Operation/Service Manual

Model 811 (English Version)

WARRANTY

All MARKEM products are warranted to be free of defects in materials and workmanship and to conform to MARKEM specifications in effect at the date of shipment. Any changes Buyer requests to MARKEM specifications are not effective without advance, written authorization by MARKEM. The warranty period is as follows:

Machines: One year from date of shipment or 2000 operating hours, whichever expires first, unless any specific machine is designated as Made to Order ("MTO"), in which event the warranty period is 90 days from date of shipment.

Ink Jet Orifice Plates (on new machines and as replacement parts): 90 days from date of shipment.

Replacement Parts: 90 days from date of shipment.

Software: 90 days from date of shipment. Warranty does not entitle Buyer to new releases, upgrades or enhancements introduced during the warranty period.

Supply Products: For the period of shelf life of the supplies as stated in the applicable specification standards or one year from the date of shipment if not specified.

During the warranty period, MARKEM will, at its option, repair, replace or refund the purchase price of MARKEM products which prove to be defective in materials or workmanship or which do not conform to the applicable MARKEM specifications. Within MARKEM service travel areas and for certain products designated by MARKEM, warranty service for machines and parts will be provided at the installation site. In all other cases, products must be returned to a service facility designated by MARKEM.

For products returned to MARKEM for warranty repair or replacement, Buyer shall obtain a return authorization number and shipping instructions from MARKEM and return the product shipping charges prepaid. Shipping charges for the return of products to Buyer shall be paid by MARKEM within the contiguous forty-eight United States and the District of Columbia; for all other locations, the warranty excludes all costs of shipping, customs clearance and any other related charges. All replaced products shall become the property of MARKEM.

The foregoing warranty shall not apply to defects or non-conformance with MARKEM specifications which result from: (1) improper installation, use, storage, care or maintenance by Buyer; (2) wear resulting from normal use of parts subject to wear, such as ink rolls, offset pads, foil feeds, thermal transfer print heads, etc.; (3) modification, alteration or retiming of a MARKEM machine; (4) cycling a MARKEM machine out of specification; or (5) adding a unit timed or driven by a MARKEM machine; (6) use of products (including supplies) or software not furnished by MARKEM; (7) modification of products without MARKEM's approval; (8) accident, neglect, misuse or abuse; or (9) exposure conditions outside the range so the environmental, power and operating specifications provided by MARKEM.

NO OTHER WARRANTY IS EXPRESSED OR IMPLIED. MARKEM SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Determination of the suitability of the products described on the face hereof is the sole responsibility of the Buyer and MARKEM shall have no responsibility in connection therewith. BUYER WARRANTS THAT HE IS NOT PURCHASING THE PRODUCTS FOR PERSONAL, FAMILY OR HOUSEHOLD PURPOSES. THE REMEDIES PROVIDED HEREIN ARE BUYER'S SOLE AND EXCLUSIVE REMEDIES. MARKEM SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, WHETHER BASED IN CONTRACT, TORT OR ANY OTHER LEGAL THEORY, OR FOR THE COST OF SUBSTITUTE GOODS. CONSEQUENTIAL DAMAGES for purposes of this Agreement shall include, without limitation:

1. Loss of use, income or profit, or losses sustained as a result of the injury (including death) to any person or loss or damage to property, including, without limitation, material manufactured, processed or labeled by the use of the products.
2. Damages arising out of or in connection with delays in delivery, MARKEM's performance, non-performance or breach of this contract, defects in the equipment, failure of the products to perform properly or non-conformance of the products with specifications or the operation, use, installation, repair or replacement of the products.

(Formerly 0874339) REF00037 Rev: 10 12/04

NOTICE

The use of this or any industrial system may involve hazards such as hot surfaces, sharp objects, or nip points, as well as danger from exposure to electrical and/or pneumatic power, UV or laser radiation, or hazardous chemicals. This manual is provided to assist you in the safe and efficient use of your system. Read and follow the instructions carefully for maximum safety, and to obtain the best use of your system and supplies.

A Material Safety Data Sheet is provided with each hazardous chemical product sold by MARKEM. These sheets include information about composition, properties, usage, and hazards.

All systems and supplies, whether considered hazardous or not, should be used in accordance with principles of good manufacturing practice.

If you have questions or comments contact
your local MARKEM   Business Center
or visit our website at www.MARKEM.com

KNOW HOW TO USE THIS SYSTEM SAFELY
BEFORE YOU START TO USE IT.

This guide explains the basic operation and care of the Model 811.

Preliminary for Review - June 30, 2006: To the best of our knowledge, the information contained in this guide was correct at the time of publication. However, continual enhancement of our products can result in some differences between the instructions represented in this guide and your machine.

