QUADREL
LABELING SYSTEMS

Operating & Maintenance
Manual
For

TITUSVILLE DAIRY PRODUCTS

Q34 TAMP
Automatic Labeling System

Labeler Model #:	Q34 TAMP
Serial #:	84245-100

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.

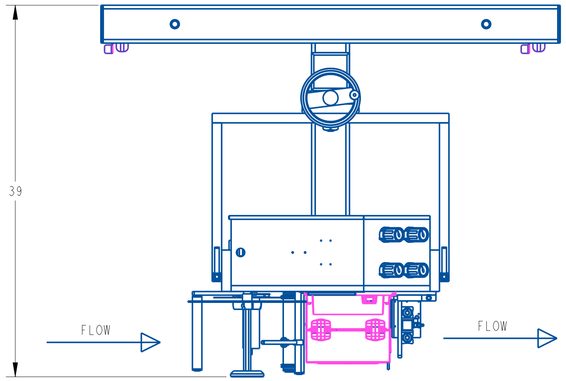
Any order put on hold or left dormant for any reason for 90 days will be considered cancelled. See Cancellation Policy below.

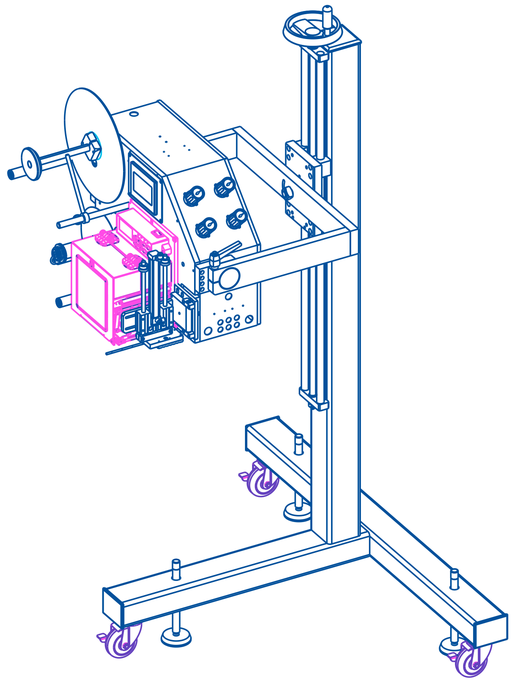
CANCELLATION POLICY:

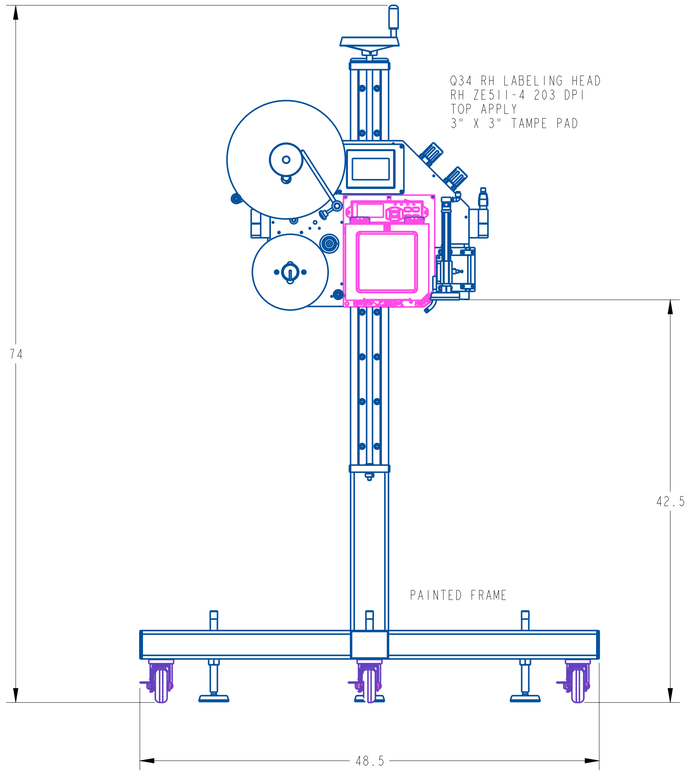
In the event of order cancellation, the 50% down payment is non-refundable. Customer may also be responsible for additional charges covering engineering resources expended and committed materials depending upon the custom nature of the project and the point in the order process in which the cancellation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

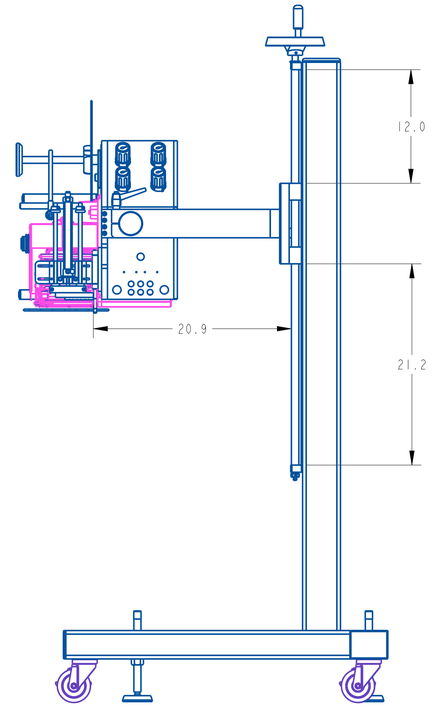
NOTE. No salesman, representative or agent of Quadrel is authorized to give a guarantee, warranty or make any representation contrary to above.

Please sign and acknowledge acceptance to these terms and conditions_____Date_____









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

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

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

SCALE:	1/8
DATE:	Nov-12-25
DRW BY:	RDL
CHK BY:	
APPR BY:	

Q34 LABEL APPLICATOR

MAT'L TITUSVILLE DAIRY PRODUCTS
APPROVAL DRAWING

84245-100

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.

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, ___6___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.

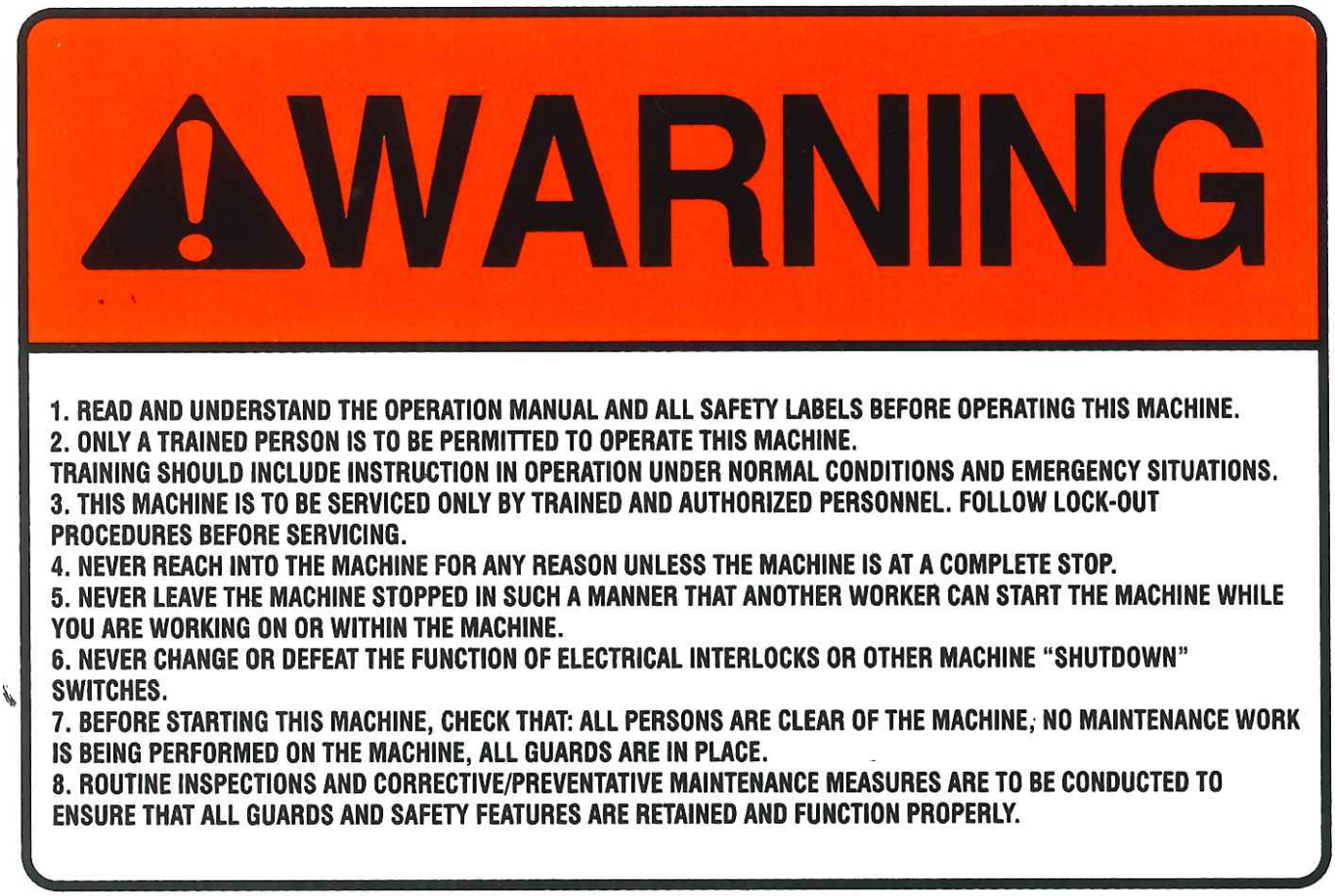
- Do not stand, sit, or allow any personnel to be within reach of the tamp cylinder/ swing arm activation (if so equip).
- Report any malfunctions, or problems with the equipment to qualified maintenance personnel for repair or adjustments that may be required.
- Keep hands clear of moving parts. Do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

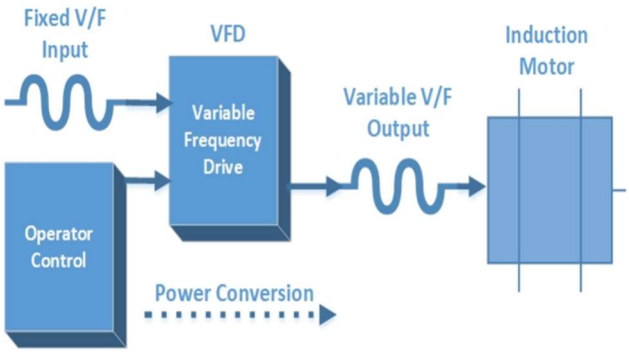


Figure-1: Typical VFD System

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).

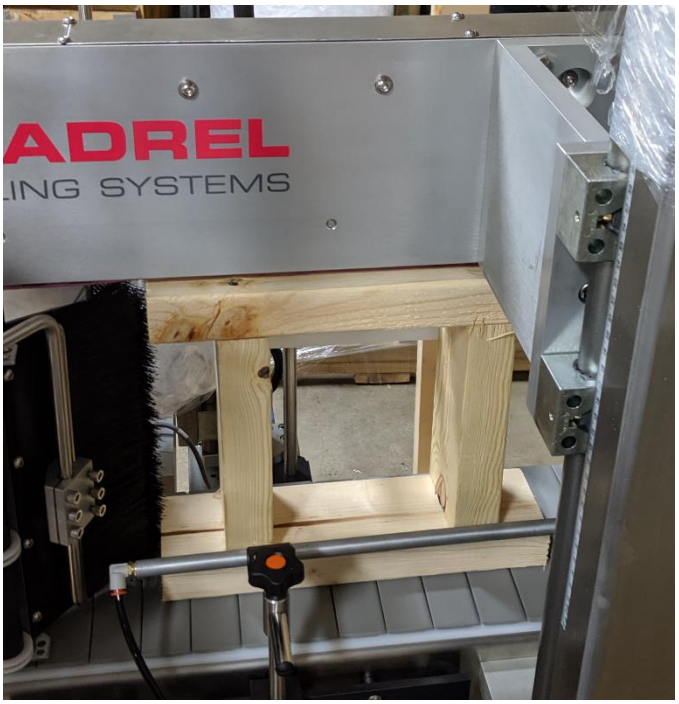
Let's get started…

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.



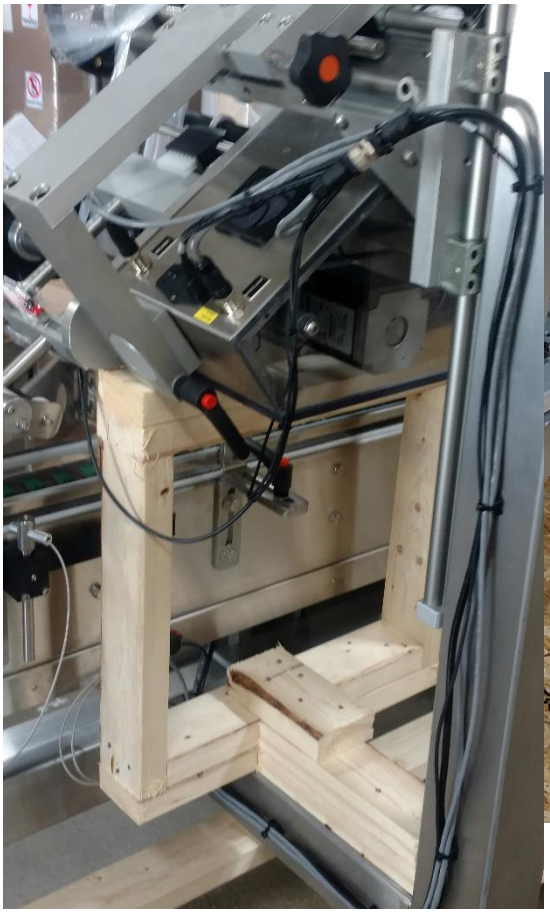
Most assemblies supported have a tool-less vertical adjustment using a knob or hand wheel.

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

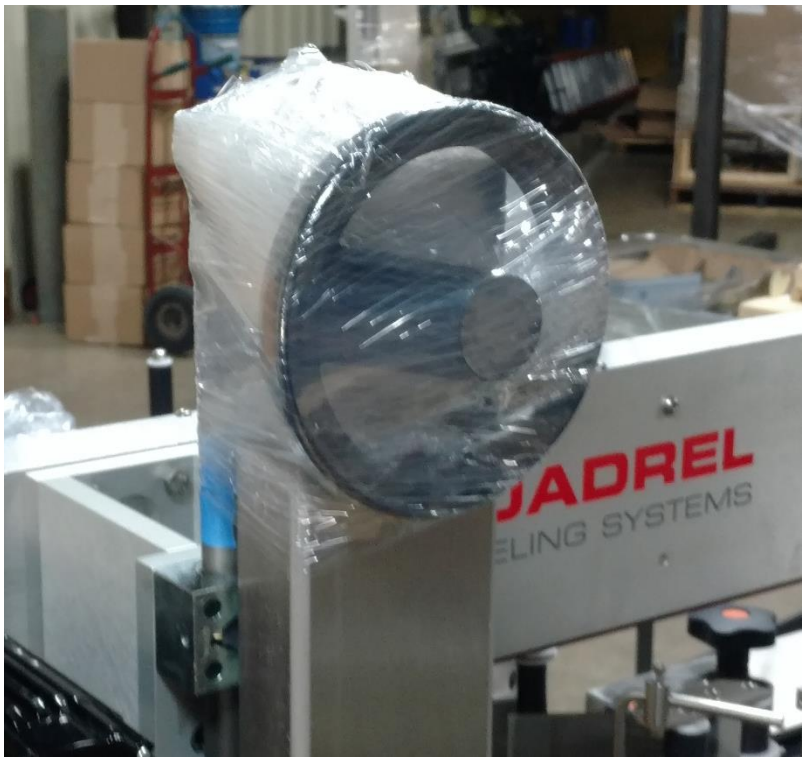
Remove the hand wheel from the wrap, then fasten the hand wheel to the square end on the lead screw using a 3/32 “L” handle Allen wrench.

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)



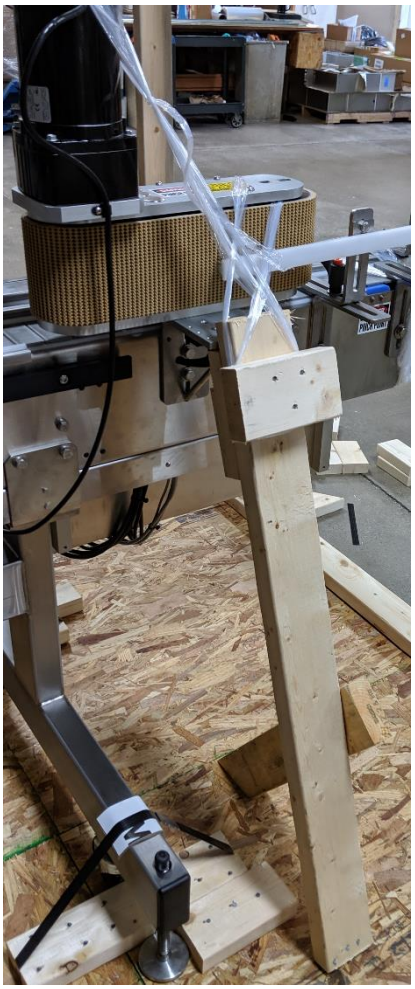
All top and bottom labeling heads will be supported



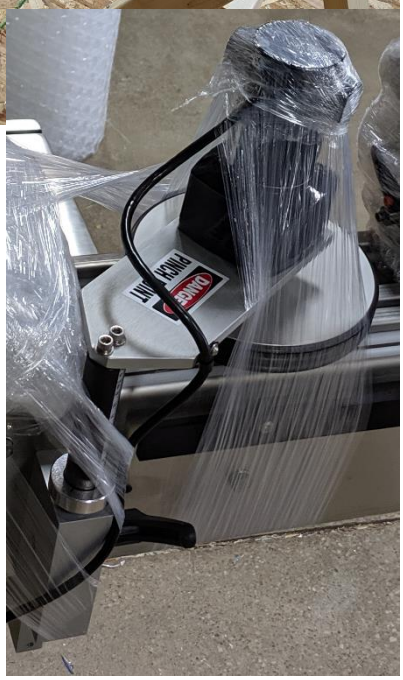
similar to the image shown on the left.

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

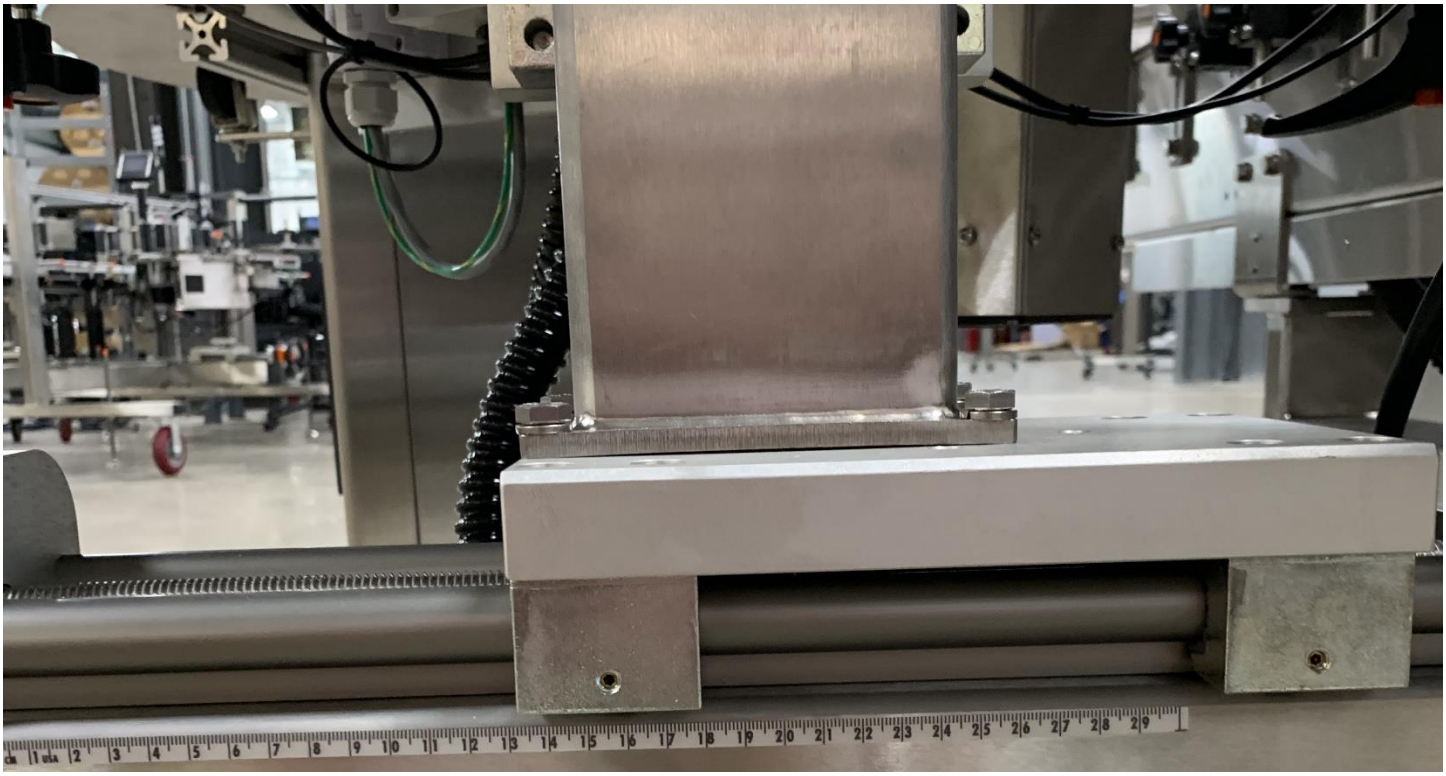
Pacing belt assembly supports can be removed will be without raising the assembly.



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.

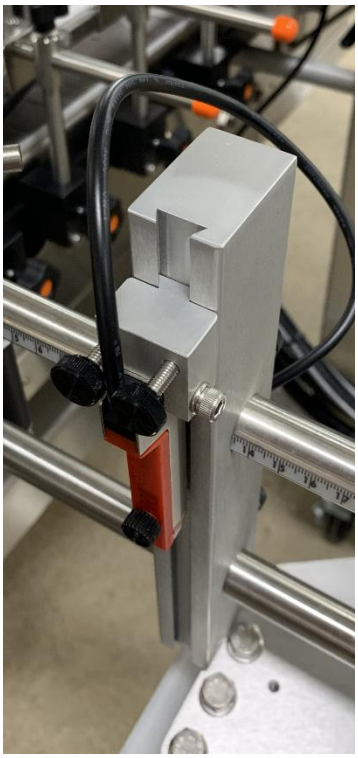
If you have the peel plate rods removed with the peel plate assembly and the label detect assembly (as shown below).

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".

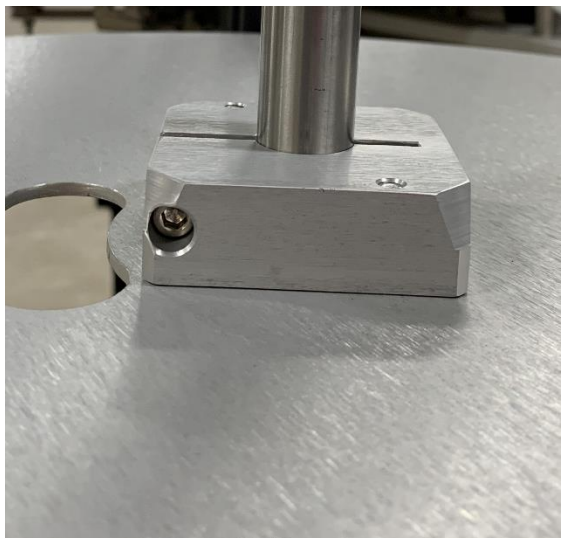
Some machines may have the unwind flange (shown in image to the right) removed to protect the flange during shipping do to the width of the machine.

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.

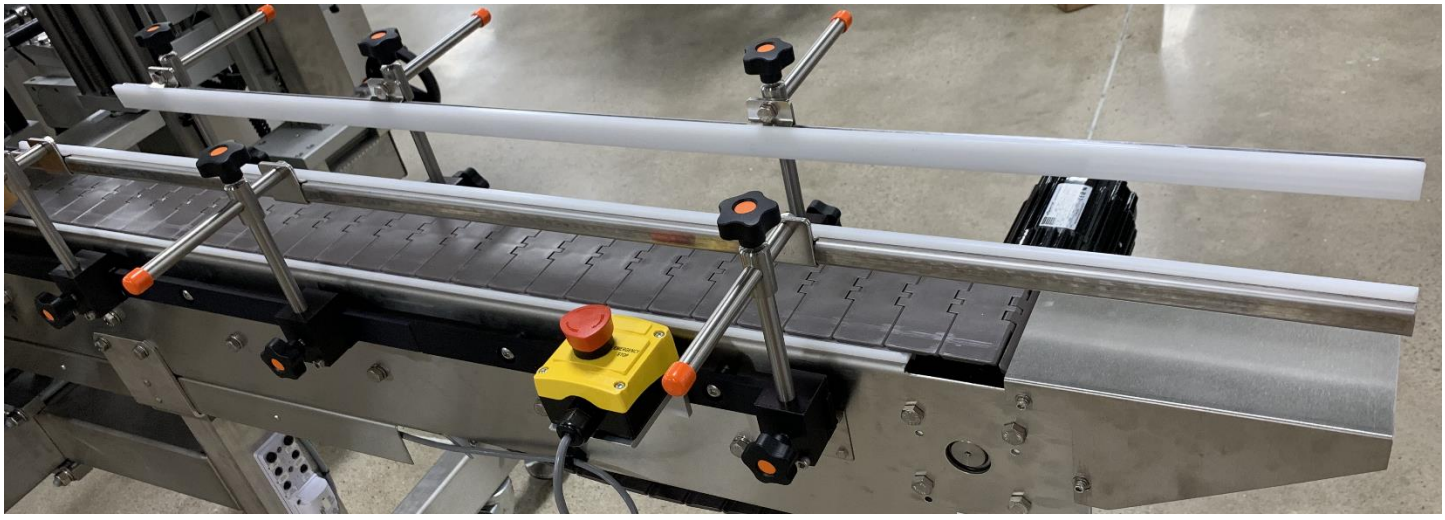
All assemblies removed will be bubble wrapped then plastic wrapped to the machine or in box on the pallet the machine is on.

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.

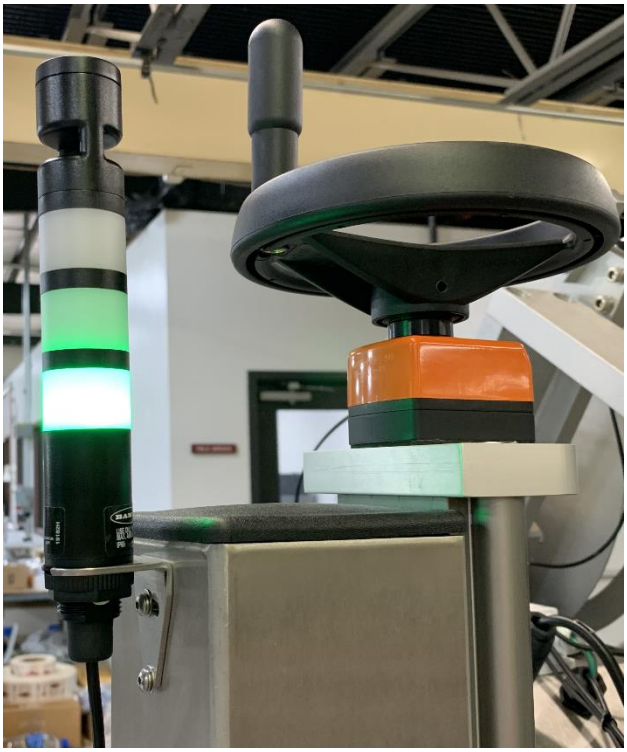
-3/32 L handle Allen wrench

-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.

