO-Link: Specification V.1.1/COM2 (38.4 kbps)". The setting file (IODD) can be downloaded from Keyence's web site (http://www.keyence.com).

**● When using the sensor in PNP mode**

OUT1 + OUT2

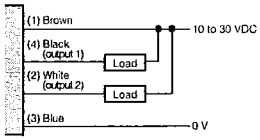



OUT1 + INPUT

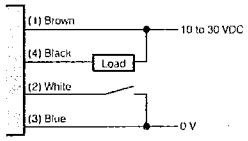



**● When using the sensor in NPN mode**

OUT1 + OUT2



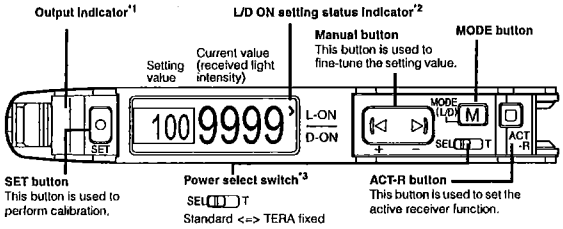

OUT1 + INPUT




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

# 3 Basic Settings

### ■ Names and functions



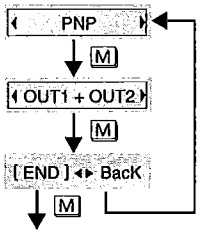

*1 On dual output types (including the FS-N41C), the indicator operates according to the output channel selected with the output channel selection switch.

*2 On dual output types (including the FS-N41C), this becomes the output indicator. It displays the current output status of channels 1 and 2.

*3 On dual output types (including the FS-N41C), this becomes the output channel selection switch. It is not present on zero line types (FS-N40).

### ■ Initial settings (FS-N41C only)

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




Settings complete

Use [◁ ▷] to select PNP or NPN.

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

Use [◁ ▷] to select this item.

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

### ■ Basic settings

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

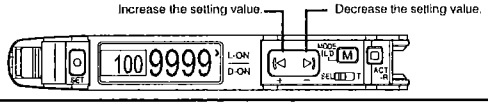
**1** Press [M] once. Switch L-On/D-On
**2** Use [◁ ▷] to switch the output style.
**3** Press [M] three times.

**● Switching the display language**

**1** Press [M] twice. Language / 语言
**2** Use [◁ ▷] to select the language.
**3** Press [M] twice.

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

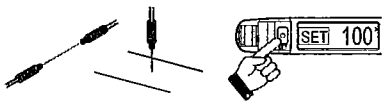
Use [◁ ▷] to adjust the value. Hold down the button to make adjustments more quickly.



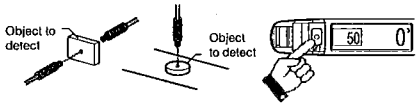

### ■ Basic calibration methods

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

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



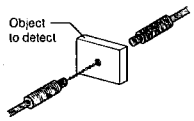

**2** Press [SET] with an object to detect present.




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

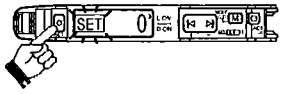
**● Maximum sensitivity calibration**

Thrubeam model: With an object to detect present




Reflective model: With no object to detect present

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




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

# 4 Useful Functions

### ● Initialization

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

**1** Hold down SET and ACT-R for 3 seconds or more. Initialize

**2** Press M once. Back

**3** Press ◀ ▶ once. Execute

**4** Press M once.

### ● Key lock

Disable button operations.

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

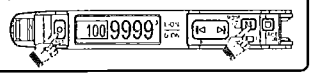
Cancel: Use the same procedure.

### ● Saturation avoidance function

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

**1** Press M and SET simultaneously.

Cancel: Use the same procedure.

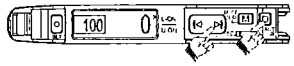


### ● Zero shift function

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

**1** Press ACT-R and ◀ ▶ simultaneously.

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



### ● Active receiver (ACT-R)

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

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

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

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

**1** Press ACT-R three times. Active Rec. Set

**2** Use ◀ ▶ to select the status from those shown below.

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

**3** Press ACT-R twice to return to the normal status.

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

**1** Press ACT-R once. ACT-R Blinking

**2** Press ◀ ▶.

**3** The light-receiving side blinks in green.

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

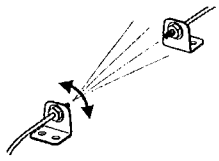
**To make it easy to perform optical-axis alignment (optical-axis alignment assist mode)**

**1** Press ACT-R twice. Opt Axis Assist

**2** Press ◀ ▶ to make the light-receiving side blink in green.

**3** Move the tip of the fiber unit within the movable range.

The light-receiving side lights in green near the peak light intensity within the range in which the tip moved.
Align the optical axis within the middle of the range in which the light-receiving side lights.



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

The sensor returns to the normal status.

# 5 Specifications

The response times are listed on the following page.

| Model | NPN output | FS-N41N | FS-N42N | FS-N43N | FS-N44N | FS-N41C*1 | FS-N40 |
|---|---|---|---|---|---|---|---|
| | PNP output | FS-N41P | FS-N42P | FS-N43P | FS-N44P | (selectable output) | |
| Cable/connector | | Cable | | | | M8 connector*2 | - |
| Main unit/expansion unit | | Main unit | Expansion unit | Main unit | Expansion unit | Main unit | Expansion unit |
| Number of control outputs | | 1 | 1 | 2 | 2 | 2*3 | None*4 |
| Number of external inputs | | - | - | 1 | 1 | 1*3 | - |
| Light source LED | | Transmitter side: Red, four-element LED (wavelength: 660 nm) | | | | | |
| Control output | | Open-collector, 30 V or less<br>100 mA or less per output, 100 mA or less total for 2 outputs<br>(when used as a solitary unit)/<br>20 mA (when used as an expansion unit) | | | | | - |
| | Residual voltage | NPN 1.4 V or less (output current: 10 mA or less)/<br>2 V or less (output current: 10 to 100 mA)<br>PNP 1.6 V or less (output current: 10 mA or less)/<br>2.2 V or less (output current: 10 to 100 mA) | | | | | - |
| External input | | Input time: 2 ms (ON)/20 ms (OFF) or longer*5 | | | | | |
| Unit expansion (excluding the FS-N41C) | | Up to 16 units (17 units connected in total including the main unit).<br>However, each two output type will be treated as two expansion units. | | | | | |
| Protection circuit | | Protection against reverse power connection, output overcurrent, output surge, and reverse output connection | | | | | |
| Mutual interference prevention | | S-HSPD/HSPD: 0 units, FINE: 4 units, TURBO/SUPER/ULTRA/MEGA/TERA: 8 units<br>(The mutual interference prevention values are twice those shown here when Double is set.) | | | | | |
| Power supply | Power supply voltage | 10 to 30 VDC (including 10% ripple (P-P) or less), class 2 or LPS*6 | | | | | |
| | Power consumption*7 NPN FS-N40 | During normal operation: 870 mW or less<br>(34 mA or less at 24 V/62 mA or less at 12 V)<br>ECO ON: 800 mW or less (31 mA or less at 24 V/56 mA or less at 12 V)<br>ECO FULL: 710 mW or less (28 mA or less at 24 V/49 mA or less at 12 V) | | | | | |
| | Power consumption*7 PNP FS-N41C | One output type (FS-N41P/N42P) and FS-N41C<br>During normal operation: 910 mW or less<br>(36 mA or less at 24 V/65 mA or less at 12 V)<br>ECO ON: 840 mW or less (33 mA or less at 24 V/60 mA or less at 12 V)<br>ECO FULL: 750 mW or less (30 mA or less at 24 V/52 mA or less at 12 V) | | | | | |
| | | Two output type (FS-N43P/N44P)<br>During normal operation: 990 mW or less<br>(39 mA or less at 24 V/72 mA or less at 12 V)<br>ECO ON: 920 mW or less (36 mA or less at 24 V/66 mA or less at 12 V)<br>ECO FULL: 830 mW or less (33 mA or less at 24 V/59 mA or less at 12 V) | | | | | |
| Ambient light | | Incandescent lamp: 20,000 lx or less, sunlight: 30,000 lx or less | | | | | |
| Ambient temperature | | -20°C to +55°C (no freezing)*8 | | | | | |
| Vibration resistance | | 10 to 55 Hz; double amplitude 1.5 mm, 2 hours each for X, Y, and Z axes | | | | | |
| Shock resistance | | 500 m/s², 3 times each for X, Y, and Z axes | | | | | |
| Case material | | Main unit and cover: polycarbonate | | | | | |
| Weight | | Approx. 78 g | Approx. 48 g | Approx. 83 g | Approx. 73 g | Approx. 25 g | Approx. 23 g |

*1 IO-Link Specification V1.1/COM2 (38.4 kbps) is supported.
*2 Ensure the cable length is 30 m or less for the M8 connector type. In case of connecting with IO-Link, set it to 20 m or less.
*3 Output 2 and the external input are selectable.
*4 This counts as 1 output when connecting multiple units to the FS-MCBN/P, NU Series.
*5 The input time becomes 25 ms (ON)/25 ms (OFF) when external calibration input is selected.
*6 When expanding the system to 9 or more units, use a power supply voltage of 12 V or higher.
*7 The load current is excluded. The power consumption including the load when the maximum number of units are connected is 38 W max.
*8 When expanded by 1 to 2 units: -20°C to +55°C. When expanded by 3 to 10 units: -20°C to +50°C.
When expanded by 11 to 16 units: -20°C to +45°C. When using 2 outputs, 1 unit is counted as 2 units.
Note that all the temperature prescriptions assume that the sensor has been mounted on a DIN rail installed on a metal surface.
Exercise special care when installing the product in an airtight space.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E 1101-3

# 6 Detailed Settings

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

**A Power Modes** Press [◀ ▶] to select the value.

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

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

| Mode | SUPER | ULTRA | MEGA | TERA |
|---|---|---|---|---|
| Response time | 1 ms | 4 ms | 16 ms | 64 ms |
| Maximum displayable light intensity | 9999 | | 99999*2 | |

**B Switch L-on/D-on** Press [◀ ▶] to select the value.
• Light ON • Dark ON

**C Display Bar** Press [◀ ▶] to select the value.
• OFF • ON

**[END] ◀ ▶ ADVANCE** Press [◀ ▶] to select the value.

End [M] ADVANCE
Settings complete

**D Detection Mode** *3 Press [◀ ▶] to select the value.

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

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

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

[M] This can only be used on types that support an external input. It is possible to select from the following values.
• OFF • External Set • Zero shift
• Reset • LED OFF • Pause
• Sleep
When connected to the multi-output unit FS-MC8N/P or the communication unit NU Series, this setting can be configured on types that do not support an external input.

**G Saturate Cancel** Press [◀ ▶] to select the value.

**H Attenuation** Press [◀ ▶] to select the value.

**I Zero Shift** Press [◀ ▶] to select the value.

**J Limit Detection** *4 Press [◀ ▶] to select the value.

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

**K Auto Power** Press [◀ ▶] to select the value.

**L Hysteresis** Press [◀ ▶] to select the value.

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

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

**N Flip Display** Press [◀ ▶] to select the value.

**O Sub Display** Press [◀ ▶] to select the value.

**P ACT-R** Press [◀ ▶] to select the value.

**Q Brightness** Press [◀ ▶] to select the value.

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

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

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

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

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

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

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

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

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

END

Settings complete

## ■ Output 2 setting

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

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

**a Second Output** Press [◀ ▶] to select the value.

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

**c Output timer 2** Press [◀ ▶] to select the value.

END

Settings complete

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


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14746E 1127-2a [96M14746] Printed in Japan

**ASSEMBLY TITLE:** **Q33 YOKE ASSEMBLY**

**GENERAL FUNCTION:**

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

**SET UP AND ADJUSTMENTS:**

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

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

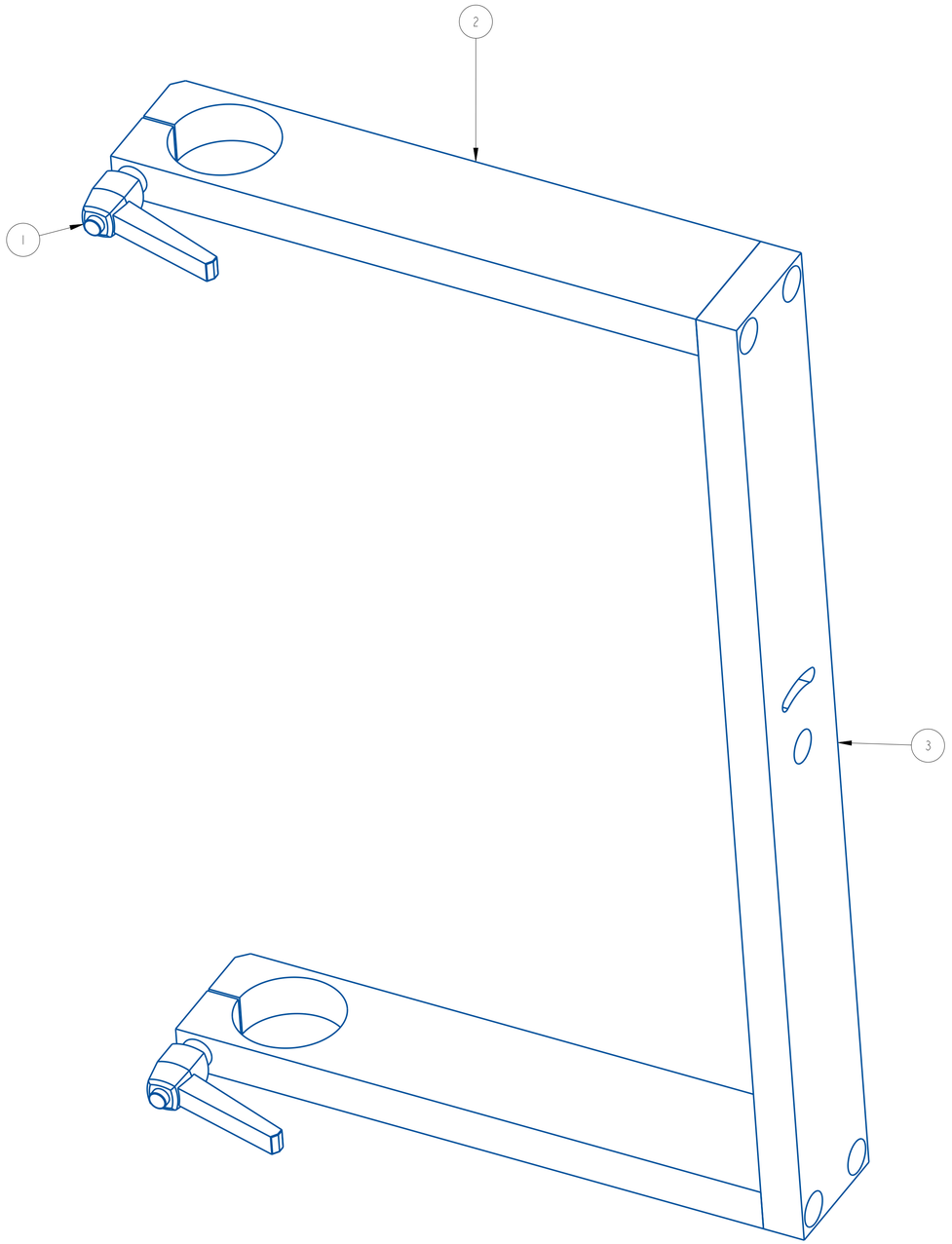
**MAINTENANCE:**

- No scheduled maintenance for this assembly.

**TROUBLESHOOTING:**

| Problem | What To Do |
|---|---|
| - Labeler angular position moves | Secure locking tension by turning locking handles clock-wise |

| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 2 | 801850-000 | CLAMPING LEVER | 22600Y-000 |
| 2 | 2 | B21190-010 | YOKE SIDE PLATE | 22600Y-000 |
| 3 | 1 | B21555-000 | MTG YOKE BACK PLATE | 22600Y-000 |




| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| C | Sep-17-20 | WAS B21555-002 | TJS |
| B | 30-MAR-16 | REPLACED WITH B21190-010 | CRT |
| A | 11-26-13 | NEW DRAWING | |

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UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE

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

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

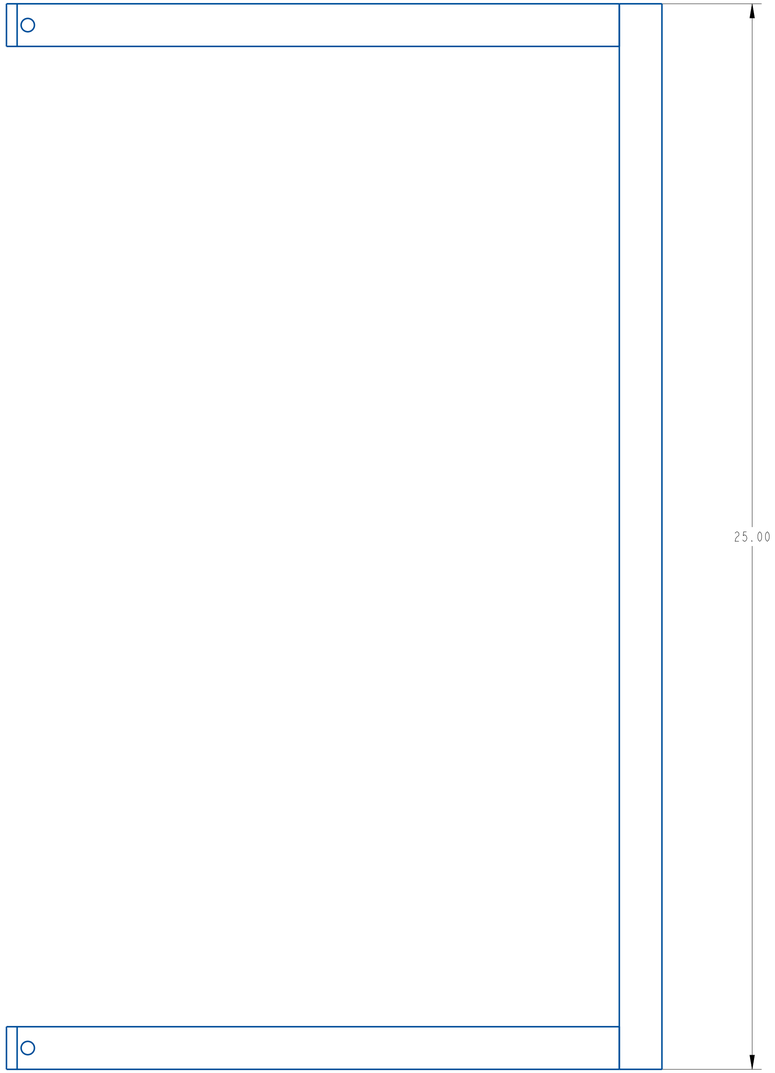
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

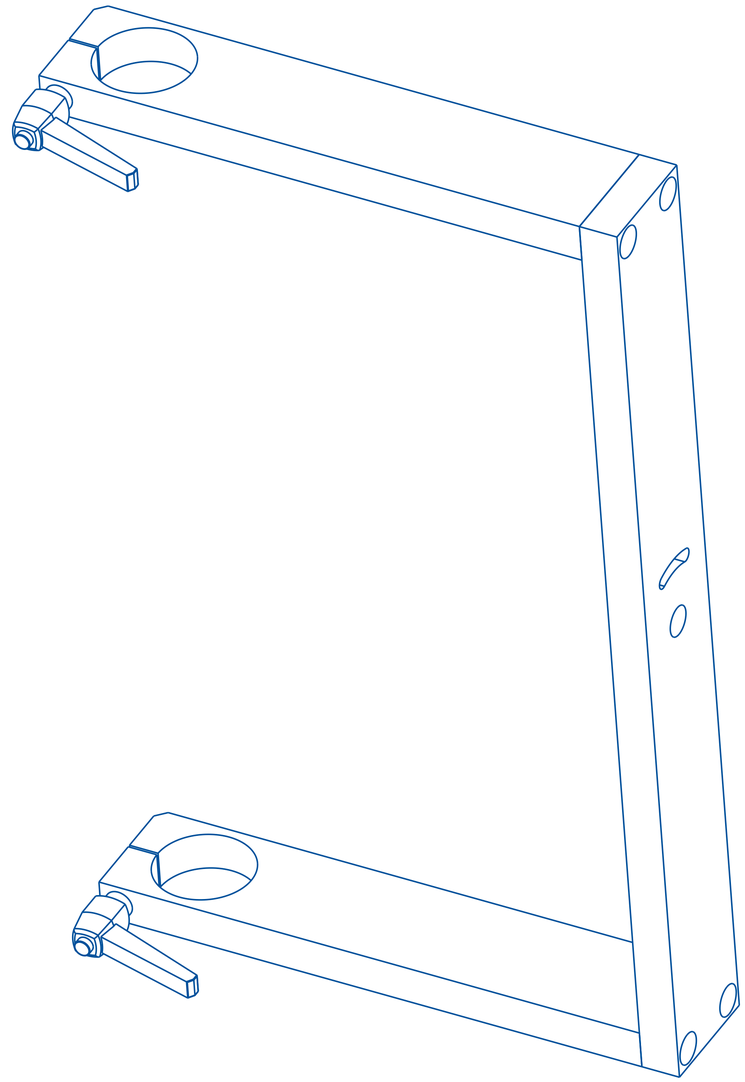
SCALE: 5/8
DATE: 11-26-13
DRW BY: MAW
CHK BY: 03/15/2024-SEM
APPR BY:

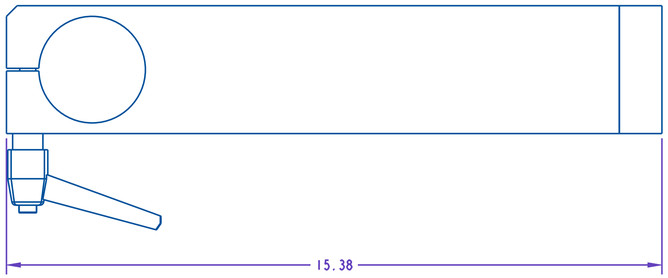
Q34 YOKE

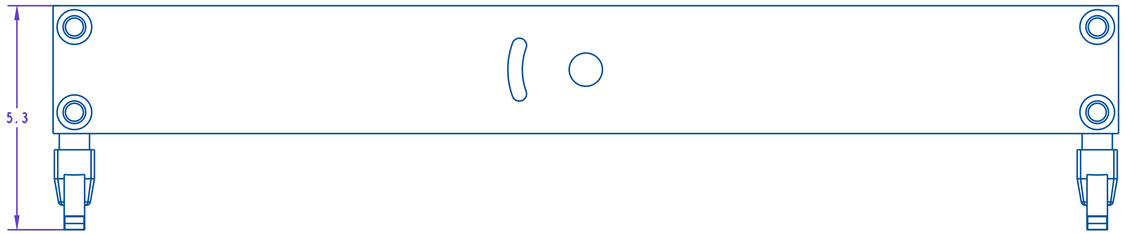
MAT'L

22600Y-000






| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| B | 30-MAR-16 | REPLACED WITH B21190-010 | CRT |
| A | 11-26-13 | NEW DRAWING | |

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

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

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

| | |
|---|---|
| SCALE: | 9/16 |
| DATE: | 11-26-13 |
| DRW BY: | MAW |
| CHK BY: | 03/15/2024-SEM |
| APPR BY: | |

Q34 YOKE

MAT'L

22600Y-000

**ASSEMBLY TITLE:** **Q33 PNEUMATIC ASSEMBLY**

**GENERAL FUNCTION:**

- The pneumatic assembly controls all air and vacuum functions under direction from the PLC
- Main functions are air assist, tamp pad vacuum, and tamp cylinder activation.
- The air assist tube provides a jet of air to the label, required to support the label as it is being dispensed.
- A filter removes water vapor from the compressed air, which could damage the pneumatic components.
- Vacuum holds the label on the tamp pad until a tamp cycle is initiated.