MARKEM is a registered trademark of MARKEM Corporation.

This guide was written by:

> MARKEM Corporation
> 150 Congress Street
> Keene, New Hampshire 03431 U.S.A.

Reference List

The information on your packing slips can be written below for reference. When contacting MARKEM please give your Model Number, Serial Number, and Customer Account Number.

Model _____ Serial Number_____ Date Installed_____

Customer Account Number_____

Name of MARKEM Representative_____

Options/
Accessories_____
_____
_____
_____
_____
_____
_____
_____

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SECTION 1

General Information

SECTION 1 General Information

1.0   Welcome to the Model 811

The Model 811 is a high speed, compact RFID tag dispenser and applicator that is compatible with a full range of MARKEM products.

1.1   What is in this Manual?

The Model 811 manual addresses the basic installation, operation and care of the RFID tag dispenser, as well as safety, maintenance, troubleshooting, and service information.

1.2   Glossary

active tags – tags that use batteries as a source of power (can be either partial or complete power); there are tags with replaceable batteries and tags that have the batteries inside a sealed unit – sometimes called **unitized active tags**

addressability – ability to address bits, fields, files or other portions of storage in a tag

AK – "Acknowledge" communications response

antenna – conductive elements that radiate and/or receive energy in the radio frequency spectrum to or from the tag

bi-directional – a tag that can be read or written from either side

capacity – amount of bits or bytes that can be programmed into a tag; these may be bits accessible to the user, or the total number, including those reserved for the manufacturer (such as parity or control bits)

converted RFID – Assembly of an inlay sandwiched between an adhesive and substrate (usually paper stock) which is then die cut into a specified size

dispenser – the enclosure that houses the electronics, LUI, mechanical components, and tape drive system.

electronic tag – a tag that has an electronic RFID tag embedded within it

EMC – electromagnetic compatibility

frequency – number of times a signal makes a complete pass through its maximum and minimum values and returns to the same value (cycles)

gap - the distance between tags (or labels) on the liner (or backing), measured from the bottom of one tag to the top of the next tag

inlay - an RFID microchip attached to an antenna and mounted on a substrate; essentially an unfinished RFID label

LUI – Local User Interface; keypad on the Model 811

misread – a condition that exists when the data presented by the reader does not match the corresponding data in the tag

NAK – "Negative Acknowledge" communications response

passive tags – An RFID tag without a battery. When radio waves from the reader or programmer reach the chip's antenna, the energy is converted by the antenna into electricity that can power up the microchip in the tag. The tag is able to send back information stored on the chip.

programming – adding information to or altering a tag

programmability – data and identification information must be entered into tags in order for them to become identifiers of specific objects; this capability is called **programmability**

programmer – tag contents can be changed by a set of electronics in close proximity or in electrical contact with them; those electronics and their packaging are called a **programmer**

RFID – Radio Frequency IDentification. A method of identifying unique items using radio waves. Typically, a reader communicates with a tag, which holds digital information in a microchip.

RFID tag: see **tag**

range – distance at which successful reading and/or writing can be attained

read – decoding, extraction and presentation of data from formatting, control and error management bits sent from a tag

readability – ability to extract data under less than optimal conditions

read rate – maximum rate at which data can be read from a tag, expressed in bits or bytes per second

read/write – many applications require that new data, or revisions to data already in the tag, be entered into the tag while it is still attached to its object; tags with this capability are said to be reprogrammable and are called **read/write tags, memory cards,** or **memory modules**

reader – device containing the digital electronics that extract and separate the information from the format definition and error management bits; digital electronics perform the actual reading function; these read electronics may also interface to an integral display and/or provide a parallel or serial communications interface to a host computer or industrial controller

reader/writer – the set of electronics can change the contents of the tags while they are still attached to their object; they are called the **transceiver** or **reader/writer** (see **reader**)

reprogrammable – many applications require that new data, or revisions to data already in the tag, be entered into the tag while it is still attached to its object; the ability to read from and write data to the tag while it is attached to its object is called **in-use programming**; tags with this capability are said to be reprogrammable and are called r**ead/write tags, memory cards,** or **memory modules**

scanner – the antennae, transmitter (or exciter) and receiver electronics are integrated in a single package called the scanner; they may be combined with additional digital electronics, including a microprocessor in a package called a **reader**

tag – A microchip attached to an antenna that is packaged in a way that it can be applied to an object. The tag picks up signals from and sends signals to a reader. The transceiver plus the information storage mechanism attached to the object is referred to as the tag, transponder, electronic tag, code plate, and various other terms. Although **transponder** is technically the most accurate term, the most common term and the one preferred by the Automatic Identification manufacturers is **tag**.