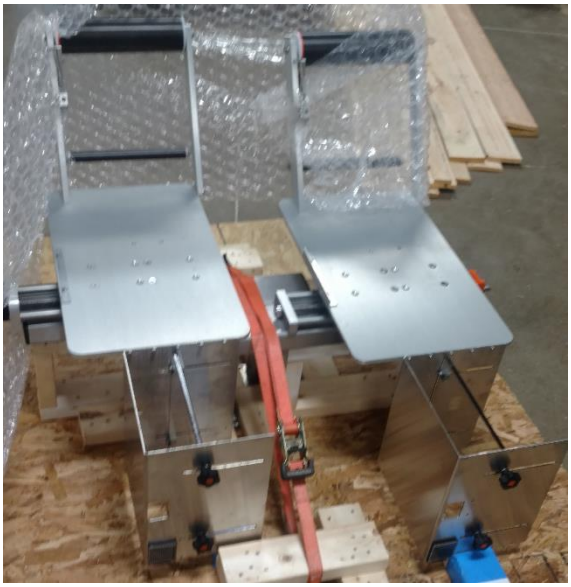
If HMI is located remotely off the enclosure it will still be supported during shipping.

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.

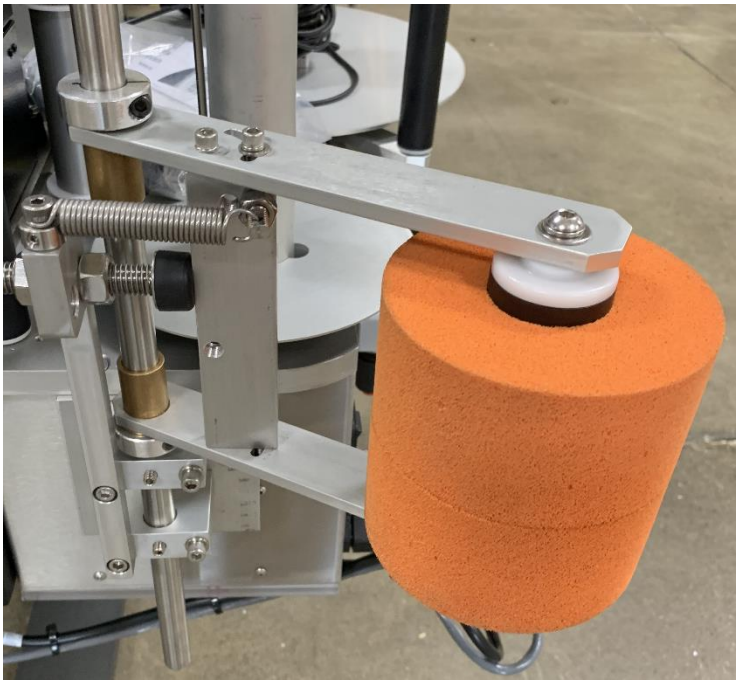
Table top printers with printer tables will ship in separate boxes or pallets (as shown to the left) the printer will be disconnected and placed in the manufacturer's box. The table will either get banded to the pallet with the machine or a separate pallet tethered to the machine pallet. Printer tables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

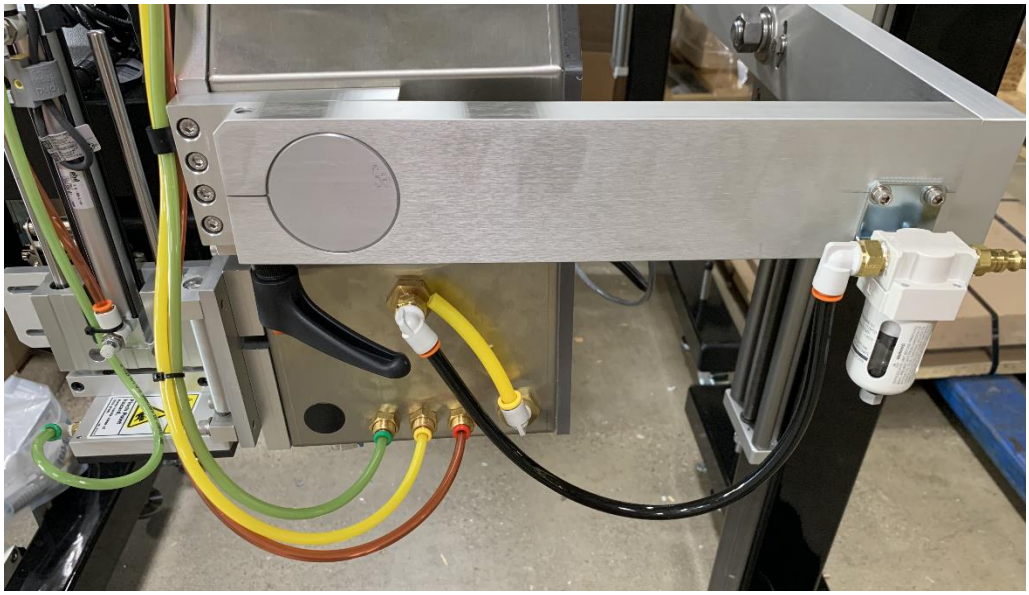


The corner wrap modules will be removed for shipping purposes. They will be wrapped in bubble wrap, plastic wrap, and placed into the box with the labeler.

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.

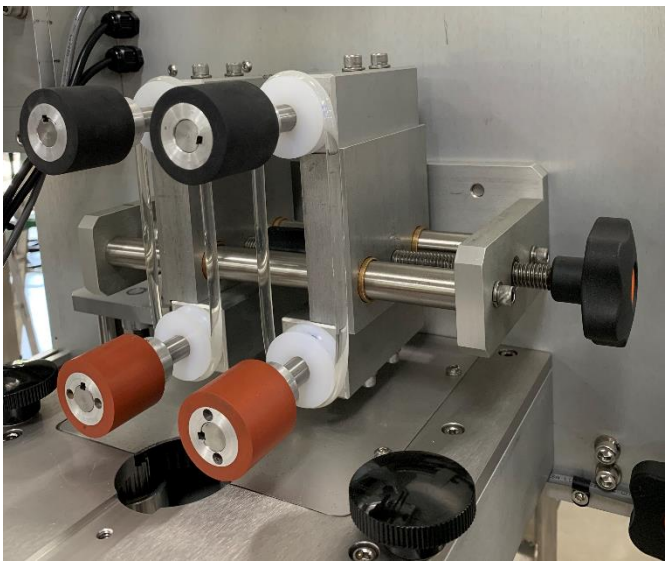
Carefully remove the banding and wrapping.

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.

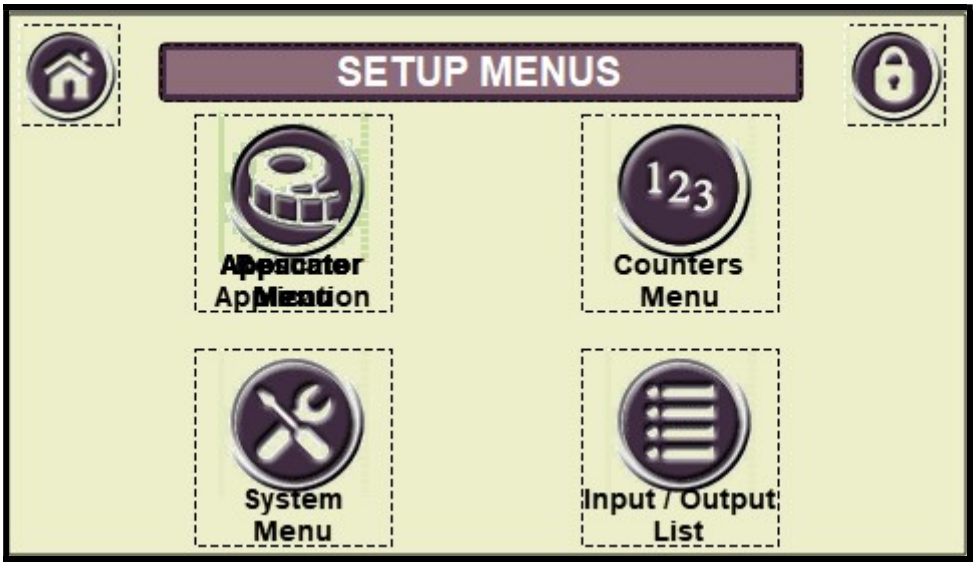
Fault/Message window:
The box towards the top of the screen will display any fault or status messages that are active on the machine. The Faults Menu button can be used to display more messages if needed. The blue button with white "R" on it will reset any active faults.

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.

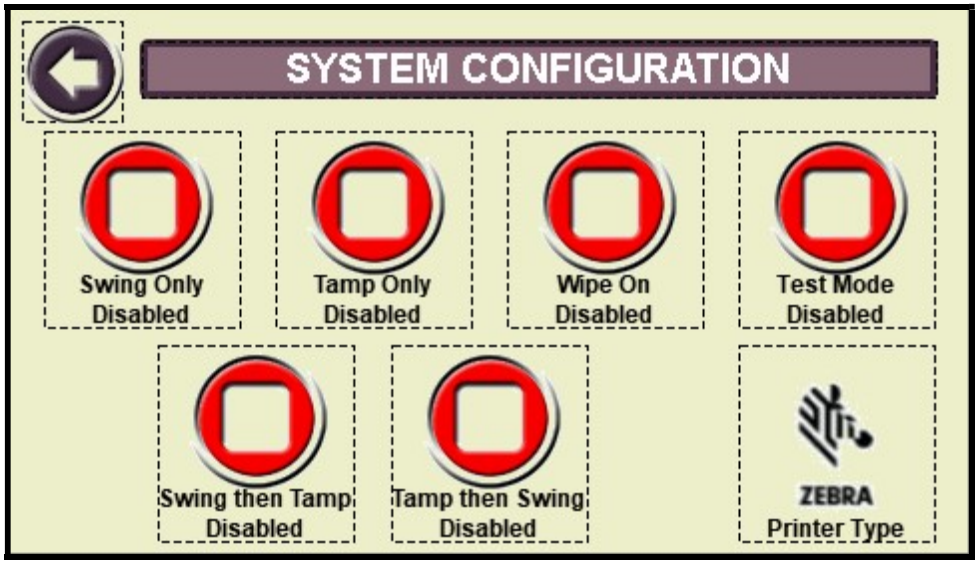
Counters Menu:
Navigates to a menu containing product and label counters.

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.

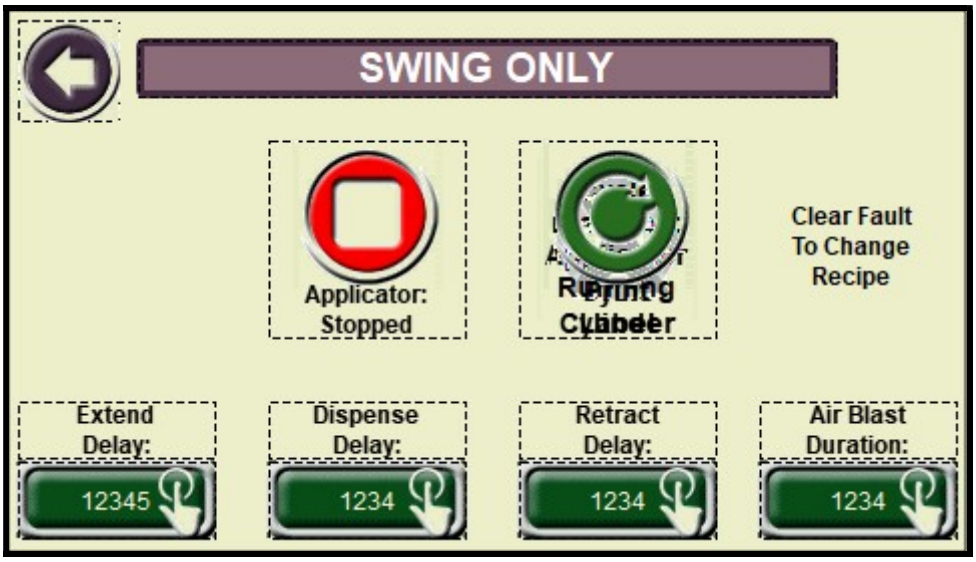
- The system will monitor the product detect signal to make sure a product has passed it.

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.

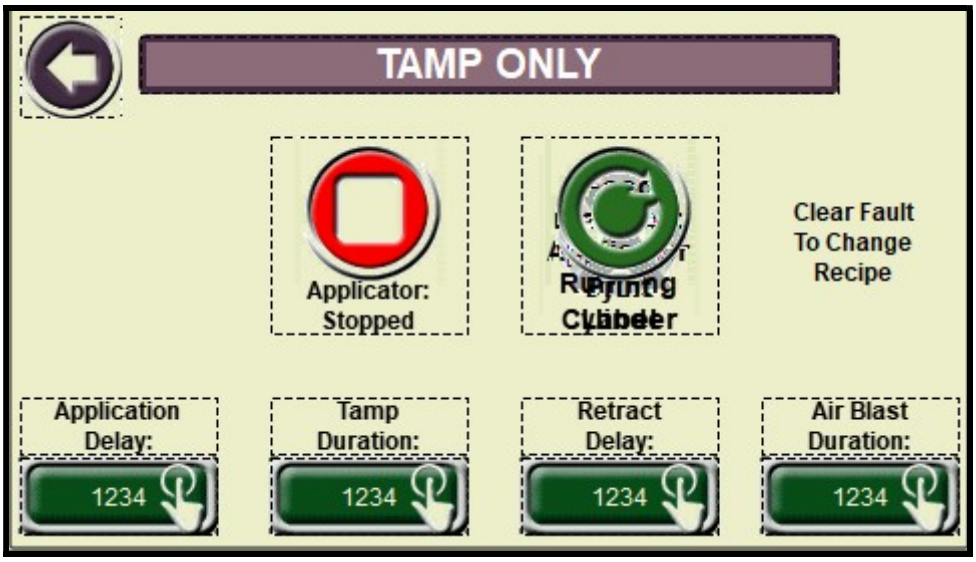
Retract Delay:
The Retract Delay (entered in milliseconds) is used to adjust when the cylinder returns after the Smart Tamp sensor (installed on the tamp pad) has become activated. A lower value may prevent the tamp pad from actually touching the product as it comes towards the pad. A value that is too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

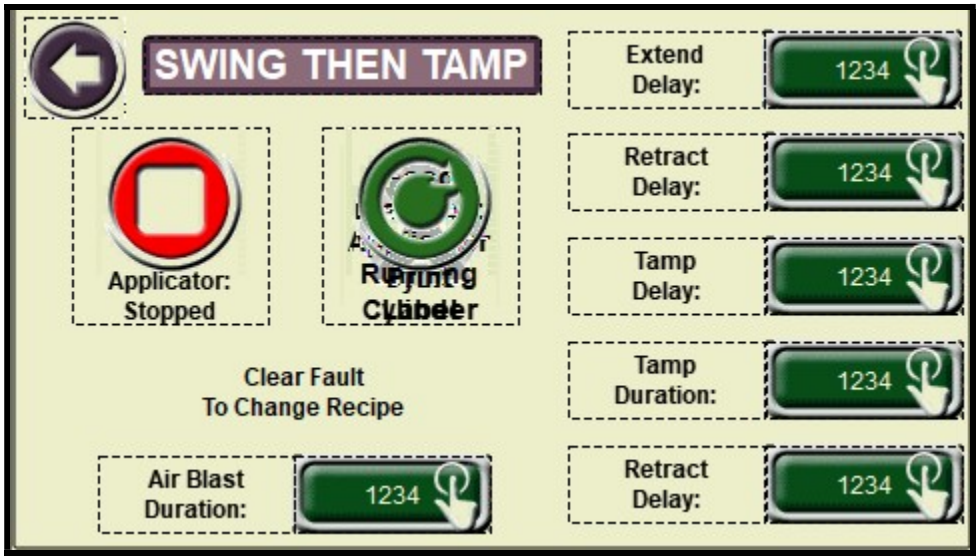
The Tamp Only Menu contains the parameters that are associated with the various components that make up the Applicator.

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.

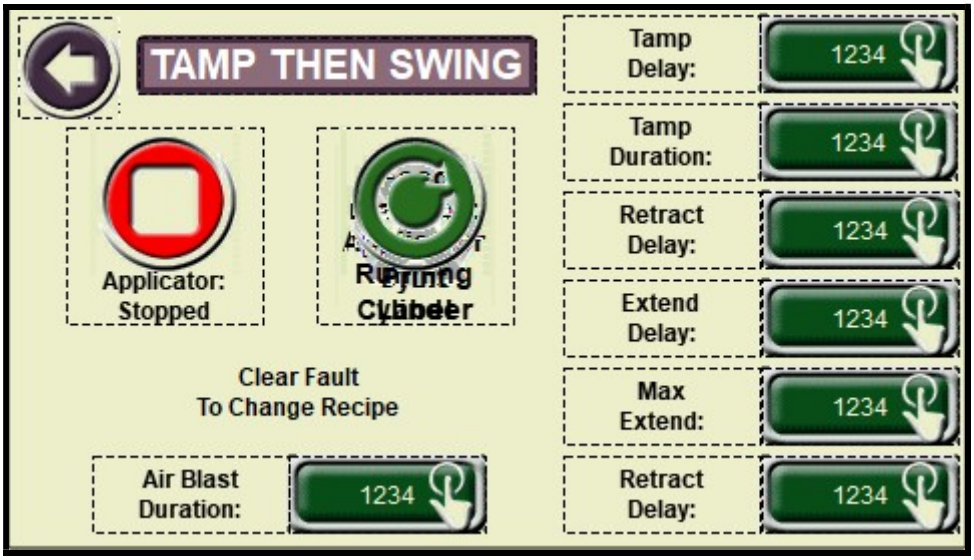
Tamp Delay:
The Tamp Delay (entered in milliseconds) is the timer from when the Swing Arm returns home until the tamp cylinder activates. This timer is used to center the label on the product before activating the tamp cylinder.

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.

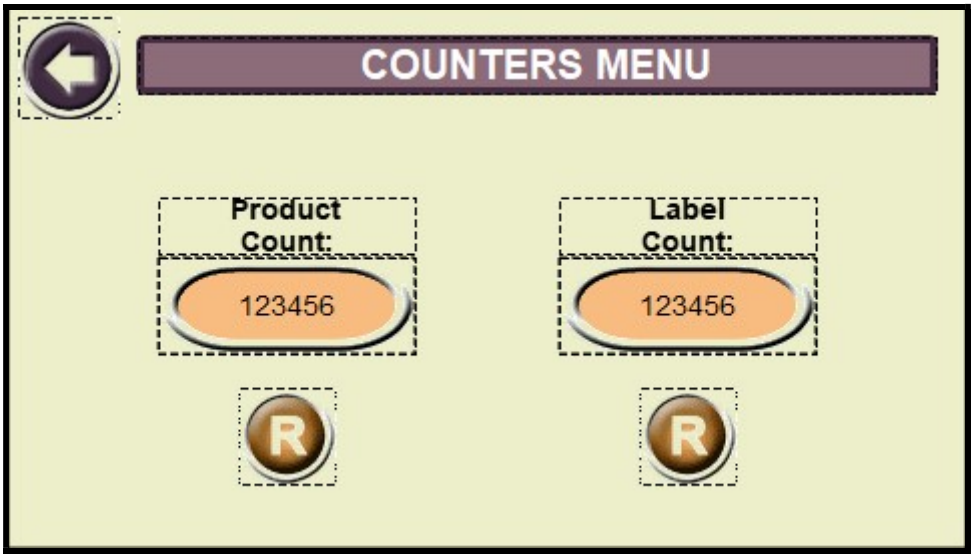
Max Extend Time:
The Extend Delay (entered in milliseconds) is the timer ensure swing arm holding max extension position.

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.

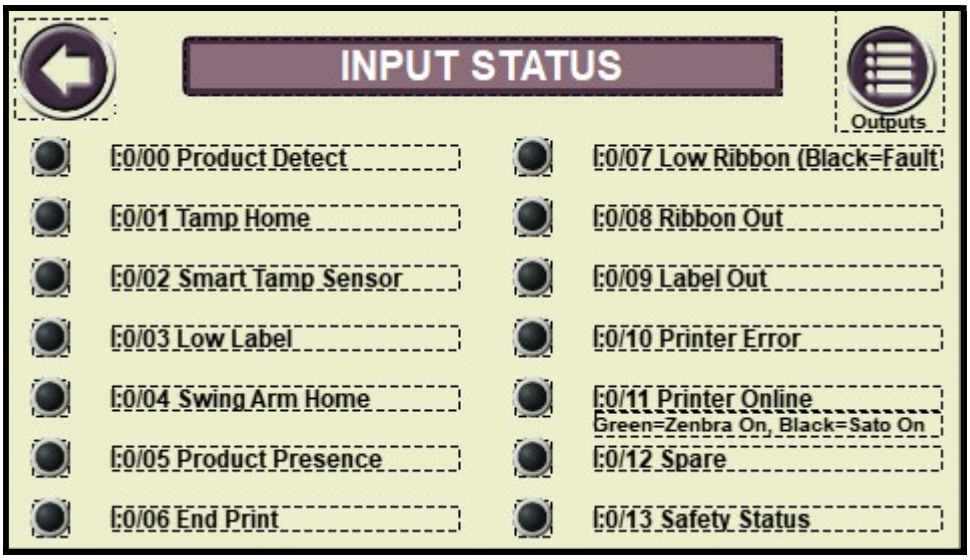
Label Count:
This counter reflects how many labels the printer has dispensed, regardless of Applicator status.

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

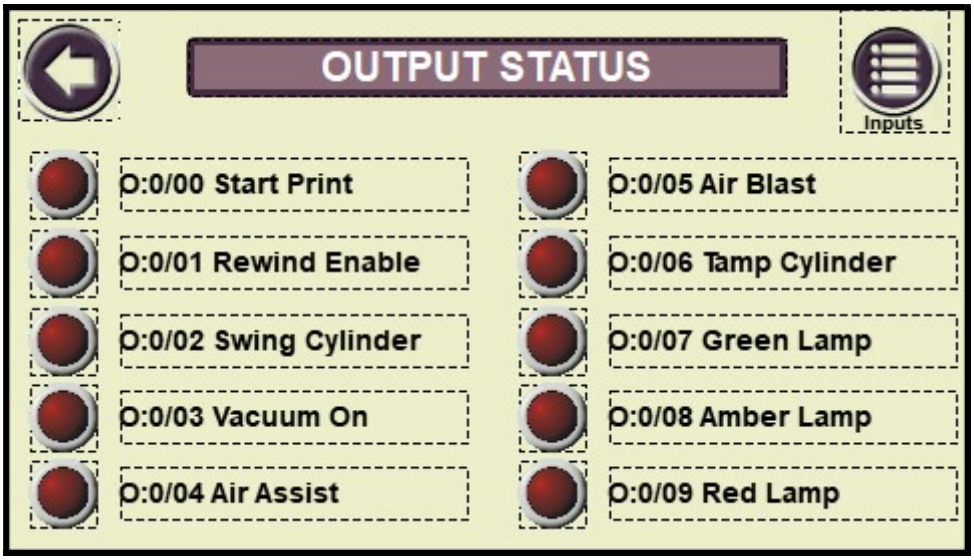
Input / Output Status:

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

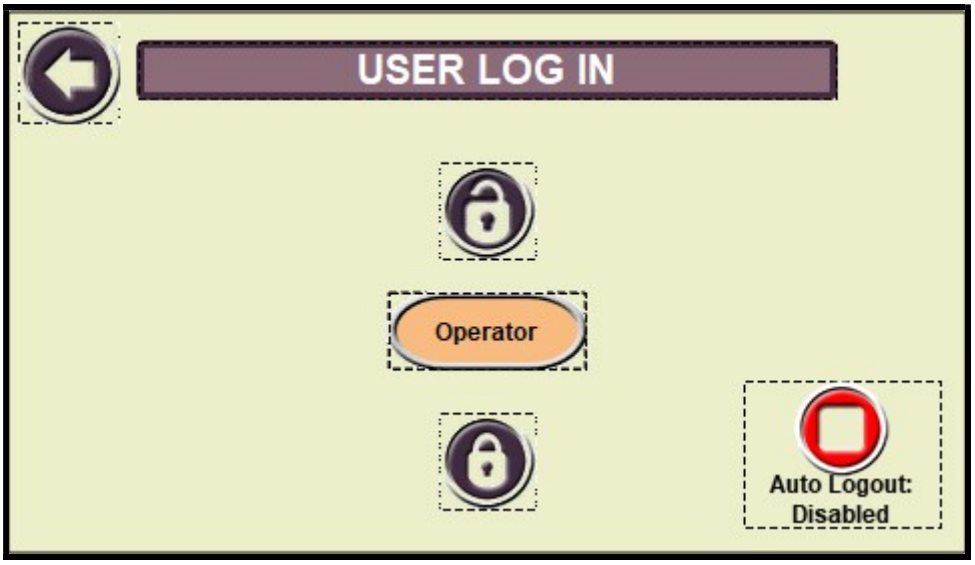
.

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:

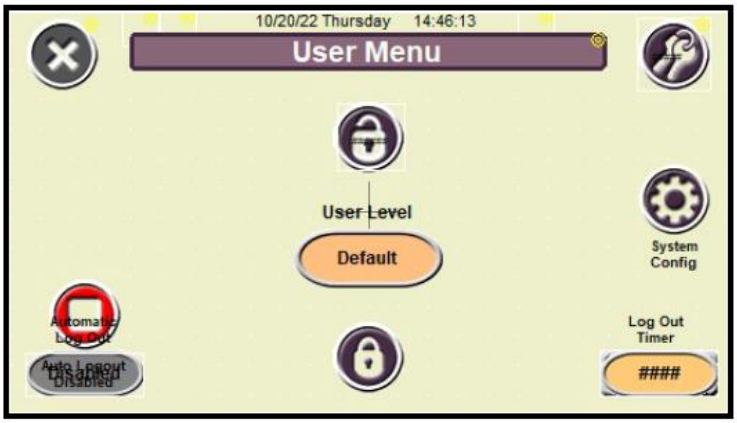
An Amber lamp will signal that there is a warning condition present on the system. Warning conditions typically allow the system to function normally, but action will be needed soon to replace labels, ribbon, etc. Some warning messages will turn into fatal faults if they are not addressed before taking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

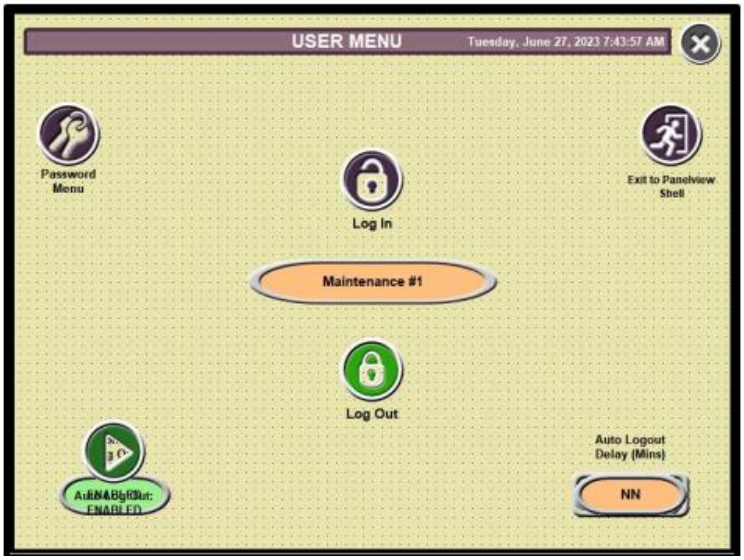
Red Lamp: A Red lamp indicates that a fatal fault occurred and the system is unable to run properly. This lamp will always flash.