**SET UP AND ADJUSTMENT:**

- The supplied compressed air should be between 80 and 90 PSI with a flow greater than 2 CFM.
- Use the air assist adjustment to enable correct label feed onto the vacuum pad. See air assist set up and adjustment.
- Keep the filter positioned vertically, as the water must accumulate in the lower portion of the drain basin. If side labeling application, rotate the filter.

**MAINTENANCE**:

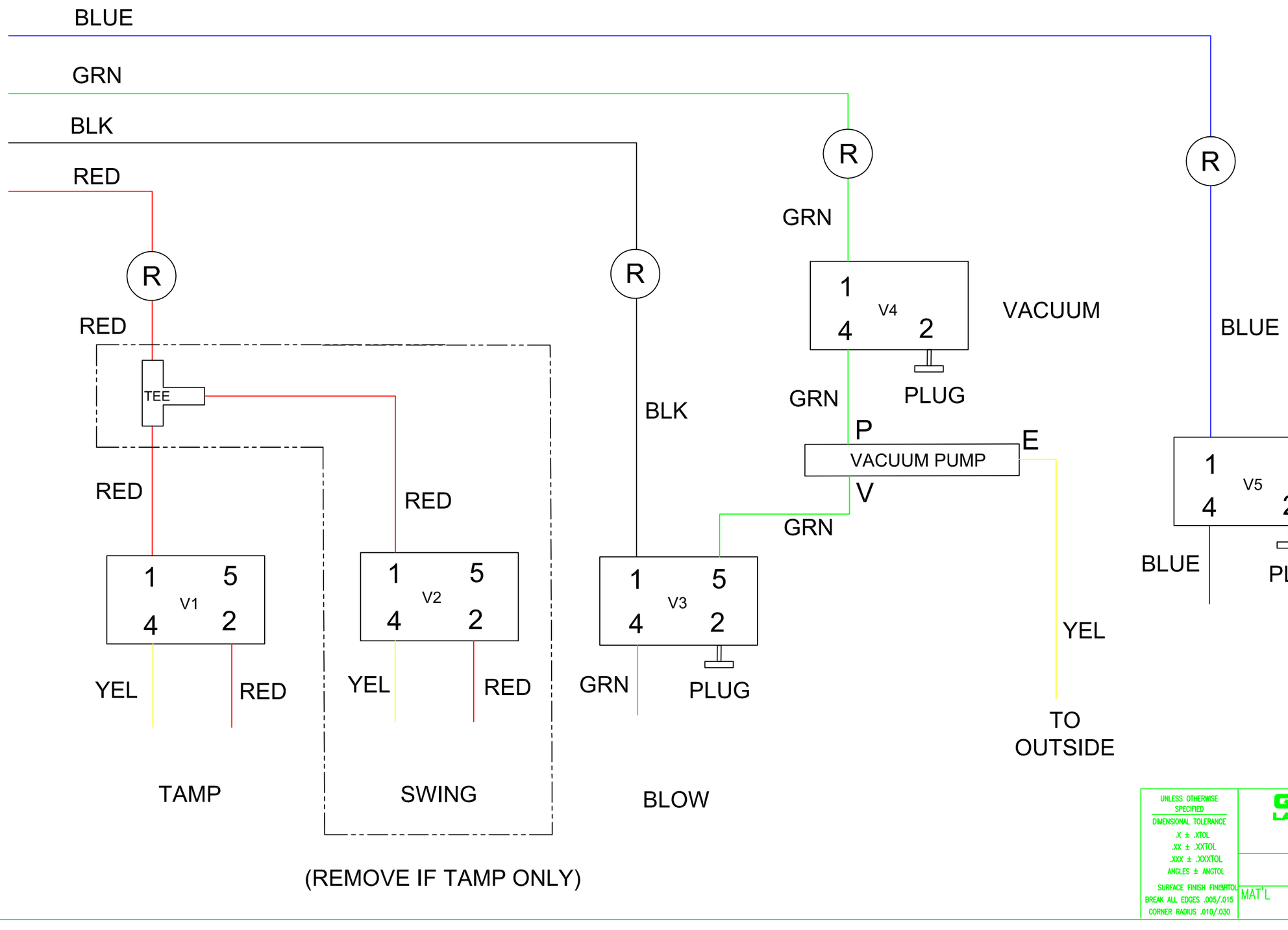
- Check the filter located at the side of the unit for water accumulation. Drain the water by loosening the valve at the bottom of the filter.
- Check air tubes for cracks or leaks. Replace if needed.

**TROUBLESHOOTING**:

| **Problem** | **What to Do** |
|---|---|
| -Label falls away | - Increase vacuum pressure<br>- Increase air assist pressure<br>- Rotate angle of the tube to 45° |

Also see Tamp Assembly Troubleshooting

MAIN AIR PIPE




| | | |
|---|---|---|
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONAL TOLERANCE<br>.X ± .XTOL<br>.XX ± .XXTOL<br>.XXX ± .XXXTOL<br>ANGLES ± ANGTOL<br>SURFACE FINISH FINISHTOL<br>BREAK ALL EDGES .005/.015<br>CORNER RADIUS .010/.030 | QUADREL LABELING SYSTEMS<br>7670 Jenther Drive<br>Mentor, Ohio 44060<br>(440) 602-4700 | SCALE: 1:1<br>DATE: 01AUG18<br>DRAWN BY: GW<br>REVISED: |
| | Q34 Pneumatics Schematic | |
| | MAT'L B22600-PNEU | B22600-PNEU |

INDENTED BILL OF MATERIAL

Items: 21389P-002 Thru 21389P-002 Location: 01 QUADREL WHSE
Activity Codes: Active Items Only
1 Levels With No Blow Through
No Selection On Basis Of Effectivity Date No Selection On Basis Of Obsolete Date

| Level | Seq | Component-Item | Component-Description | Loc | Opr LLC | UOM | Scrap REV | Act P/M | Stk Ctl | B/I B/F | Qty On-Hand / Qty-Allocated | Qty-Per-Parent / Qty-On-Order |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parent Item: 21389P-002 | | Q34 | PNEUMATICS | Loc: 01 | LLC: 5 | | | | | | | |
| 1 | 5 | 391802-000 | FITTING,1/4"X1/4"ELBOW TUBE X MALE NPT,SMC# KQ2L07-35AS | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 4.000000 |
| 1 | 10 | 392270-000 | REGULATOR W/GUAGE (INCL.NUT) SMC ARG20-NO2G1H-Z ******** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 4.000000 |
| 1 | 15 | 391991-000 | ANCHOR COUPLING, 1/4 PIPE X 3/4-16 THD., MDA#28-302 *** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 1.000000 |
| 1 | 20 | 391201-000 | FILTER, AIR WITH BRACKET * SMC P/N AF20-N02B-CZ-A * | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 1.000000 |
| 1 | 25 | 392003-000 | BULKHEAD UNION,SMC#KQ2E07-00 TUBE, SMC #KQ2E07-00A | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 6.000000 |
| 1 | 30 | 391805-000 | FITTING,1/4x1/4 HEX NIPPLE SMC #KV-NH35-99 | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 1.000000 |
| 1 | 35 | 391801-000 | FITTING NPT,SMC #KQ2L07-34AS | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 3.000000 |
| 1 | 40 | 391191-000 | VALVE,SMC PORTED VALVE 1/8" TH SMC #VQZ2121-5L1-N7T | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 4.000000 |
| 1 | 45 | 392116-000 | END CAP, BLACK 1/4" "SMC" #KQ2C-07BB **** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 2.000000 |
| 1 | 50 | 392115-000 | END CAP, GREEN 1/4" "SMC" #KQ2C-07GB ***** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 5.000000 |
| 1 | 55 | 392121-000 | END CAP, BLACK 3/8" "SMC" #KQ2C-11BB **** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 2.000000 |
| 1 | 60 | 392120-000 | END CAP, GREEN 3/8" "SMC" #KQ2C-11GB **** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 2.000000 |
| 1 | 65 | 392118-000 | END CAP, RED 3/8" "SMC" #KQ2C-11RB **** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 2.000000 |
| 1 | 70 | 392119-000 | END CAP, YELLOW 3/8" "SMC" #KQ2C-11YB ***** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 2.000000 |
| 1 | 75 | 392122-000 | END CAP, BLUE 3/8" "SMC" #KQ2C-11CBB **** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 2.000000 |
| 1 | 80 | 392114-000 | END CAP, YELLOW 1/4" "SMC" #KQ2C-07YB **** | 01 | 7 | 0 EA | .0 | A P | Y Y | N N | | 2.000000 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 85 | 392113-000 | END CAP, RED 1/4" | | 0 | EA | .0 | A | Y | N | | 3.000000 |
| | | "SMC" #KQ2C-07RB **** | | 01 | 7 | | | P | Y | N | | |
| 1 | 90 | 392117-000 | END CAP, BLUE 1/4" | | 0 | EA | .0 | A | Y | N | | 3.000000 |
| | | "SMC" #KQ2C-07BUB **** | | 01 | 7 | | | P | Y | N | | |
| 1 | 95 | 392109-000 | DOUBLE BRANCH MALE ELBOW | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "SMC" #KQ2ZD11-35AS 3/8 X 1/4 | | 01 | 7 | | | P | Y | N | | |
| 1 | 100 | 392123-000 | PNEUMATICS, RED CAP | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "SMC" #KQ2C-07A-R | | 01 | 7 | | | P | Y | N | | |
| 1 | 105 | 392124-000 | PNEUMATICS, BLUE CAP | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "SMC" #KQ2C-07A-CB | | 01 | 7 | | | P | Y | N | | |
| 1 | 110 | 392125-000 | PNEUMATICS, YELLOW CAP | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "SMC" #KQ2C-07A-Y | | 01 | 7 | | | P | Y | N | | |
| 1 | 115 | 392126-000 | PNEUMATICS, GREEN CAP | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "SMC" #KQ2C-07A-G | | 01 | 7 | | | P | Y | N | | |
| 1 | 120 | 392097-000 | PNEUMATICS, PLUG, 1/4" | | 0 | EA | .0 | A | Y | N | | 2.000000 |
| | | "SMC" #KQ2P-07 | | 01 | 7 | | | P | Y | N | | |
| 1 | 125 | 392110-000 | COUPLING, 1/4" TO 1/4" | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | SMC #KV-F35-00 | | 01 | 7 | | | P | Y | N | | |
| 1 | 130 | 392107-000 | ELBOW,MALE 1/4"TUBE X 1/16"THD | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | SMC KJL07-33S | | 01 | 7 | | | P | Y | N | | |
| 1 | 135 | 391906-000 | ELBOW,90 DEGREE 1/4FEM-1/4MALE | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | SMC #KV-LS35-99 ***** | | 01 | 7 | | | P | Y | N | | |
| 1 | 140 | 391809-000 | FITTING,3/8"X1/4"ELBOW,TUBE X | | 0 | EA | .0 | A | Y | N | | 4.000000 |
| | | MALE NPT,SMC# KQ2L11-35AS *** | | 01 | 7 | | | P | Y | N | | |
| 1 | 145 | 392108-000 | BULKHEAD 3/8" *** | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | SMC #KQ2E11-00A | | 01 | 7 | | | P | Y | N | | |
| 1 | 150 | 392146-000 | PLUG-IN REDUCER 1/4 TO 5/16 | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | SMC #KQ2R07-09A | | 01 | 7 | | | P | Y | N | | |
| 1 | 155 | 392147-000 | PLUG-IN REDUCER 1/4 TO 3/8 | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | SMC #KQ2R07-11A | | 01 | 7 | | | P | Y | N | | |
| 1 | 160 | 392609-000 | VACUUM GENERATOR | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | SMC# ZH13DSA-09-11-11 | | 01 | 7 | | | P | Y | N | | |
| 1 | 165 | 394428-001 | CONNECTOR, SOLENOID, 39" | | 0 | EA | .0 | A | Y | N | | 4.000000 |
| | | "SMC" #SY100-30-4A-10 *** | | 01 | 7 | | | P | Y | N | | |
| 1 | 170 | 392128-000 | BULKHEAD UNION ELBOW | | 0 | EA | .0 | A | Y | N | | 4.000000 |
| | | SMC #KQ2LE07-00A | | 01 | 7 | | | P | Y | N | | |
| 1 | 175 | 392046-000 | 90 DEGREE STREET ELBOW | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | ANDERSEN P/N 116A-B **** | | 01 | 7 | | | M | Y | N | | |
| 1 | 180 | 391929-000 | NIPPLE,BRASS,1/4"NPT X 6"LONG | | 0 | EA | .0 | A | Y | N | | 1.000000 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MDA 40-030 *** | | 01 | 7 | | | P | Y | N | | | | |
| 1 | 185 | 391954-000 | COUPLING 1/4"NPT HOSE DISCONN. | 0 | EA | .0 | | A | Y | N | | | | 1.000000 |
| | | AIR CHIEF# DCP21B | | 01 | 7 | | | P | Y | N | | | | |
| 1 | 190 | 391884-000 | NIPPLE, 1/4" NPT X 3" LONG | 0 | EA | .0 | | A | Y | N | | | | 1.000000 |
| | | MDA 40-024 **** | | 01 | 7 | | | P | Y | N | | | | |

**ASSEMBLY TITLE: TAMP CYLINDER, MECHANICAL ADJUSTMENT**

**GENERAL FUNCTION:**

- The mechanical position of the tamp cylinder is critical for proper label placement.
- There are 3 axis of adjustment to assure pad positioning.

**NOTE:** Before attempting mechanical adjustment of the tamp applicator, power down unit and disconnect air.

**SET UP AND ADJUSTMENTS:**

**TAMP PAD ASSEMBLY HORIZONTAL POSITION:**

Normally the tamp pad should be centered to the dispensing edge of the printer. To adjust the horizontal position, loosen the (4) horizontal positioning screws located at the tamp cylinder mounting plate.

Position the tamp/air cylinder assembly as required to center the assembly to the dispensing edge of the printer. Re-tighten when centered.

**TAMP PAD ASSEMBLY VERTICAL POSITION:**

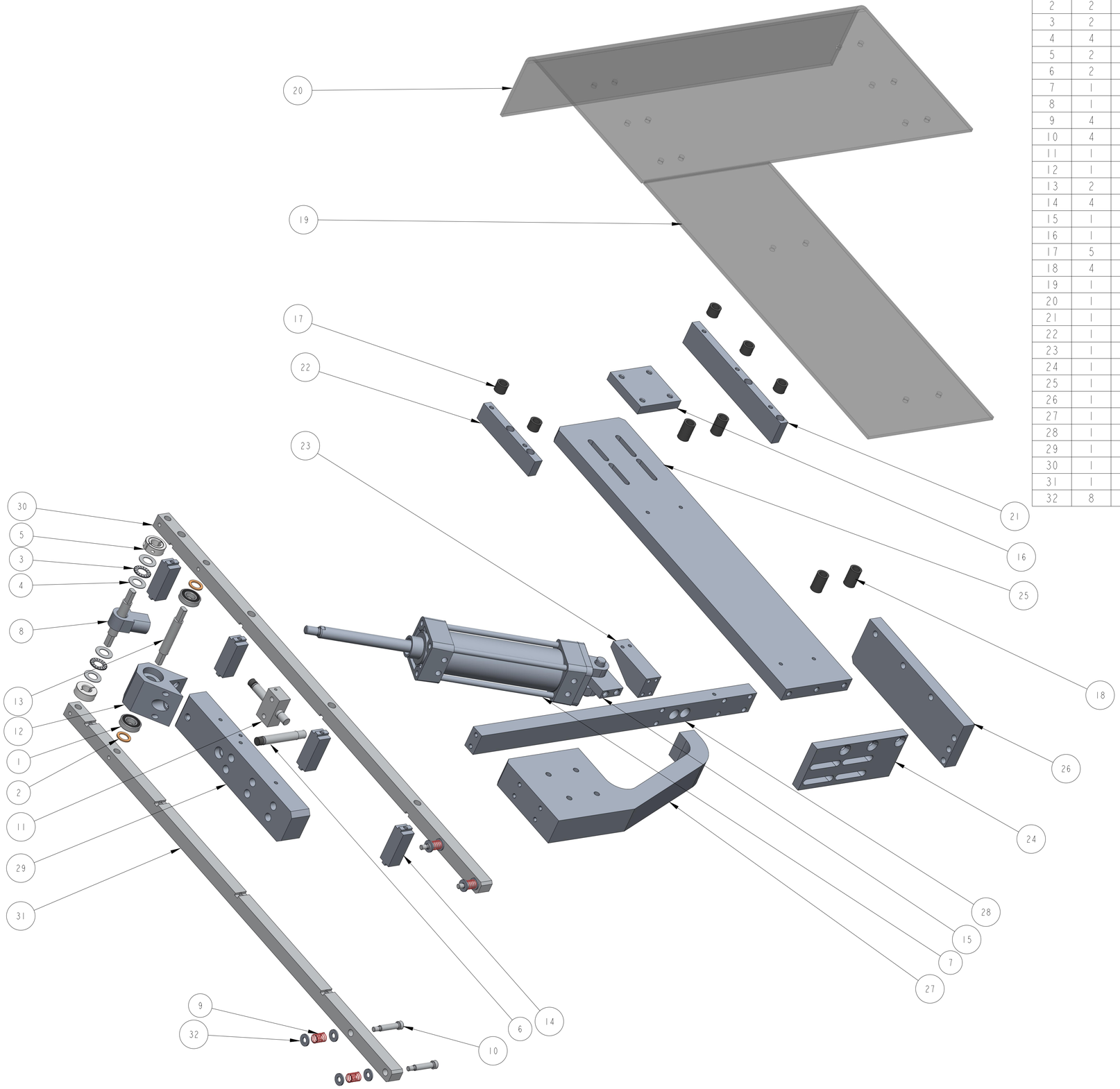
- For vertical adjustment, loosen the (2) socket head screws holding the tamp cylinder mounting block to the applicator side plate. Move the entire assembly as needed. Re-tighten the (2) socket head screws when the proper position is set.
- Manually move the tamp pad down to verify the correct position and clearance from the printer and air assist tube.
- The lower face of the tamp pad should be positioned even or about 0.01” above the label peel edge.
- Use the JOG function to feed labels and index the tamp applicator. Observe the position of the label on the tamp pad as it its applied. Adjust the position of the tamp applicator as required. Once a label is dispensed, it should be centered across the width of the tamp pad.