transceiver – see **reader/writer**

transponder – see **tag**

unitized active tags – see **active tags**

verify – assure that the desired operation was performed correctly

WebUI – Web User Interface

write – transfer of data to a tag; the tag's internal operation of storing the data, sometimes including the data, in order to verify the operation

write rate – rate at which information is transferred to a tag, written into the tag's memory and verified as being correct; it is quantified as the average number of bits or bytes per second in which the complete transaction can be performed

2.0   Specifications

Weight: Model 811: Approx: 40,82kg (90 lbs)

                        Stand: 42,64kg [94 lbs]

Dimensions: Model 811:
                        Width: 660mm [26.00"] with mounting bar
                        Width: 508mm [20.00"] to edge of dispenser
                        Height: 547mm [21.55"] with full rewind roll
                        Height:495mm [19.50] to top of dispenser
                        Depth: 395mm [14.76"]

                        Stand:
                        Width: 870mm [34.25"]
                        Height: 17277mm [68.0"]
                        Depth: 1156mm [45.50"]

                        See Dimensional Drawing (Paragraph 4.0)

RFID Standards: Frequency 860-925 mHz
                        Class 1, Class 1 Gen 2

Electrical Standards: CE marked ?
                        FCC ID: QME811RFID

Voltage: 100/115/200/208/230V, 50–60Hz,
                        single phase, 450W

Air Supply: 90psi / 6 bar (dry, uncontaminated)

Air Consumption: 0.035 cfm (1 l/min) at 20 labels per minute

Environmental: Operating temperature range
                        4°–40°C [39°– 104°F]

                        Relative humidity
                        10-90%, non-condensing

                        Noise emission
                        Does not exceed 80 dB(A)

Sensors: Tag gap / out sensor included
                        Product detect sensors included

Communications: Connection via Ethernet or network switch
                        to support Web User Interface (Web UI) to
                        Windows-based computer

Encode Process: Erases tag, programs tag with EPC code, reads tag, if good, applies tag, if bad, rejects tag

Reject Mechanism: bad tags are rejected onto the backing web for easy disposal

Tag Cycle Rate: Up to 100 per minute depending on tag size, the applicator used, communication protocols, and machine settings

Tag Footprints (in inches):

	Tall		Wide	Applicator Required
On-pitch inlays:	0.5"[12,7mm]	x	4.0" [101,6mm]	Tamp
	0.5"[12,7mm]	x	6.0" [152,4]	Tamp
Converted tags:	1.5"[38,1mm]	x	4.0" [101,6mm]	Tamp or blow
	2.0"[50,8mm]	x	4.0" [101,6mm]	Tamp or blow
	3.0"[76,2mm]	x	3.0" [76,2mm]	Tamp or blow
	1.5"[38,1mm]	x	6.0" [152,4mm]	Tamp
	2.0"[50,8mm]	x	6.0" [152,4mm]	Tamp
	6.0"[152,4mm]	x	4.0" [101,6mm]	Tamp