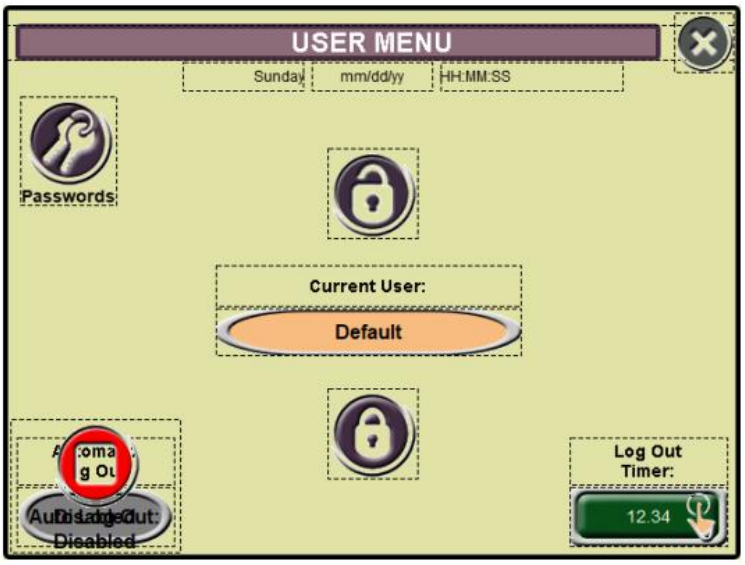
Messages	Cause/Solution
Warning Messages	
Low Label Supply	The label supply on the applicator has been determined low by the sensor fiber under the flange.
Low Ribbon Supply	The printer has given the system a signal that it is low on ribbon material.
Ribbon Out Warning	The printer has given the system 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 # 84245

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	1	
TAMP DURATION	500	
RETRACT DELAY	50	
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	40	
VACUUM PAD	20	
TAMP CYLINDER	40	
AIR ASSIST	50	

Zebra Technologies
ZTC ZE511 RH-203dpi ZPL

E4J252400259

Internal Wired PrintServer

Status: READY

Printer Home Page

View Printer Configuration
View and Modify Printer Settings
Directory Listing
Alert Setup
Printer Controls
Print Server Settings

Home: https://www.zebra.com
Support: https://www.zebra.com/support.html

Zebra Technologies
ZTC ZE511 RH-203dpi ZPL

E4J252400259

Internal Wired PrintServer

Home

View Printer Configuration

+15.0	DARKNESS
6.0 IPS	PRINT SPEED
+000	TEAR OFF ADJUST
APPLICATOR	PRINT MODE
GAP/NOTCH	MEDIA TYPE
TRANSMISSIVE	SENSOR SELECT
THERMAL-TRANS.	PRINT METHOD
609	PRINT WIDTH
0628	LABEL LENGTH
P1112356/00525 3	PRINT HEAD ID
15.0IN 380MM	MAXIMUM LENGTH
MAINT. OFF	EARLY WARNING
NOT CONNECTED	USB COMM.
BIDIRECTIONAL	PARALLEL COMM.
RS232	SERIAL COMM.
9600	BAUD
8 BITS	DATA BITS
NONE	PARITY
XON/XOFF	HOST HANDSHAKE
NONE	PROTOCOL
000	NETWORK ID
NORMAL MODE	COMMUNICATIONS
<~> 7EH	CONTROL PREFIX
<^> 5EH	FORMAT PREFIX
<,> 2CH	DELIMITER CHAR
ZPL II	ZPL MODE
INACTIVE	COMMAND OVERRIDE
NO MOTION	MEDIA POWER UP
NO MOTION	HEAD CLOSE
BEFORE	BACKFEED
+000	LABEL TOP
+0000	LEFT POSITION
MODE 1	APPLICATOR PORT
ENABLED	ERROR ON PAUSE
PULSE MODE	START PRINT SIG
DISABLED	REPRINT MODE
HIGH	RIBBON TENSION
052	WEB SENSOR
085	MEDIA SENSOR
054	RIBBON SENSOR
027	MARK SENSOR
027	MARK MED SENSOR
035	TRANS GAIN
000	TRANS BASE
100	TRANS LED

015	RIBBON GAIN
013	MARK GAIN
100	MARK LED
DPCSWFXM	MODES ENABLED
.....	MODES DISABLED
832 8/MM FULL	RESOLUTION
7.3	LINK-OS VERSION
V94.21.38Z ->	FIRMWARE
1.3	XML SCHEMA
7.0.4 24.21	HARDWARE ID
8176k.....R:	RAM
131072k.....E:	ONBOARD FLASH
NONE	FORMAT CONVERT
FW VERSION	IDLE DISPLAY
12/01/25	RTC DATE
14:34	RTC TIME
DISABLED	ZBI
2.1	ZBI VERSION
READY	ZBI STATUS
23 LABELS	NONRESET CNTR
23 LABELS	RESET CNTR1
23 LABELS	RESET CNTR2
122 IN	NONRESET CNTR
122 IN	RESET CNTR1
122 IN	RESET CNTR2
310 CM	NONRESET CNTR
310 CM	RESET CNTR1
310 CM	RESET CNTR2
002 APPLICATOR	SLOT 1
*** EMPTY	SLOT 2
0	MASS STORAGE COUNT
0	HID COUNT
OFF	USB HOST LOCK OUT

Print on Label

Home: https://www.zebra.com
Support: https://www.zebra.com/support.html

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.

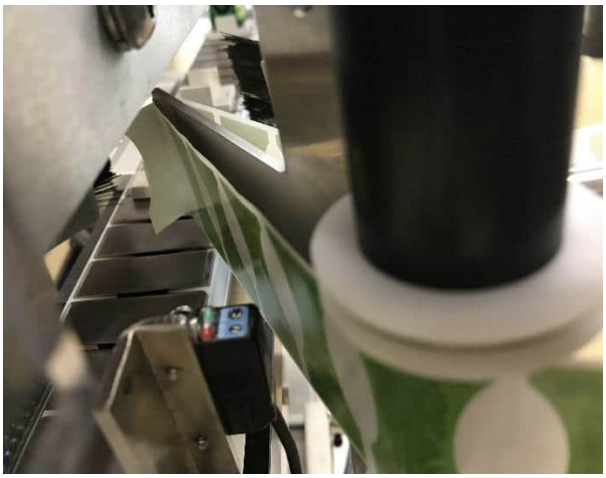
You will also find the threading diagram directly on the labeling head.

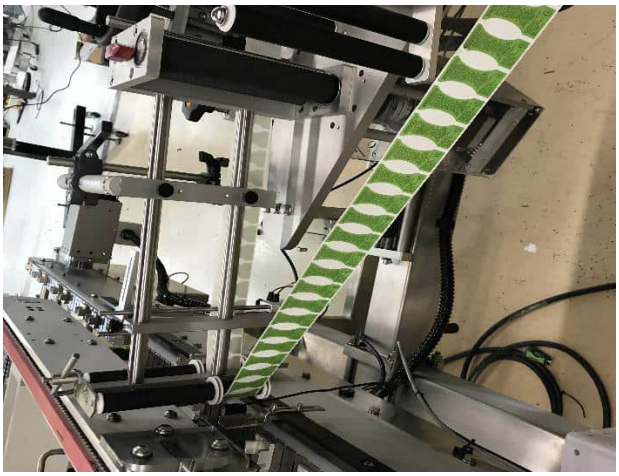
1) Place the label stock roll on the unwind shaft. Press the roll firmly against the flange. Then slide the locking collar over the unwind shaft aligning the set screw with the shaft. Press into the roll and twist to lock the collar in place.

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

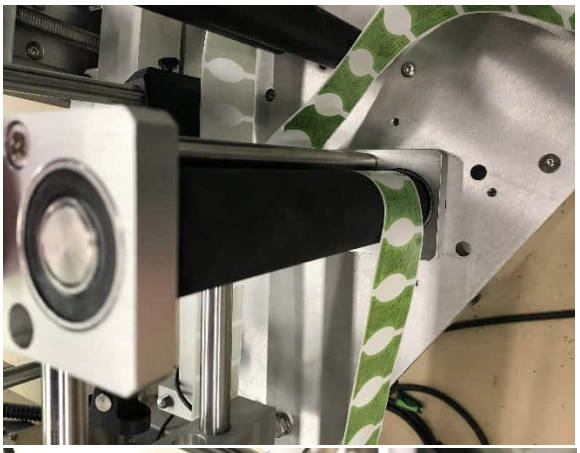
3) Follow the threading diagram on the labeling head for routing the web.
4) Thread through the dancer to the peel plate.

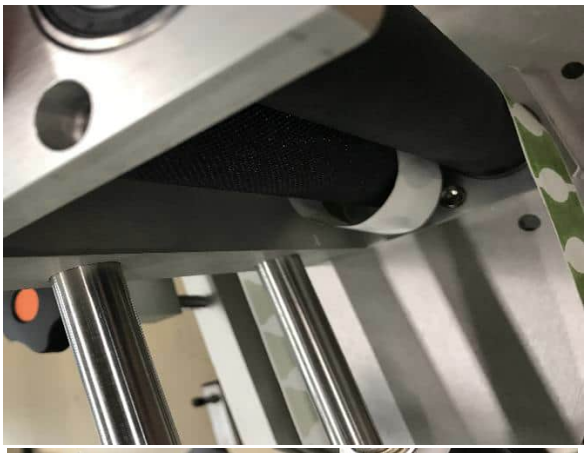
5) Feed the label around the peel plate and under the pressure shoe if (if there is one). Feed the label up the head to the pull roll. Pull all the slack out.

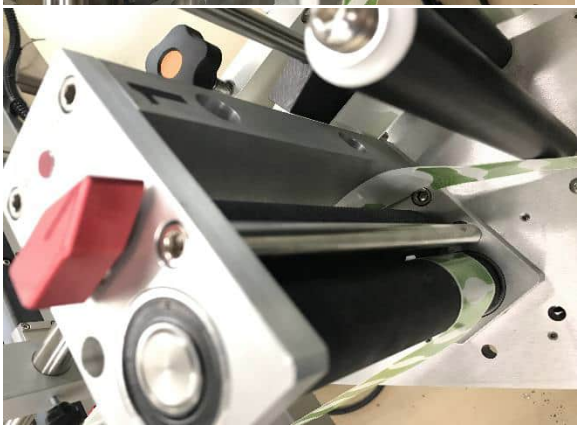




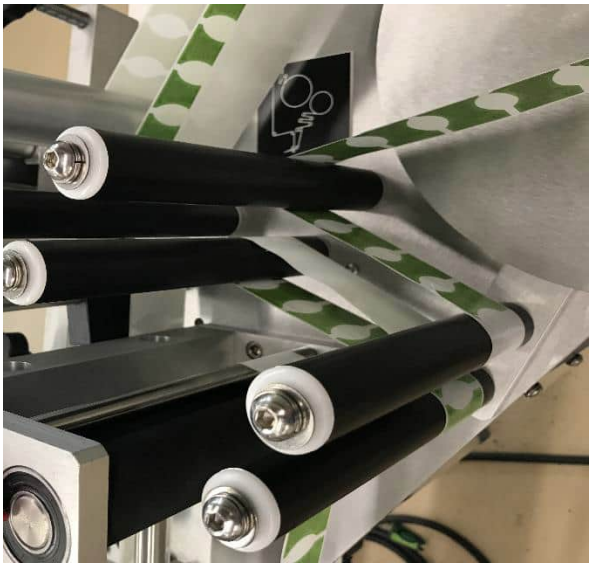
6) Wrap labels around the rubber roller as shown, then around the knurled roller. Make sure the knurled roller is not locked in by turning the red knob to the left or right of the red dot on the drive roll. When you have the labels completely threaded you can turn the knob to the red dot.



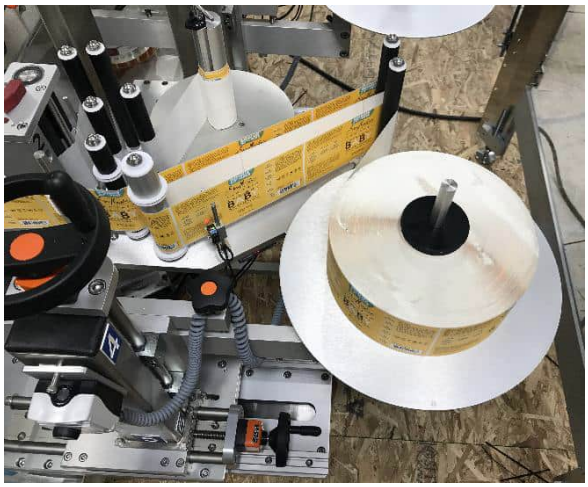




7) Thread the labels through the rewind dancers to the rewind shaft. Place the end of the label through the clip and rotate the rewind hub to take up the slack.



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.

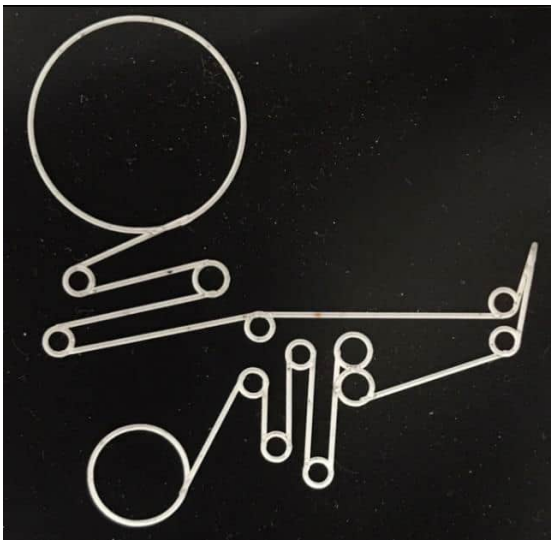


9) To unload the rewind loosen (counter clockwise) the “clevis” bolt on the top of the rewind hub. this will collapse the rewind and you can pull the liner off the hub.

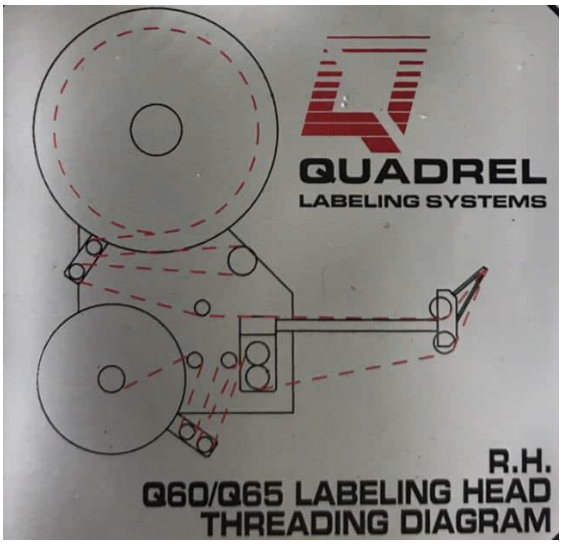
⚠ CAUTION There are many pinch points on a labeler. to avoid injury read and understand the owner’s manual before operating.

6.1.2 THREADING DIAGRAMS

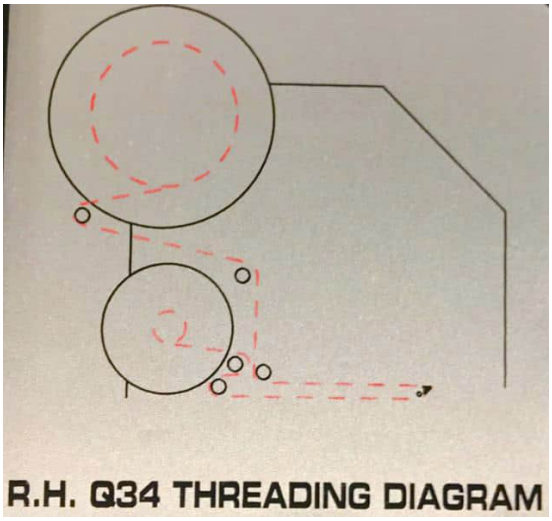
Here are the following threading diagrams for our standard labeling heads.



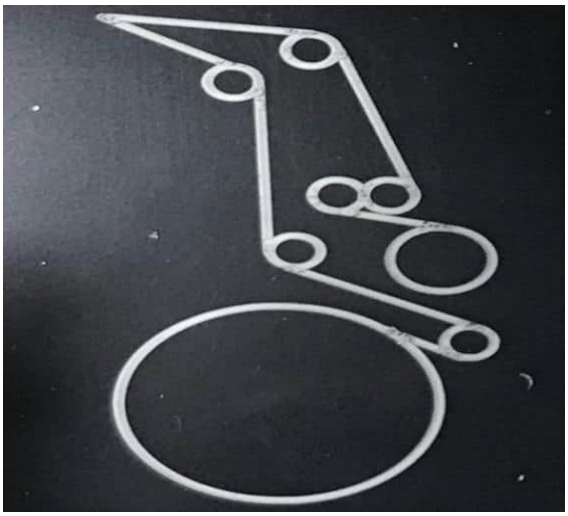
Q120/Q125/Q115/Q110



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)

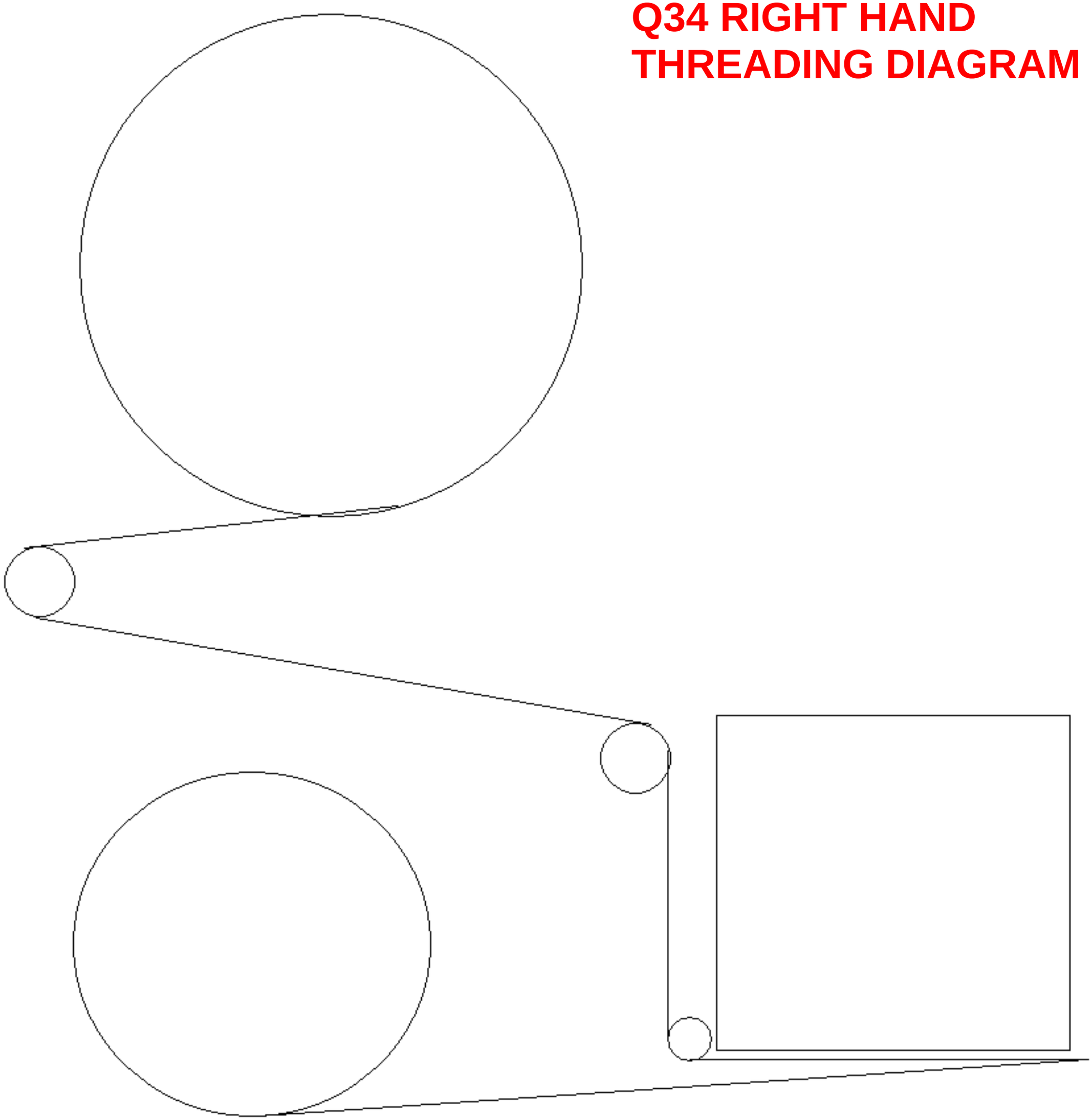
MAINTENANCE:

- None this section.

TROUBLESHOOTING:

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

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:

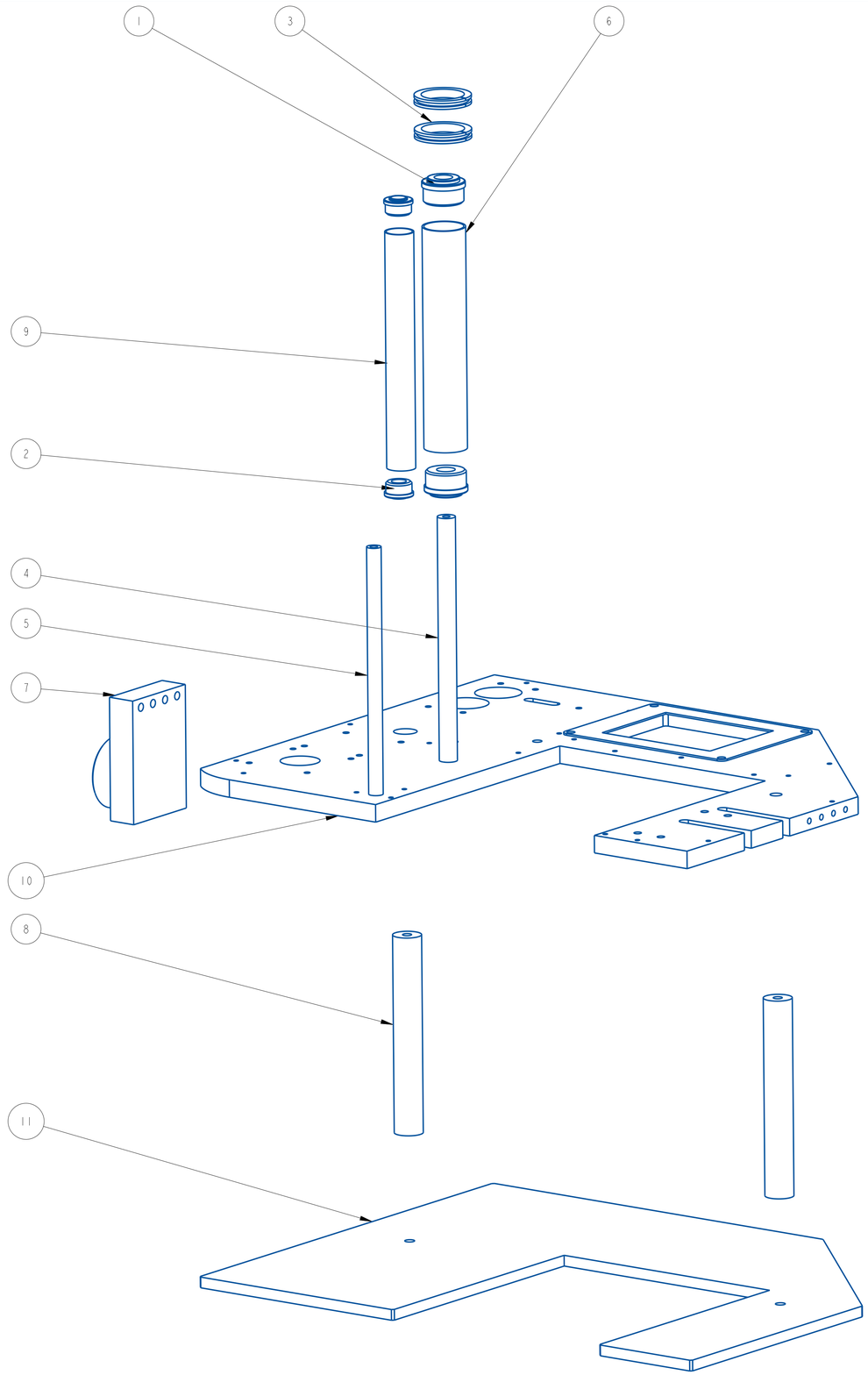
- None

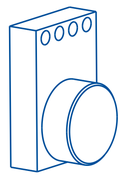
MAINTENANCE:

- 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:

770236-000 PRINTER 203DPI, ZE11

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BREAK ALL EDGES .005/.015
CORNER RADIUS .010/.030

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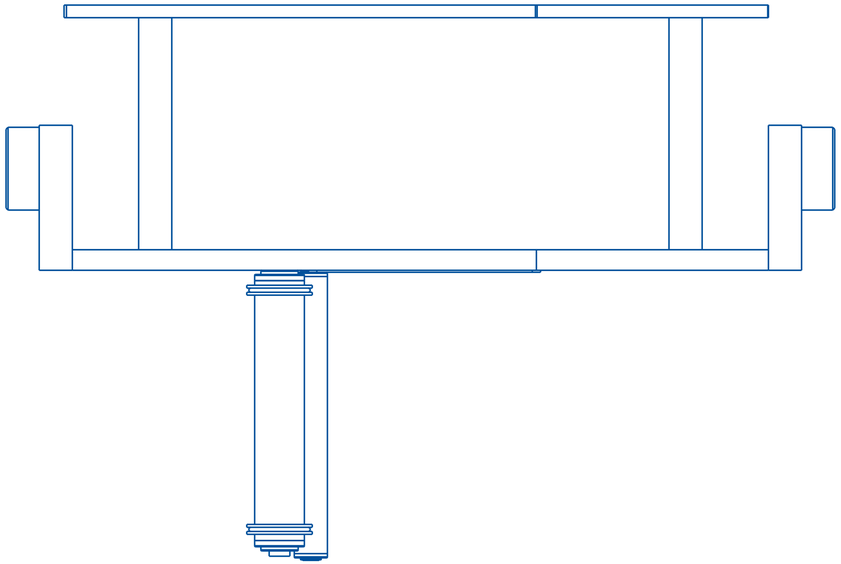
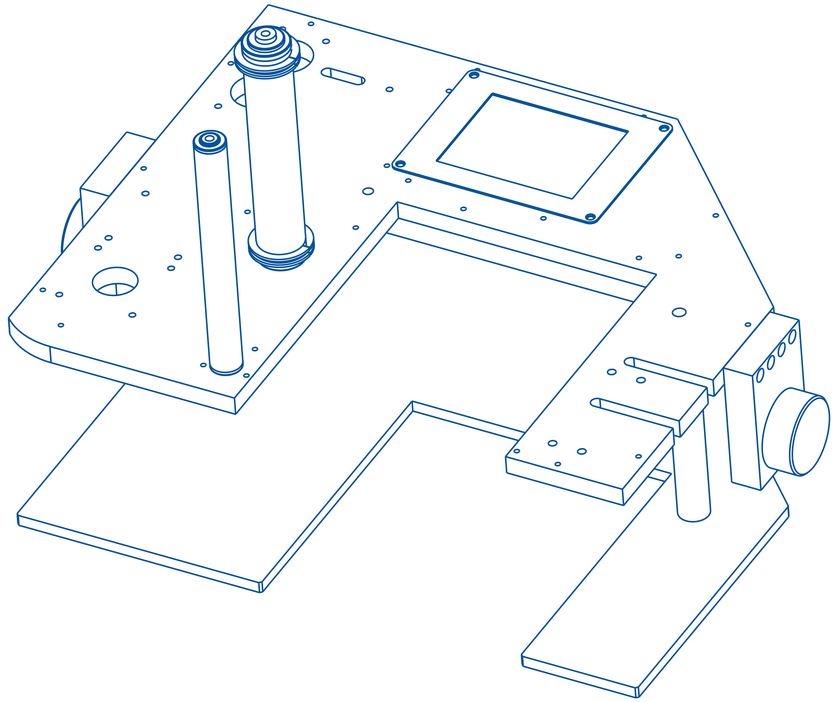
APPR BY:

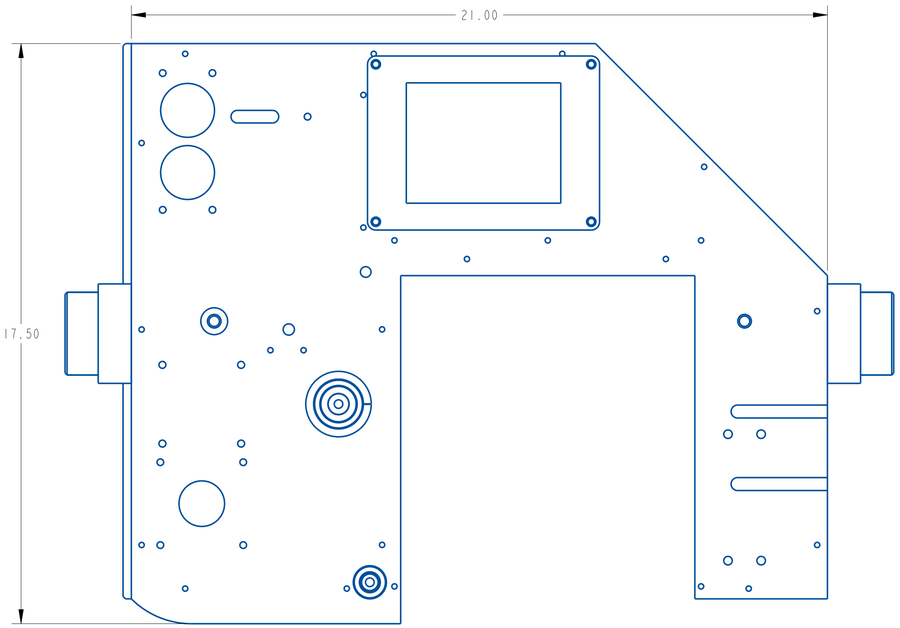
Q34 SIDE PLATE

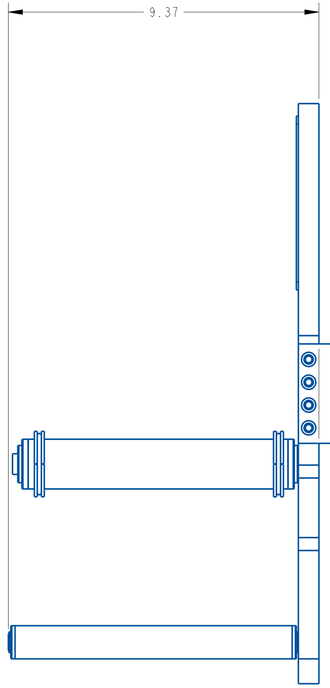
MAT'L

22600SP-000









SHEET 2 OF 2

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

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SCALE:	7/16
DATE:	11-26-13
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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:

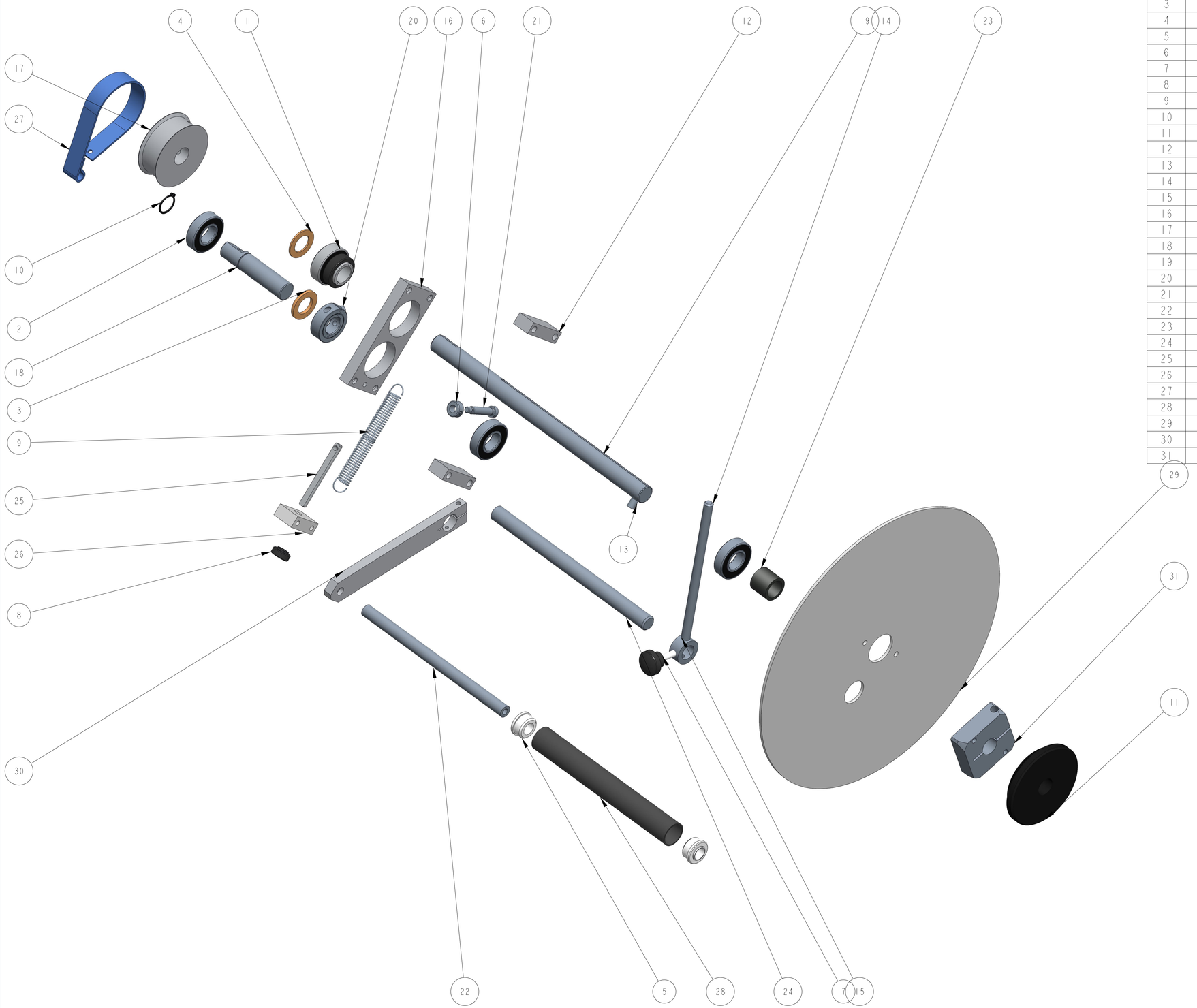
- Move flange to required height and tighten set screw in the flange hub, approximately 7/8” off side plate.
- Adjust dancer tension by turning check nut so that dancer roll snaps back to braking position when labeling head is threaded.
- Position guide collars on idler roll, one slightly above, and 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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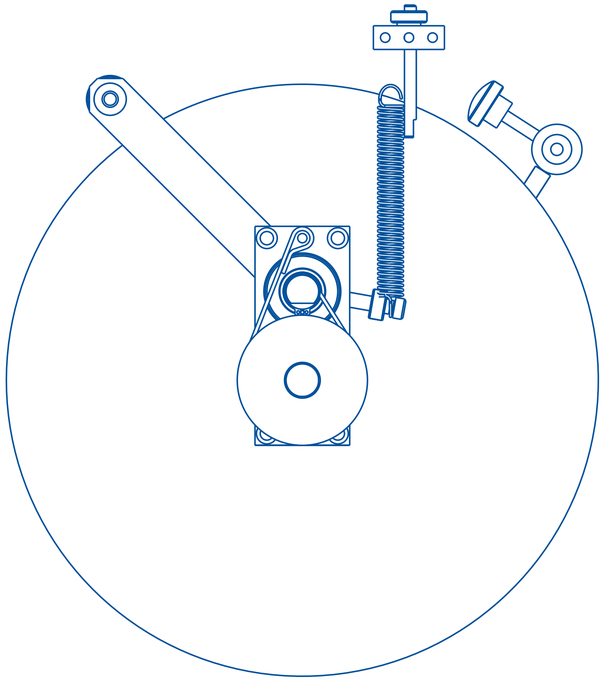
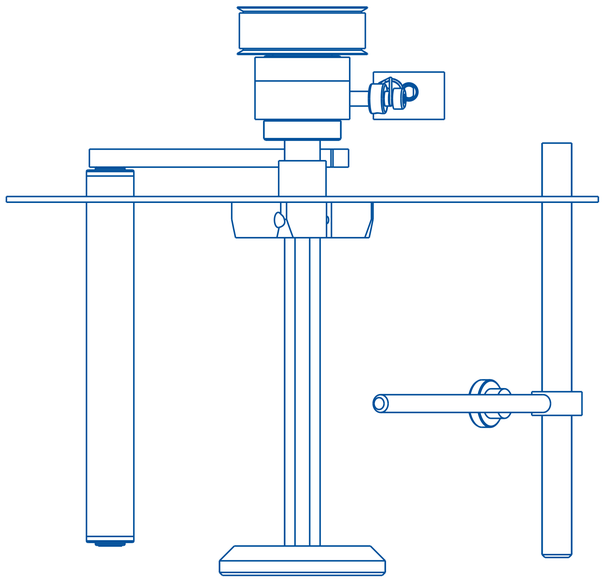
CHK BY: 03/15/2024-SEM
APPR BY:

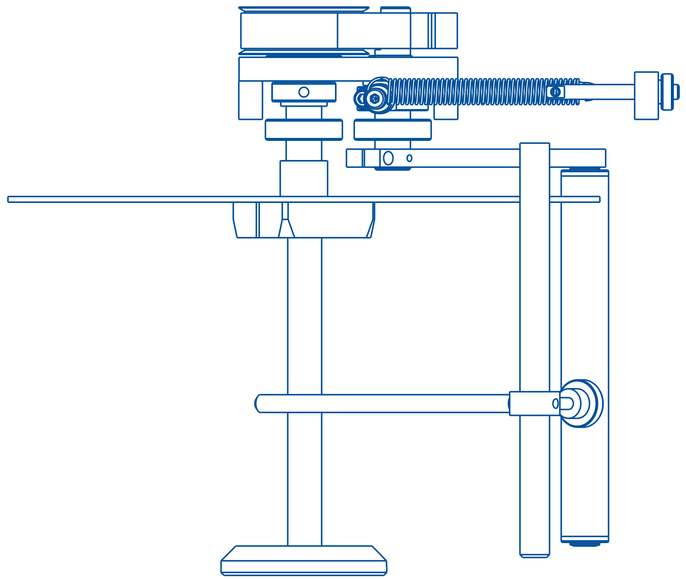
UNWIND ASSEMBLY Q34

MAT'L: BOM 22600U-000

22600U-000







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DRW BY: MAW
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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:

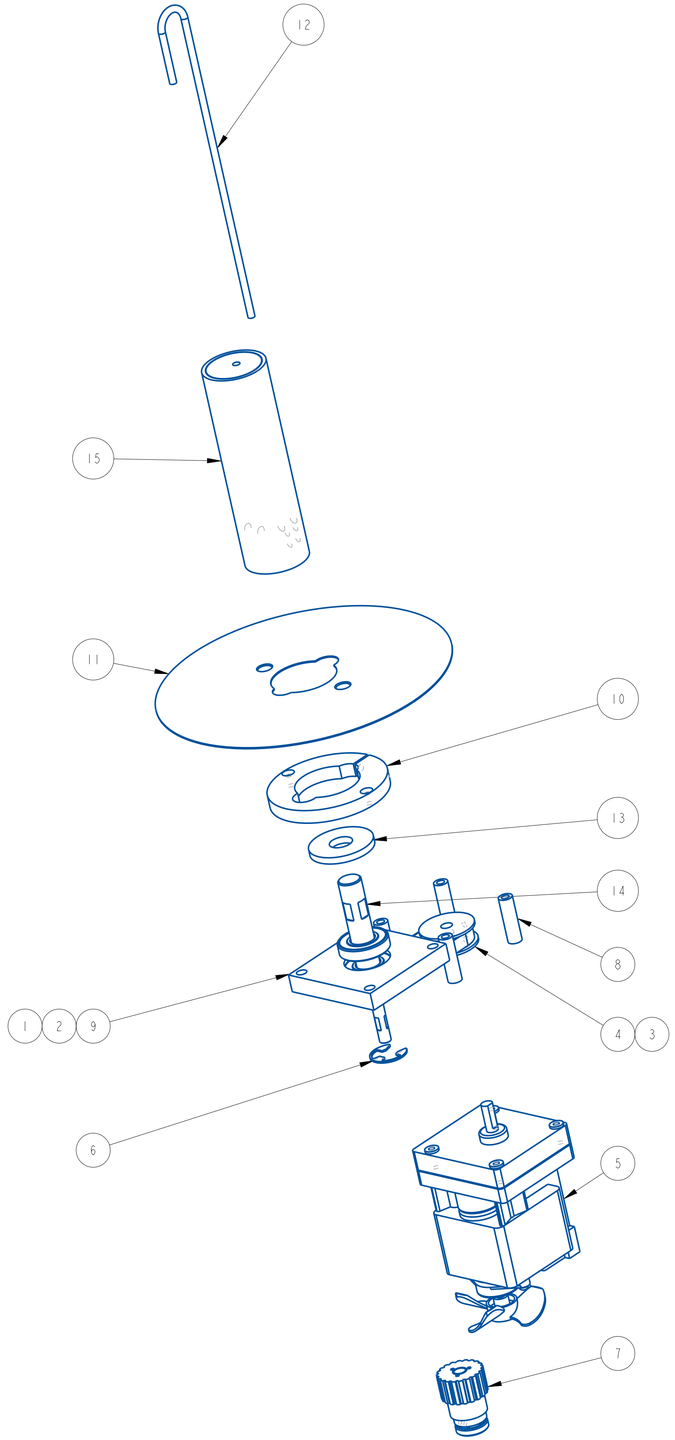
- Position the rewind flange slightly below the web path and lock with the set screw in the hub.
- When threading liner to the rewind, place the liner between the drum and pin.
- Tighten adjusting knob just enough to allow the rewind drum to keep up with the drive roll. Excessive tightening will cause 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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B	Nov-13-23	UPDATED THE DRAWING/BOM	--
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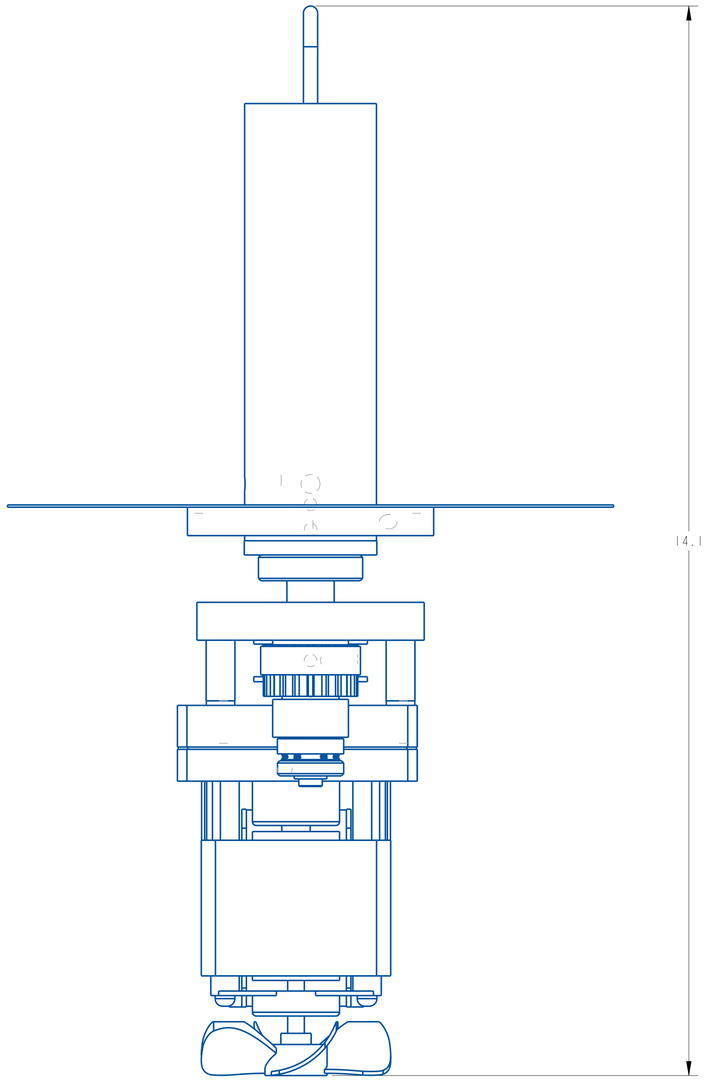
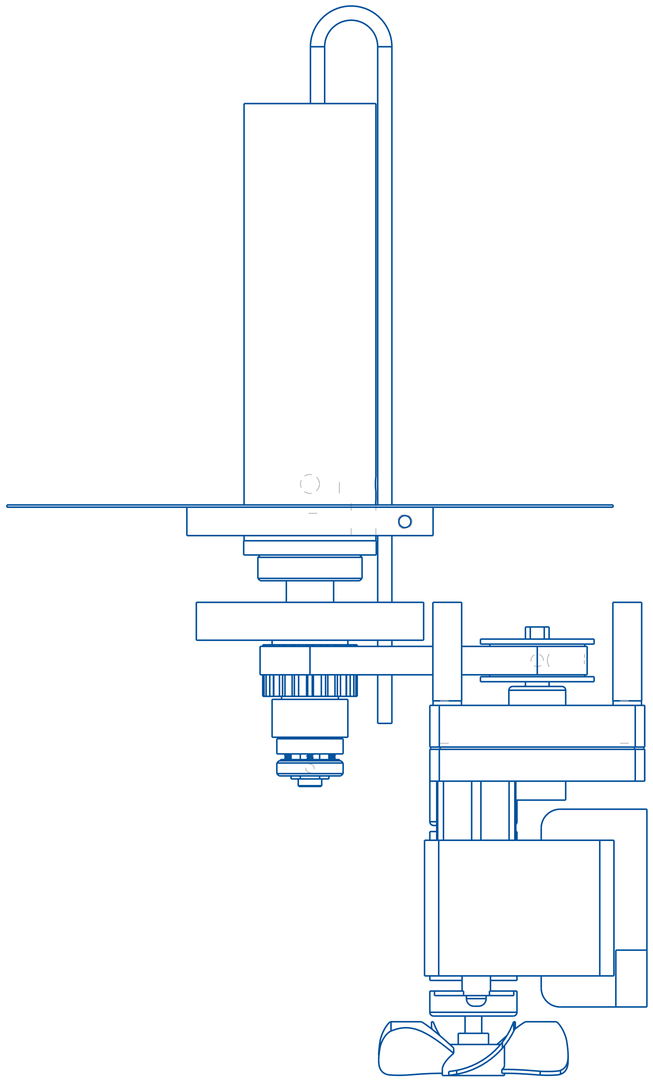
APPR BY:

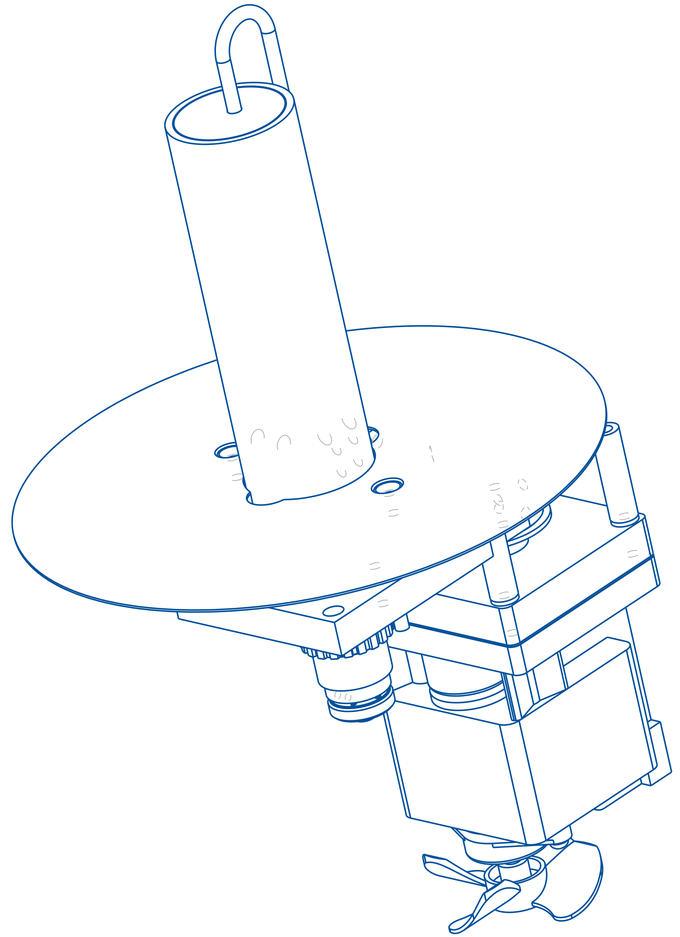
Q34 REWIND ASSEMBLY

MAT'L 22600R-134

22600R-134







B	Nov-13-23	UPDATED THE DRAWING/BOM
A	8-24-15	NEW DRAWING
REV	DATE	DESCRIPTION

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SCALE:	1/1
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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

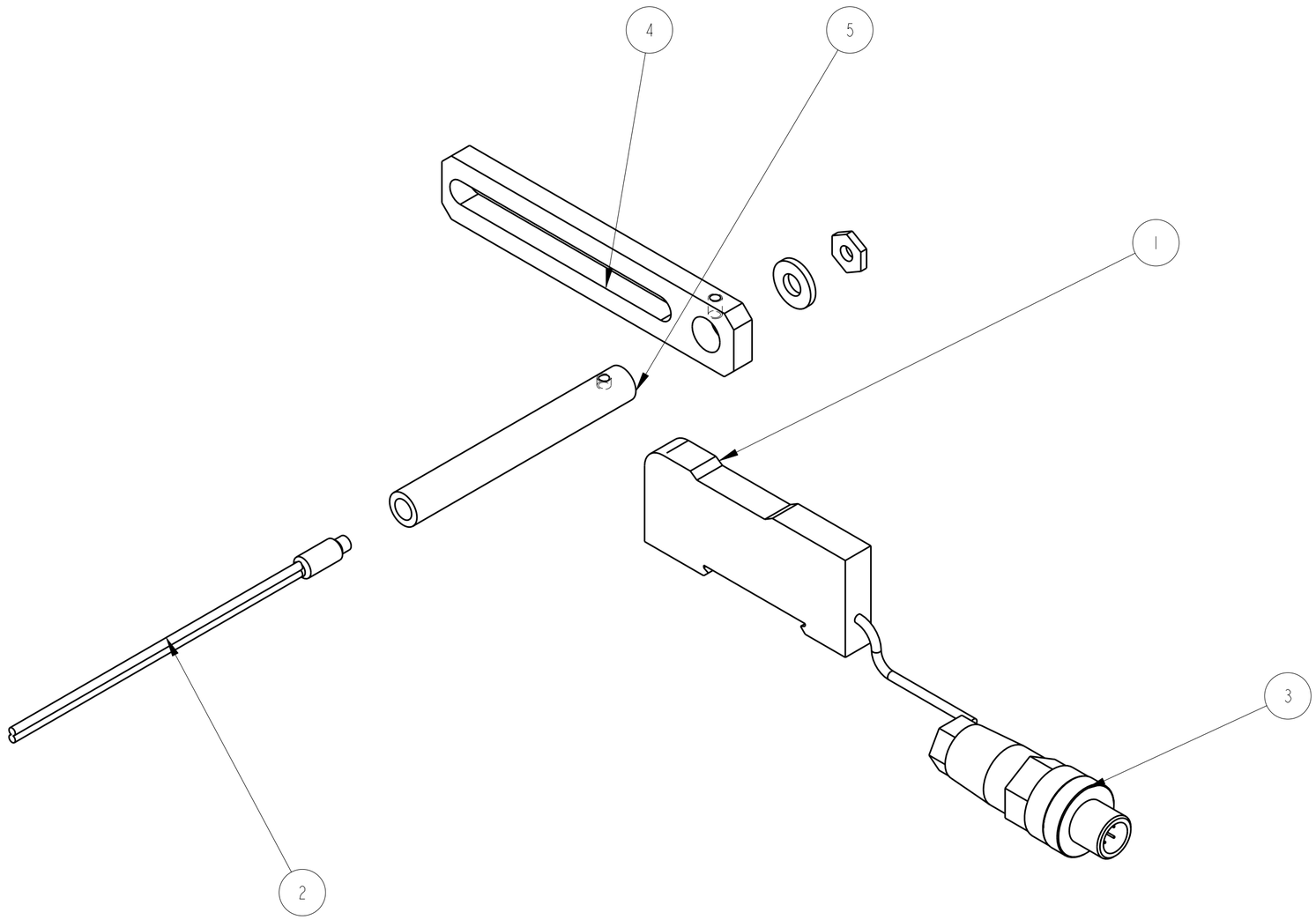
TROUBLESHOOTING:

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

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

UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE

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

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

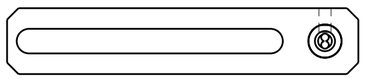
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

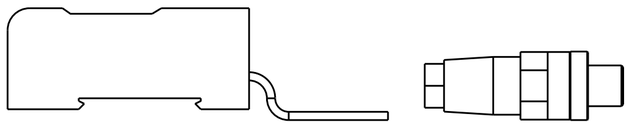
SCALE:	1/1
DATE:	02/25/2010
DRW BY:	SEM
CHK BY:	
APPR BY:	

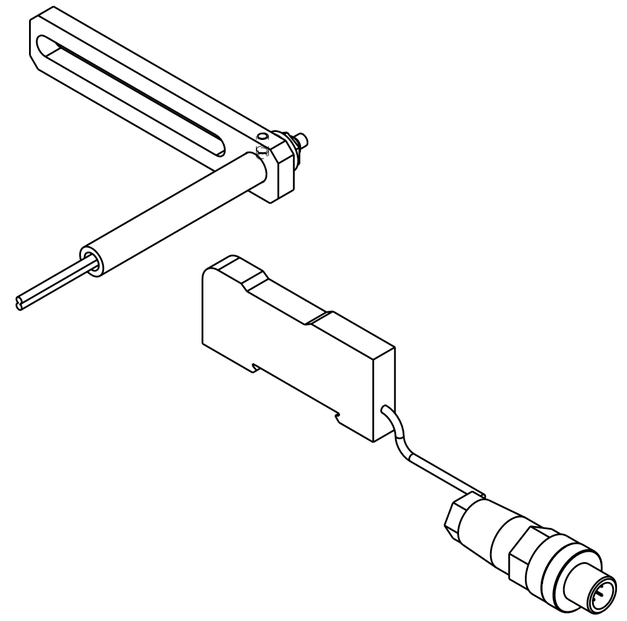
LOW LABEL DETECT

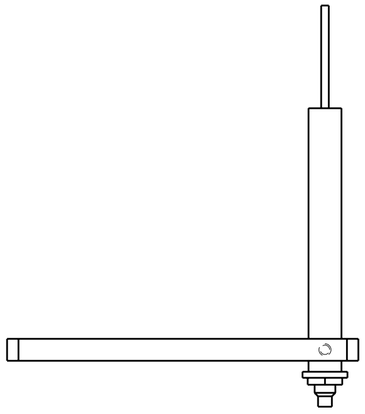
MAT'L

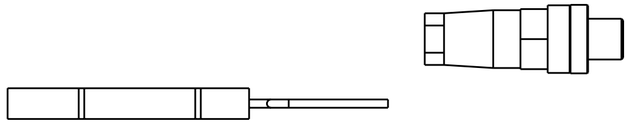
C21187-000

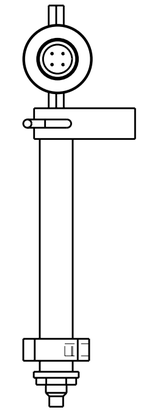












SHEET 2 OF 2

REV	DATE	DESCRIPTION
A	02/25/2009	NEW DRAWING

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

LOW LABEL DETECT

MAT'L

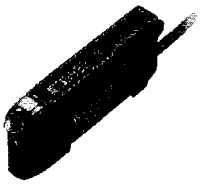
C21187-000

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

Precautions on Regulations and Standards

■ CE Marking

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

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

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

■ UL Certificate

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

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

■ FCC Regulations

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

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

Package Contents

- Main unit
- Instruction manual

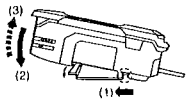
2 Installation and Wiring

Mounting the Main Unit

■ Mounting the Main Unit on a DIN rail

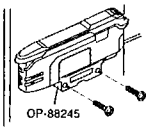
1 **Align the claw at the bottom of the main unit with the DIN rail, as shown in the figure. While pushing the main body in the direction of arrow 1, push down in the direction of arrow 2.**

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



■ Installation on a wall (main unit only)

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

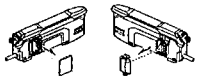


Connecting Multiple Amplifiers

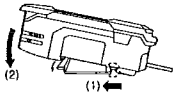
Up to 16 expansion units can be connected to 1 main unit. However, each dual output type will be treated as 2 expansion units.