**ASSEMBLY TITLE:** **TAMP CYLINDER, MECHANICAL ADJUSTMENT**

**TROUBLESHOOTING**:

| **Problem** | **What to Do** |
|---|---|
| - Label not positioned on tamp pad correctly | - Correct tamp cylinder position |
| - Label not feeding completely onto tamp pad. | - Tamp pad to far from peel edge. |
| - Label jams into the side of the | - Tamp pad vertical position to low tamp pad. |






| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 2 | 111072-000 | BEARING, BALL | 22002-83432 |
| 2 | 2 | 151004-000 | BEARING, THRUST WASHER | 22002-83432 |
| 3 | 2 | 181079-000 | BEARING, NEEDLE ROLLER | 22002-83432 |
| 4 | 4 | 181080-000 | BEARING, THRUST WASHER | 22002-83432 |
| 5 | 2 | 361169-000 | COLLAR, 1/2 IN. ID ONE-PIECE CLAMP | 22002-83432 |
| 6 | 2 | 391643-000 | SHOCK ABSORBER | 22002-83432 |
| 7 | 1 | 394412-000 | CYLINDER ASSEMBLY | 22002-83432 |
| 8 | 1 | 394413-000 | ROD EYE | 22002-83432 |
| 9 | 4 | 811233-000 | | 22002-83432 |
| 10 | 4 | 841519-000 | 5/16 x 1-1/4 LG. SHOULDER BOLT | 22002-83432 |
| 11 | 1 | A20633-000 | STOP MOUNTING BLOCK | 22002-83432 |
| 12 | 1 | A20634-000 | PIVOT BLOCK | 22002-83432 |
| 13 | 2 | A20635-000 | PIVOT PIN | 22002-83432 |
| 14 | 4 | A20636-002 | PIVOT ARM SPACER | 22002-83432 |
| 15 | 1 | A20638-001 | EYE BRACKET | 22002-83432 |
| 16 | 1 | A20642-000 | STRAP PLATE | 22002-83432 |
| 17 | 5 | A20904-000 | RAIL SPACER, 1/2" | 22002-83432 |
| 18 | 4 | A20904-200 | RAIL SPACER, 1" | 22002-83432 |
| 19 | 1 | A22159-006 | Q32 LEADING/ADJ. CYLINDER COVER | 22002-83432 |
| 20 | 1 | A22160-000 | COVER | 22002-83432 |
| 21 | 1 | A22201-000 | COVER SUPPORT, BACK | 22002-83432 |
| 22 | 1 | A22202-000 | COVER SUPPORT, FRONT | 22002-83432 |
| 23 | 1 | A22203-000 | GUSSET, BACK SUPPORT | 22002-83432 |
| 24 | 1 | B20165-002 | SLIDE PLATE MOUNTING PLATE | 22002-83432 |
| 25 | 1 | B20202-001 | SLIDE MOUNTING PLATE | 22002-83432 |
| 26 | 1 | B20204-000 | GUSSET PLATE | 22002-83432 |
| 27 | 1 | B20270-000 | SLIDE REPLACEMENT PLATE | 22002-83432 |
| 28 | 1 | B20771-000 | EYE BRACKET MOUNTING BAR | 22002-83432 |
| 29 | 1 | C20139-000 | PIVOT MOUNTING ARM | 22002-83432 |
| 30 | 1 | C20140-001 | PIVOT ARM | 22002-83432 |
| 31 | 1 | C20141-001 | PIVOT ARM | 22002-83432 |
| 32 | 8 | WA009 | 1/4 FLAT WASHER | 22002-83432 |

NOT SHOWN:

B25032-275 TAMP PAD 4" X 6"
B25032-1013 TAMP PAD BLOCK 4" X 6"



| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | Aug-10-21 | NEW DRAWING | TJS |

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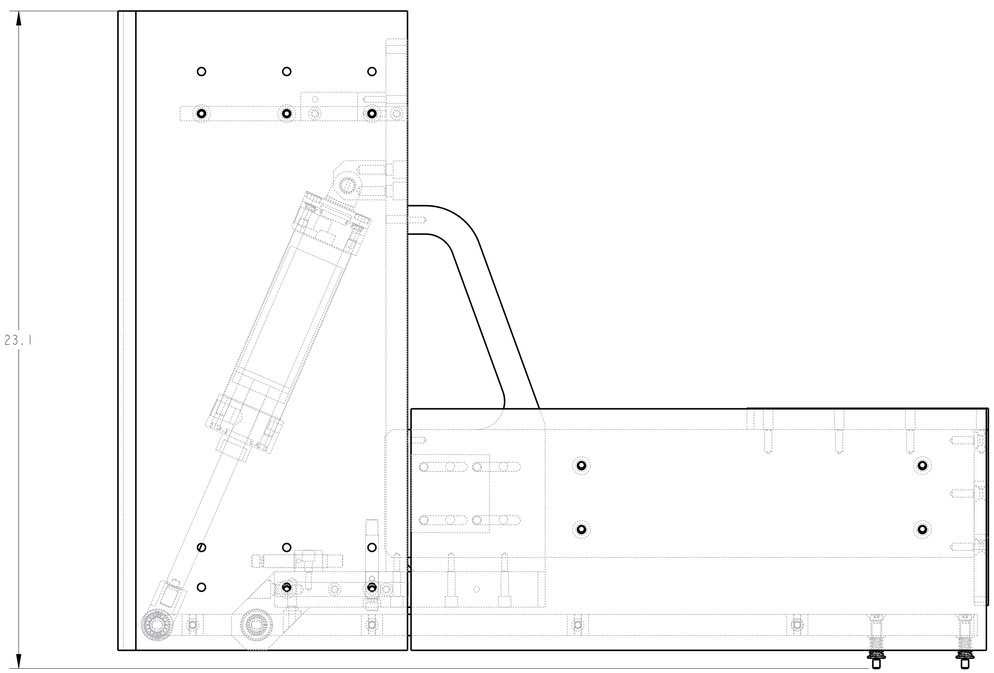
UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE
X ± .1
XX ± .01
XXX ± .005
ANGLES ± 30'
SURFACE FINISH 125
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

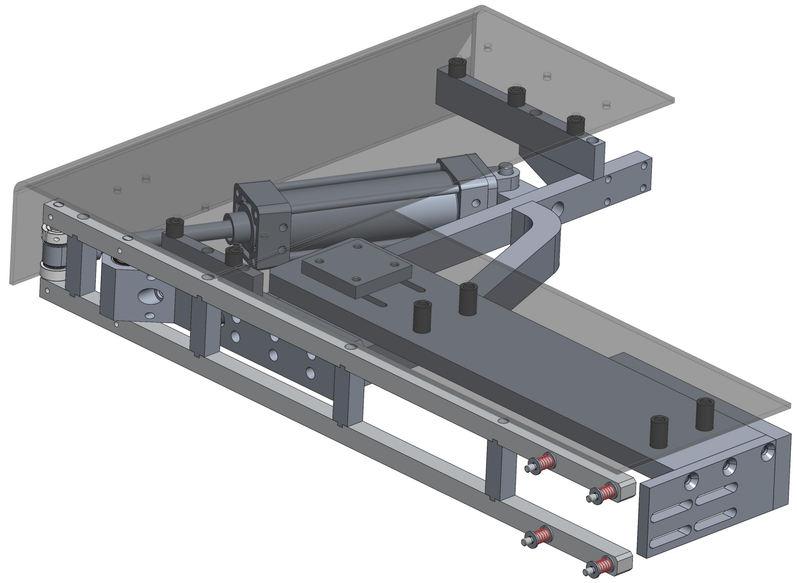
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

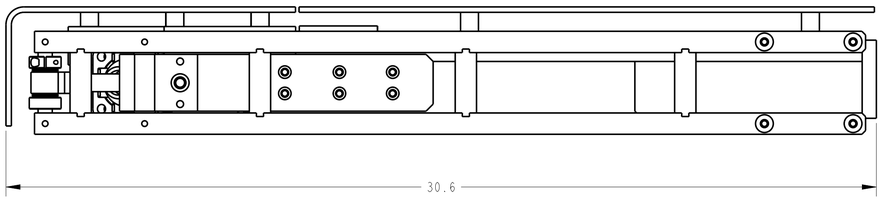
| | |
|---|---|
| SCALE | 3/8 |
| DATE | Aug-10-21 |
| DRAWN BY | TJS |

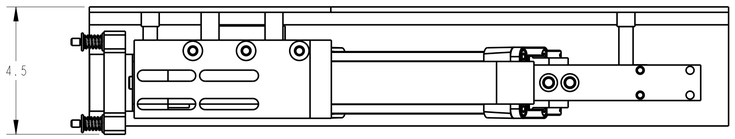
CUSTOM SWING ARM ASSEMBLY

MAT'L | 22002-83432 | 22002-83432






| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | Aug-10-21 | NEW DRAWING | TJS |

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

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

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

| | |
|---|---|
| SCALE | 3/8 |
| DATE | Aug-10-21 |
| DRAWN BY | TJS |

CUSTOM SWING ARM ASSEMBLY

MAT'L

22002-83432

22002-83432

INDENTED BILL OF MATERIAL

Items: 22600SN-002 Thru 22600SN-002 Location: 01 QUADREL WHSE
Activity Codes: Active Items Only
1 Levels With No Blow Through
No Selection On Basis Of Effectivity Date No Selection On Basis Of Obsolete Date

| Level | Seq | Component-Item | Component-Description | Opr Loc | UOM LLC | Scrap Draw | Act REV | Stk P/M | B/I Ctl | B/F | Qty On-Hand Qty-Allocated | Qty-Per-Parent Qty-On-Order |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parent Item: 22600SN-002 | | | SENSOR KIT, LEADING NPN, INCLUDES SAFETY KIT | | Loc: 01 | LLC: 1 | | | | | | |
| 1 | 15 | 252019-000 | CONNECTOR, M12, 4P, MALE | 0 | EA | .0 | A | Y | N | | | 3.000000 |
| | | "LUMBERG" | RSC4/7 | 01 | 10 | | | P | Y | N | | |
| 1 | 20 | 202201-001 | MOUNTING BRACKET FOR FS-N41 | 0 | EA | .0 | A | Y | N | | | 2.000000 |
| | | "KEYENCE" | OP-88245 | 01 | 7 | | | P | Y | N | | |
| 1 | 25 | A23728-000 | SENSOR TUBE, 3/8" X 3" | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | | | 01 | 7 | | | M | Y | N | | |
| 1 | 30 | A23727-000 | LOW LEVEL BRACKET | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | | | 01 | 8 | | | M | Y | N | | |
| 1 | 35 | 202958-000 | DIGITAL FIBER AMPLIFIER, NPN | 0 | EA | .0 | A | Y | N | | | 2.000000 |
| | | "KEYENCE" | FS-N41N | 01 | 7 | | | P | Y | N | | |
| 1 | 40 | 203170-000 | FIBER, REFLECTIVE, M6 HEAD | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | "KEYENCE" | FU-67V | 01 | 7 | | | P | Y | N | | |
| 1 | 45 | 202960-000 | REFLECTIVE FIBER ARMORED TOUGH | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | "KEYENCE" | FU-67G | 01 | 7 | | | P | Y | N | | |
| 1 | 50 | A20733-001 | SENSOR MTG. BRACKET | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | 6mm THREAD | | 01 | 7 | | | M | Y | N | | |
| 1 | 55 | 841378-001 | SHOULDER BOLT,5/16 X 1 1/4" LG | 0 | EA | .0 | A | Y | N | | | 4.000000 |
| | | SS. | | 01 | 7 | | | M | Y | N | | |
| 1 | 60 | 811233-000 | SPRING-COMPRESSION | 0 | EA | .0 | A | Y | N | | | 4.000000 |
| | | "LEE" | LC-045G-6 STAINLESS STL. | 01 | 7 | | | P | Y | N | | |
| 1 | 65 | A21358-001 | Q32 SMART TAMP MTG. BLOCK | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | | | 01 | 7 | | | M | Y | N | | |
| 1 | 70 | 271334-004 | HALL EFFECT SWITCH, NPN, 3m | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | "SMC" | D-F59L | 01 | 2 | | | P | Y | N | | |
| 1 | 75 | 271333-000 | BRACKET, SWITCH, 1.5" BORE | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | "SMC" | NBT-150 | 01 | 7 | | | P | Y | N | | |
| 1 | 80 | 391174-000 | AIR DUMP VALVE WITH SOFT START | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | "SMC" | NAV2000-N02-5DZ | 01 | 6 | | | P | Y | N | | |
| 1 | 85 | 221650-002 | SAFETY RELAY, FOR ESTOPS | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | "BANNER" | ES-FA-9AA | 01 | 8 | | | P | Y | N | | |
| 1 | 90 | 221152-005 | ENCLOSURE, E-STOP, 2NC SWITCH | 0 | EA | .0 | A | Y | N | | | 1.000000 |
| | | BACO | LBX130005 | 01 | 9 | | | P | Y | N | | |

INDENTED BILL OF MATERIAL

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 95 | 241780-000 | STRAIN RELIEF, 1/2" BLACK NPT | | 0 | EA | .0 | A | Y | N | | | | 1.000000 |
| | | "HEYCO" M3200 | | 01 | 9 | | | P | Y | N | | | | |
| 1 | 100 | 241780-001 | LOCKNUT, 1/2" NPT BLACK NYLON | | 0 | EA | .0 | A | Y | N | | | | 1.000000 |
| | | "HEYCO" 8463 | | 01 | 9 | | | P | Y | N | | | | |
| 1 | 105 | 391631-000 | MUFFLER, 1/4"NPT SINTERED BRNZ | | 0 | EA | .0 | A | Y | N | | | | 1.000000 |
| | | "SPEEDAIR" 1A326 | | 01 | 6 | | | P | Y | N | | | | |

# Tamp Pad Assembly

The tamp pad assembly is the mechanism which applies a label to the product. A printed label is fed from the printer to the tamp pad. A vacuum draws the label towards the pad with the adhesive side facing away from the pad. Once the label is completely dispensed from the liner, it is suspended under the pad by vacuum. Once a product is detected, the tamp pad extends, contacts the product and applies the label. The position of the tamp pad is critical to the correct operation of your labeling system.

**Procedure**

The tamp pad position may be adjusted as show below.

Each unique label requires a custom tamp pad. The pad is sized to match the label dimensions and the vacuum ports are drilled according to the shape of the label.

Position the tamp pad so that the slide is fully retracted. Loosen the vertical position locking screws and slide the tamp pad assembly so that the lower surface of the tamp pad is positioned slightly above the dispensing edge of the printer. After the correct height adjustment is achieved, lock the screws into position.

Loosen the screws which attach the tamp pad to the mounting block of the slide. Position the leading edge of the tamp pad, the edge closest to the dispensing edge of the printer, 3/16” away from the dispensing edge. After correct position is achieved, lock the pad into place.

To correctly set up a tamp pad to a peel edge two things must be kept in mind.

1. Maintain approx. 3/16” between the edge of the peel plate and the front of the tamp pad.
2. Maintain approx. 3/16” from the peel point to the bottom of the tamp pad.

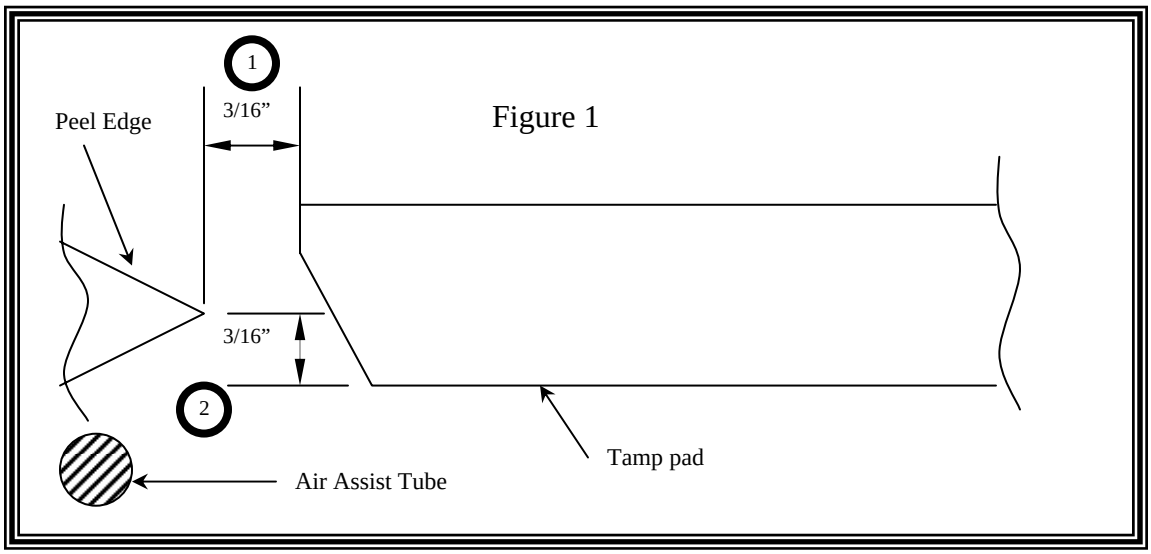



Figure 1

Loosen the horizontal position locking screw. After threading the labels through the labeler, center the tamp pad across the width of the label. Once a label is dispensed, it should be centered across the width of the tamp pad.

The four ports of the air assist delivery tube should be directed upwards towards the front of the vacuum tamp pad. The tube may slide along its axis to permit the centering of the ports across the width of the label. Unused ports not located under the label or tamp pad maybe covered with tape if not required. As each label is dispensed, the ports deliver a blast of air which directs the label out and onto the lower surface of the vacuum pad.

When the label is dispensed it should feed on to the chamfered edge of the peel plate, then follow along the angle of the tamp pad. The air assist will blow the label along the tamp pad and assist in pushing the label out on the pad.

**Note:** Figure 2

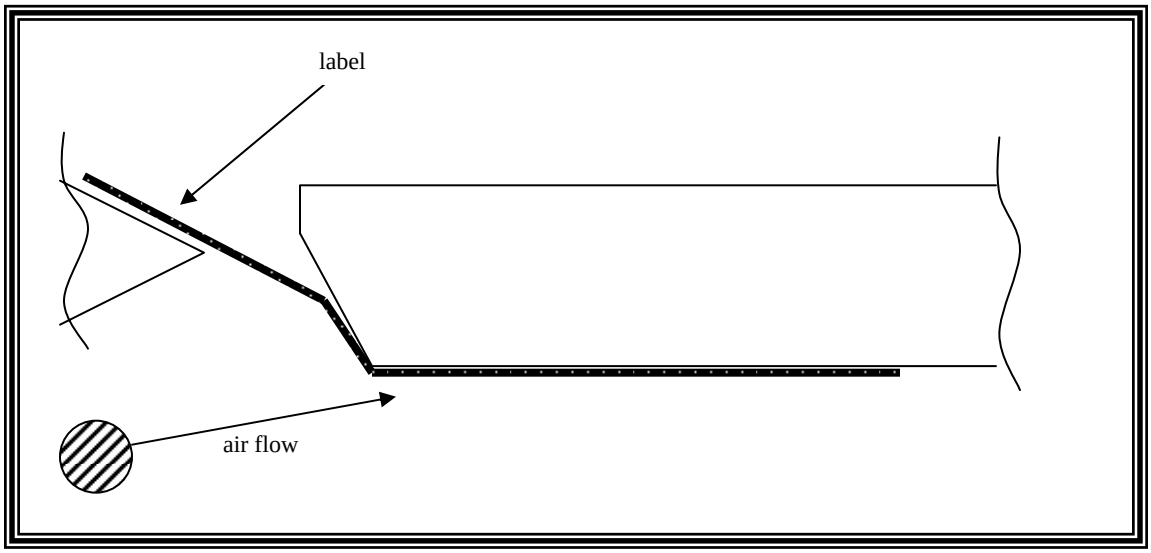



*Figure 2*

With the compressed air supply disconnected and with a label dispensed on the tamp pad, verify that the label is sitting below the peel plate edge. Verify that the dispensing edge of the printer does not interfere with the tamp cycle during extension or retraction.

**Note:** Figure 3

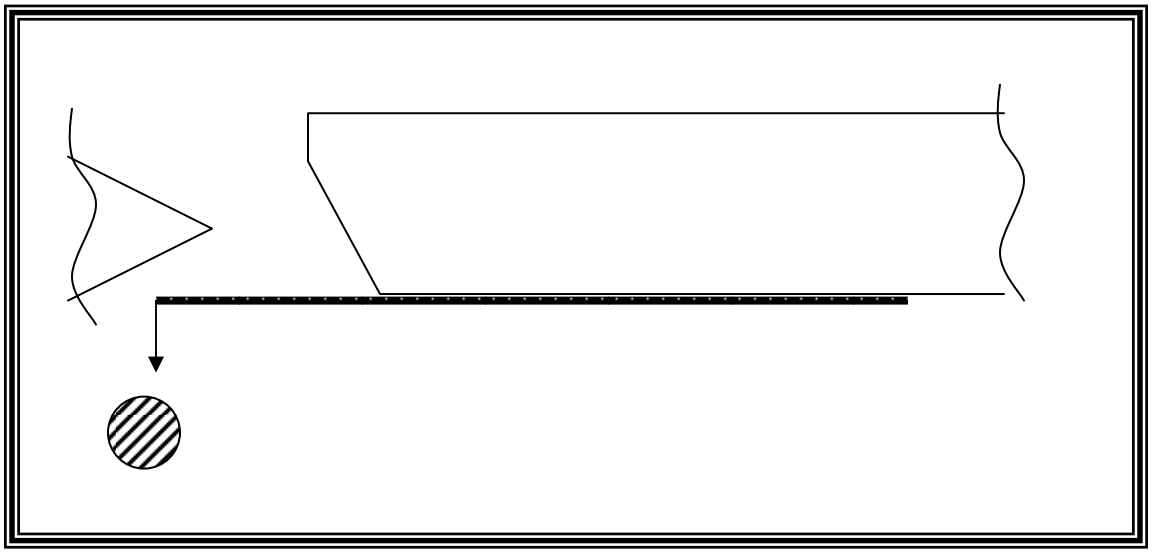


*Figure 3*

The speed and force associated with the extension and retraction of the air tamp cylinder are variable and are adjusted in a number of ways. The speed of extension is adjusted by opening and closing the intake/exhaust port of the cylinder.

In addition to regulating the rate of the tamp pad extension and retraction, the force contributing to the movement of the tamp cylinder may also be adjusted. A regulator mounted to the pneumatic control side panel permits the adjustment of the supply pressure to the tamp cylinder.

The tamp cylinder pressure maybe adjusted by first releasing the locking regulator knob by pulling on it. Once released, turn the knob in the direction indicated to raise or lower the pressure supplied to the tamp cylinder.

The pressure gauge reflects the static pressure of the air supply to the tamp cylinder. During operation, the reading may drop slightly while the tamp cylinder is in motion. The air pressure is typically set between 40-60psi. Adjust the pressure, so that the cylinder extends smoothly while fully impressing the label onto the product with out deforming or damaging the product.

While the labeler waits for a product, the vacuum tamp pad must securely hold the label in place until a product is in position to be labeled. The strength of the

vacuum is adjusted with a regulator mounted to the same side plate as the air tamp pressure regulator.

After releasing the knob, turn as indicated to increase or decrease the strength of the vacuum must be strong enough to prevent the label from falling from the pad. However, the vacuum should not prevent the proper dispensing of the label from the printer. If the label wrinkles, the vacuum is too strong.

The last major adjustment to the tamp pad assembly focuses on the air assist deliver tube. As previously described, the ports of the air assist delivery tube are angled towards the tamp pad. As a label is dispensed from the printer, compressed air flows from these ports and directs the label against the pad. The air assist pressure is adjusted in the same manner as the tamp pressure and the vacuum.

Typically operating pressure for the air assist is between 10-30psi. When the air assist is operating properly, the label does not blow across the pad. Instead, the label slides smoothly under the pad while it is being dispensed.

Although the air assist assembly only releases air flow during the dispensing of the label, the supply pressure maybe adjusted at any time.

After a label is applied to a product, and the tamp dwell cycle has expired, the tamp dwell cycle has expired, the tamp cylinder begins to retract. Once the tamp pad returns to its retracted position the microprocessor receives a signal that the tamp cycle is complete.

**ASSEMBLY TITLE:** **TAMP PAD POSITIONING**

**GENERAL FUNCTION:**

The tamp pad assembly is the support platform for label capture and application. As the label is dispensed over the tamp pad, the vacuum keeps it in place, ready for application. The position of the tamp pad is critical to reliable system operation as well as accurate and repeatable label placement.

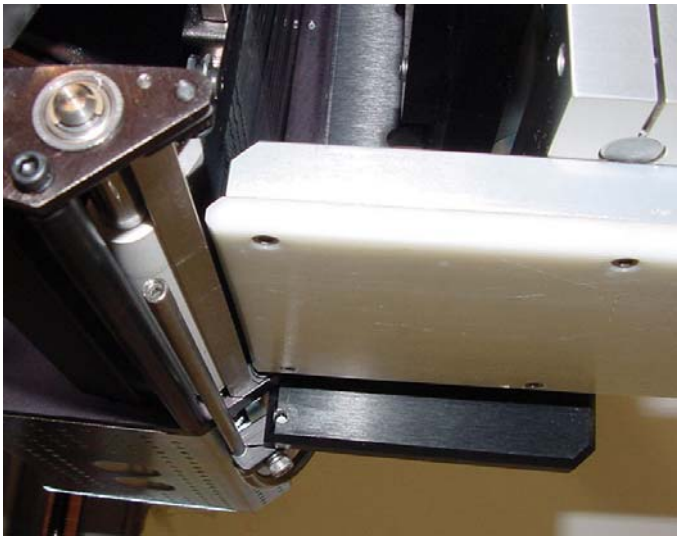
**SET UP AND ADJUSTMENTS:**

**NOTE:** For tamp cylinder adjustment, see previous section.

Insure that the air supply to the tamp cylinder is turned off.
Position the tamp pad so the slide is fully retracted by pulling the tamp pad to the full extended position.

Loosen the two screws which attach the tamp pad to the mounting block mounted on the end of the slide. Position the leading edge of the tamp pad (edge closest to the printer) so that the edge is approximately 1/16” away from the dispensing edge of the printer.

Position the leading edge of the tamp pad parallel to the dispensing edge of the printer. Lock the pad into place by tightening the locking screws.



**ASSEMBLY TITLE:** **TAMP PAD POSITIONING (CONT.)**

**TROUBLESHOOTING**:

| **Problem** | **What to Do** |
|---|---|
| - Label jams at leading edge pad. | - Tamp pad set to low. Raise position of tamp tamp pad |
| - Label applied at an angle | - Tamp pad not parallel to peel edge Re-seat to parallel position. |
| - Label falls away after feed | - Tamp pad set to high. Lower tamp pad with vertical adjustment. |

**ASSEMBLY TITLE:** **VACUUM AND TAMP PAD - SET UP AND ADJUSTMENT**

**DRAWING NO:** **CUSTOM PER LABEL**

**GENERAL FUNCTION:**

- A venturi style vacuum generator provides vacuum through the tamp pad holes to allow the label to be held during label application.
- This function is directly controlled by the vacuum air valve and by masking of the excessive tamp pad holes.
- The vacuum air adjustment controls the vacuum in the tamp pad that holds the label in place

**SET UP AND ADJUSTMENT:**

- Use the feed function on the printer to dispense labels
- Adjust the Vacuum air regulator until the label is retained by the tamp pad.
- Depending on the size of the label, areas of the tamp pad may be masked off with tape or label stock to increase the vacuum under the label retention area.
- If the labels in use are smaller than the tamp pad, mask off the unused portion of the pad with tape or label material. This will focus the vacuum at the point of label adhesion.

**TROUBLESHOOTING**:

| **Problem** | **What to Do** |
|---|---|
| -Label falls away | - Insufficient vacuum, Increase vacuum pressure.<br>- Mask off excessive holes in the tamp pad |

**ASSEMBLY TITLE:** **AIR ASSIST - SET UP AND ADJUSTMENT**

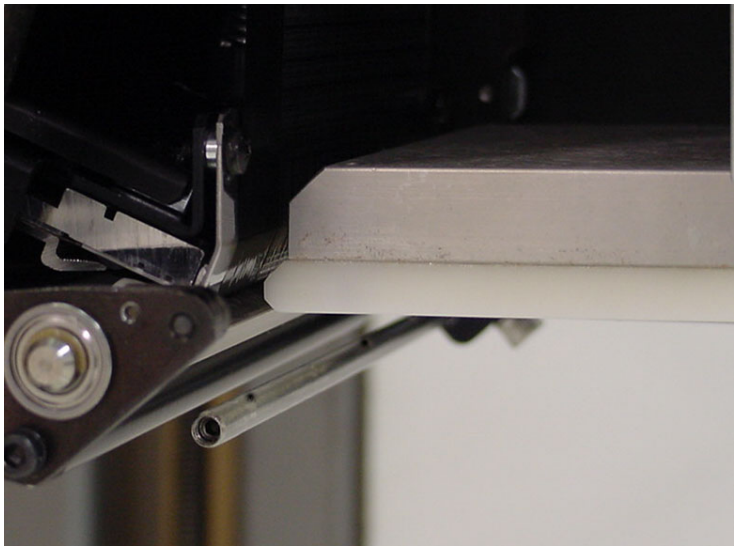
**DRAWING NO:** **SEE BELOW**

**GENERAL FUNCTION:**

- The air assist tube provides a jet of air to the label, required to support the label as it is being dispensed.
- This function is directly controlled by the air assist air valve and the position of the air assist tube.

**SET UP AND ADJUSTMENTS:**

- Normally the air assist tube is mechanically set at the factory. If re-positioning is necessary, follow these guidelines.
- To rotate tube, loosen the screw clamping the tube
- To set the angle of air assist direction, position the tube so that the exhaust holes are facing the label at a 45 degree angle.
- Final position:
    a. Under the label exit area of the printer
    b. Exhaust holes facing at 45 degree angle to the tamp pad.
    c. Exhaust holes centered on label exit area
- While feeding labels, adjust the AIR ASSIST pressure until the label is uniformly positioned under the tamp pad.
- Use jog button to cycle tamp and then feed a label onto the tamp pad



**ASSEMBLY TITLE:** **AIR ASSIST - SET UP AND ADJUSTMENT (CONT.)**

**TROUBLESHOOTING**:

| **Problem** | **What to Do** |
|---|---|
| -Label blows away | - Increase vacuum pressure<br>- Decrease air pressure to the air assist tube<br>- Rotate angle of the tube to 45 deg. of label |
| -Label falls away | - Increase vacuum pressure<br>- Increase air pressure to the air assist tube<br>- Rotate angle of the tube to 45 deg. of label |

**ASSEMBLY TITLE:** **PRODUCT DETECT ASSEMBLY**

**DRAWING NO:**

**GENERAL FUNCTION:**

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

**SETUP AND ADJUSTMENTS:**

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

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

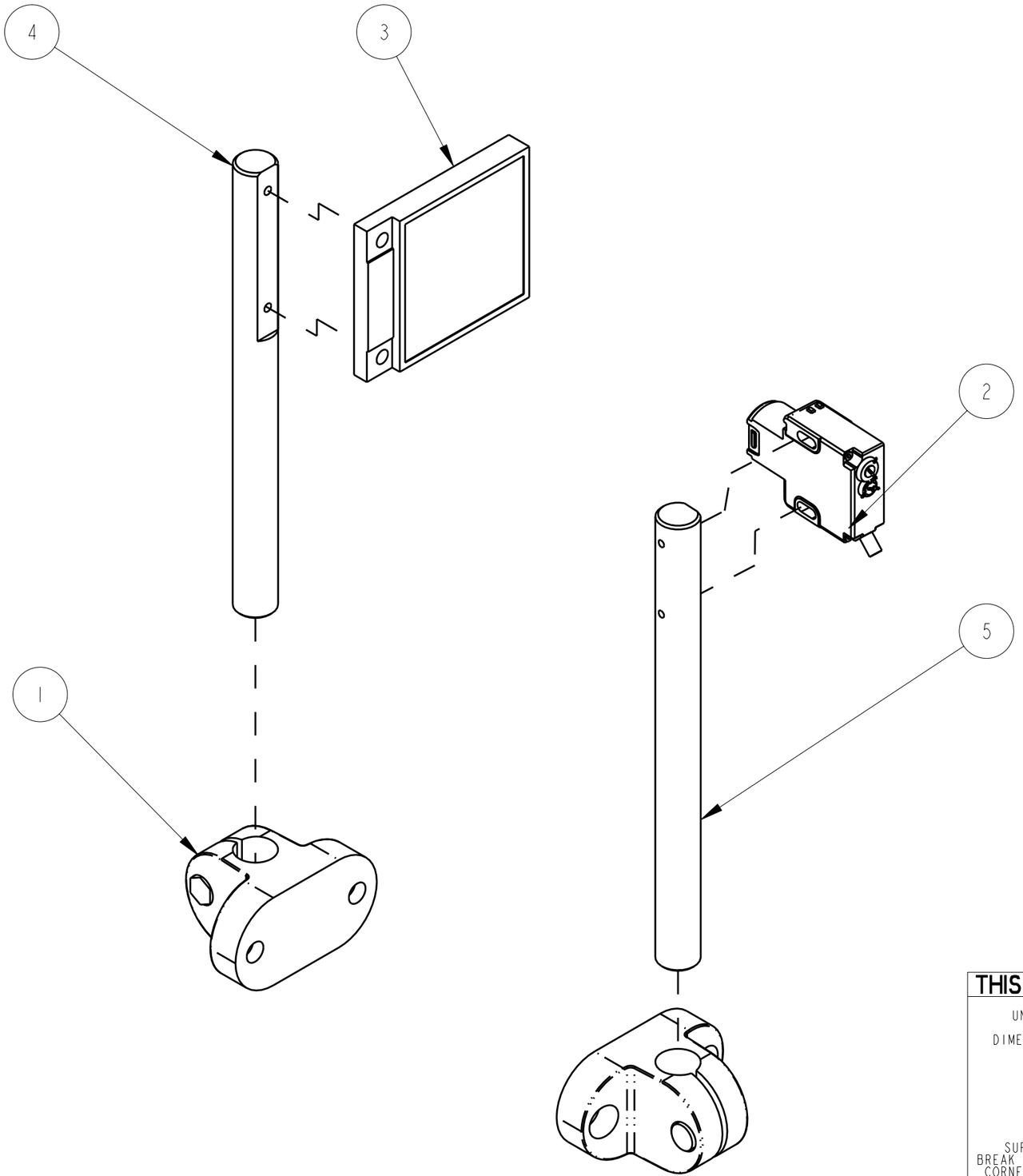
**MAINTENANCE:**

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

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

**TROUBLESHOOTING:**

| **PROBLEM:** | **WHAT TO DO:** |
|---|---|
| - No label trigger or intermittent trigger. | - Product does not intersect sensor scan field. Adjust sensor position until sensor detects product.<br>- Sensor gain set is too low. Increase gain until sensor indicator displays ON status(with product in sensor field). |




| ITEM | QTY | PART NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 2 | 092043-000 | "T" CLAMP, 1/2 BORE |
| 2 | 1 | 202192-003 | SENSOR |
| 3 | 1 | 203160-000 | REFLECTOR |
| 4 | 1 | A24279-000 | REFLECTOR MTG. SHAFT |
| 5 | 1 | A24278-001 | SENSOR MTG. SHAFT |

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| A | 03/11/2008 | NEW DRAWING |

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UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE

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

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

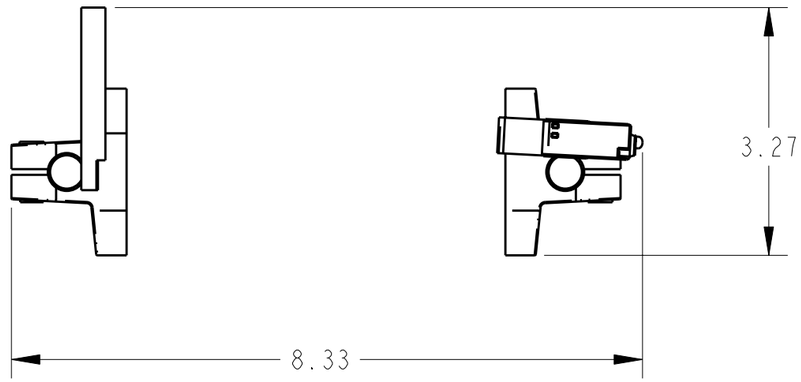
**QUADREL LABELING SYSTEMS**
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(216) 975-0006

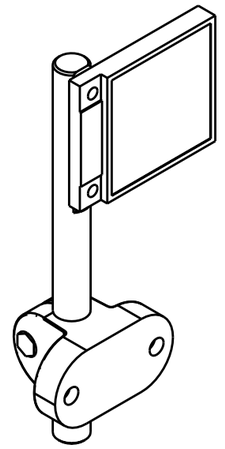
| | |
|---|---|
| SCALE: | 3/4 |
| DATE: | 03/11/2008 |
| DRW BY: | sem |
| CHK BY: | |
| APPR BY: | |

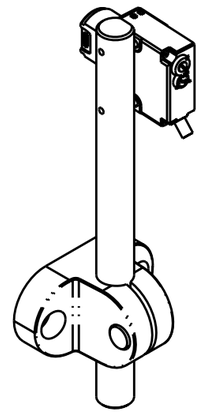
# CONVEYOR MOUNTING PRODUCT DETECT

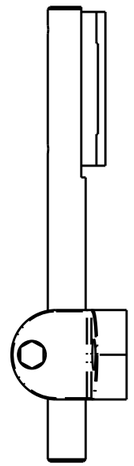
MAT'L

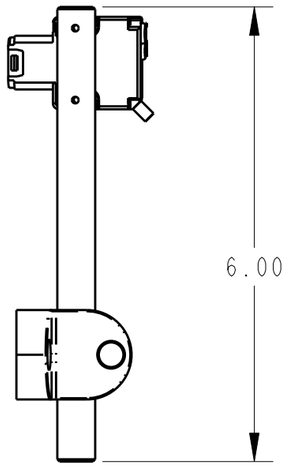
BOM 21679-006

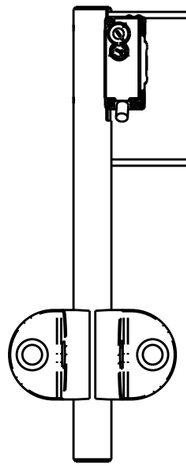








| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| A | 03/11/2008 | NEW DRAWING |

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UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE

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

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

**QUADREL LABELING SYSTEMS**
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(216) 975-0006

| | |
|---|---|
| SCALE: | 1/2 |
| DATE: | 03/11/2008 |
| DRW BY: | SEM |
| CHK BY: | |
| APPR BY: | |

# CONVEYOR MOUNTING PRODUCT DETECT

MAT'L

BOM 21679-006

KEYENCE

96M11227

Self-contained
Photoelectric Sensor

# PZ-G Series
## Instruction Manual

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

### ■ Safety precautions

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

## Precautions on Regulations and Standards

### ■ UL Certificate

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

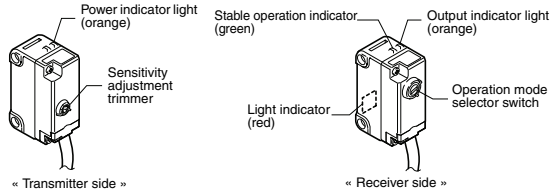
- UL File No. E301717
- Category NRKH,NRKH7
- Enclosure Type 1 (Based on UL50)

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

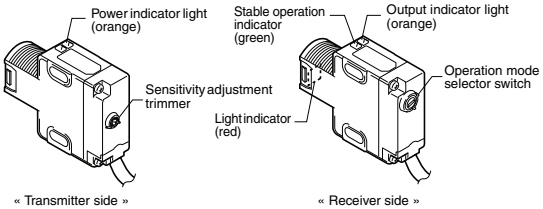
- Use the power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/ Control input/ Control output circuits shall be connected to a single Class 2 source only.
- Use with the over current protection device which is rated 30V or more and not more than 1A.

## Part Names

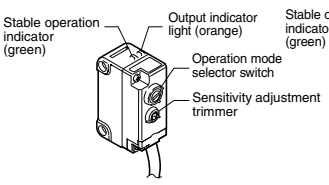
● **PZ-G5xN/G5xP**



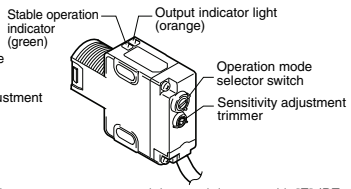

● **PZ-G5xB**




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




● **PZ-G4xB/G10xB/G6xB**

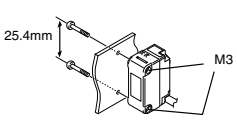



* The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

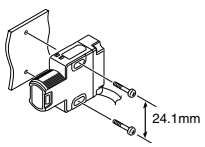
## Mounting Method

### ■ Side Mounting (Prepare M3 screws)

Tightening torque: 0.5 N·m or less

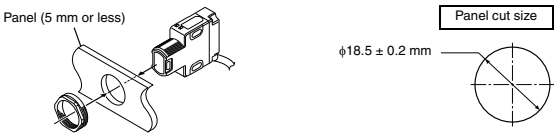



Tightening torque: 0.5 N·m or less




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

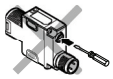
The M18 nut is also available separately as OP-84225 (2 pcs. supplied).
Tightening torque:1.0 N·m or less




**Note**

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

## Sensitivity Adjustment Method

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

### ■ Operation mode selector switch

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

LIGHT-ON setting

DARK-ON setting

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

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

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

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

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

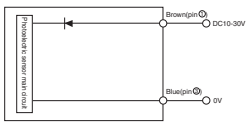
The following assumes DARK-ON (D) is set.

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

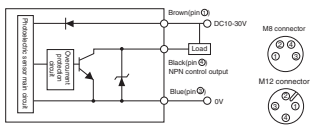
Reference To use the sensor in LIGHT-ON mode, adjust the mode selector switch to "L".

## I/O Circuit Diagram

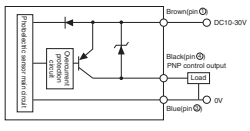
● **PZ-G5xN/G5xP/G5xB (Transmitter side)**



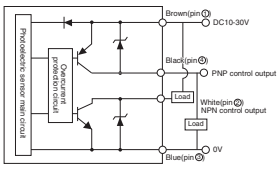

● **PZ-G5xN (Receiver side)/ G4xN/G10xN/G6xN**




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




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



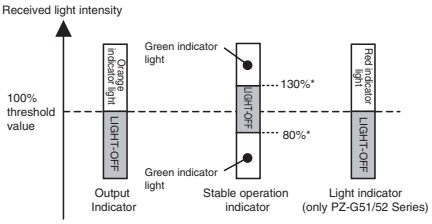

* The pin numbers represent those of the connector type / pigtail quick disconnect type. The model name with "C" (PZ-GxxCx) is the connector type, and the model name with "E" (PZ-GxxEx) is the pigtail quick disconnect type.

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

## ■ Indicators

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

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




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

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

## ■ Mutual interference

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

# Specifications

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

*1 The detection distance is measured with the maximum sensitivity.
*2 The cable for the connector type / pigtail quick disconnect type is sold separately. The reflector for the retro-reflective type is sold separately.

# WARRANTY

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

### 1. WARRANTY PERIOD

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

### 2. WARRANTY SCOPE

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

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

### 3. PRODUCT APPLICABILITY

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

Therefore, our products are not intended for the applications below and are not applicable to them. If, however, the purchaser consults with us in advance regarding the employment of our product, understands the specifications, ratings, and performance of the product on their own responsibility, and takes necessary safety measures, the product may be applied. In this case, the warranty scope shall be the same as above.
- Facilities where the product may greatly affect human life or property, such as nuclear power plants, aviation, railroads, ships, motor vehicles, or medical equipment
- Public utilities such as electricity, gas, or water services
- Usage outdoors, under similar conditions or in similar environments

E 1040-1


## KEYENCE CORPORATION

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



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11227E 1070-1 96M11227
Printed in Japan

**ASSEMBLY TITLE:** **BREAK AWAY STAND WITH HORIZONTAL & VERTICAL ADJUSTMENT**

**DRAWING NO.:**

## GENERAL FUNCTION:

- Provides solid mounting for labeling head if not installed on a system that allows for vertical and horizontal adjustment.
- Allows for vertical assembly to rotate 360° in the event of incorrect setup or an electrical failure to the labeling head that prohibits typical operation.
- Minimizes possible damage to the labeling head.

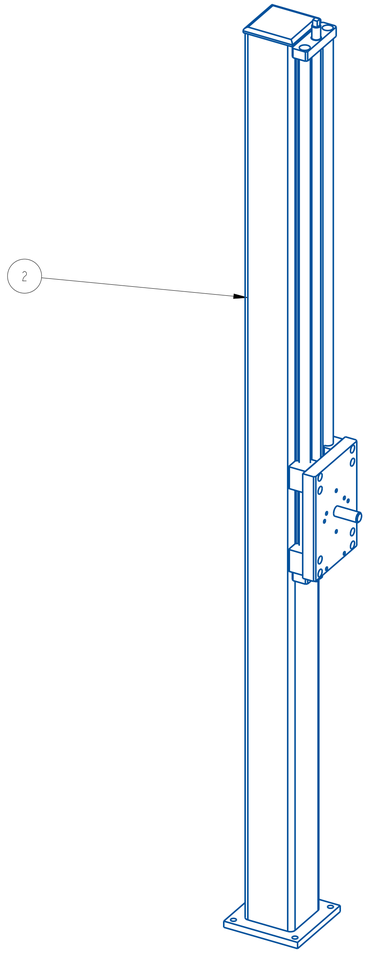
## SET-UP AND ADJUSTMENTS:

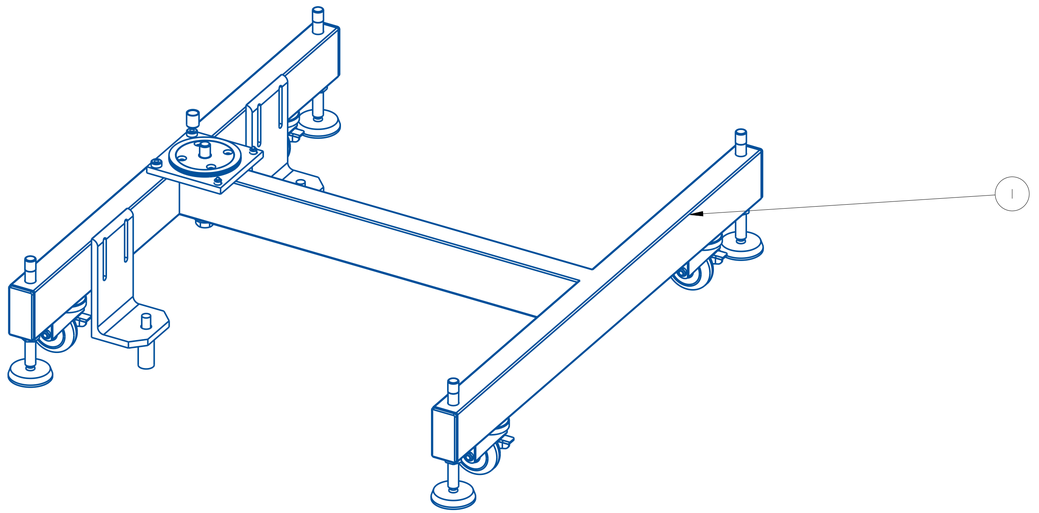
- Rotate leveling pads to appropriate position. Secure locknut when proper height is achieved.
- Using ratchet handle, adjust labeling head vertical and horizontal positon. The pallet arm will need to be in the extended position in order to achieve correct loction.
- Friction pads and or spring plungers may need to rotated out slightly to apply more resitstance to rotation feature. Both adjust from bottom of horizontal sled, the spring plungers will require a flat blade screw driver and the friction pad will require an allen key.