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

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



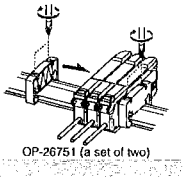
2 **Install the amplifiers on the DIN rail one at a time.**



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

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

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



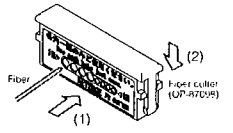
OP-26751 (a set of two)

Fiber Unit Installation

■ Using a fiber cutter

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

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



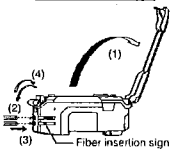
Always insert fiber from the side with writing

■ Connecting to the amplifier unit

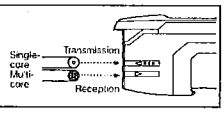
1 **Open the cover (1), and then lower the lever in the direction indicated by (2).**

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

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

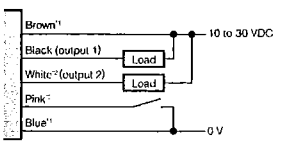


NOTICE	**When installing a coaxial reflective fiber in the main unit, install the single-core fiber in the transmission installation hole and the multi-core fiber in the reception installation hole.**



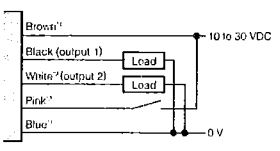
Wiring (Cable Type)

● FS-N41N/N42N/N43N/N44N



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

● FS-N41P/N42P/N43P/N44P



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

Wiring (M8 Connector Type: FS-N41C)

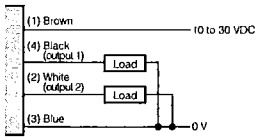
Select NPN or PNP and the function of I/O pin (2) during the initial settings.

Sensor pin layout 

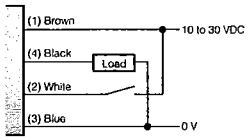
FS-N41C supports "IO-Link: Specification V.1.1/COM2 (38.4 kbps)". The setting file (IODD) can be downloaded from Keyence's web site (http://www.keyence.com).

● When using the sensor in PNP mode

OUT1 + OUT2

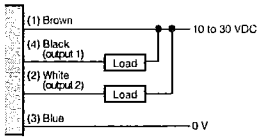


OUT1 + INPUT

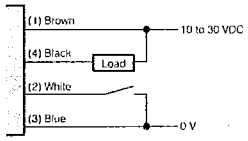


● When using the sensor in NPN mode

OUT1 + OUT2



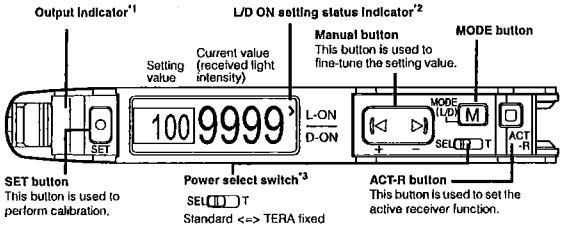
OUT1 + INPUT



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

3 Basic Settings

■ Names and functions



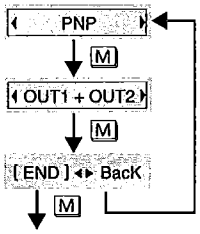
*1 On dual output types (including the FS-N41C), the indicator operates according to the output channel selected with the output channel selection switch.

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

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

■ Initial settings (FS-N41C only)

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



Settings complete

Use [◁ ▷] to select PNP or NPN.

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

Use [◁ ▷] to select this item.

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

■ Basic settings

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

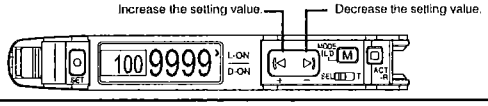
1 Press [M] once. Switch L-On/D-On
2 Use [◁ ▷] to switch the output style.
3 Press [M] three times.

● Switching the display language

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

● Fine-tuning the setting value (threshold)

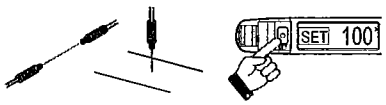
Use [◁ ▷] to adjust the value. Hold down the button to make adjustments more quickly.



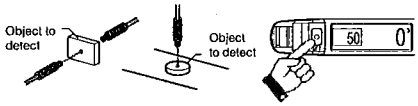
■ Basic calibration methods

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

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



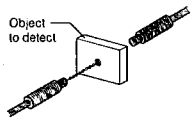
2 Press [SET] with an object to detect present.



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

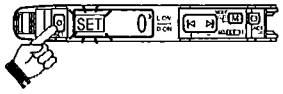
● Maximum sensitivity calibration

Thrubeam model: With an object to detect present



Reflective model: With no object to detect present

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



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

4 Useful Functions

● Initialization

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

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

2 Press M once. Back

3 Press ◀ ▶ once. Execute

4 Press M once.

● Key lock

Disable button operations.

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

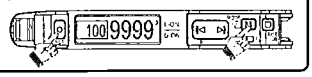
Cancel: Use the same procedure.

● Saturation avoidance function

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

1 Press M and SET simultaneously.

Cancel: Use the same procedure.

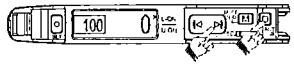


● Zero shift function

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

1 Press ACT-R and ◀ ▶ simultaneously.

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



● Active receiver (ACT-R)

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

Operation when the sensor is shipped from the factory

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

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

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

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

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

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

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

1 Press ACT-R once. ACT-R Blinking

2 Press ◀ ▶.

3 The light-receiving side blinks in green.

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

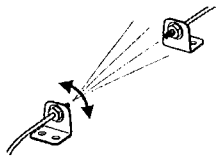
To make it easy to perform optical-axis alignment (optical-axis alignment assist mode)

1 Press ACT-R twice. Opt Axis Assist

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

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

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



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

The sensor returns to the normal status.

5 Specifications

The response times are listed on the following page.

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

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

E 1101-3

6 Detailed Settings

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

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

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

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

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

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

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

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

End [M] ADVANCE
Settings complete

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

END

Settings complete

■ Output 2 setting

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

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

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

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

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

END

Settings complete

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

KEYENCE CORPORATION

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

www.keyence.com

AUSTRIA Ph: +43 22 36-3782 66-0
BELGIUM Ph: +32 1 528 1222
BRAZIL Ph: +55-11-3045-4011
CANADA Ph: +1-905-366-7655
CHINA Ph: +86-21-3357-1001
CZECH REPUBLIC Ph: +420 222 191 483
FRANCE Ph: +33 1 56 37 78 00
GERMANY Ph: +49 6102 36 89-0
HONG KONG Ph: +852-3104-1010
HUNGARY Ph: +36 1 802 73 60
INDIA Ph: +91-44-4963-0900
INDONESIA Ph: +62-21-2966-0120
ITALY Ph: +39-02-6688220
KOREA Ph: +82-31-789-4300
MALAYSIA Ph: +60-3-7883-2211
MEXICO Ph: +52-55-8850-0100
NETHERLANDS Ph: +31 40 20 66 100
PHILIPPINES Ph: +63-(0)2-981-5000
POLAND Ph: +48 71 36861 60
ROMANIA Ph: +40 269-232-808
SINGAPORE Ph: +65-6392-1011
SLOVAKIA Ph: +421 2 5939 6461
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SWITZERLAND Ph: +41 43-45577 30
TAIWAN Ph: +886-2-2721-8080
THAILAND Ph: +66-2-369-2777
UK & IRELAND Ph: +44-1908-696900
USA Ph: +1-201-930-0100
VIETNAM Ph: +84-24-3772-5555

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

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.

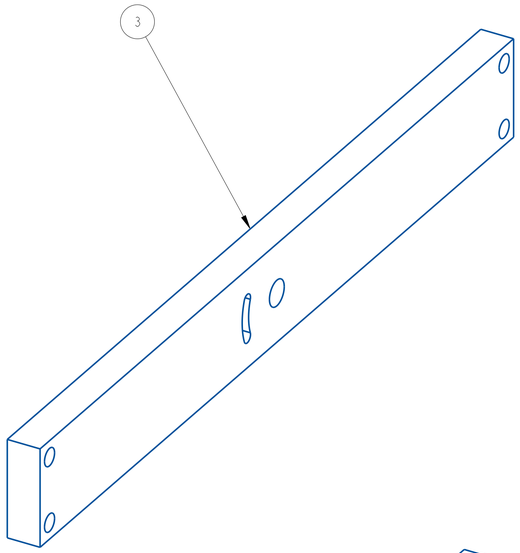
MAINTENANCE:

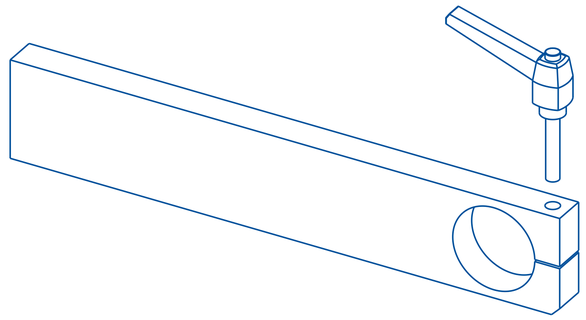
- No scheduled maintenance for this assembly.

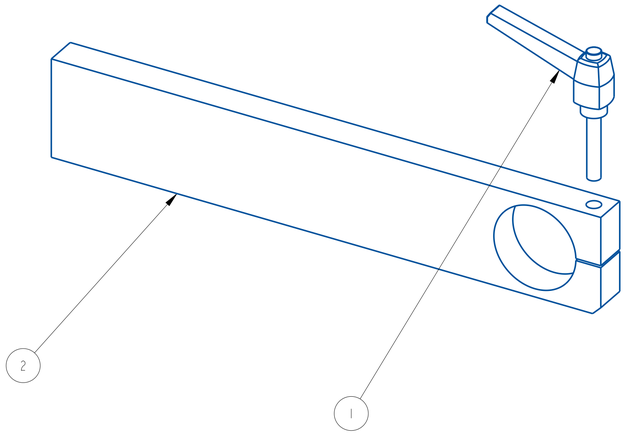
TROUBLESHOOTING:

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-04
2	2	B21190-043	YOKE SIDE PLATE	22600Y-04
3	1	B21555-000	MTG YOKE BACK PLATE	22600Y-04







REV	DATE	DESCRIPTION	BY
A	Jul-21-25	NEW DRAWING	TAZ

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

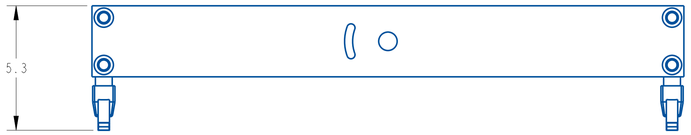
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

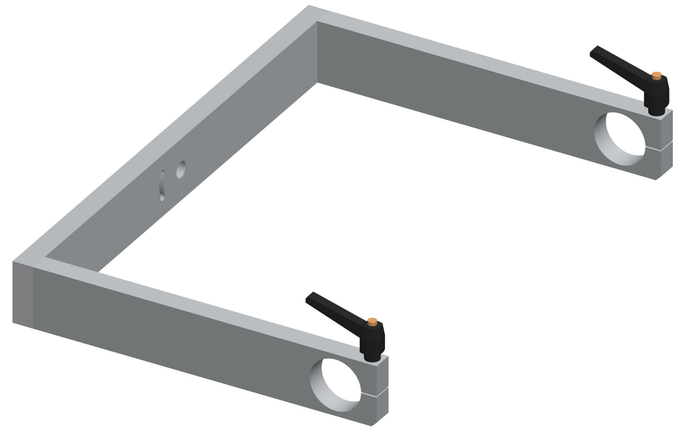
SCALE: 1/2
DATE: Jul-21-25
DRW BY: TAZ
CHK BY:03/15/2024-SEM
APPR BY:

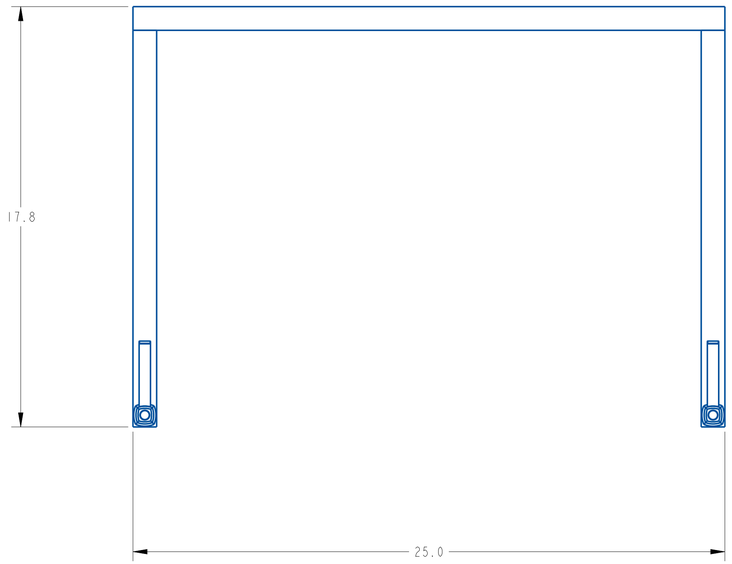
Q34 GUARD YOKE

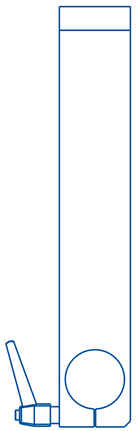
MAT'L

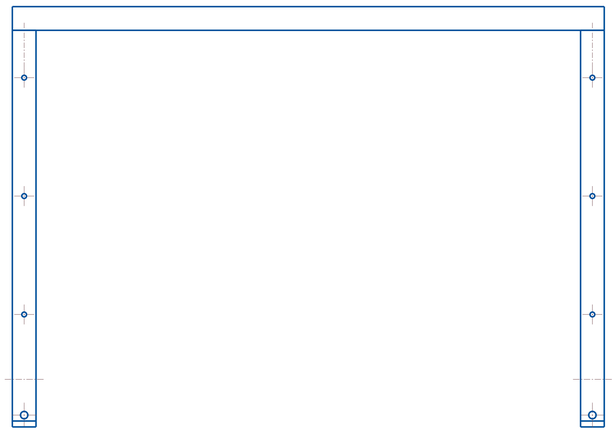
22600Y-04











REV	DATE	DESCRIPTION	BY
A	Jul-21-25	NEW DRAWING	TAZ

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

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

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

SCALE: 5/16
DATE: Jul-21-25
DRW BY: TAZ
CHK BY:03/15/2024-SEM
APPR BY:

Q34 GUARD YOKE

MAT'L

22600Y-04

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:

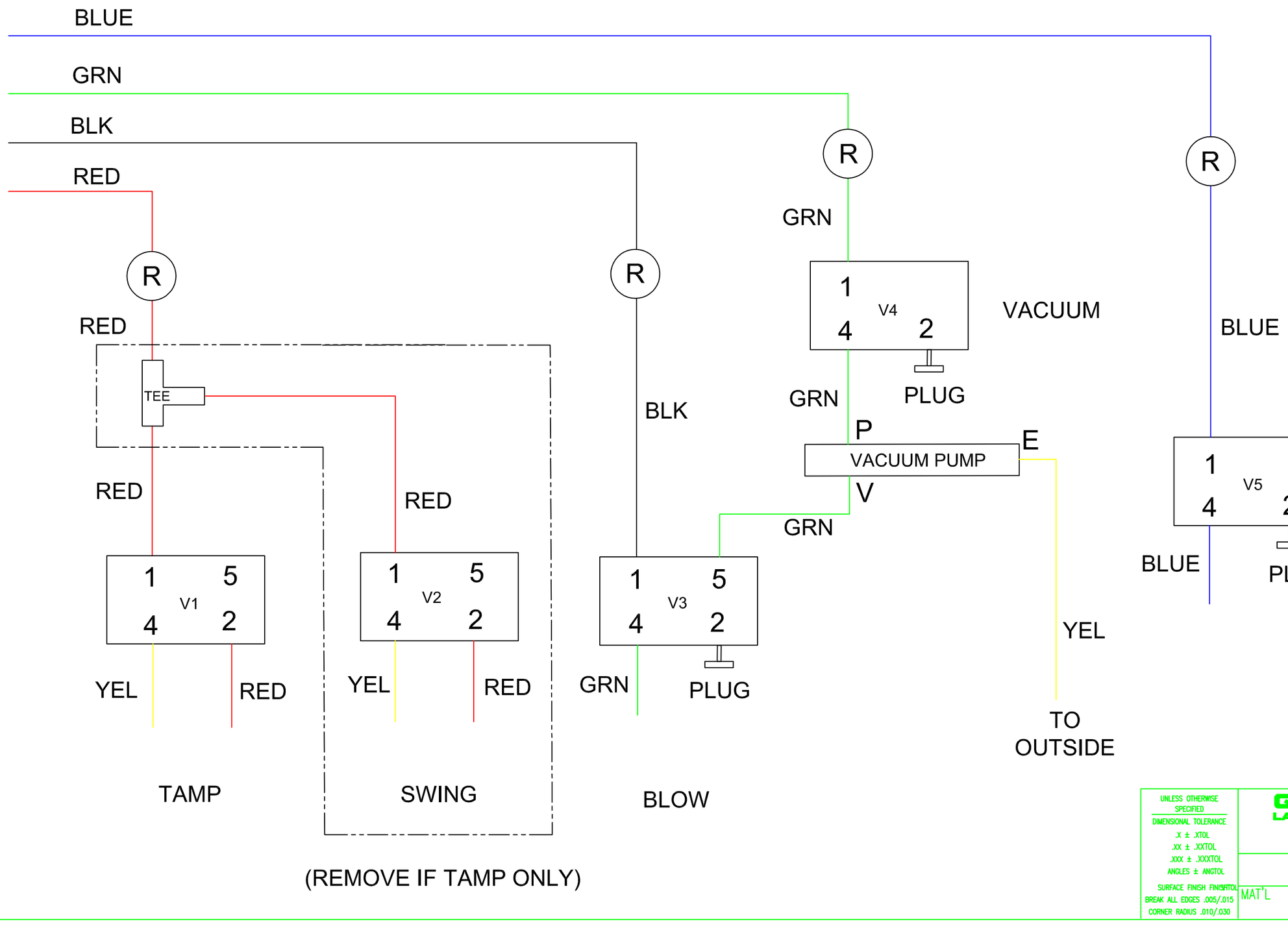
- Check the filter located at the side of the unit for water accumulation. Drain the water by loosening the valve at the bottom of the filter.
- Check air tubes for cracks or leaks. Replace if needed.

TROUBLESHOOTING:

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

Also see Tamp Assembly Troubleshooting

MAIN AIR PIPE



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: 01AUG18 DRAWN BY: GW 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.

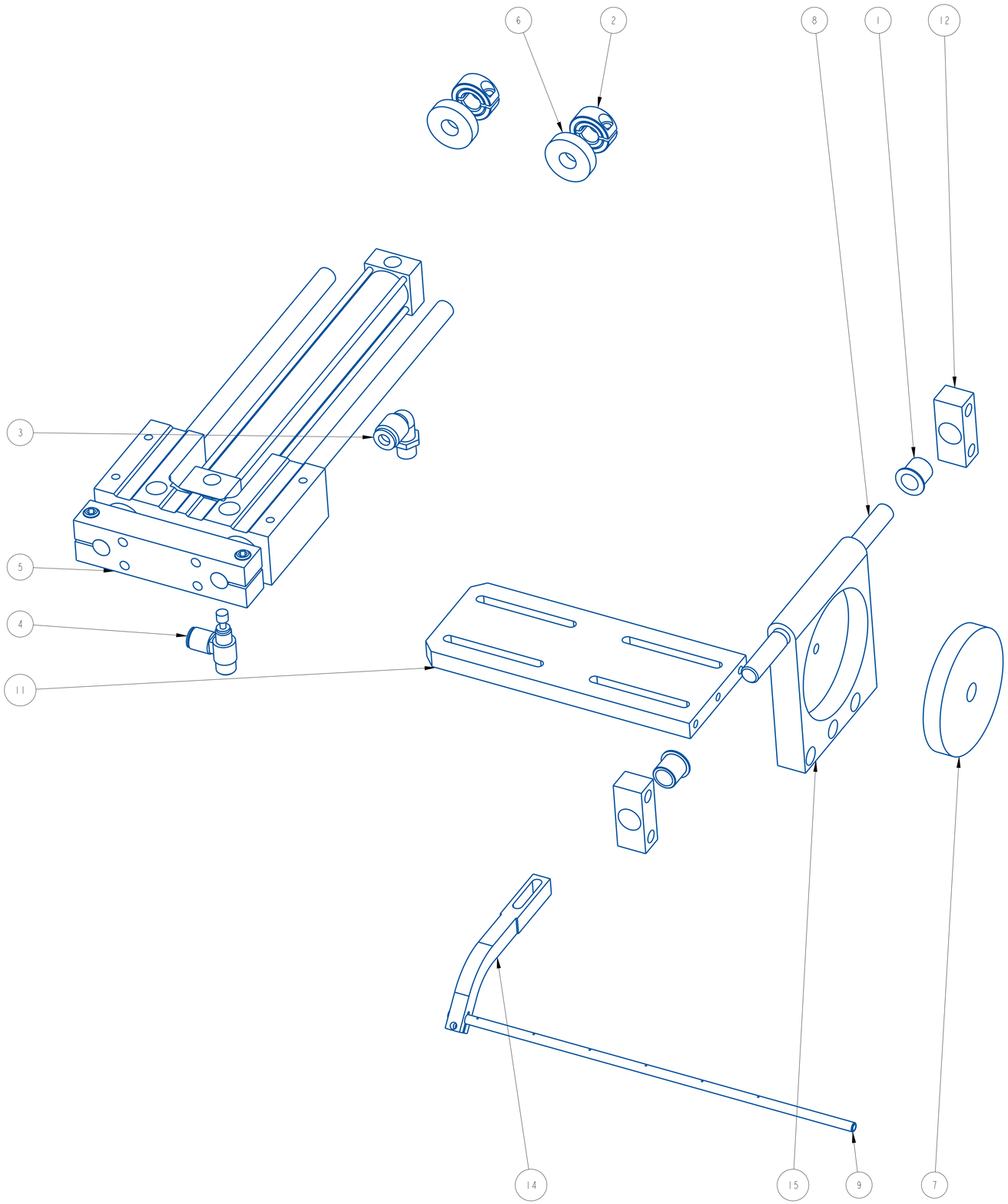
TAMP PAD ASSEMBLY VERTICAL POSITION:

- 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:

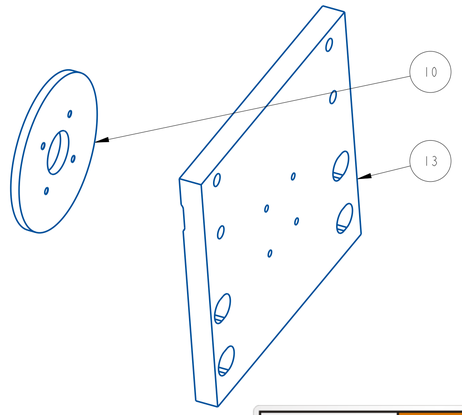
Problem	**What to Do**
- Label not positioned on tamp pad correctly	- Correct tamp cylinder position
- Label not feeding completely onto tamp pad.	- Tamp pad to far from peel edge.
- Label jams into the side of the	- Tamp pad vertical position to low tamp pad.



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	2	131116-034	FLANGE BEARING	22600T-000
2	2	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	22600T-000
3	1	391801-000	FITTING, 1/4 TUBE X 1/8 NPT ELBOW	22600T-000
4	1	392029-000	FLOW CONTROL FITTING	22600T-000
5	1	392571-000	PNEUMATIC SLIDE	22600T-000
6	2	393562-000	BUMPERS FOR PHD CYLINDER	22600T-000
7	1	792303-034	MAGNET	22600T-000
8	2	A20592-035	PIVOT SHAFT	22600T-000
9	1	A23372-034	AIR ASSIST TUBE	22600T-000
10	1	A26162-000	WASHER REWORK	22600T-000
11	1	B20076-034	SLIDE MOUNTING PLATE	22600T-000
12	2	B23018-000	BRG PLATE	22600T-000
13	1	B23019-010	MTG PLATE	22600T-000
14	1	B23020-000	AIR ASSIST TUBE MTG.	22600T-000
15	1	C21420-010	SWING MTG PLATE	22600T-000

NOT SHOWN:

B25032-1011 TAMP PAD BLACK 3" X 3"
B25032-299 TAMP PAD, 3" X 3"



REV	DATE	DESCRIPTION	BY
C	Nov-10-23	UPDATED THE BOM	CRT
B	11-MAR-16	UPDATED BOM	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

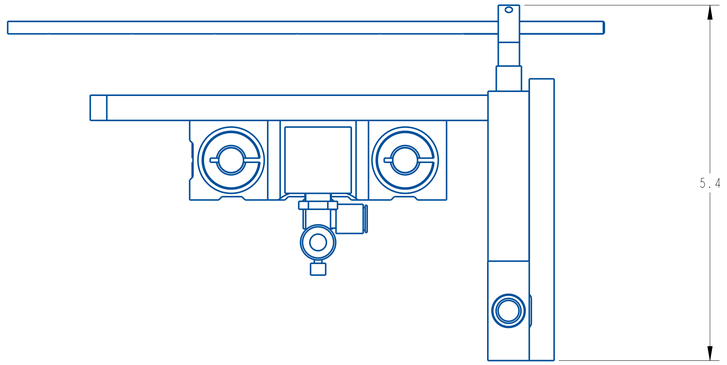
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

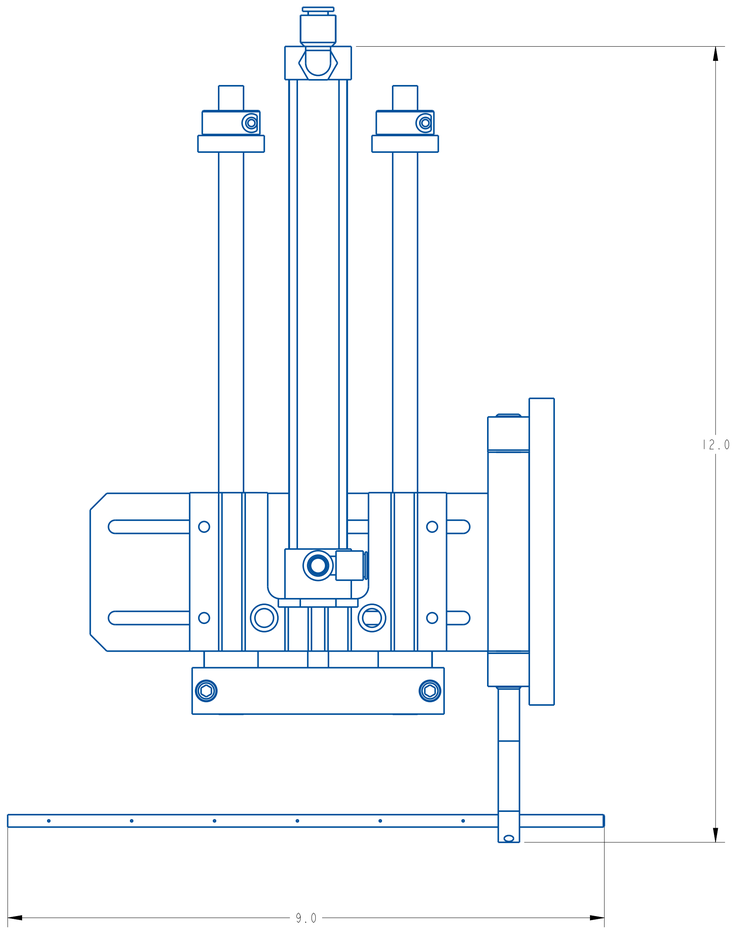
SCALE: 7/8
DATE: 11-26-13
DRW BY: MAW
CHK BY: 03/15/2024-SEM
APPR BY:

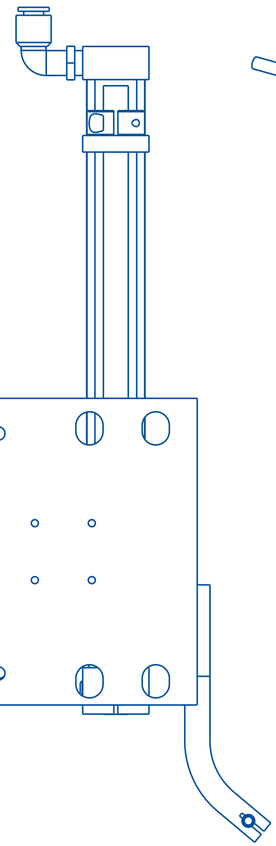
TAMP CYLINDER

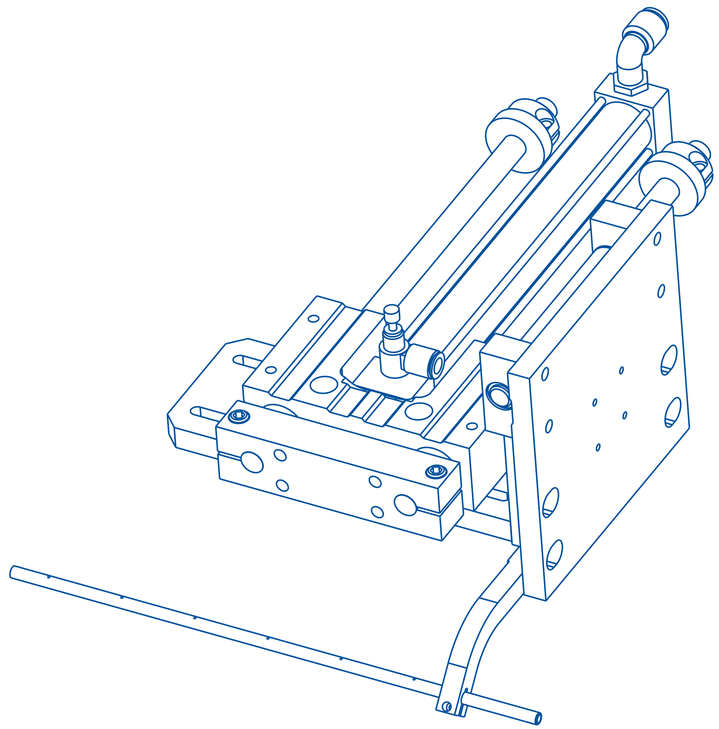
MAT'L

22600T-000









REV	DATE	DESCRIPTION	BY
C	Nov-10-23	UPDATED THE BOM	CRT
B	11-MAR-16	UPDATE BOM	CRT
A	11-26-13	NEW DRAWING	

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

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

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

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

SCALE: 1/8
DATE: 11-26-13
DRW BY: MAW
CHK BY:03/15/2024-SEM
APPR BY:

TAMP CYLINDER

MAT'L

22600T-000

INDENTED BILL OF MATERIAL

Items: 22600SN-005 Thru 22600SN-005 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: 22600SN-005			SENSOR KIT, Q34 STANDARD TAMP NPN, M8 QD HALL	01	1							
1	10	271305-001 "PHD" 92100	HALL EFFECT SENSOR BRACKET	01	0 8	EA	.0	A P	Y Y	N N		1.000000
1	15	252019-000 "LUMBERG" RSC4/7	CONNECTOR, M12, 4P, MALE	01	0 10	EA	.0	A P	Y Y	N N		2.000000
1	20	271291-003 "PHD" JC1HDN-K	HALL EFFECT SENSOR, NPN, M8 QD	01	0 8	EA	.0	A P	Y Y	N N		1.000000
1	25	202624-000 LUMBERG# RKMV3-224-2M ***	CABLE, M8, 3 PIN, 2m	01	0 7	EA	.0	A P	Y Y	N N		1.000000

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.