## MAINTENANCE:

- Replace friction pads (apply a thread locker to pads) and spring plungers as required.

| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 1 | 22880-000 | H-BASE W/BREAKAWAY | 22887-072 |
| 2 | 1 | 21628V-072_33-00 | VERTICAL STAND FOR BREAKAWAY | 22887-072 |




SHEET 1 OF 2

| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | Apr-15-25 | NEW DRAWING | RDL |

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

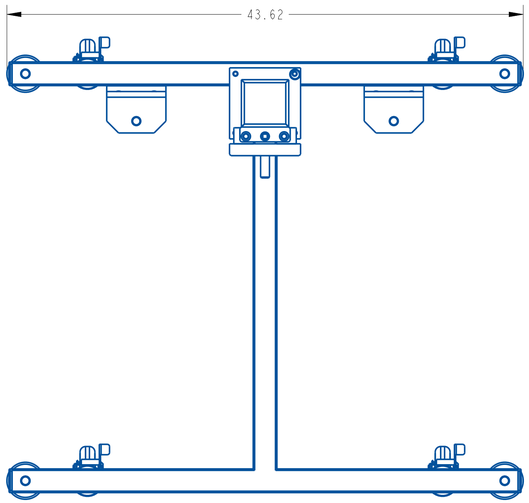
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

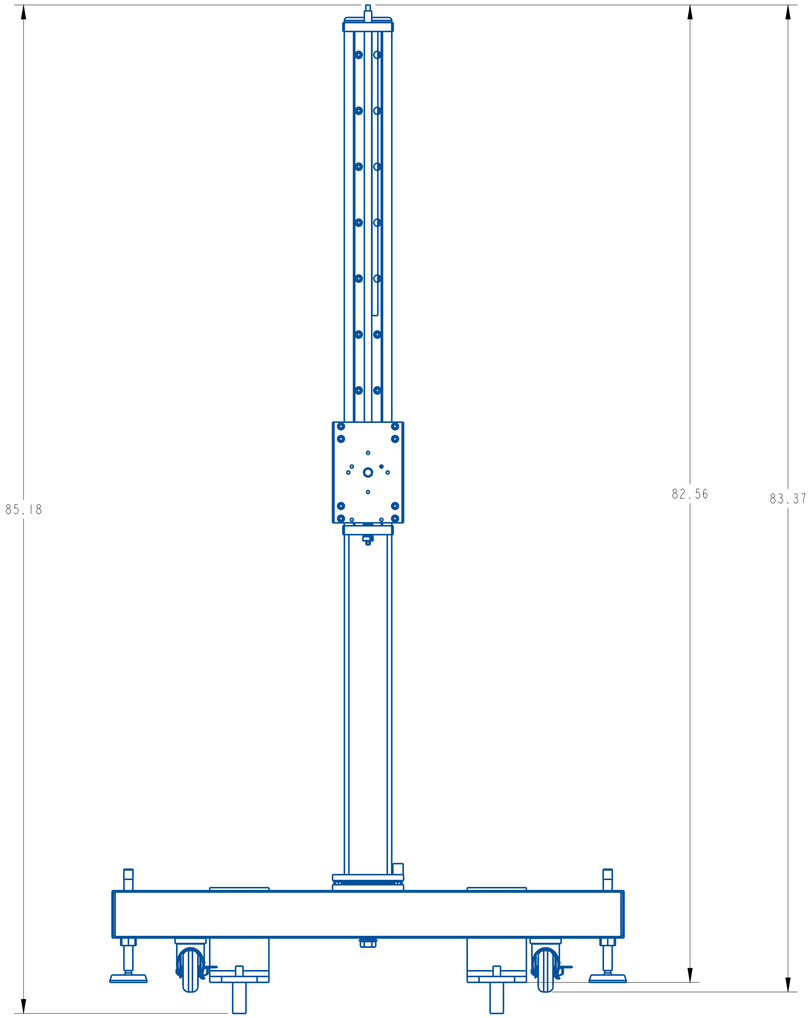
SCALE: 3/16
DATE: Apr-15-25
DRW BY: RDL
CHK BY:04/16/2025-SEM
APPR BY:

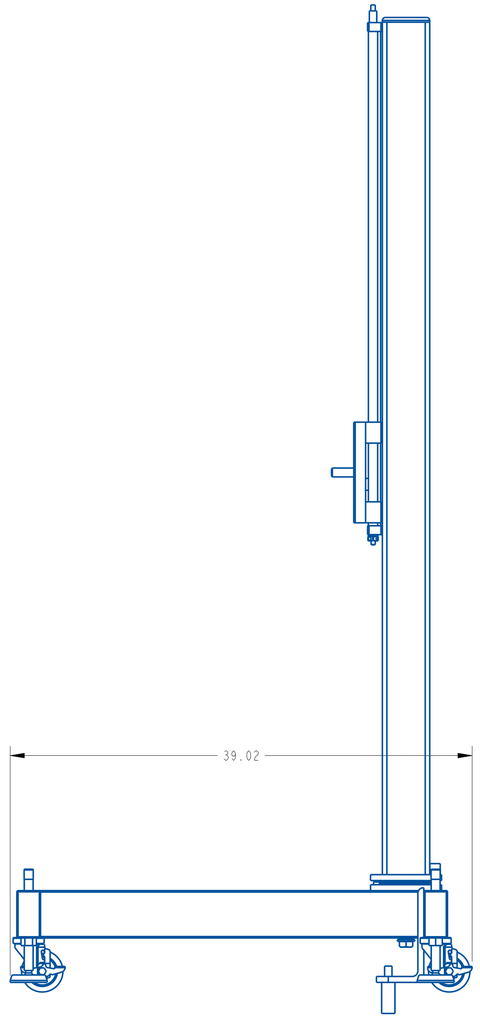
H-BASE, BREAK-AWAY STAND, 72"

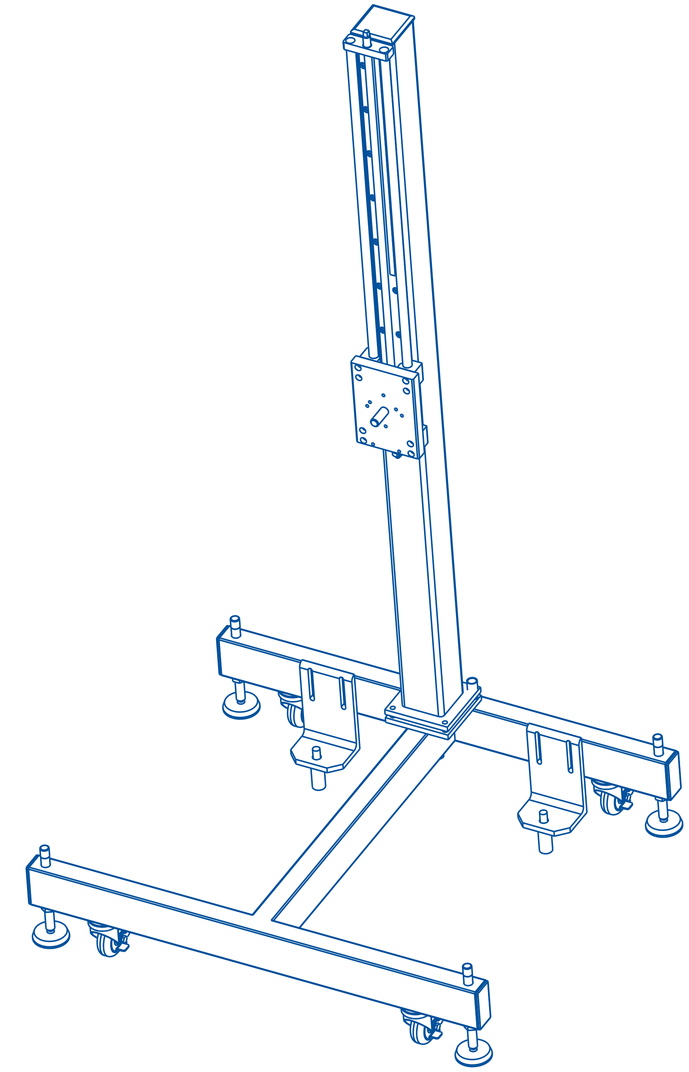
MAT'L

22887-072



| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | Apr-15-25 | NEW DRAWING | RDL |

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

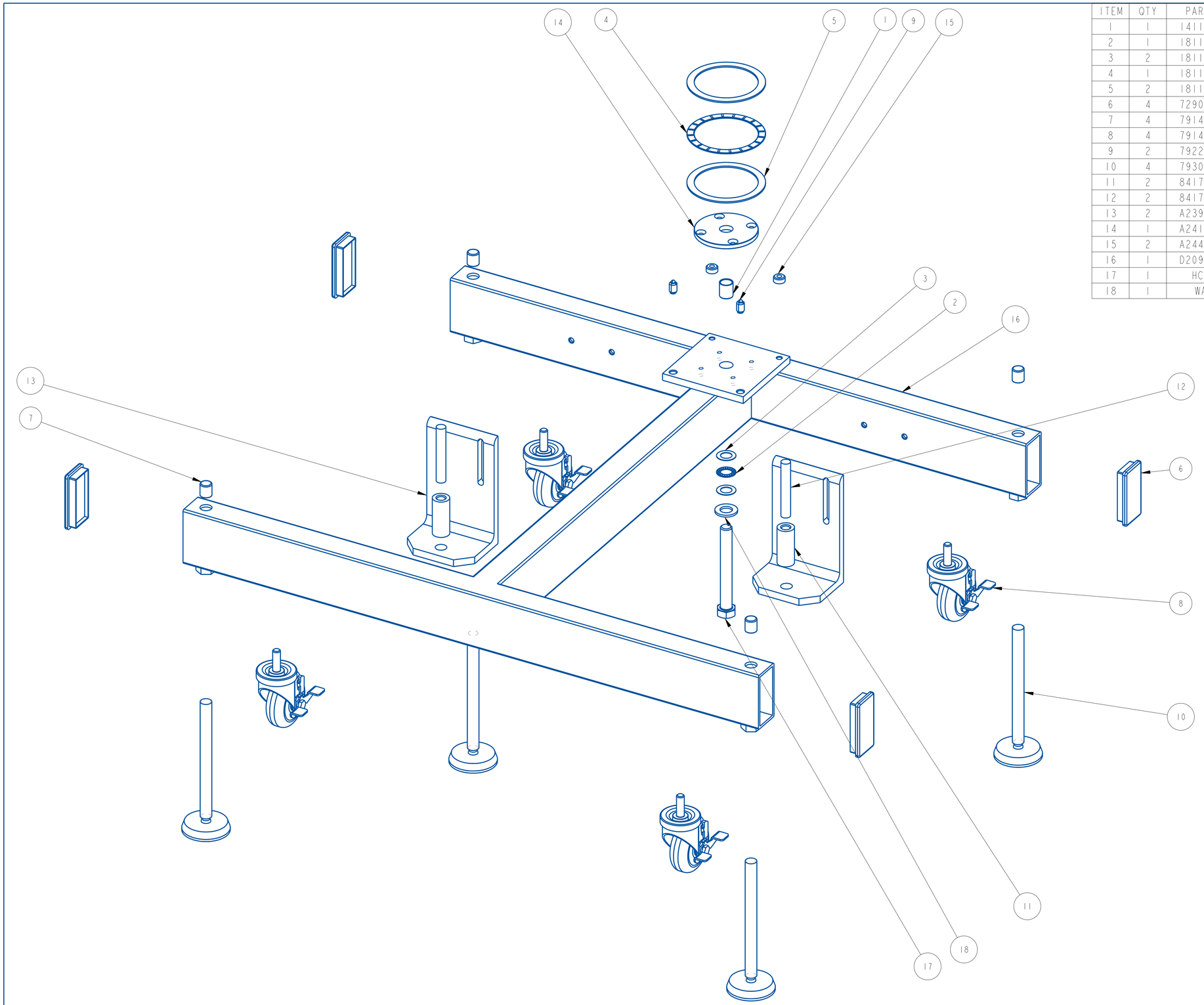
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

| | |
|---|---|
| SCALE: | 5/32 |
| DATE: | Apr-15-25 |
| DRW BY: | RDL |
| CHK BY: | 04/16/2025-SEM |
| APPR BY: | |

H-BASE, BREAK-AWAY STAND, 72"

MAT'L

22887-072




| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 1 | 141188-000 | BEARING, SLEEVE | 22880-000 |
| 2 | 1 | 181145-000 | BEARING, NEEDLE ROLLER | 22880-000 |
| 3 | 2 | 181146-000 | BEARING, THRUST WASHER | 22880-000 |
| 4 | 1 | 181151-000 | BEARING, NEEDLE ROLLER | 22880-000 |
| 5 | 2 | 181152-000 | BEARING, THRUST WASHER | 22880-000 |
| 6 | 4 | 729006-000 | CAP INSERT FOR 2 X 4 TUBE | 22880-000 |
| 7 | 4 | 791436-000 | CAP, 3/4" HIGH X 5/8" I.D. | 22880-000 |
| 8 | 4 | 791449-000 | SWIVEL CASTER | 22880-000 |
| 9 | 2 | 792259-000 | SPRING PLUNGER | 22880-000 |
| 10 | 4 | 793020-000 | LEVELING MOUNT | 22880-000 |
| 11 | 2 | 841796-000 | ANCHOR | 22880-000 |
| 12 | 2 | 841797-000 | STUD | 22880-000 |
| 13 | 2 | A23979-000 | LAG BRACKET | 22880-000 |
| 14 | 1 | A24185-002 | SWIVEL SHAFT | 22880-000 |
| 15 | 2 | A24400-000 | FRICTION PAD | 22880-000 |
| 16 | 1 | D20900-000 | CUSTOM H-BASE | 22880-000 |
| 17 | 1 | HCS296 | | 22880-000 |
| 18 | 1 | WA023 | | 22880-000 |



| REV | DATE | DESCRIPTION | BY |
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| A | 10/03/24 | NEW DRAWING | SEM |

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

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

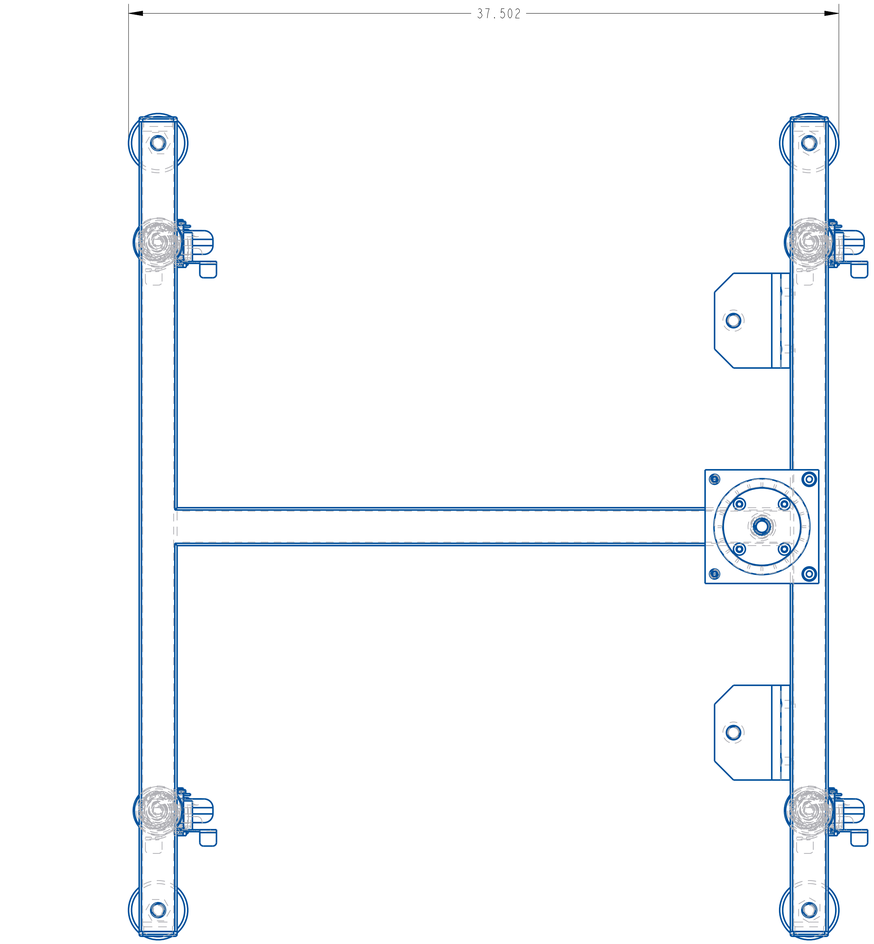
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

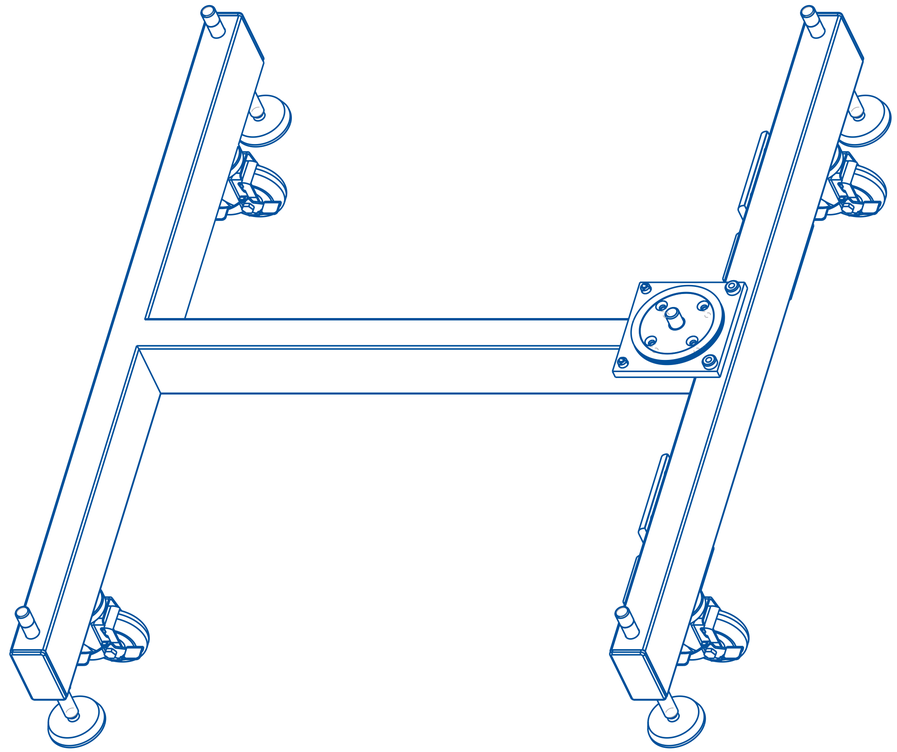
SCALE: 5/16
DATE: 10/03/24
DRW BY: SEM
CHK BY: 10/03/2024-SEM
APPR BY:

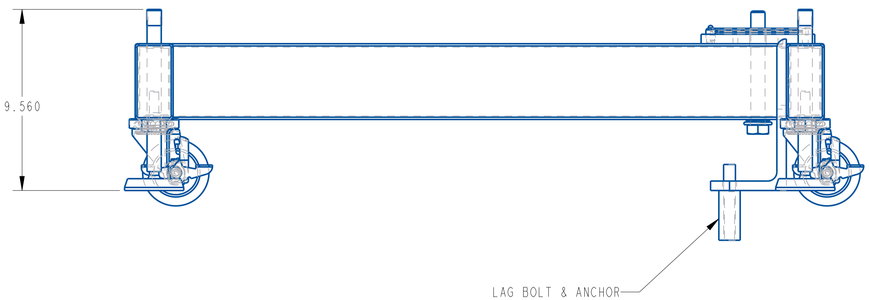
H-BASE W/BREAKAWAY

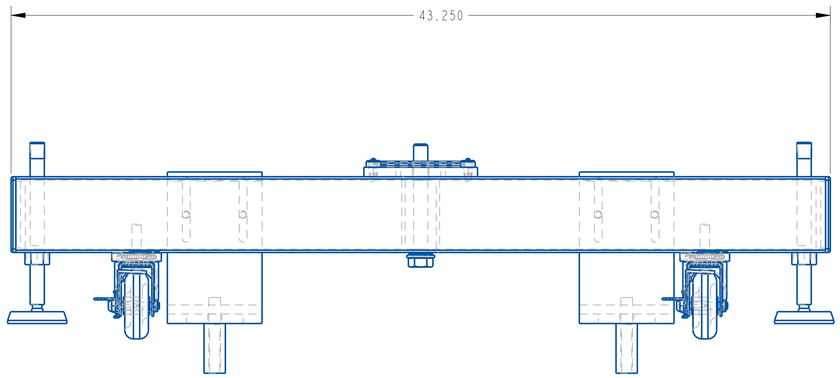
MAT'L

22880-000






| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 10/03/24 | NEW DRAWING | SEM |

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

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

SCALE: 1/4
DATE: 10/03/24
DRW BY: SEM
CHK BY:10/03/2024-SEM
APPR BY:

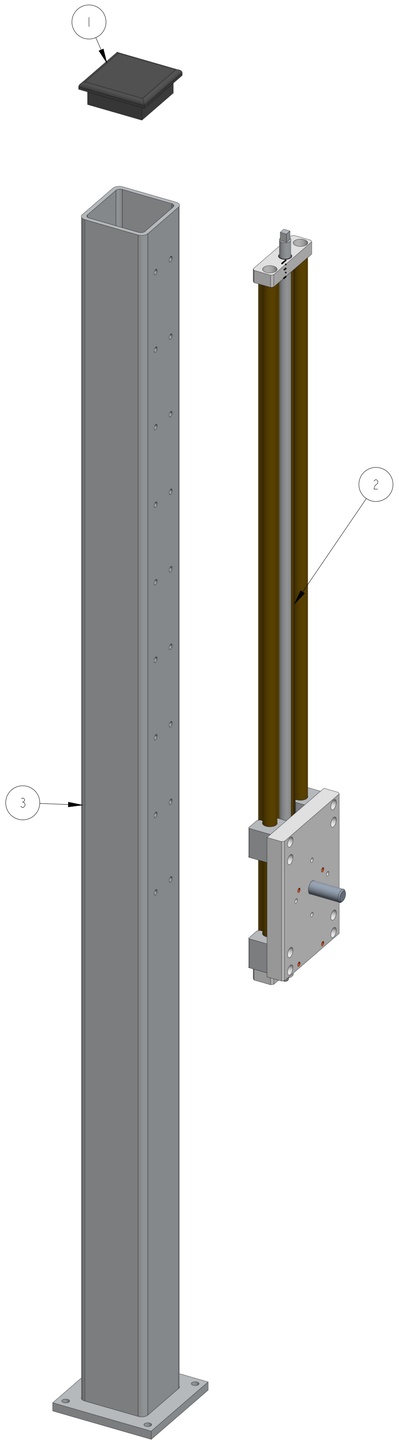
H-BASE W/BREAKAWAY

MAT'L 22880-000

22880-000

SHEET 2 OF 2

| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 1 | 792065-000 | CAP INSERT FOR 4X4 TUBE (1/4WALL) | 21628V-072_33-00 |
| 2 | 1 | 21628S-000_33 | VERTICAL ADJUST ASSEMBLY W/ IGUS | 21628V-072_33-00 |
| 3 | 1 | D21019-011 | VERTICAL RISER | 21628V-072_33-00 |




| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | Apr-15-25 | NEW DRAWING | RDL |

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

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

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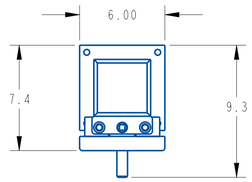
(440) 602-4700

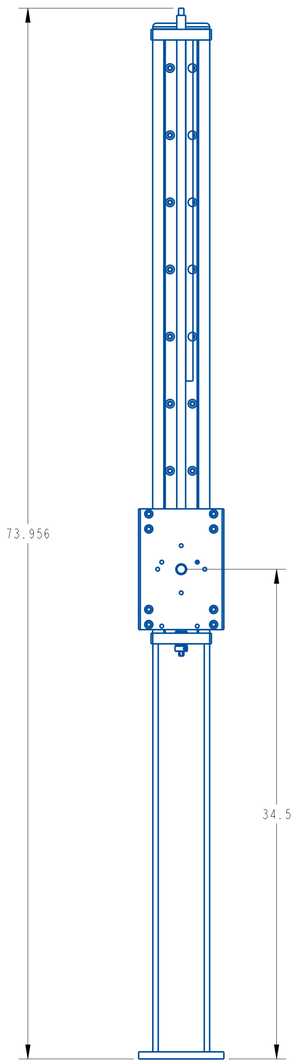
SCALE: 1/4
DATE: Apr-15-25
DRW BY: RDL
CHK BY: 10/03/2024-SEM
APPR BY:

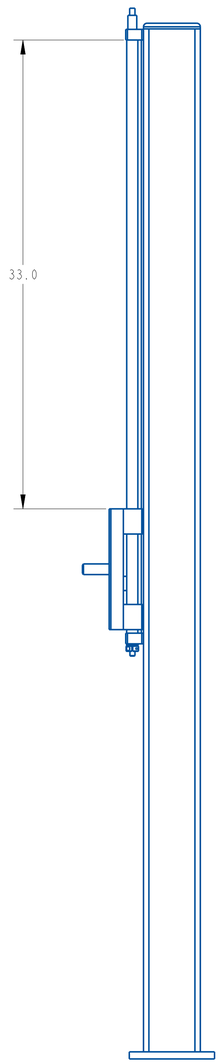
VERTICAL STAND FOR BREAKAWAY

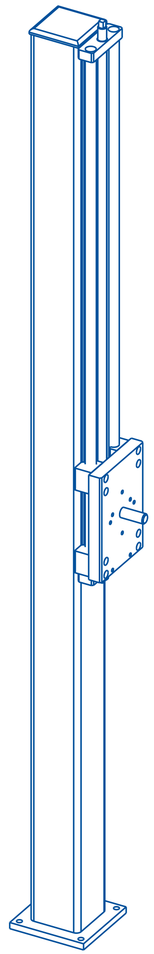
MAT'L

21628V-072



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| A | Apr-15-25 | NEW DRAWING | RDL |

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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
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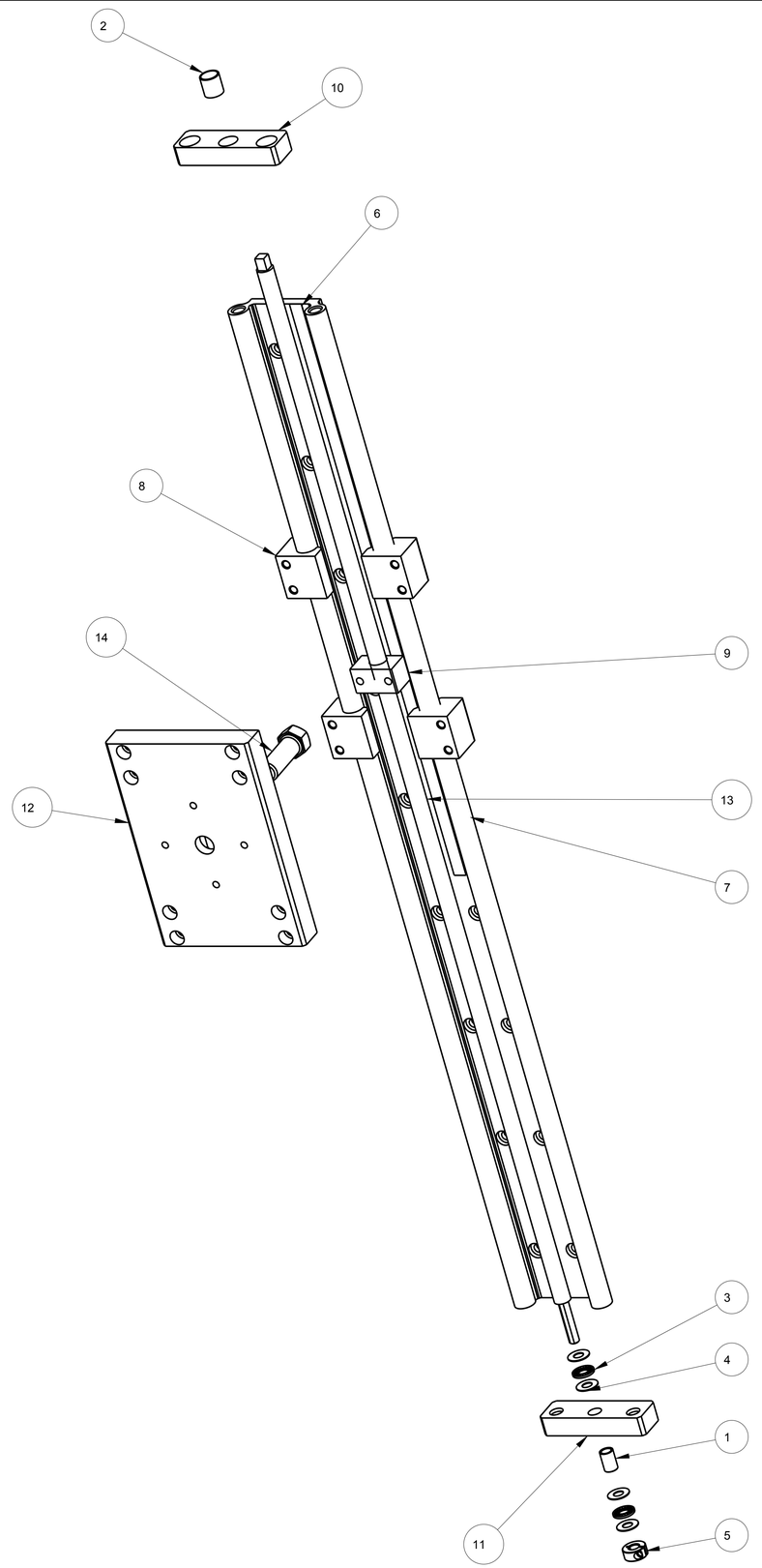
SCALE: 3/16
DATE: Apr-15-25
DRW BY: RDL
CHK BY: 10/03/2024-SEM
APPR BY:

VERTICAL STAND FOR BREAKAWAY

MAT'L

21628V-072




| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 1 | 141172-000 | SLEEVE BEARING | 21628S-000 |
| 2 | 1 | 141173-000 | SLEEVE BEARING-5/8 O.D. X .75 LG. | 21628S-000 |
| 3 | 2 | 181108-000 | BEARING, NEEDLE ROLLER | 21628S-000 |
| 4 | 4 | 181111-000 | THRUST WASHER | 21628S-000 |
| 5 | 1 | 362186-000 | COLLAR, 3/8 IN. ID ONE-PIECE CLAMP | 21628S-000 |
| 6 | 1 | 791914-001 | MYLAR SCALE, QUADREL LOGO | 21628S-000 |
| 7 | 1 | 792247-000 | DRYLIN RAIL | 21628S-000 |
| 8 | 4 | 792248-000 | PILLOW BLOCK | 21628S-000 |
| 9 | 1 | A24077-000 | BRONZE NUT, RH | 21628S-000 |
| 10 | 1 | B21345-000 | TOP BEARING PLATE | 21628S-000 |
| 11 | 1 | B21346-000 | BOTTOM BEARING PLATE | 21628S-000 |
| 12 | 1 | C20626-000 | STAND SLED | 21628S-000 |
| 13 | 1 | C20835-000 | THREADED ROD, SQUARE END | 21628S-000 |
| 14 | 1 | HCS281 | 3/4-10 X 2-1/4 LG. HEX HEAD BOLT | 21628S-000 |



| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | Nov-22-17 | NEW DRAWING | CRT |

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

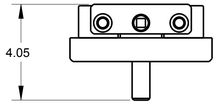
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

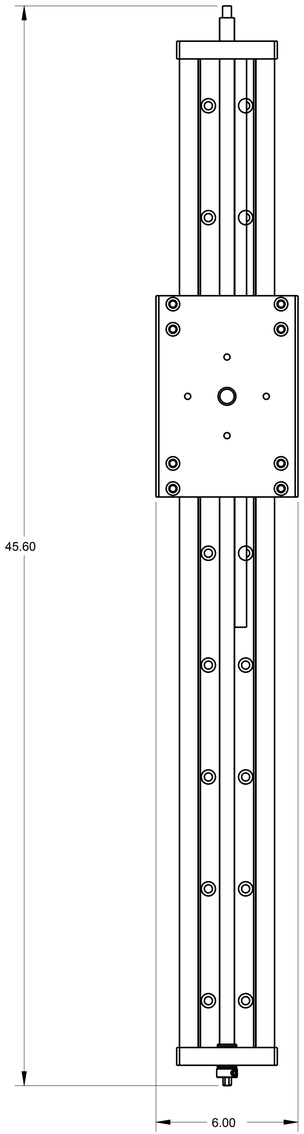
| | |
|---|---|
| SCALE | 3/8 |
| DATE | Nov-22-17 |
| DRAWN BY | CRT |

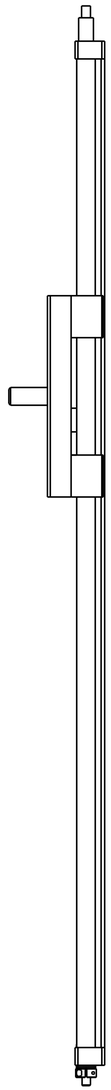
VERTICAL ADJUST ASSEMBLY W/ IGUS

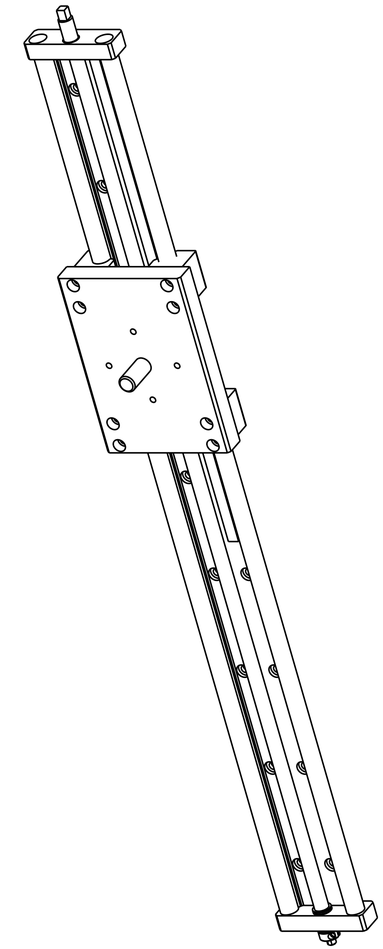
MAT'L 21628S-000

21628S-000





| | | | |
|---|---|---|---|
| | | | |
| | | | |
| A | Nov-22-17 | NEW DRAWING | CRT |
| REV | DATE | DESCRIPTION | BY |

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

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

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

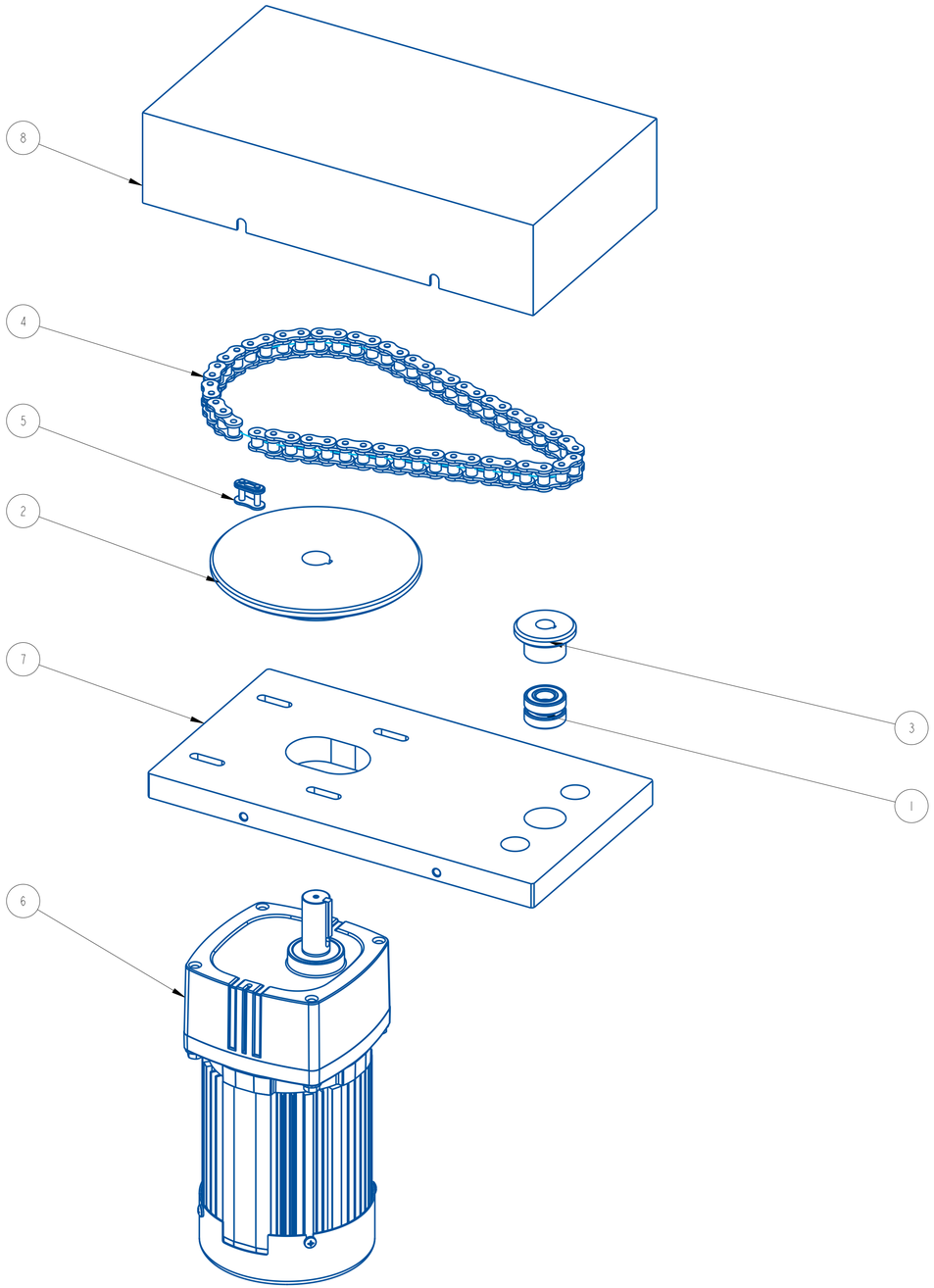
| | |
|---|---|
| SCALE | 5/16 |
| DATE | Nov-22-17 |
| DRAWN BY | CRT |

VERTICAL ADJUST ASSEMBLY W/ IGUS

MAT'L 21628S-000

21628S-000

| ITEM | QTY | PART NO. | DESCRIPTION | PARENT ITEM |
|---|---|---|---|---|
| 1 | 2 | 111072-000 | BEARING, BALL | 22667-000 |
| 2 | 1 | 322180-001 | SPROCKET | 22667-000 |
| 3 | 1 | 322193-001 | SPROCKET | 22667-000 |
| 4 | 1 | 361127-000_82719 | ROLLER CHAIN, 1/2" PITCH 44 LINKS | 22667-000 |
| 5 | 1 | 361127-001 | MASTER LINK, 1/2" PITCH | 22667-000 |
| 6 | 1 | 413006-000 | GEARMOTOR, 3/8HP 85RPM 230VAC | 22667-000 |
| 7 | 1 | B22609-003 | MOTOR MOUNTING PLATE | 22667-000 |
| 8 | 1 | B22610-003 | GUARD | 22667-000 |




| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | Apr-11-25 | NEW DRAWING | RDL |

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

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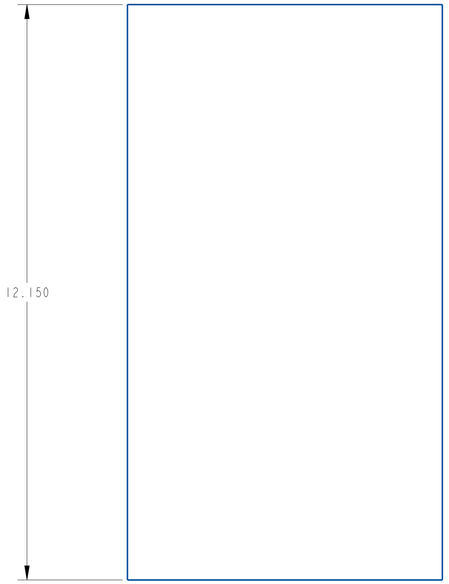
(440) 602-4700

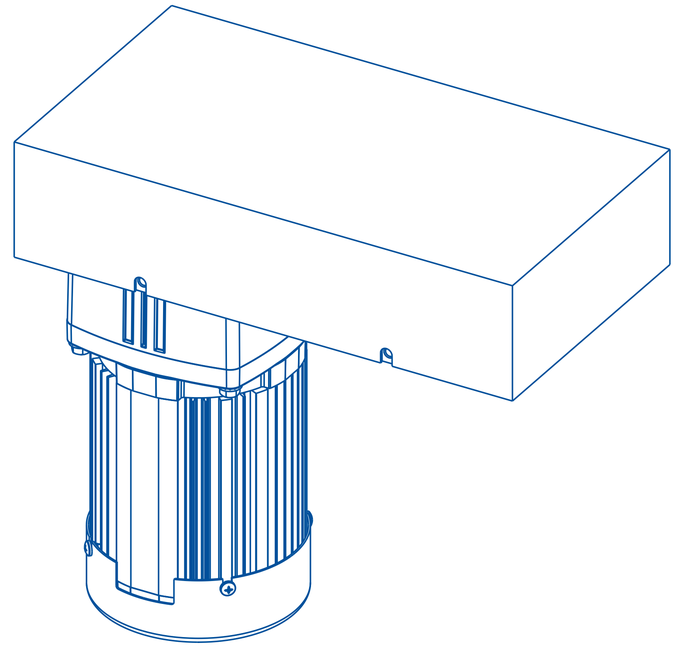
SCALE: 1/2
DATE: Apr-11-25
DRW BY: RDL
CHK BY:04/16/2025-SEM
APPR BY:

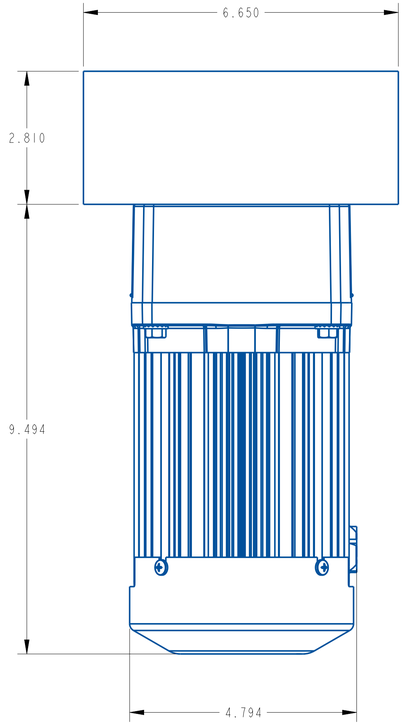
MOTORIZED LIFT

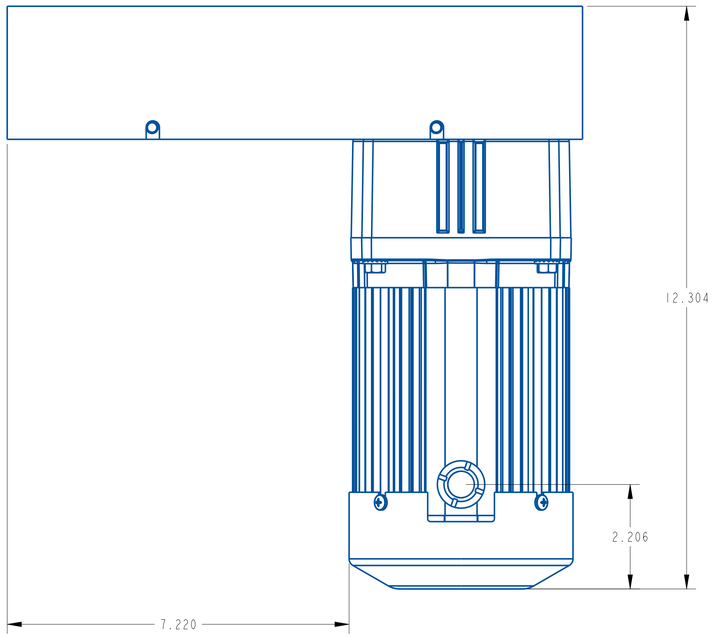
MAT'L

22667-000






| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | Apr-11-25 | NEW DRAWING | RDL |