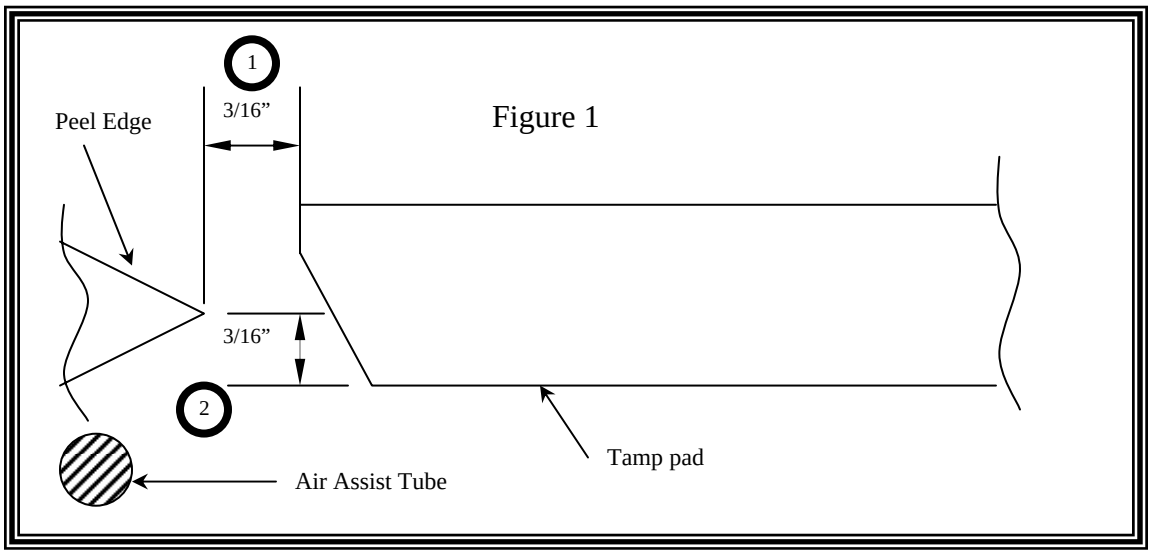


Figure 1

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

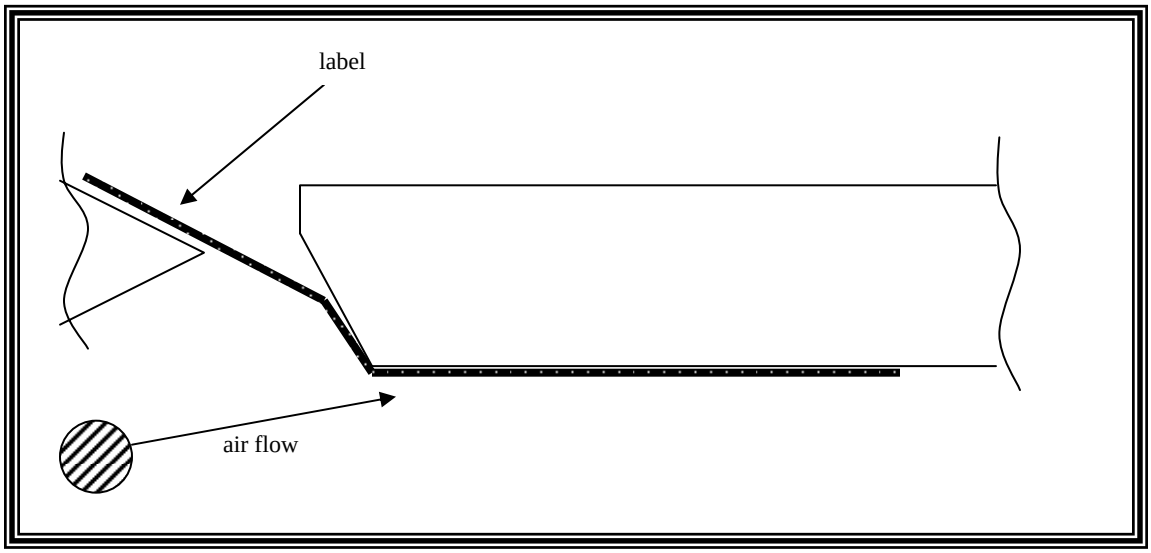


Figure 2

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

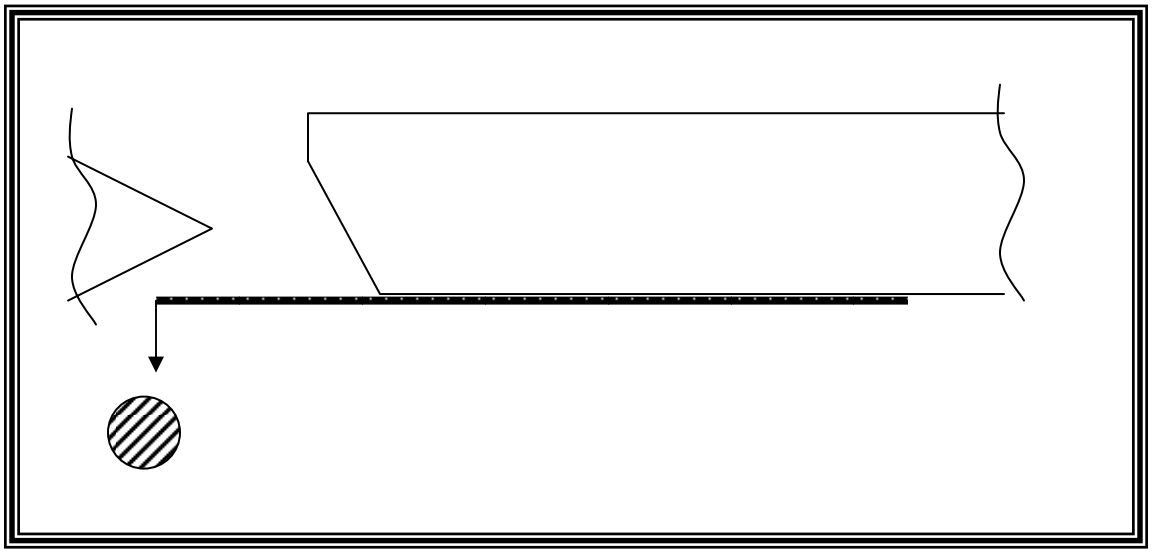


Figure 3

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.

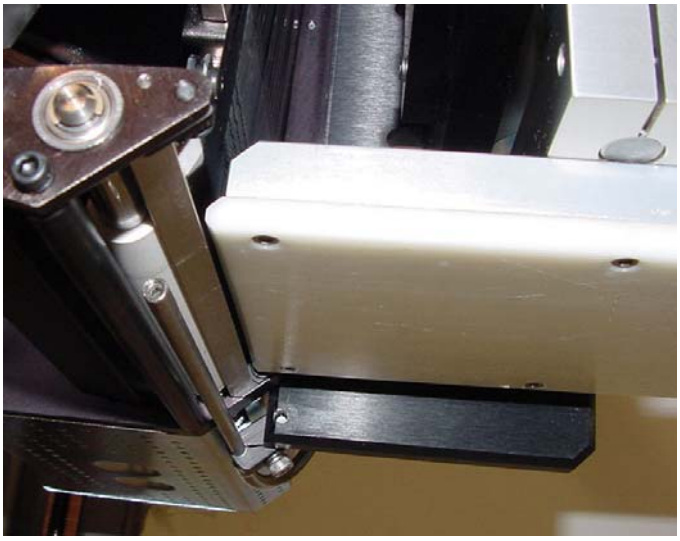
SET UP AND ADJUSTMENTS:

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. - Mask off excessive holes in the tamp pad

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

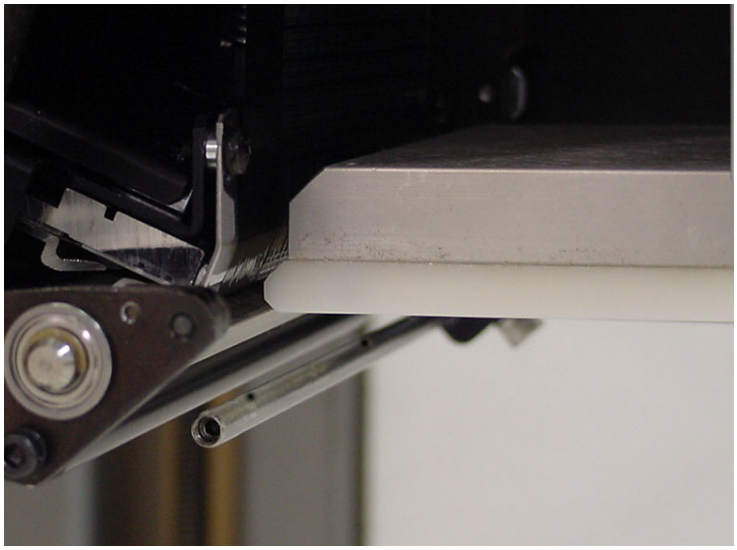
DRAWING NO: **SEE BELOW**

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 - Decrease air pressure to the air assist tube - Rotate angle of the tube to 45 deg. of label
-Label falls away	- Increase vacuum pressure - Increase air pressure to the air assist tube - Rotate angle of the tube to 45 deg. of label

ASSEMBLY TITLE: **PRODUCT DETECT ASSEMBLY**

DRAWING NO.: **B22291-000**

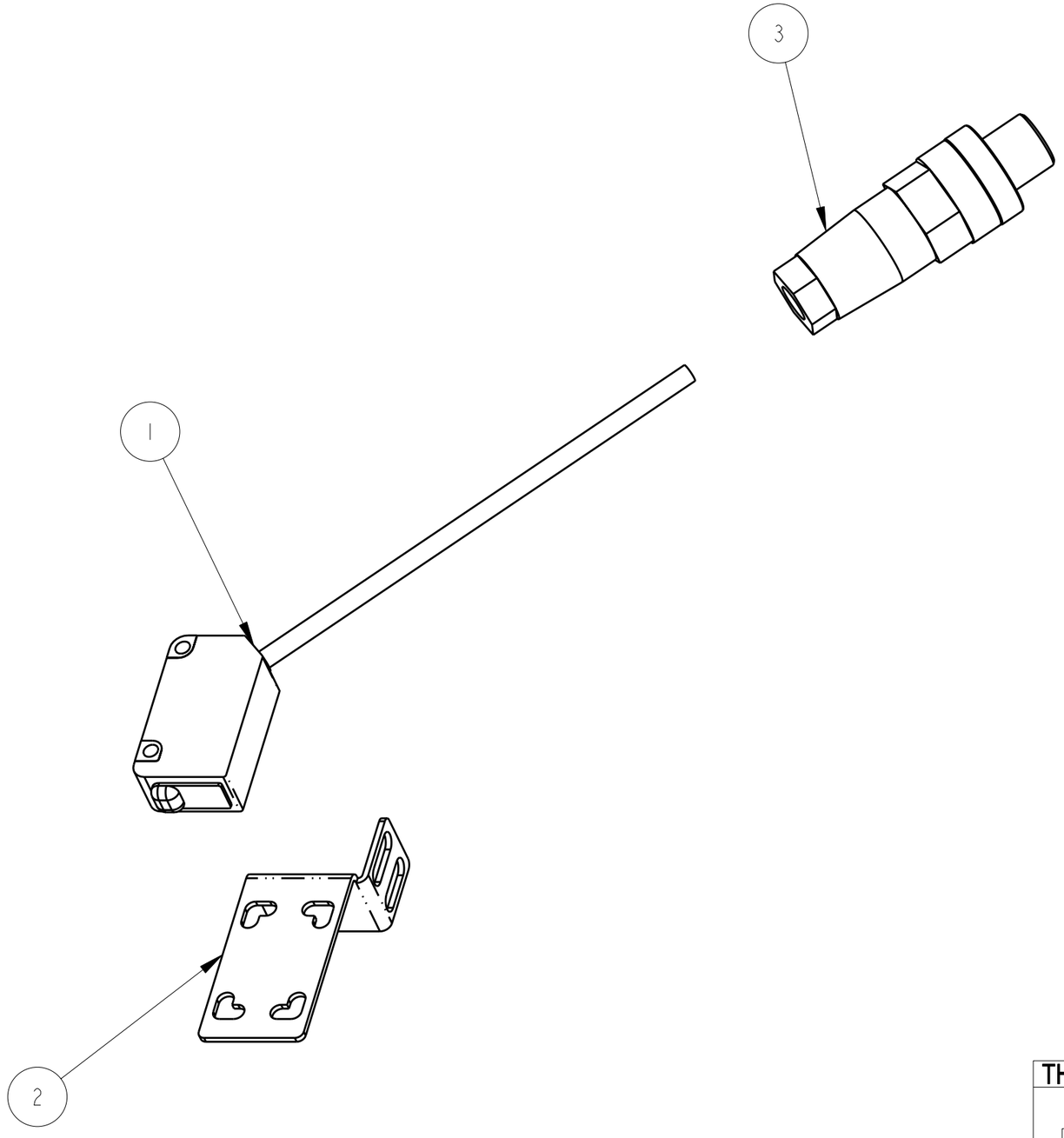
GENERAL FUNCTION:

- 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 bolts securing the sensor, and move as required, then retighten screws.
- The sensor is configured at the factory for optimum performance however if a new product is introduced adjustments may be required or a different sensor may if adjustments are required please refer to manufacturers data sheet for detailed setup and calibration if needed.

MAINTENANCE: None



ITEM	QTY	PART NO.	DESCRIPTION
1	1	203004-000	PHOTO SENSOR
2	1	203005-000	MOUNTING BRACKET
3	1	252019-000	4 PIN MALE CONNECTOR

REV	DATE	DESCRIPTION
A	04/01/2009	NEW DRAWING

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DIMENSIONAL TOLERANCE

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

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

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

SCALE:	1/1
DATE:	04/01/2009
DRW BY:	SEM
CHK BY:	
APPR BY:	

PRODUCT DETECT, LONG RANGE

MAT'L
BOM 21776-000

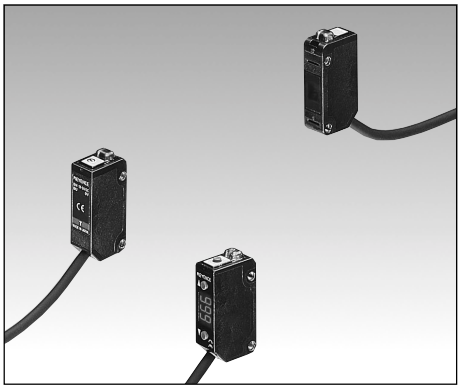
B22291-000

KEYENCE

96M0434

Self-contained Photoelectric Sensor
PZ-V/PZ-M

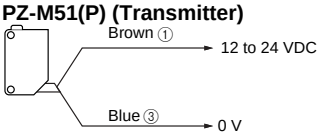
Instruction Manual



Connections

Circled numbers 1 to 4 represent the connector pin numbers.

PZ-M51(P) (Transmitter)



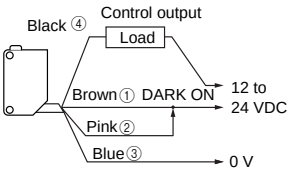
Pin arrangement for M12 connector

Pin arrangement for M8 connector

Pins ② and ④ are not used.

PZ-M51 (Receiver)/M61/M11/M31/M71/V11/V31/V71

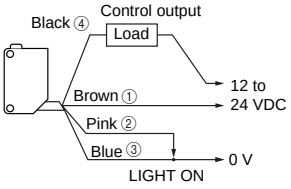
1. DARK-ON mode



Pin arrangement for M12 connector

Pin arrangement for M8 connector

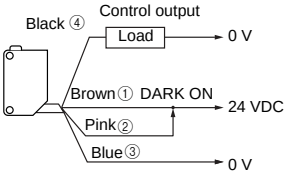
2. LIGHT-ON mode



* Be sure to connect the pink cable (output control) to the 12 to 24 VDC or 0 V terminal.

PZ-M51P (Receiver)/M61P/M11P/M31P/M71P/V11P/V31P/V71P

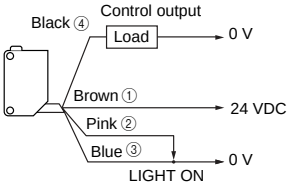
1. DARK-ON mode



Pin arrangement for M12 connector

Pin arrangement for M8 connector

2. LIGHT-ON mode

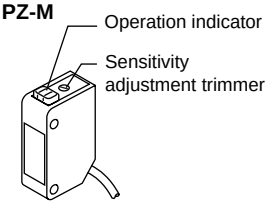


* Be sure to connect the pink cable (output control) to the 12 to 24 VDC or 0 V terminal.

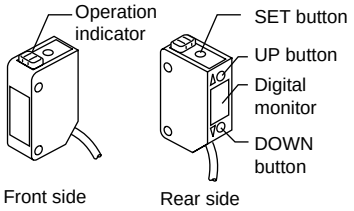
Note: The connector sensors will be released in the near future. Refer to “Model List” for the model of the connector sensor.

Part Names

PZ-M



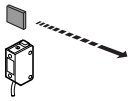
PZ-V



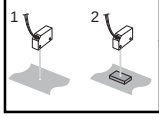
Sensitivity Adjustment

■ **PZ-V (Digital type)**

● **To detect a moving target (Fully-automatic calibration)**

Operation	Procedure	Adjustment
	1	Pass a target through the optical axis while pressing the SET button.
	2	Confirm that "SEt" flashes on the monitor.
	3	Release the SET button. The preset value flashes several times before the normal display appears.

● **To detect a stationary target (Two-point calibration)**

Operation	Procedure	Adjustment
	1	With no target, press the SET button and release it. "SEt" and the current distance flash alternately.
	2	With the target in place, press and release the SET button. The preset value flashes several times before the normal display appears.

● **To obtain maximum sensitivity (Maximum sensitivity setting)**

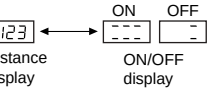
Operation	Procedure	Adjustment
	1	With no target, press the SET button for three seconds or more.
	2	Confirm that "SEt" flashes on the monitor.
	3	Release the SET button. The preset value flashes several times before the normal display appears.

Note: If the green LED turns off or " - - - " flashes after the calibration, the sensitivity has no allowance. In such a case, adjust the sensor head position, and calibrate again.

● **Fine sensitivity adjustment**

- When the ◁ or ▷ button is pressed and released, the numerical value flashes (approx. 2 seconds). This is the preset value. If the ◁ or ▷ button is pressed again while the preset value flashes, the preset value can be increased or decreased.
- When the ◁ or ▷ button is held down for 3 seconds or more, the preset value increases/decreases continuously.

● **Other functions**

Function	Operation	Description	Display
Display selection	Press the ◁ and ▷ buttons simultaneously and release them.	Change the display as shown on the right.	 Distance display / ON/OFF display (ON, OFF)
Key-lock	Press the ◁ and ▷ buttons simultaneously for three seconds or more.	Lock the operation buttons to avoid the preset value from being accidentally changed .	LOC flashes and then the normal display appears.
Key-lock cancel	Press the ◁ and ▷ buttons simultaneously for three seconds or more.	Unlock the operation buttons to allow the preset value to be changed.	UNL flashes and then the normal display appears.

● **Distance display**

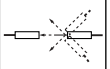
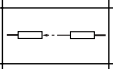
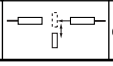
- The greater the distance between the target and the sensor head, the larger the displayed value becomes.
- If the target or background is out of the detectable range, 999 is displayed.

Note 1: The distance value indicates a reference value only. It is not an absolute distance.
Note 2: If the target approaches the sensor head closer than the specified range, the displayed value may increase.

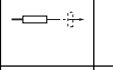
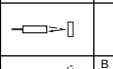
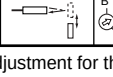
Sensitivity Adjustment

■ **PZ-M (Trimmer type)**

- **DARK-ON mode (When LIGHT-ON mode is selected, refer to the description in parentheses.)**

	Procedure	Operation	Trimmer	Indicators	Adjustment
Thrubeam type	1		 Max.	Green ☼ (☼) Orange ● (☼)	With the target in place, turn the trimmer to "Max." With the receiver in place, move the transmitter up/down and right/left. Set the transmitter at the midpoint of the range where the green LED is lit. Secure the transmitter and adjust the receiver position in the same way.
	2		 A Max.	Green ● (●) Orange ● (☼)	Turn the trimmer counterclockwise from Max. until the green LED turns off. Assume the position as Point A.
	3		 A Optimal position Max.	Green ☼ (☼) Orange ● (☼)	Set the trimmer midway between point A and Max. Confirm sensor operation.

- **LIGHT-ON mode (When DARK-ON mode is selected, refer to the description in parentheses.)**

	Procedure	Operation	Trimmer	Indicators	Adjustment
Multi-reflective type	1		 A	Green ● (●) Orange ☼ (●)	With no target, turn the trimmer clockwise until the orange indicator illuminates (turns off) and assume the position as Point A. If the LED does not illuminate (turn off) even with the trimmer at Max., use Max. as Point A.
	2		 A	Green ● (●) Orange ☼ (●)	With the target in place, turn the trimmer counterclockwise from Point A until the green LED turns off. Assume the position as Point B.
	3		 B Optimal position A	Green ☼ (☼) Orange ☼ (●)	Set the trimmer midway between points A and B. Confirm sensor operation.

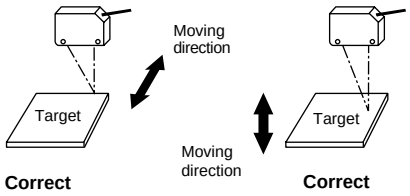
* The adjustment for the retroreflective type is the same as for the thrubeam type.

Mutual Interference

- The alternate-frequency type allows mutual interference suppression up to two sensors.
- The alternate-frequency type is not available for the thrubeam type.
- To suppress the mutual interference with the thrubeam type or with three or more sensors, contact KEYENCE.

Sensor Head Orientation

To detect a moving target, consider orientation of the sensor head according to the direction of the movement.



If you want to mount the sensor head in an orientation other than the above, contact KEYENCE.

Specifications

Type	Thrubeam	Retroreflective	Multi-reflective					
Model	**PZ-M51**	**PZ-M61** [1.]	**PZ-M11** [1.]	**PZ-M31** [1.]	**PZ-M71** [1.]	**PZ-V11** [1.]	**PZ-V31** [1.]	**PZ-V71** [1.]
Detecting distance [2.]	10 m	0.1 to 1.5 m (When R-5 reflector is used)	5 to 100 mm (10 x 10 cm white paper)	5 to 300 mm (10 x 10 cm white paper)	20 to 900 mm (30 x 30 cm white paper)	5 to 100 mm (10 x 10 cm white paper)	5 to 300 mm (10 x 10 cm white paper)	20 to 900 mm (30 x 30 cm white paper)
Setting distance	—	—	30 to 100 mm (10 x 10 cm white paper)	40 to 300 mm (10 x 10 cm white paper)	150 to 900 mm (10 x 10 cm white paper)	30 to 100 mm (10 x 10 cm white paper)	40 to 300 mm (10 x 10 cm white paper)	150 to 900 mm (10 x 10 cm white paper)
Light source	Red LED				Infrared LED	Red LED		Infrared LED
Sensitivity adjustment	1-turn trimmer (230°)					Automatic calibration		
Response time	1.5 ms max.	1 ms max. (1.2 ms max. with alternate-frequency type, 2 ms max. with M65 only [1.])						
Operation mode	LIGHT-ON/DARK-ON (selectable by wiring)							
Indicators [3.]	Output: Orange LED, Stable operation: Green LED							
Digital monitor	—					7-segment 3-digit red LED		
Control output	NPN open-collector 100 mA max. (30 V max.), Residual voltage 1 V max. PNP open-collector [4.] 100mA max. (26.4V max.), Residual voltage 1 V max.							
Protective circuit	Reversed polarity protection, Overcurrent protection, Surge absorbe							
Power supply	12 to 24 VDC ±10%, Ripple (P-P) 10% max							
Current consumption	T: 24 mA max. R: 27 mA max.	34 mA max.	30 mA max.		38 mA max.	37 mA max.		45 mA max.
Enclosure rating	IP-67							
Ambient light	Incandescent lamp: 5000 [5.] lux max., Sunlight: 20000 lux max							
Ambient temperature	-20 to +55°C (-4 to 158°F), No freezing							
Relative humidity	35 to 85%, No condensation							
Vibration	10 to 55 Hz, 1.5 mm double amplitude in X, Y and Z directions, 2 hours respectively							
Shock	1000 m/s^2 in X, Y and Z directions, six times each							
Housing material	Glass-fiber reinforced resin							
Weight (including 2-m cable)	T: Approx.50 g R: Approx.55 g	Approx. 55 g			Approx. 70 g	Approx. 55 g		Approx. 70 g

1. The alternate-frequency type is indicated by replacing "1" at the end of model name with "5". The models are PZ-M65, M15, M35, M75, V15 V35 and V75.
2. The detecting distance is obtained with the maximum sensitivity.
3. The transmitter of the PZ-M51 features a power indicator only.
4. The PNP-output type sensor is suffixed with P after the model name.
5. 3000 lux max for the PZ-M71P/V71P.

■ Options

The optional slit plate and polarizing filter are available for the PZ-M51 thrubeam type. Model: A-4 (A set of three types of slit plates and a polarizing filter.)