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

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

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

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

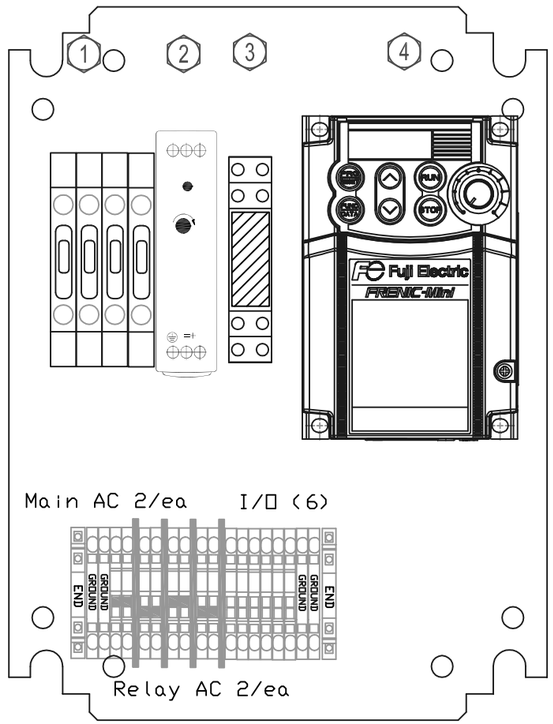
SCALE: 5/8
DATE: Apr-11-25
DRW BY: RDL
CHK BY:04/16/2025-SEM
APPR BY:

MOTORIZED LIFT

MAT'L

22667-000

# Schematics




| | | | |
|---|---|---|---|
| -- | 241069-000 | 2 | Fuse, 8A, 1.25 x .25 |
| -- | 241060-000 | 2 | Fuse, 5A, 1.25 x .25 |
| -- | B22502-010E | 1 | Enclosure Modification |
| -- | B22502-010P | 1 | Panel Modification |
| -- | 221125-001 | 1 | Enclosure, 12x10x6 |
| 4 | 411458-007 | 1 | AC Drive, Fuji Mini, 120V, 1/2 HP 2.5A |
| 4 | 411458-000 | 1 | AC Drive, Fuji Mini, 220V, 1/2 HP 2.5A |
| 3 | 202626-000 | 1 | Relay, 24V, DPDT |
| 2 | 211536-001 | 1 | Mean Well MDR-20-24 Power Supply, 24V, 1A |
| 1 | 251788-001 | 4 | Fuse Holder, 1.25 x .25 |

UNLESS OTHERWISE SPECIFIED
DIMENSIONAL TOLERANCE
.X ± .XTOL
.XX ± .XXTOL
.XXX ± .XXXTOL
ANGLES ± ANGTOL
SURFACE FINISH FINISHTOL
BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

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

SCALE: 1:1
DATE: 19APR2024
DRAWN BY: CAV
REVISED:

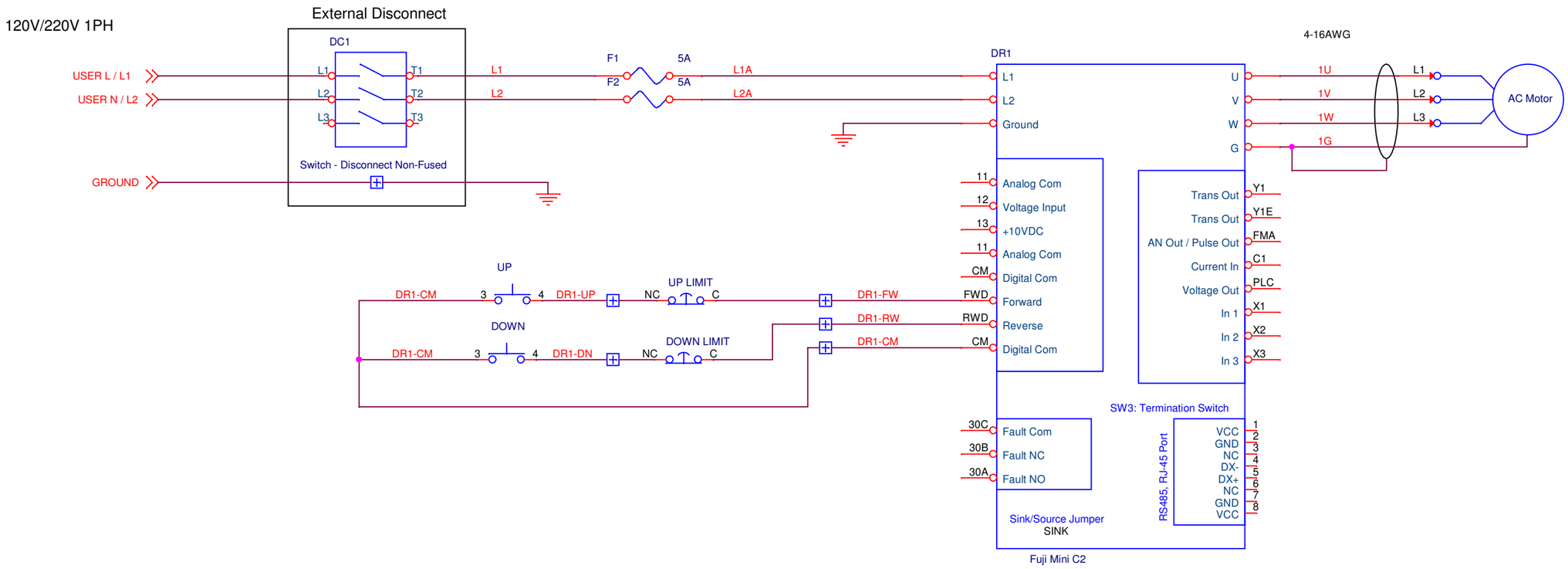
Panel, Modified
Single Drive Enclosure

MAT'L
QLS 221125-001

B22502-010P

Wiring:
AC: 14AWG Black
+VDC / Signals: 18AWG Blue
-VDC: 18AWG White/Blue

# SB5172-001




Setup Sheet for Motorized Stand: Fuji_Mini_Lifts_v000

| | | | | |
|---|---|---|---|---|
| QUADREL LABELING SYSTEMS<br>7670 JENTHER DR.<br>MENTOR, OH<br>44060<br>Drawn By: CAV | | | | |
| | A | Fuji Drive | CAV | 11APR2025 |
| | - | Release | GW | 07MAR2019 |
| | REV | DESCRIPTION | BY | DATE |

Title: MOTORIZED STAND

Schematic # SB5172-001 Rev A

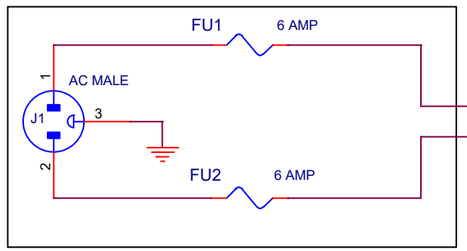
Date: Friday, April 11, 2025 Sheet 1 of 1

# Q34 with AB Micro 800 series and 4" Touch Screen

Main AC
Page 1

AC Wiring:
L1/L: 18AWG Black
L2/N: 18AWG White

Q34 FUSED POWER RECEPTACLE




MAIN AC TERMINALS: 2/EA

L1
L2

LF1
LINE-L1 LOAD-L1
GND
LINE-L2 LOAD-L2
FILTER 6A

1L1
1L2

FU3 1 AMP
FU4 1 AMP

2L1
2L2

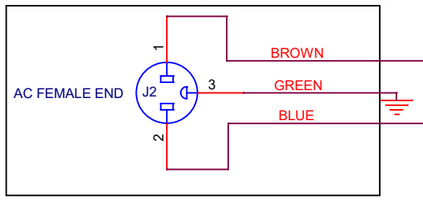
PS1
L
N
GND
24VDC V+
0VDC V-
POWER SUPPLY 24VDC 1A

24VDC
0VDC

DC Wiring:
+V / Signals: 20AWG Blue
0VDC: 20AWG Blue / White

AC Wiring:
L1/L: 18AWG Black
L2/N: 18AWG White

PRINTER POWER CORD (SUPPLIED W/PRINTER)




L1
L2

FU5 4 AMP
3L2

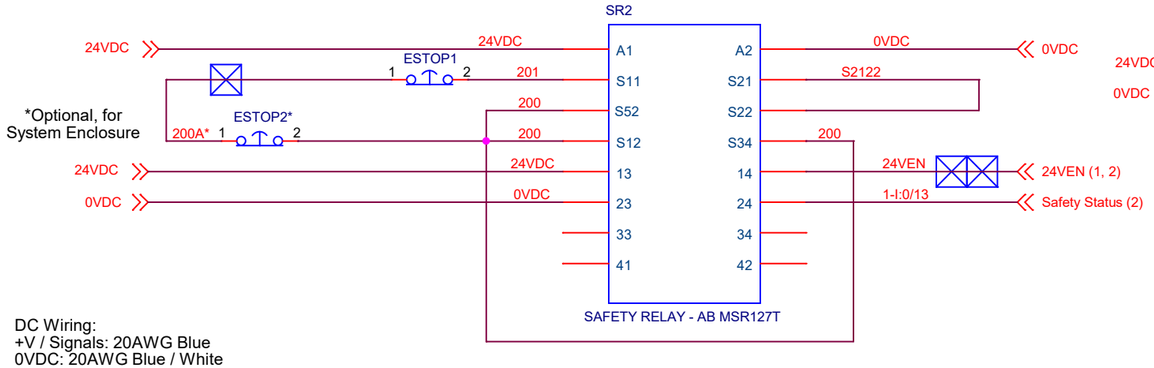
FU6 4 AMP
3L1

CR1
14
11
1
2
3T1

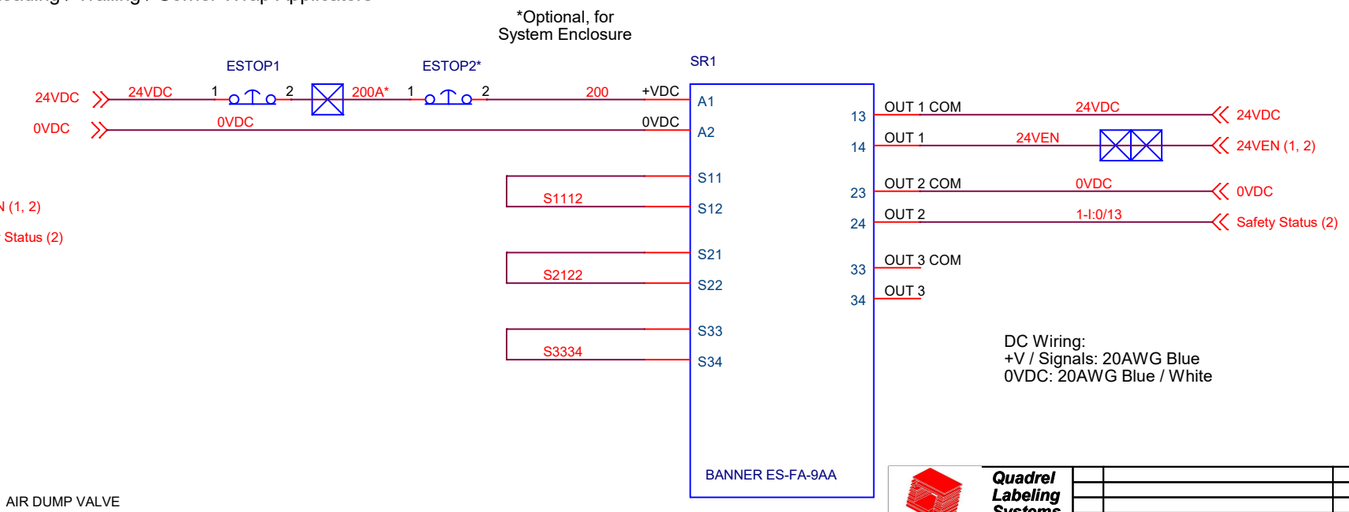
M1
REWIND MOTOR

Rewind Enable (2)
1-O:0/01
CR1
A1+
A2-
COIL
0VDC
0VDC

## Safety Relay Options for Leading / Trailing / Corner Wrap Applicators




DC Wiring:
+V / Signals: 20AWG Blue
0VDC: 20AWG Blue / White

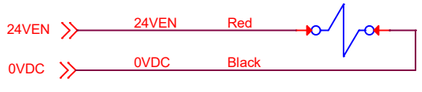



DC Wiring:
+V / Signals: 20AWG Blue
0VDC: 20AWG Blue / White

| COLOR | TECHNICIAN | DATE |
|---|---|---|
| | | |
| | | |
| | | |

For Quadrel Assembly Use

AIR DUMP VALVE





Quadrel Labeling Systems
7670 Jenther Dr.
Mentor, Ohio 44060
Drawn By: CAV


| REV | DESCRIPTION | BY | DATE |
|---|---|---|---|
| A | Updated to Micro 800 Series & Safety | CAV | 15NOV17 |

Title: Main Power

Size | Document Number: SD22600-000 | Rev: A

Date: Thursday, April 07, 2022 | Sheet 1 of 3

All Inputs: NPN / SINKING

24VDC, 0VDC, and 24VEN's can be Jumped on Multiple Terminals

Micro 830 Wiring is the same, but uses a Serial Cable instead of Ethernet

PLC - AB Micro850 2080LC5024QBB

Zip Port Group

Printer Group

| | | | |
|---|---|---|---|
| 24VDC | 24VDC | COM0 | |
| Product Detect | 1-I:0/00 | I-00 | |
| Tamp Home | 1-I:0/01 | I-01 | |
| Smart Tamp | 1-I:0/02 | I-02 | |
| Low Label | 1-I:0/03 | I-03 | |
| Swing Home | 1-I:0/04 | I-04 | |
| Product Presence | 1-I:0/05 | I-05 | |
| End Print (3) | 1-I:0/06 | I-06 | |
| Low Ribbon (3) | 1-I:0/07 | I-07 | |
| 24VDC | 24VDC | COM1 | |
| Ribbon Out (3) | 1-I:0/08 | I-08 | |
| Label Out (3) | 1-I:0/09 | I-09 | |
| Printer Status (3) | 1-I:0/10 | I-10 | |
| Printer Data Ready (3) | 1-I:0/11 | I-11 | |
| | | I-12 | |
| Safety Status (1)* | 1-I:0/13 | I-13 | |

INPUTS

| | | |
|---|---|---|
| +DC24 | 24VDC | 24VDC |
| -DC24 | 0VDC | 0VDC |
| +CM0 | 24VDC* | 24VDC |
| O-00 | 1-O:0/00 | Print Out (3) |
| O-01 | 1-O:0/01 | Rewind Enable (1) |
| -CM0 | 0VDC | 0VDC |
| +CM1 | 24VDC | 24VDC |
| O-02 | 1-O:0/02 | Swing Cylinder |
| O-03 | 1-O:0/03 | Vacuum Enable |
| O-04 | 1-O:0/04 | Air Assist |
| O-05 | 1-O:0/05 | Air Blast |
| O-06 | 1-O:0/06 | Tamp Cylinder |
| O-07 | 1-O:0/07 | Green Lamp |
| O-08 | 1-O:0/08 | Amber Lamp |
| O-09 | 1-O:0/09 | Red Lamp |
| -CM1 | 0VDC | 0VDC |

OUTPUTS

*If Safety Relay Installed, Use 24VEN from Page 1

Solenoid Group

PLC Output — Red
0VDC — 0VDC — Black

Stack Lamp Common: 0VDC
Buzzer option : Connect to Red Lamp

*If Safety Relay installed.
If NOT Installed, jump input to 0VDC

24VDC, 0VDC, and 24VEN's can be Jumped on Multiple Terminals

Ethernet

192.168.102.11

192.168.102.15

HMI1

ETHERNET

+VDC — 24VDC
COM — 0VDC
GROUND

All Inputs: NPN / SINKING

8-22AWG

ZIP Port

| | | |
|---|---|---|
| 6 | 1-I:0/05 | Product Present |
| 5 | 1-I:0/04 | Swing Home |
| 4 | 1-I:0/03 | Low Label |
| 3 | 1-I:0/02 | Smart Tamp |
| 2 | 1-I:0/01 | Tamp Home |
| 1 | 1-I:0/00 | Product Detect (Set for Dark Operate) |
| - | 0VDC | 0VDC |
| GND | | |
| + | 24VDC | 24VDC |

Product Preset and Swing Home for Leading / Trailing / Corner Wrap Applicators

| COLOR | TECHNICIAN | DATE |
|---|---|---|
| | | |
| | | |
| | | |

For Quadrel Assembly Use

Product Detect PZ-M31 - "Dark Operate"

M12 4P Male Connector

| | |
|---|---|
| BROWN 24VDC | 1 |
| PINK 24VDC | 2 |
| BLUE 0VDC | 3 |
| BLACK SIGNAL | 4 |

Typical Sensor Wiring Example

M12 4P Male Connector

| | |
|---|---|
| BROWN 24VDC | 1 |
| | 2 |
| BLUE 0VDC | 3 |
| BLACK SIGNAL | 4 |

Quadrel Labeling Systems
7670 Jenther Dr.
Mentor, Ohio 44060

Drawn By: CAV

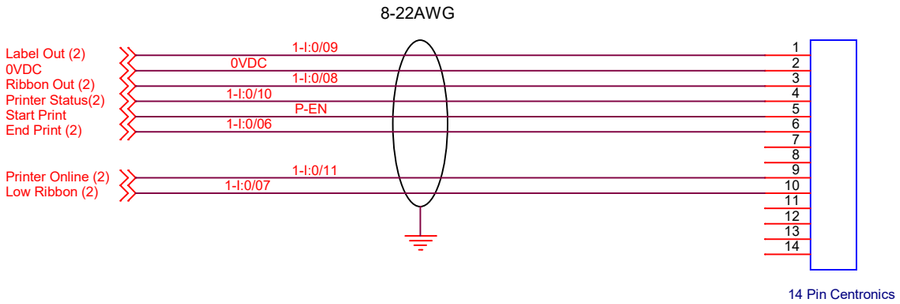
| REV | DESCRIPTION | BY | DATE |
|---|---|---|---|
| A | Updated to Micro 800 Series & Safety | CAV | 15NOV17 |

Title: PLC, Sensors

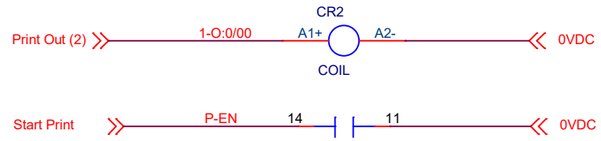
Size | Document Number: SD22600-000 | Rev: A

Date: Thursday, April 07, 2022 | Sheet 2 of 3

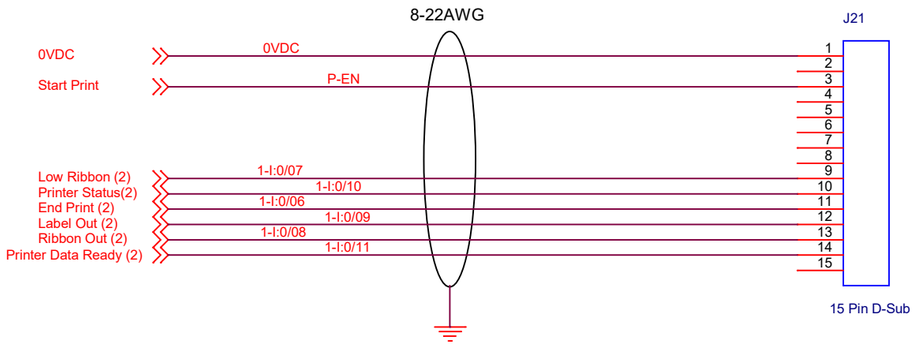
# Printer Interface, Expansion Option Page 3



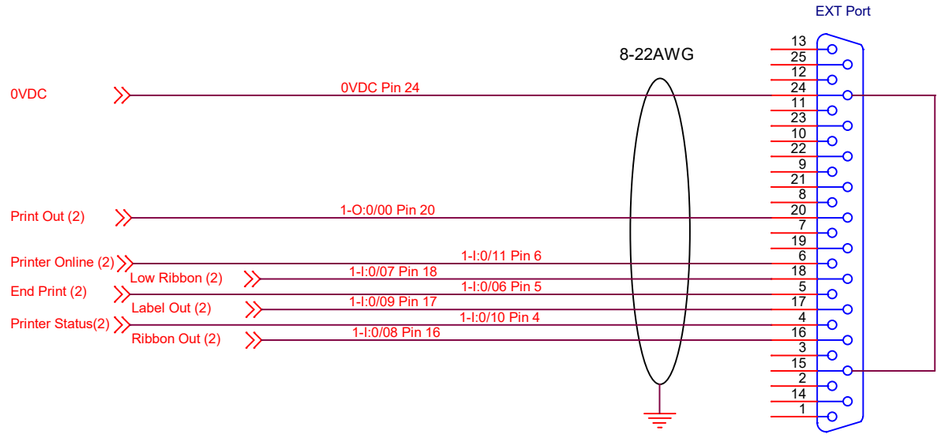

## Sato 8424, 8485, 8490



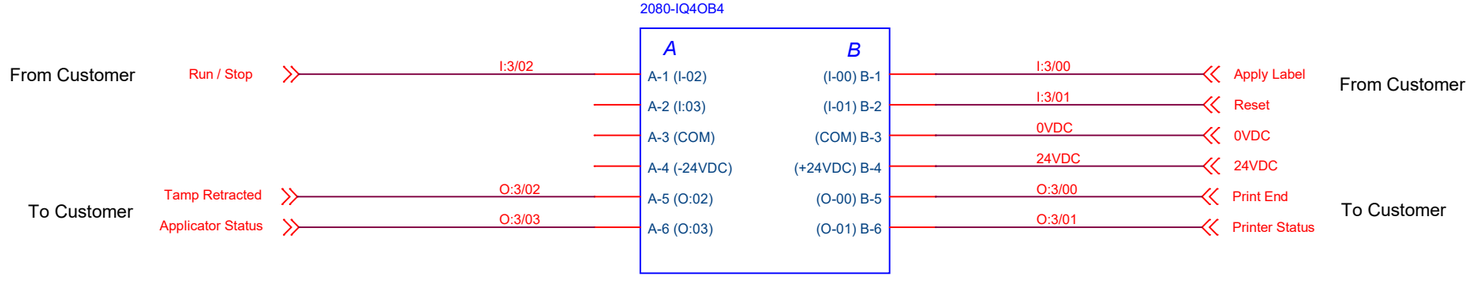

## Start Print Signal (excluding S86ex)




## Zebra 170 / 500




## Sato 86ex / 84ex




| COLOR | TECHNICIAN | DATE |
|---|---|---|
| | | |
| | | |
| | | |

For Quadrel Assembly Use

**Quadrel Labeling Systems**
7670 Jenther Dr.
Mentor, Ohio 44060
Drawn By: CAV

| REV | DESCRIPTION | BY | DATE |
|---|---|---|---|
| A | Updated to Micro 800 Series & Safety | CAV | 15NOV17 |

Title: **Printer Interface**

Size | Document Number: ***SD22600-000*** | Rev: A

Date: Thursday, April 07, 2022 | Sheet 3 of 3

INDENTED BILL OF MATERIAL

Items: 22635FL-000 Thru 22635FL-000 Location: 01 QUADREL WHSE
Activity Codes: Active Items Only
1 Levels With No Blow Through
No Selection On Basis Of Effectivity Date No Selection On Basis Of Obsolete Date

| Level | Seq | Component-Item | Component-Description | Loc | Opr LLC | UOM Draw | Scrap REV | Act P/M | Stk Ctl | B/I B/F | Qty On-Hand Qty-Allocated | Qty-Per-Parent Qty-On-Order |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parent Item: 22635FL-000 | | | Q105/110 FAULT LAMP PACKAGE SUPERBRIGHT, CONNS, BRACKET | 01 | 2 | | | | | | | |
| 1 | 5 | 203341-010 | STACK LAMP, 24V, R/Y/G/A, DOME | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "SUPERBRIGHTLEDS" | GPI-RYG50-** | 01 | 6 | | | P | Y | N | | |
| 1 | 10 | 251449-000 | CONNECTOR, M12 5P FEMALE | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "LUMBERG" | RKC5/9 **** | 01 | 6 | | | P | Y | N | | |
| 1 | 15 | 251430-000 | CONNECTOR, M12, 5P, MALE | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "LUMBERG" | RSC5/9 **** | 01 | 7 | | | P | Y | N | | |
| 1 | 20 | 201268-007 | BRACKET, MOUNTING, 30mm, 90 | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | "AUTOM DIRECT" | ST30C6W | 01 | 5 | | | P | Y | N | | |

INDENTED BILL OF MATERIAL

Items: 84254-200 Thru 84254-200 Location: 01 QUADREL WHSE
Activity Codes: Active Items Only
2 Levels With No Blow Through
No Selection On Basis Of Effectivity Date No Selection On Basis Of Obsolete Date

| Level | Seq | Component-Item | Component-Description | Loc | Opr LLC | UOM Draw | Scrap REV | Act P/M | Stk Ctl | B/I B/F | Qty On-Hand Qty-Allocated | Qty-Per-Parent Qty-On-Order |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parent Item: 84254-200 | | | SPARE PARTS KIT | Loc: 01 | LLC: 1 | | | | | | | |
| 1 | 5 | SP22600-000 | Q34 SPARE PARTS KIT | | 0 | EA | .0 | A | N | N | | 1.000000 |
| | | | MECHANICAL & ELECTRICAL PARTS | 01 | 2 | | | M | N | N | | |
| 2 | 5 | 412164-000 | MOTOR, SHADED POLE GEARMOTOR** | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | DAYTON, 1MBG6 | 01 | 7 | | | P | Y | N | | |
| 2 | 10 | 392609-000 | VACUUM GENERATOR | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | "SMC" ZH13DS-09-11-11 *** | 01 | 7 | | | P | Y | N | | |
| 2 | 30 | 191658-000 | BELT, TIMING 1/5P 3/8W 10L | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | BROWNING P/N 100XL037 KEVLAR | 01 | 7 | | | P | Y | N | | |
| 2 | 35 | 391191-000 | VALVE, 1/4" TUBING, NPTF | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | "SMC" VQZ2121-5L1-N7T | 01 | 7 | | | P | Y | N | | |
| 2 | 40 | 202628-000 | RELAY, SPDT, 24VDC, 6A, MECHAN | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | "WAGO" 857-304 | 01 | 9 | | | P | Y | N | | |
| 2 | 45 | 241268-000 | FUSE, 2A, 5x20, 250V, SLOW | | 0 | EA | .0 | A | Y | N | | 2.000000 |
| | | | "LITTELFUSE" 239002 | 01 | 8 | | | P | Y | N | | |
| 2 | 50 | A25825-000 | BRAKE BAND | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | NITTA SG-750 | 01 | 8 | | | M | Y | N | | |
| 2 | 55 | 811100-000 | SPRING, EXTENSION, STAINLESS | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | "LEE" LE-055E-08 | 01 | 8 | | | P | Y | N | | |
| 2 | 65 | A20101-034 | REWIND CLUTCH ASSEMBLY | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | | 01 | 7 | | | M | Y | N | | |
| 2 | 70 | A26211-000 | SPACER, LEATHER | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | | 01 | 7 | | | | | N | | |
| 2 | 80 | 241179-000 | FUSE, 6.3A, 5X20, 250V, SLOW | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | "BUSSMANN" S506-6.3-R ****** | 01 | 6 | | | P | Y | N | | |
| 2 | 85 | 211536-000 | POWER SUPPLY, 24VDC, 25W | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | "ASTRODYNE" RS25-24 | 01 | 7 | | | P | Y | N | | |
| 1 | 10 | P1112750-012 | PRINT HEAD ZE521 | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | "ZEBRA" P1112750-012 | 01 | 2 | | | P | Y | N | | |
| 1 | 15 | P1046696-146 | MEDIA DRIVE BELTS ZE511 ZE521 | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | RH & LH P1046696-146 (ZEBRA) | 01 | 3 | | | P | Y | N | | |
| 1 | 20 | P1112750-040 | PLATEN, PINCH, & PEEL ROLLERS | | 0 | EA | .0 | A | Y | N | | 1.000000 |
| | | | ZE521 RH & LH (P1112750-040) | 01 | 3 | | | P | Y | N | | |

**ASSEMBLY TITLE:** Q34 **PREVENTATIVE MAINTENANCE**

**DRAWING NO:** **ALL APPLICABLE SYSTEM DRAWINGS**

Printer cleaning: Label & Ribbon path **(Once a shift frequency**)

Use alcohol or Citrus Based Cleaner and a clean soft cloth. Under no circumstances should a metal object be used to clean the label and ribbon path on the Labeling System. Soaking the rollers and peel edge with a spray silicone or citrus cleaner will help dissolve label adhesive; however, alcohol should be used to remove the silicone and residue from the components. There are several rollers inside the printer- ensure all these rollers are clean to include the knurl roller. Proper maintenance is important to maintain the warranty and longevity of your printer. Improper maintenance or maintenance not in compliance with the provided printer manual will void the printer warranty. Pay particular attention to the printer manual and warranty supplied with your printer.

Applicator cleaning: Label path & Label pad **(Once a shift frequency)**

Use alcohol and a clean soft cloth. Clean idlers exterior to the printer on the infeed and outfeed sides of the printer. The label pad should be cleaned with alcohol and a soft cloth; ensure all label and adhesive residue is removed from the pad. The label pad must be smooth or the label will contact the residue and may cause the label to stop sliding on the pad.

Water Trap/ Filter Draining **(As necessary)**

The air presented to the Applicator should be clean and dry; however, sometimes water is not avoidable in the air lines. Drain the cup of your filter if water is present. Clean the cup if it looks like rust is accumulating from the air lines. If water accumulates in the cylinder, solenoids and venturi, the components life will be decreased dramatically. Avoid water and dirt in the air supply line.

**ASSEMBLY TITLE: Q34 PREVENTATIVE MAINTENANCE (cont.)**

Lubrication: Idlers, Cylinder guides, Spring Loaded InteliTamp, Apply–Only Module

Idlers: Lubricate with Lithium grease every **(6 months.)**
Cylinder guides: Lubricate with light machine oil such as WD-40 **(weekly.)**
Spring Loaded Tamp: lubricate springs and bolts with Lithium Grease **(monthly.)**
Cables and hoses: Check cables and hoses for cuts and abrasions repair or replace as necessary.
Fuses Replace with same rating and style. **(as required)**

- Power supply fuse (3.15A)
- Motor fuse (2A)
- Printer Power fuse (See Printer Manual)
- Zebra only: There are fuses on the applicator interface board. (See Zebra Manual)
- Apply-Only module (2A)

**ASSEMBLY TITLE:** **Q34 PREVENTATIVE MAINTENANCE SCHEDULE**

**DRAWING NO:** **ALL APPLICABLE SYSTEM DRAWINGS**

**Q33 Maintenance Schedule**

**Operator Maintenance:** Daily and as necessary

Threading Labels & Ribbon
Cleaning Web path
Cleaning Ribbon path
Cleaning Tamp pad
Cleaning Print Head (SEE MAUFACTORES RECIMENDATION)
Checking Water trap and draining
Cleaning pull roll/knurl roll assembly

**Technician Level**: Weekly and as necessary

Setting dwell times & air pressures
Lubricating spring loaded tamp assembly and cylinder guides
Lubricating pivot pins on adjacent side module

**Technician Level:** 6 Months and as necessary

Cleaning unwind & rewind belt
Adjusting rewind torque
Cleaning vacuum generator and tamp pad
Lubricate Idler Rollers

**NOTES:**

# 9 MAINTENANCE

## 9.1 GENERAL INFORMATION

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

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

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

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

The following section explains the preventive maintenance for each section

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

⚠ CAUTION WEAR PROTECTIVE EYEWEAR when performing any maintenance on this equipment.

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

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

Always disconnect the electrical plug from the wall socket

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

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

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

***ASSEMBLY TITLE:*** **LABELING HEAD ASSEMBLY**

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

***ASSEMBLY TITLE:*** **UNWIND ASSEMBLY**

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

***ASSEMBLY TITLE:*** **REWIND ASSEMBLY**

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

***ASSEMBLY TITLE:*** **BRAKE BRUSH ASSEMBLY**

**W-** Reverse brake brush direction.
**M-** Inspect Brake brush when brush body contour no longer viable or bristles are worn down. Replace

***ASSEMBLY TITLE:*** **SLOT SENSOR ASSEMBLY**

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

***ASSEMBLY TITLE:*** **SIDE PLATE ASSEMBLY**

**S-** Check and inspect and grease all rollers and idler**.**

***ASSEMBLY TITLE:*** **PEEL PLATE ASSEMBLY**

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

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

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

***ASSEMBLY TITLE:*** **ROLLER/BRUSH IMPRESSER**

**D-** Check the rollers/brushes free of label flash, glue and debris. This will prevent jamming and web tears.
**W-** Check the foam rollers. If foam wear is noticeable, replace as necessary.

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

***ASSEMBLY TITLE:*** **OPERATOR PANEL**

-No maintenance is required for the operator panel

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

***ASSEMBLY TITLE:*** **ELECTRICAL**

**W-** Check the foam for fan clean or replace.

**ASSEMBLY TITLE:** **ROLLER/BRUSH IMPRESSER**

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

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

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

**ASSEMBLY TITLE:** **TAMP PAD ASSEMBLY**

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

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

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

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

**W** – Inspect all pneumatic components for wear.

**W** – Lubricate Pneumatic cylinder slide rods

**ASSEMBLY TITLE:** **OPERATOR PANEL**

-No maintenance is required for the operator panel

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

**ASSEMBLY TITLE:** **ELECTRICAL**

**W-** Check the foam for fan clean or replace.

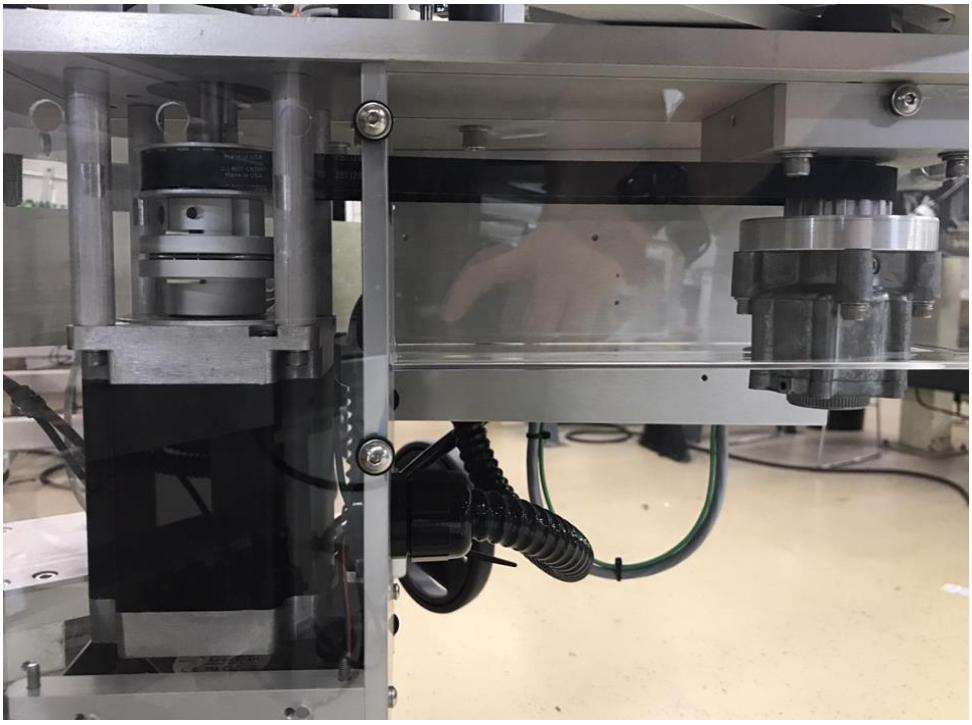
**NOTES:**

## 9.2 BELTS

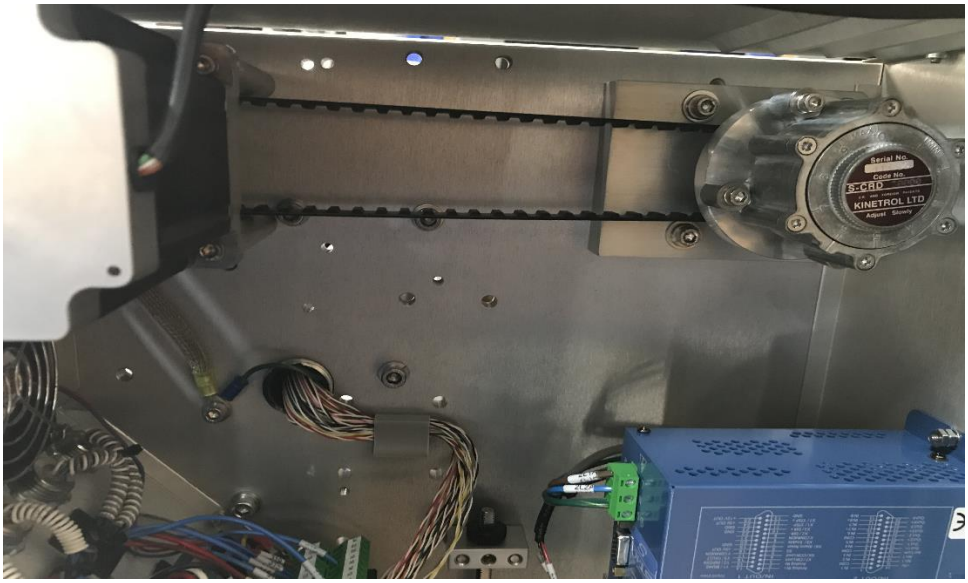
Monthly, a visual inspection of the rewind belt and timing belt, to do this depending on the labeling head you may need to remove the bottom cover on the head.

Refer to photos below.

Servo labeling head.

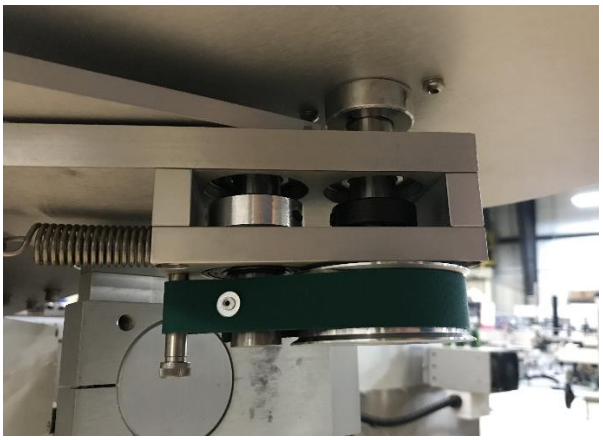


Stepping labeling head.




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

The visual inspection should consist of looking for cracks or defects in the belts. If this is the case, change the belts that are defective. Refer to the parts listing in the labeling head section of this manual.
The brake band mechanism requires a monthly visual inspection as well. Also once every 12 months you should consider replacing the belt (it is possible that you may need to change it later or earlier than 12 months depending the usage of the labeling head).
The brake band belt assembly is located at the base of the unwind assembly. See images below for reference.

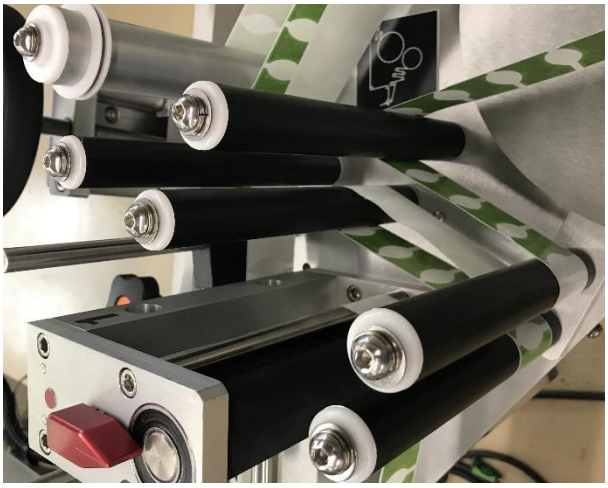


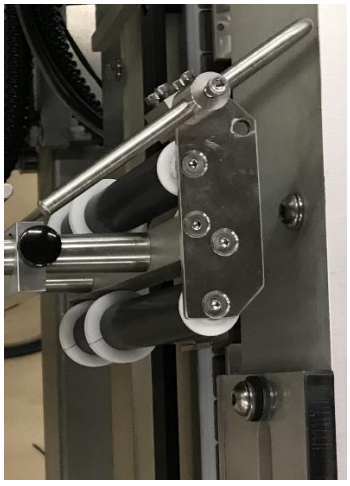
For replacement parts see the unwind assembly drawing for your labeling head in this manual.

## 9.3 ROLLERS

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

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





## 9.4 SENSORS

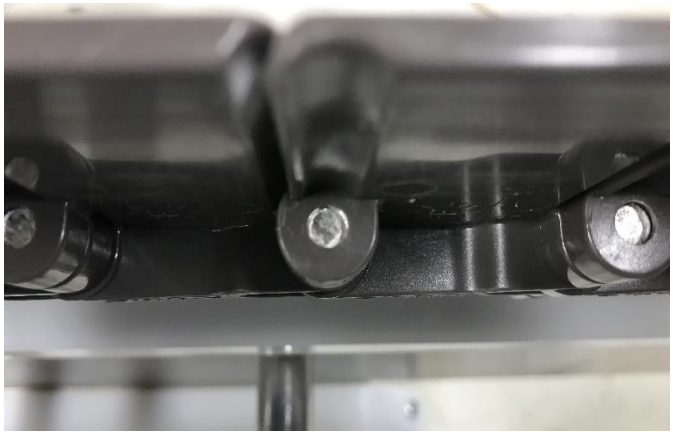
The sensors all have an electronic eye called a photocell; these must be free of lint or dirt. Since the photocells are generally made with glass or plastic lenses. They naturally attract substances which could easily trigger the sensor, use a cotton swap to gently clean the eye of the sensor as you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

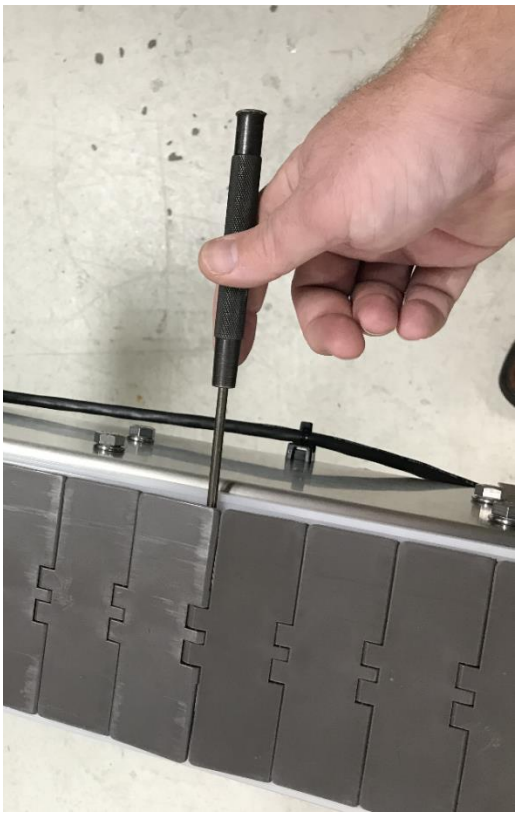
## 9.5 CONVEYOR

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

### 9.5.1 CLEANING

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





# 10 CLEARING A JAM

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

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

# 11 WARRANTY

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

## Return of defective parts

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

## Appropriate Use of Equipment

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

## Responsibility Limits

The solution put forth has been prepared with the information that has been provided to Quadrel by the end user. Subsequently, Quadrel cannot assume any responsibility for the exactitude, precision, and the validity of the information which was supplied. Moreover, Quadrel cannot be responsible for (a) any damages, direct or indirect, secondary, or

accessory, including without limitations, the loss of profit, workflow interruption, loss of production, loss of profits and other; (b) any and all damages claimed against the end user by a third party; (c) any or all damages caused to the property of end user or any other third party; (d) any or all resulting in an act from the end user or third party, major force, or act of god, unforeseen cause, or event.

With all reservation, in the eventuality where the responsibility is that of Quadrel relative to any defect of quality of said equipment or proposed solution Quadrel would be able to accept the responsibility, to its entire discretion, with the replacement of part of the said equipment or solution. By a compatible or identical equipment or solution or by a reimbursement of value agreed upon. In no case can Quadrel's responsibility exceed the total monetary sums received for the said defective equipment or solution.