	Slit plate		
Slit width (mm)	0.5	1	2
Detecting distance (mm)	500	1000	2000
Target size (mm)	0.5 x 5	1 x 5	2 x 5

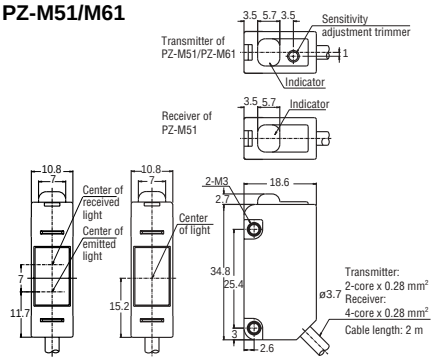
	Slit plate + Polarizing filter			
Slit width (mm)	No slit	0.5	1	2
Detecting distance (mm)	4000	200	600	1300
Target size (mm)	6 x 6	0.50 x 5	1 x 5	2 x 5

Model List

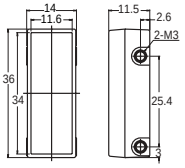
			Cable type	M8 connector type	M12 connector type
Thrubeam			PZ-M51	PZ-M52	PZ-M53
Retrorefrective			PZ-M61	PZ-M62	PZ-M63
Multi-reflective	**100 mm**	**Digital**	PZ-V11	PZ-V12	PZ-V13
		Trimmer	PZ-M11	PZ-M12	PZ-M13
	300 mm	**Digital**	PZ-V31	PZ-V32	PZ-V33
		Trimmer	PZ-M31	PZ-M32	PZ-M33
	900 mm	**Digital**	PZ-V71	PZ-V72	PZ-V73
		Trimmer	PZ-M71	PZ-M72	PZ-M73

Dimensions

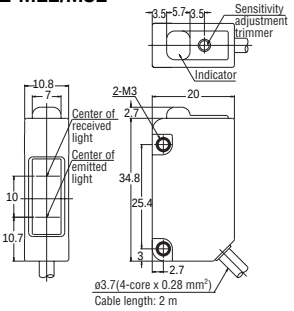
PZ-M51/M61



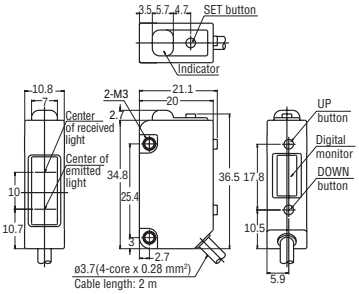
Reflector R-5 (Accessory for PZ-M61only)



PZ-M11/M31

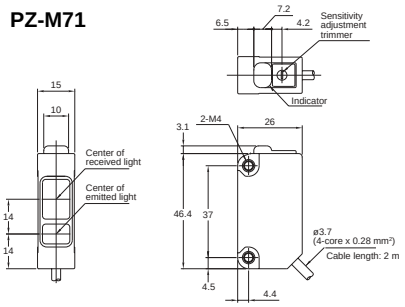


PZ-V11/V31

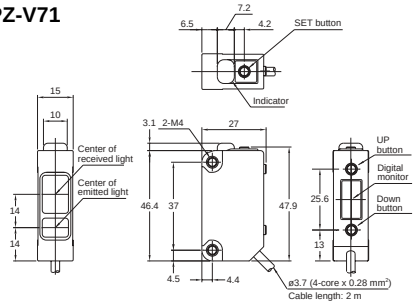


Special mounting bracket is optionally available. Contact KEYENCE for details.

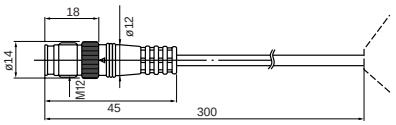
PZ-M71



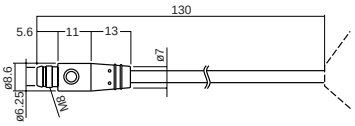
PZ-V71



M12 Connector type



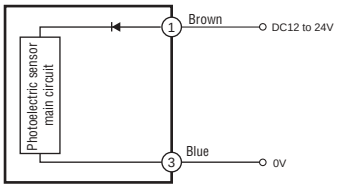
M8 Connector type



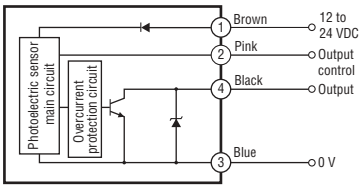
I/O Circuit

Circled numbers 1 to 4 represent the connector pin numbers.

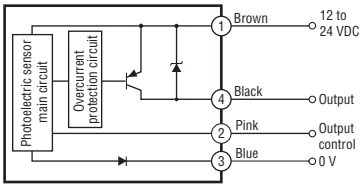
PZ-M51(P) (Transmitter)



PZ-M51 (Receiver)/M61/M11/M31/V11/V31



PZ-M51P (Receiver)/M61P/M11P/M31P/V11P/V31P



Hints On Correct Use

⚠ WARNING

- ***The PZ-V/PZ-M series is designed only to detect a target. Do not use it in a safety circuit to protect human body.***
- ***The PZ-V/PZ-M series does not have explosion-proof structure. Do not use it in the atmosphere where flammable gas, liquid or powder exists.***

- To extend the cable length, use a cable with at least a 0.3 mm² nominal cross-section area. Limit the length of cable extension to no more than 100 m.
- If the amplifier cable is placed together with power lines or high voltage lines in the same conduit, a detection error may occur due to noise interference, or the sensor may be damaged. Isolate the amplifier cable from these lines.
- When using a commercially available switching regulator, ground the frame ground terminal and ground terminal.
- Do not use the PZ-V/PZ-M series outdoors or in a place where extraneous light can enter the light-receiving surface directly.
- When the multi-reflective type is used for the detection of a target with high reflectivity (e.g. mirror-surfaced object), proper detection or distance adjustment may be disabled. In such a case, tilt the sensor head at some angle.
- During maximum sensitivity setting, the detecting distance may vary due to a difference in characteristics of each unit.
- Be sure to check that the wiring is properly established. Improper wiring may cause a decrease in sensitivity or overheating and sensor damage. (See “I/O Circuit”.)
- To mount the sensor, use an M3 screw (coarse thread). Limit the tightening torque to 0.6 N•m or less.
- To mount PZ-M71/V71, use an M4 screw (coarse thread). Limit the tightening torque to 0.7 N•m or less.
- To attach the R-5 reflector, use an M3 screw (coarse thread). Limit the tightening torque to 0.3 N•m or less.
- The displayed value may vary depending on the surrounding environment, such as temperature change or dust.
- Use a stable power supply. The sensor cannot operate properly if the power supply is unstable at power-on or if the ripple exceeds the specified range.

WARRANTIES (MUST ACCOMPANY THE PRODUCTS)

KEYENCE, at its sole option, will refund, repair or replace at no charge any defective Products within 1 year from the date of shipment. Unless stated otherwise herein, the Products should not be used internally in humans, for human transportation, as safety devices or fail-safe systems. EXCEPT FOR THE FOREGOING, ALL EXPRESS, IMPLIED AND STATUTORY WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OF PROPRIETARY RIGHTS, ARE EXPRESSLY DISCLAIMED. KEYENCE SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES, EVEN IF DAMAGES RESULT FROM THE USE OF THE PRODUCTS IN ACCORDANCE WITH ANY SUGGESTIONS OR INFORMATION PROVIDED BY KEYENCE. In some jurisdictions, some of the foregoing warranty disclaimers or damage limitations may not apply.

KEYENCE CORPORATION
1-3-14, Higashi-Nakajima, Higashi-Yodogawa-ku,
Osaka, 533-8555, Japan
PHONE: +81-6-6379-2211 FAX: +81-6-6379-2131

AFFILIATED COMPANIES

KEYENCE CORPORATION OF AMERICA
PHONE: 201-930-0100 FAX: 201-930-0099
KEYENCE DEUTSCHLAND GmbH
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KEYENCE KOREA CORPORATION
PHONE: 02-563-1270 FAX: 02-563-1271

0061-1 96M0434 Printed in Japan

Trouble Shooting Guide

(Consult respective printer manual for setup procedures)

SYMPTOM	DIAGNOSIS	CORRECTIVE ACTION
System will not power up	Blown Fuse	Replace 3.15amp. fuse on Power Supply
	Defective Power Supply	Replace Power Supply
	Defective Power Switch	Replace Main Power Switch
System will not Tamp	Tamp Home Sensor LED not on when Cylinder is home,	Adjust sensor until LED comes on when Cylinder is in the full up position
	No +24 VDC to tamp solenoid	Check wire connection at Breakout Board
	Defective Tamp Home Sensor	Check for +24 VDC at Breakout board, replace power supply if not present.
	Defective Solenoid	Replace Sensor
		Replace Tamp Solenoid
		Loose wires at Breakout board Replace defective product detect sensor
Printer will not print	Check printer setup (output print signal)	**Sato Printer** = Must be Type 3 output (DSW3-6 down, DSW3-7 up), DSW3-5 = Enabled **Zebra Printer** = Applicator Port must be set to MODE 1 **Datamax** = Apply HW must be Enabled External Signal = Low Status **Avery =** External Signal set to SINGLESTART
	Breakout Jumper/ Print Enable Sensor	Verify print jumper is in place from J2-8 to J2-11 on Breakout board. Replace faulty Print Enable sensor/ signal to J2-8.
	Tamp Home Sensor not active	Adjust sensor position so LED is on when tamp is fully retracted
	Faulty printer interface cable/connection	Replace faulty sensor Repair/Replace printer to applicator interface cable
	Defective Optional Smart tamp Sensor	Replace sensor (printer will not print unless sensor is triggered in tamp pad before returning to home position)

Troubleshooting Guide (cont.)

SYMPTOM	DIAGNOSIS	CORRECTIVE ACTION
Rewind Drum does not take up waste	Printer Setup	Verify printer output settings as stated above in “Printer will not print”
	Clutch loose	Adjust slip clutch mounted to rewind motor shaft(see photo in rewind section)
	Blown Motor Fuse	Replace Motor fuse F1 on breakout board with 3A MDL
	Defective Relay	Replace relay U2 on breakout board
	Defective Motor	Replace Rewind Motor
Applicator applies label late or not at all after product sensor is triggered.	Printer/Applicator has not finished print cycle	Raise printing speed and/or open up product pitch to allow reset time between print cycles.
	Product Delay set too high for product pitch	Move sensor closer to tamp pad and lower Product Delay Timer.
Jog button will not actuate tamp cylinder.	Fault Active	Reset Printer fault and/or low label/ribbon fault before jog button is depressed. (jog button priority is fault reset.)

ASSEMBLY TITLE: **T-BASE STAND ASSEMBLY**

GENERAL FUNCTION:

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

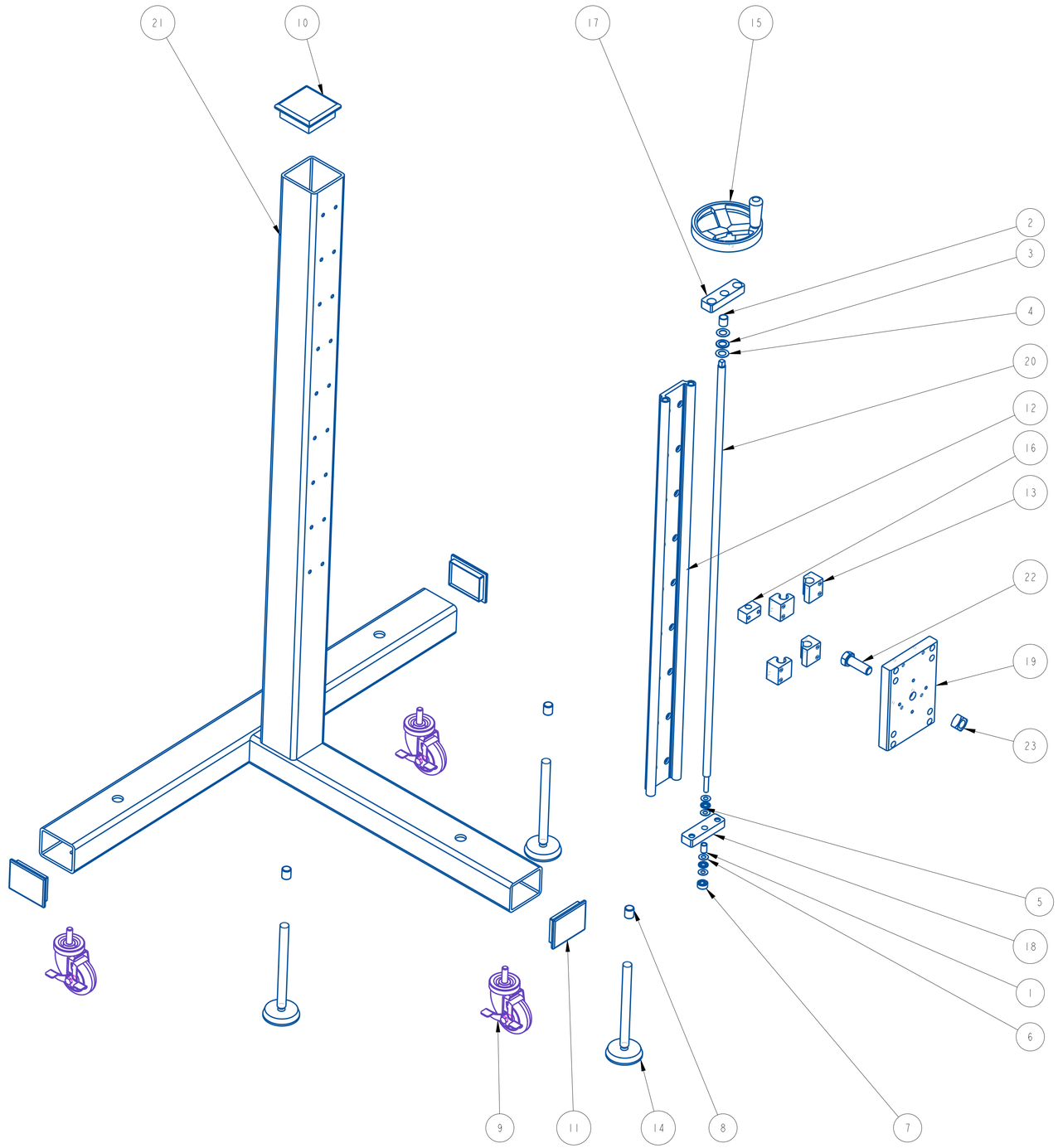
SET-UP AND ADJUSTMENTS:

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

MAINTENANCE:

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

TROUBLESHOOTING: None this section



ITEM	QTY	PART NO.	DESCRIPTION	PARENT ITEM
1	1	141172-000	SLEEVE BEARING, 1/2OD. x 3/8ID. x 3/4LNG	21770-001
2	1	141173-000	SLEEVE BEARING, 23/32OD. x 5/8ID. x 3/4LNG	21770-001
3	1	181081-000	BEARING, NEEDLE ROLLER	21770-001
4	2	181082-000	BEARING, THRUST WASHER	21770-001
5	2	181108-000	BEARING, NEEDLE ROLLER	21770-001
6	4	181111-000	THRUST WASHER	21770-001
7	1	362186-000	COLLAR, 3/8 IN. ID ONE-PIECE CLAMP	21770-001
8	3	791436-000	CAP, 3/4" HIGH X 5/8" I.D.	21770-001
9	3	791449-000	CASTERS, SWIVEL 3-1/2"	21770-001
10	1	792065-000	CAP INSERT FOR 4X4 TUBE (1/4WALL)	21770-001
11	3	792245-000	CAP INSERT FOR 3 X 4 TUBE	21770-001
12	1	792247-000	DRYLIN RAIL	21770-001
13	4	792248-001	PILLOW BLOCK	21770-001
14	3	793020-000	LEVELING MOUNT	21770-001
15	1	801080-000	HANDLE WHEEL, MODIFIED	21770-001
16	1	A24077-000	BRONZE NUT, RH	21770-001
17	1	B21345-000	TOP BEARING PLATE	21770-001
18	1	B21346-000	BOTTOM BEARING PLATE	21770-001
19	1	C20626-000	STAND SLED	21770-001
20	1	C20835-000	THREADED ROD, SQUARE END	21770-001
21	1	D21235-001	T-BASE STAND	21770-001
22	1	HCS281		21770-001
23	1	SQN022		21770-001

REV	DATE	DESCRIPTION	BY
A	25-Oct-07	NEW DRAWING	CAR

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

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

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

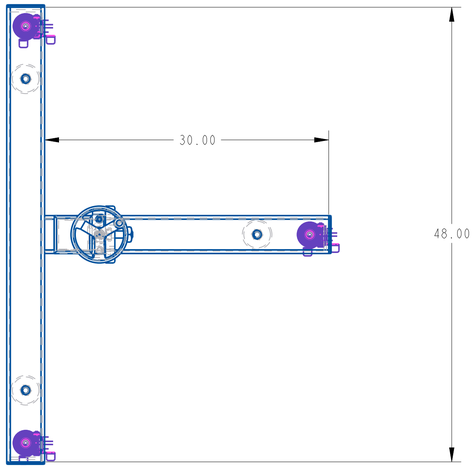
QUADREL LABELING SYSTEMS
7670 JENTHER DRIVE
MENTOR, OHIO 44060
(440) 602-4700

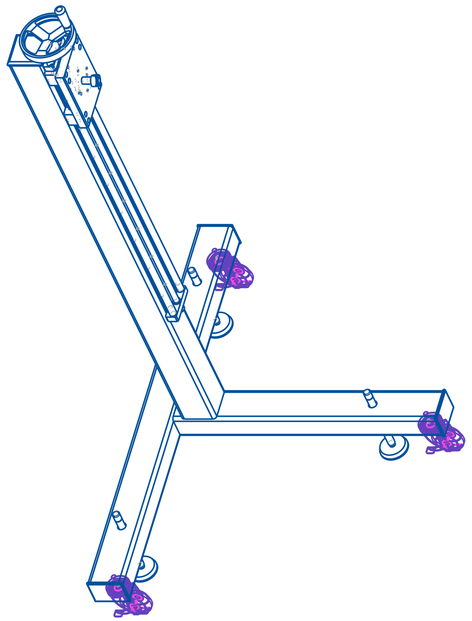
SCALE: 3/16
DATE: 25-Oct-07
DRW BY: CAR
CHK BY: 03/28/2024-SEM
APPR BY:

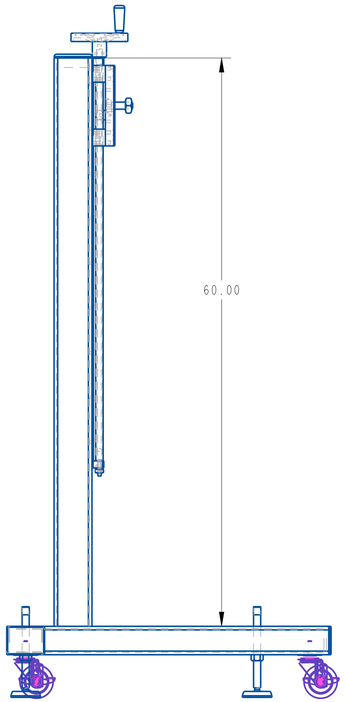
60" T-BASE STAND WITH IGUS SLIDE

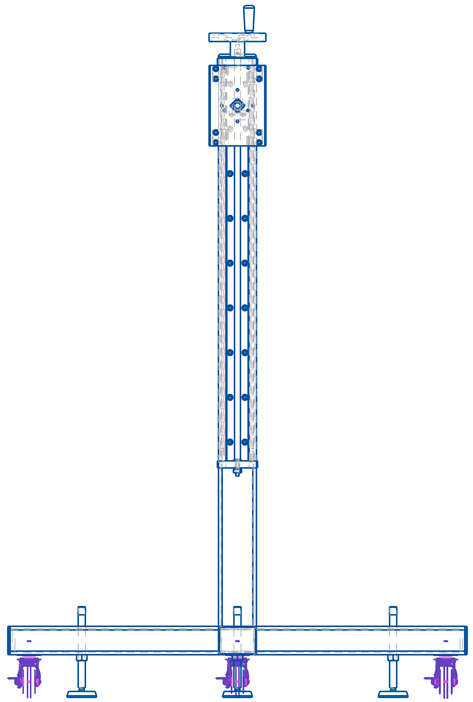
MAT'L 21770-000

D22051-000









SHEET 2 OF 2

REV	DATE	DESCRIPTION	BY
A	25-Oct-07	NEW DRAWING	CAR

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

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

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

SCALE: 1/8
DATE: 25-Oct-07
DRW BY: CAR
CHK BY:03/28/2024-SEM
APPR BY:

60" T-BASE STAND WITH IGUS SLIDE

MAT'L 21770-000

D22051-000

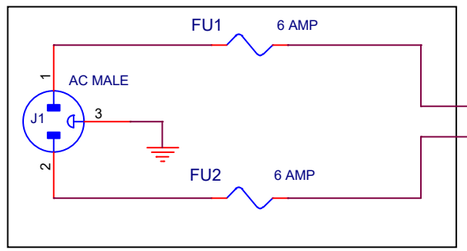
Schematics

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

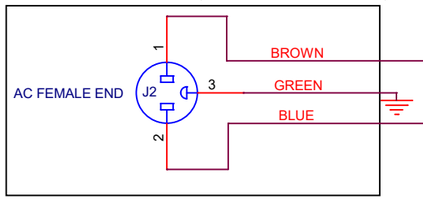
PS1
L
N
GND
24VDC V+
0VDC V-
POWER SUPPLY 24VDC 1A

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

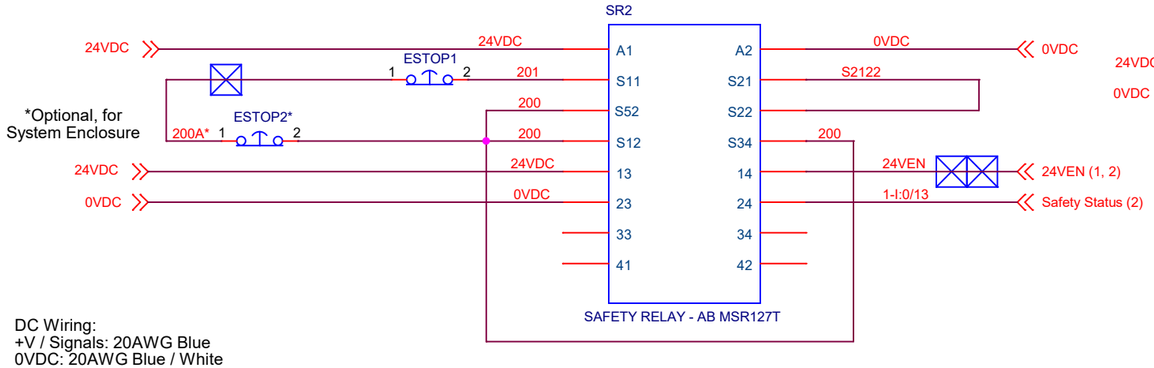
FU6 4 AMP
3L1

CR1
14
11
1
2
3T1

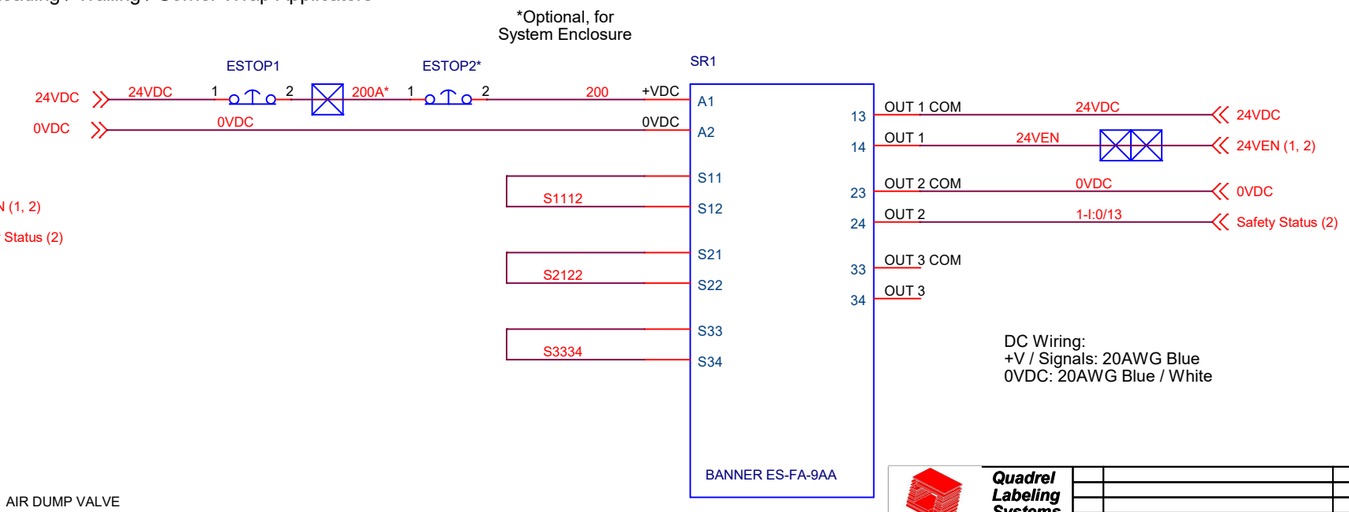
M1
REWIND MOTOR

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

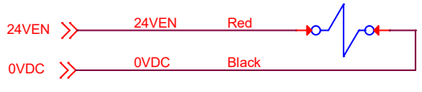


DC Wiring:
+V / Signals: 20AWG Blue
0VDC: 20AWG Blue / White

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

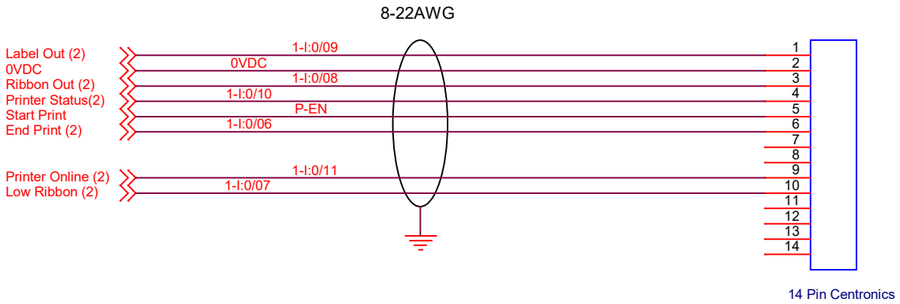
REV	DESCRIPTION	BY	DATE
A	Updated to Micro 800 Series & Safety	CAV	15NOV17

Title: PLC, Sensors

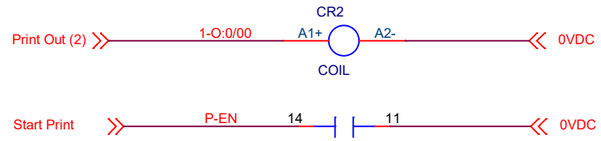
Size | Document Number: SD22600-000 | Rev: A

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

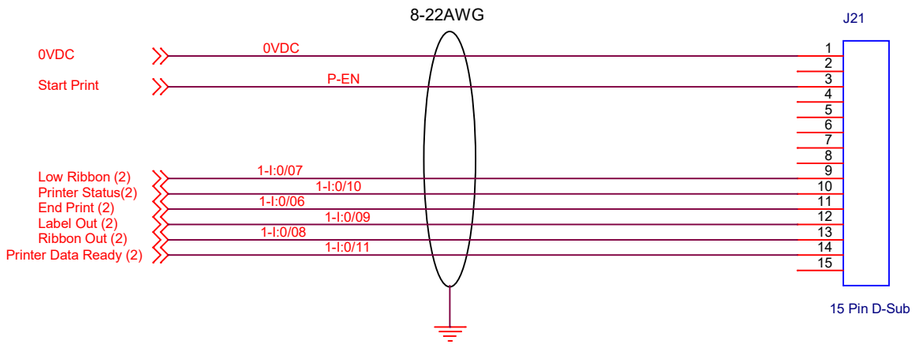
Printer Interface, Expansion Option Page 3



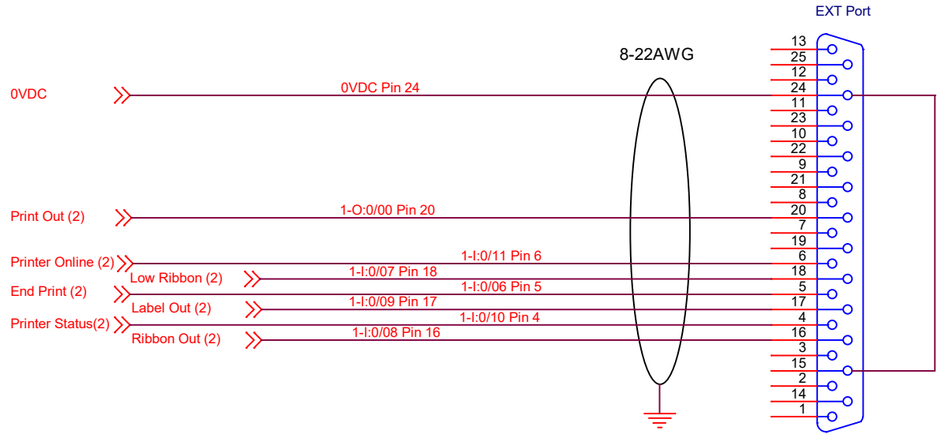
Sato 8424, 8485, 8490



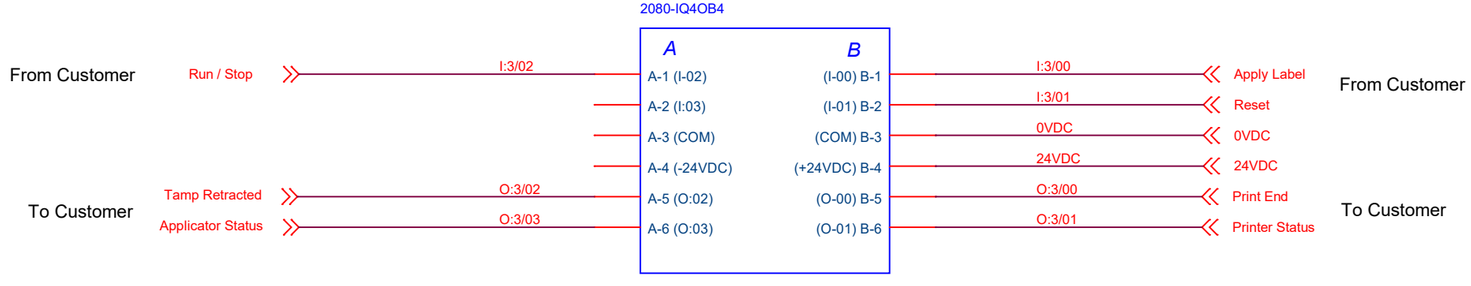
Start Print Signal (excluding S86ex)



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: 84204-200 Thru 84204-200 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: 84204-200			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		

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

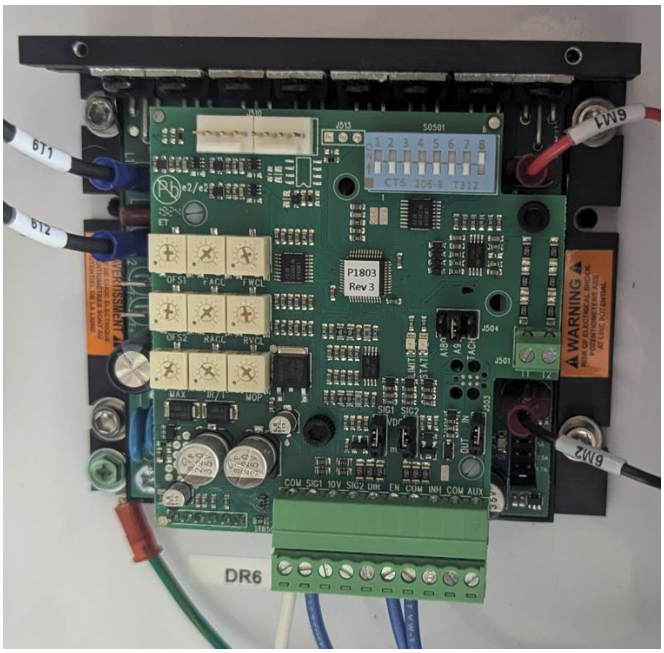
-Occasionally, the keypad may be cleaned with any non-solvent based cleaning solution.

ASSEMBLY TITLE: **ELECTRICAL**

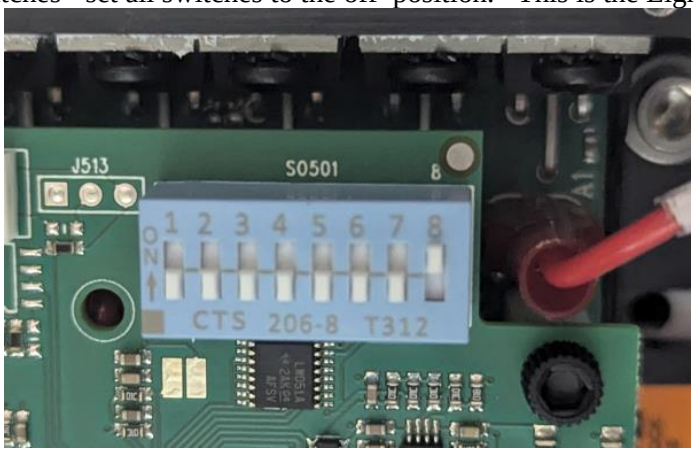
W- Check the foam for fan clean or replace.

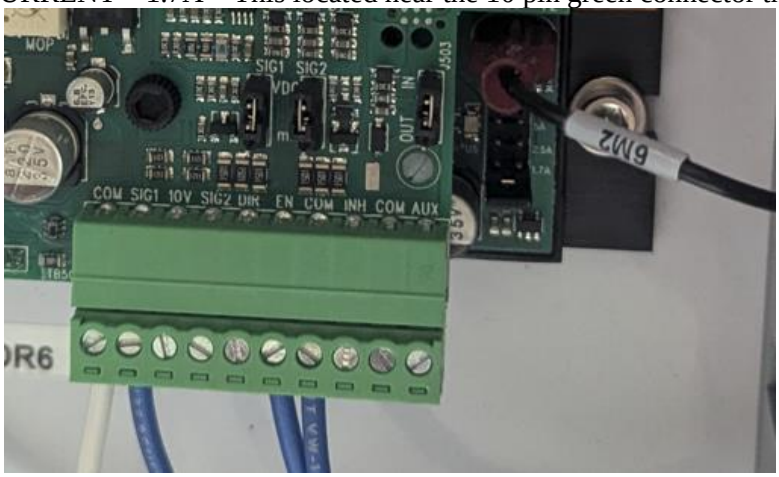
NOTES:

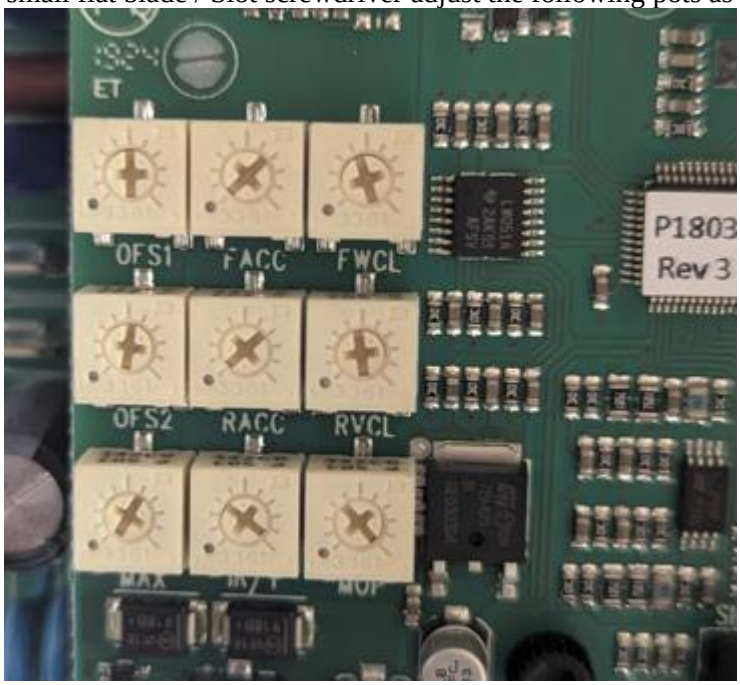
Setup procedure for Powered rewind using MGC403-11-00MD drive



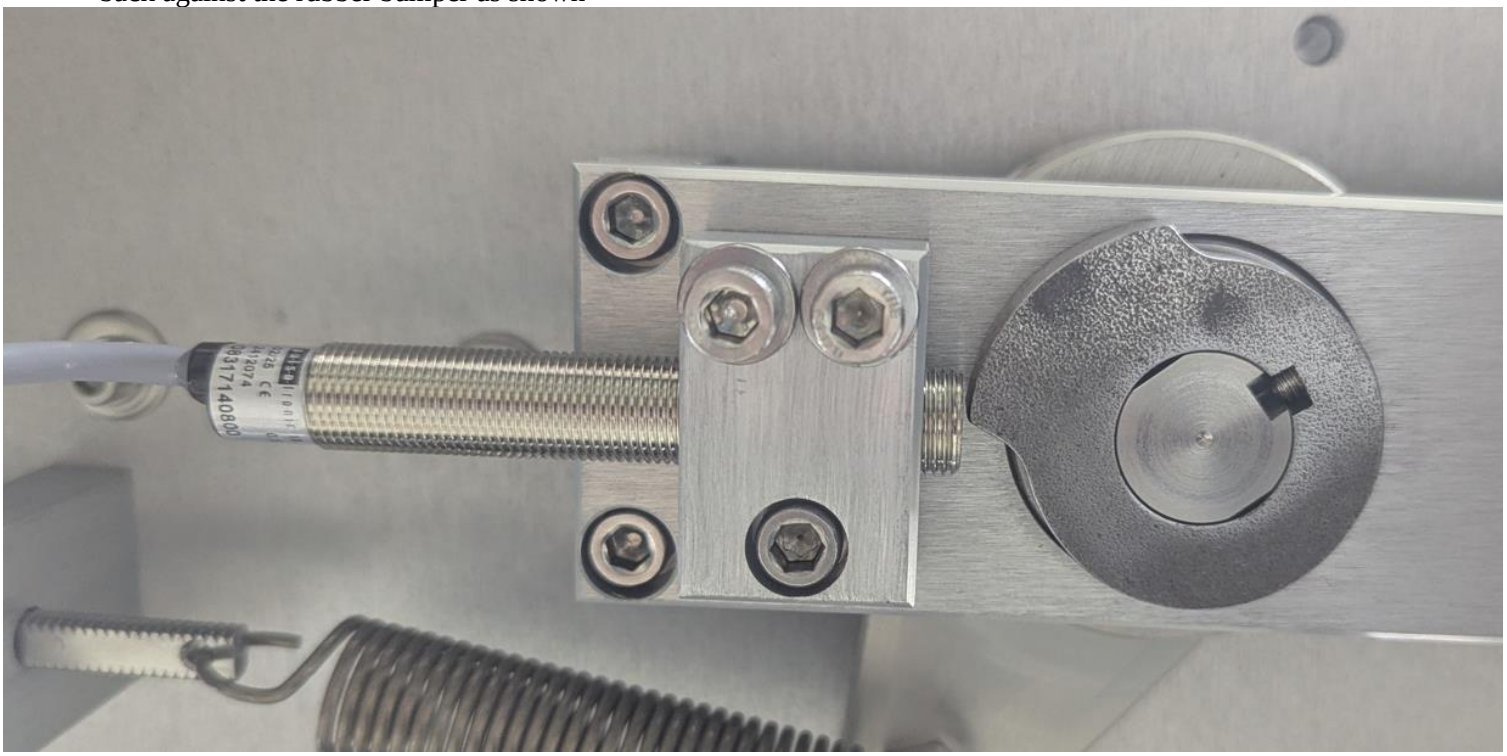
Upon receiving drive set the following BEFORE installing in the machine.

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

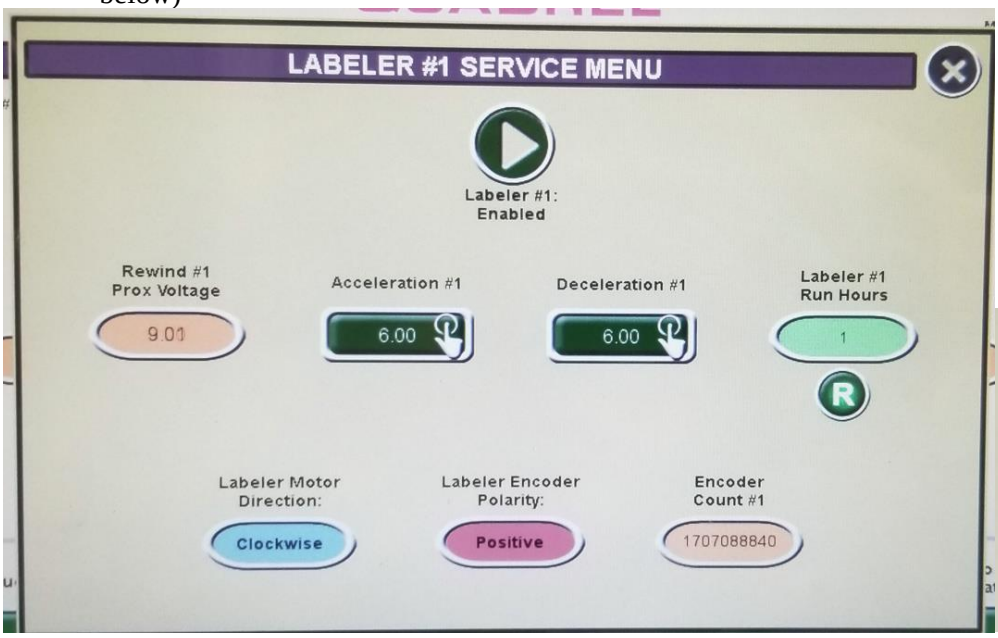
2. Set Jumpers on drive based on electrical schematic for your machine
   a. SIG1 – VDC
   b. SIG2 – VDC
   c. J504 – A90
   d. AMP CURRENT – 1.7A – This located near the 10 pin green connector that
      i. 

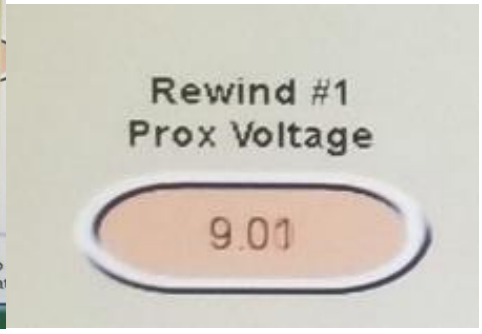
3. Using a small flat blade / Slot screwdriver adjust the following pots as indicated in the image below:
   a. 

      i. Top row **OFS1** – WILL BE ADJUSTED AT LATER STEP
      ii. Top row – **FACC -** turn counter clockwise until it stops.
      iii. Top row **FWCL** – set to half way point – midpoint
      iv. Middle row **- OFS2** – turn counter clockwise until it stops. This turns the pot OFF
      v. Middle row – **RACC -** turn counter clockwise until it stops
      vi. Middle row – **RVCL** – set to half way point – midpoint
      vii. Bottom row – **MAX** – Set to 3/4 point
      viii. Bottom row **– Leave other 2 pots at factory setting – DO NOT ADJUST**
4. **Install drive in machine then proceed to next steps**
5. Set the Cam on the rewind dancer per image below when the dancer arm is at rest. Rest is when the arm is all the way back against the rubber bumper as shown

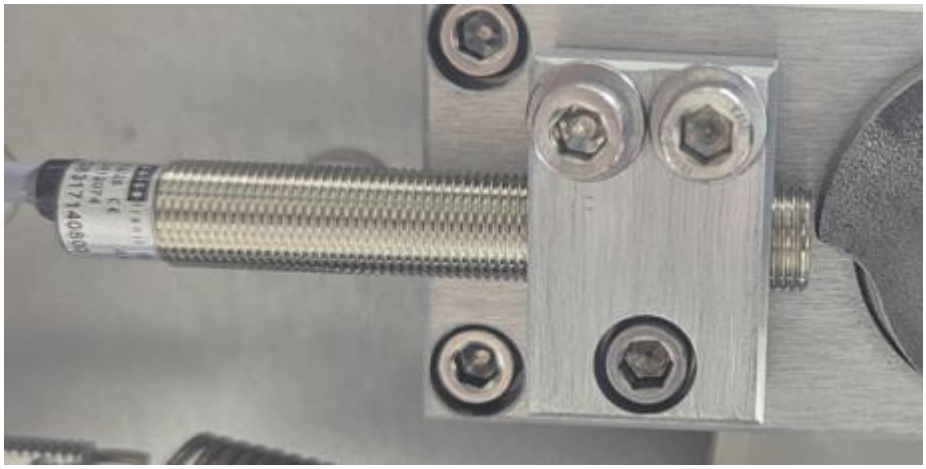


6. On the HMI go to into labeling head service menu. You will be looking at the REWIND PROX VOLTAGE (example below)

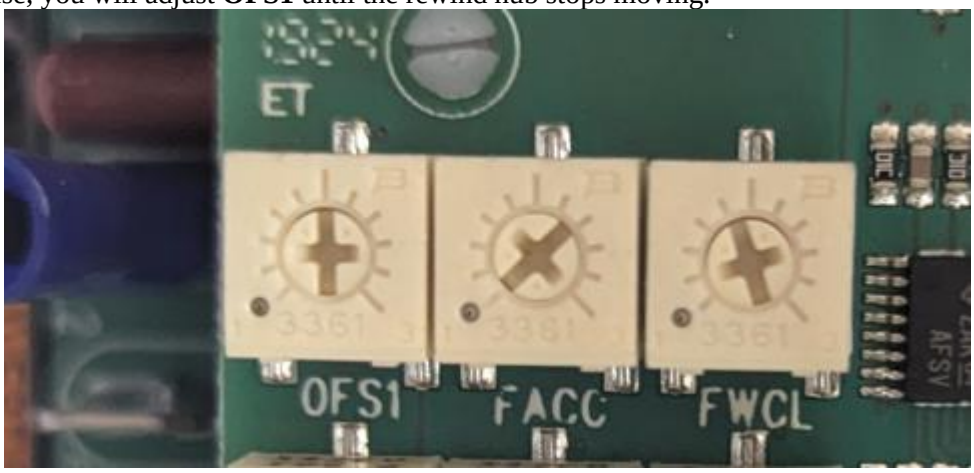




7. Adjust the sensor gap at the cam by loosening the bolt using an allen key so that the sensor can be moved forward or backward. The bolt does NOT touch the sensor. Loosening it opens the clamp so you can adjust.
8. Set the gap so the REWIND PROX VOLTAGE on the HMI reads .**90 it must be under 1 volt.**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

b. 

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

    a. **If you do not see the voltage increase steadily, recheck cam sensor gap in step 7**
10. Turn on rewind switch on the back of the labeler. This will engage / turn on the motor.
11. Move the rewind dancer arm forward the rewind hub should start to turn clockwise. It will slow then stop as you move forward. Rewind hub should ALWAYS be turning clockwise. If it moves counter clockwise move to **step 11a**
    a. While holding the arm in the position where it started to run counter clockwise, it MUST be running counter clockwise, you will adjust **OFS1** until the rewind hub stops moving.
    i. 

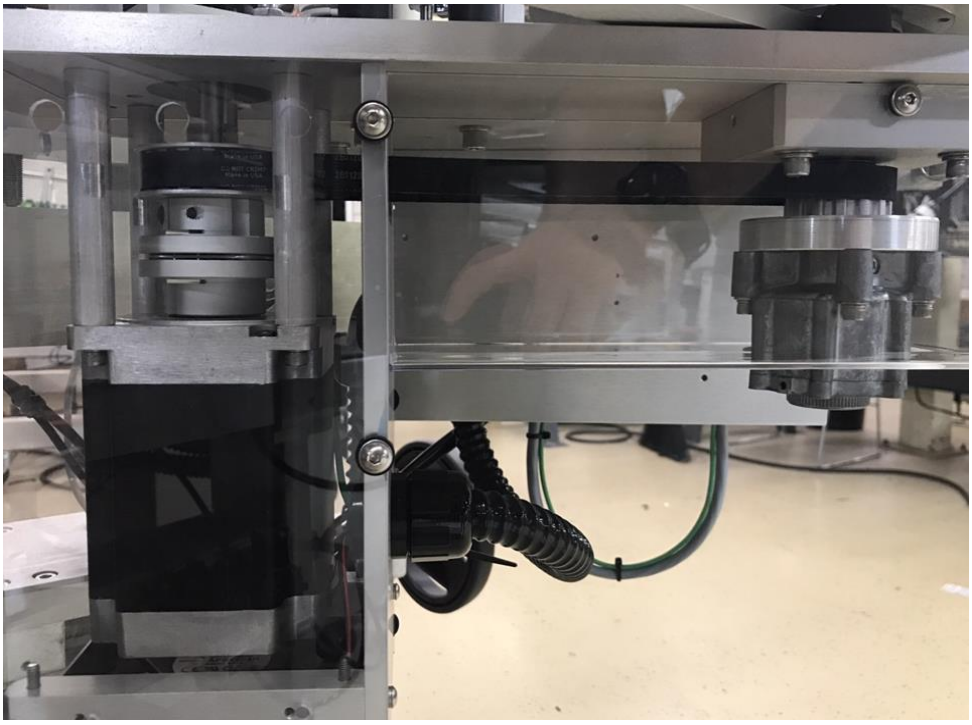
    b. This adjustment may need to be done multiple times until it no longer moves counter clockwise when rewind arm is all the forward and at rest.

9.2 BELTS

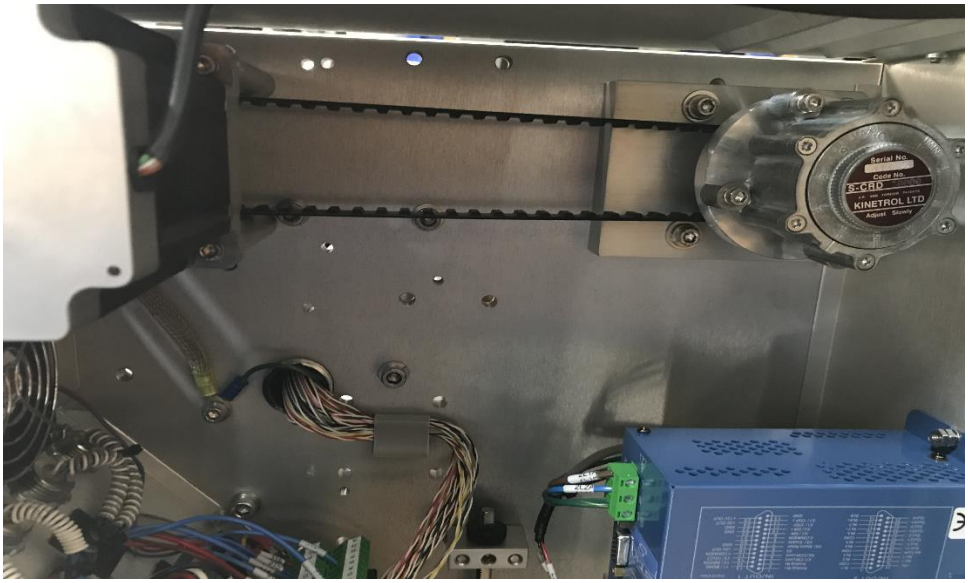
Monthly, a visual inspection of the rewind belt and timing belt, to do this depending on the labeling head you may need to remove the bottom cover on the head.

Refer to photos below.

Servo labeling head.

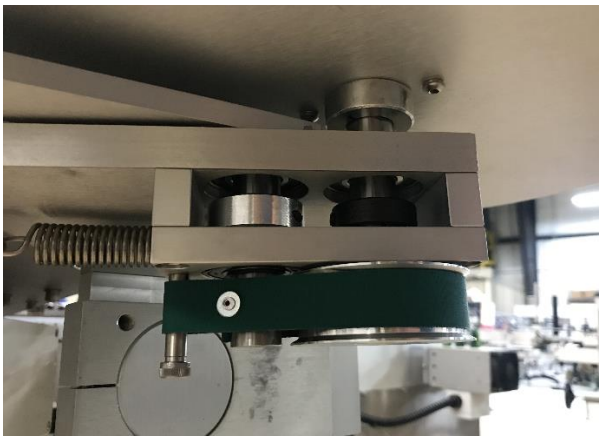


Stepping labeling head.



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

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

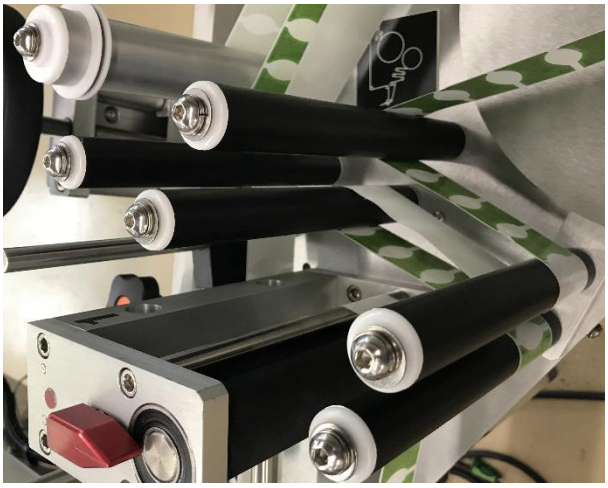


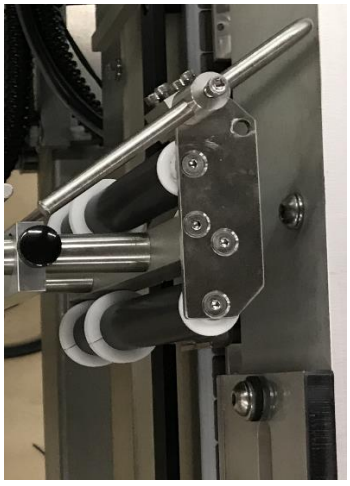
For replacement parts see the unwind assembly drawing for your labeling head in this manual.

9.3 ROLLERS

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

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





9.4 SENSORS

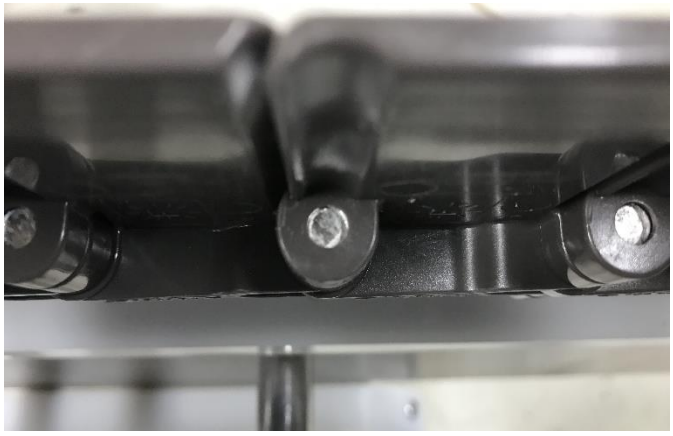
The sensors all have an electronic eye called a photocell; these must be free of lint or dirt. Since the photocells are generally made with glass or plastic lenses. They naturally attract substances which could easily trigger the sensor, use a cotton swap to gently clean the eye of the sensor as you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

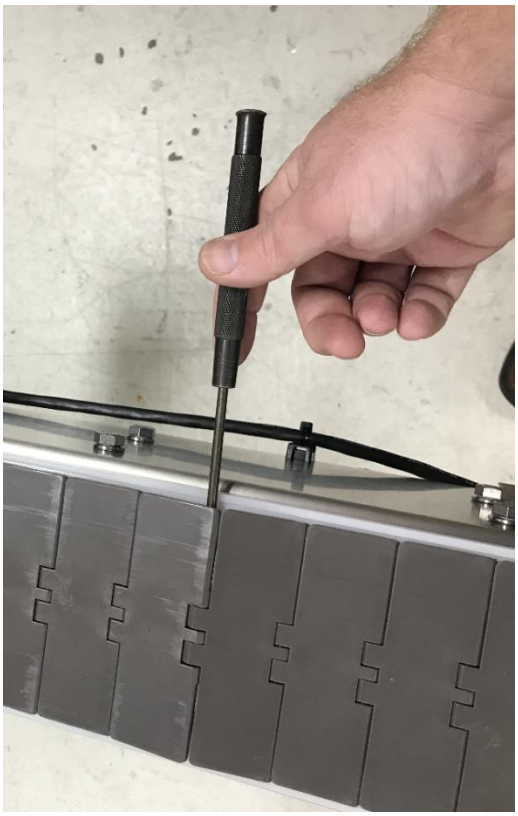
9.5 CONVEYOR

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

9.5.1 CLEANING

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





10 CLEARING A JAM

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

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

11 WARRANTY

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

Return of defective parts

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

Appropriate Use of Equipment

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

Responsibility Limits

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

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

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