3.0 Dimensional Drawing
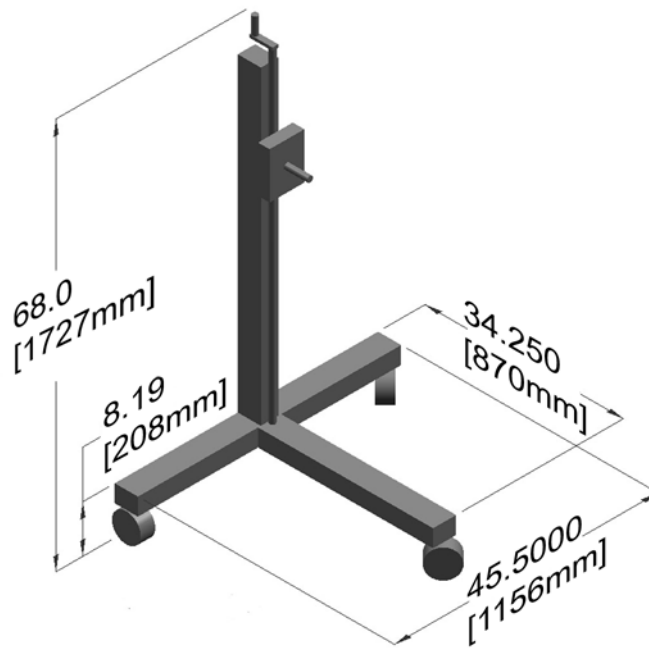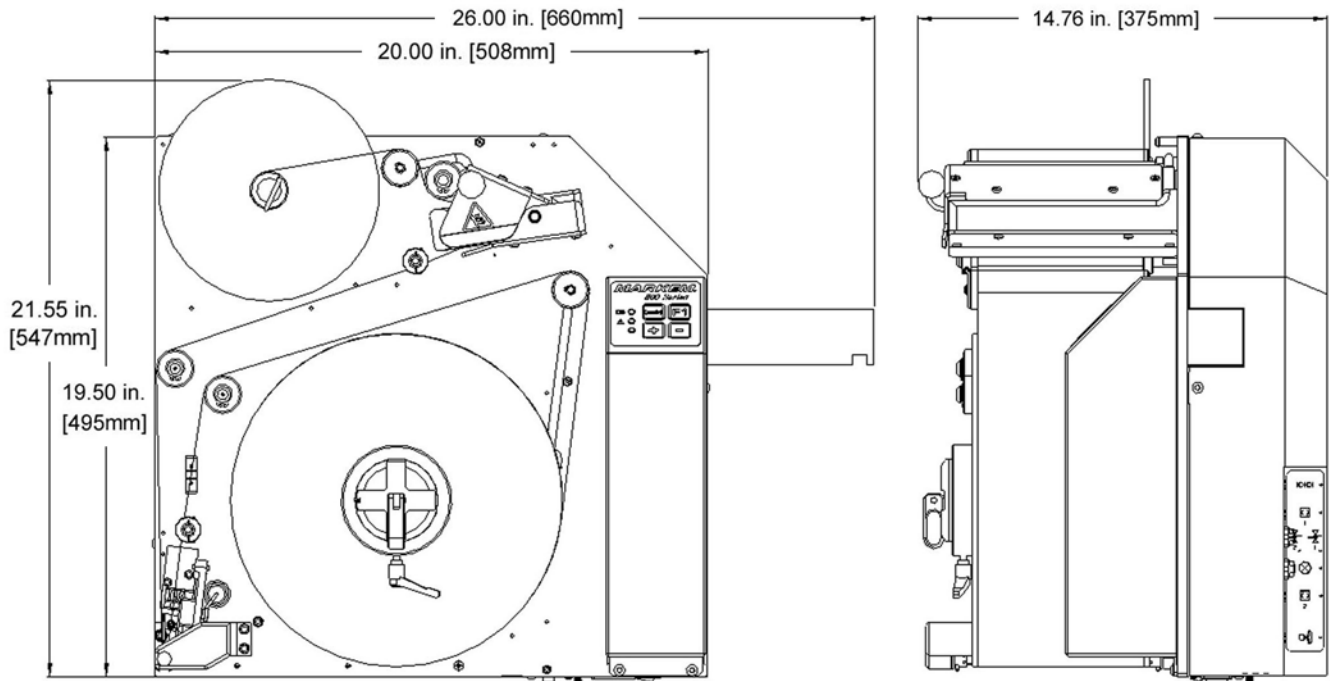
Figure 1–1

4.0   Safety Information

The Model 811 has been designed to meet various safety standards. To alert you to potentially hazardous situations, labels and messages appear on the machine and throughout the manual.

CAUTION refers to a potentially hazardous situation which, if not avoided, could result in personal injury.

4.1   Machine Safety

High Voltage

This safety label is located on the ourside of the rear cover of the machine and indicates that line voltages are inside.

To prevent injury from electrical shock, the power cord should be removed from the electrical outlet before performing troubleshooting or repair.

Electronic troubleshooting must be performed by personnel trained to troubleshoot electrical circuits.

Pinching/Crushing

This safety label is located on the drive pressure roller and indicates that operators should be careful not to pinch or crush their fingers.

Earth

This safety label is located inside the machine and indicates an earth point.

4.2   Modifications to the Model 811

Any changes or modifications not expressly approved by MARKEM that could affect FCC Compliance could void the user's authority to operate the machine.

CAUTION: Applicator cylinders have been factory-set to 27 PSI for safety. If the tamp applicator cylinders are operated over 27 PSI, the machine must be protected by guarding, supplied by the customer. Do not adjust the tamp applicator regulator pressure above 27 PSI unless guarding is in place.

4.3   Foreseen Use/Misuse

This manual provides information about Safety, Installation, Operation, Troubleshooting, Illustrated Parts, Electrical Schematics, Recommended Spares and Preventive Maintenance Procedures. Using the Model 811 in any other manner is considered a misuse of the product. Please consult your local MARKEM Business Center before using this machine for anything other than the foreseen use.

Misuses include, but are not limited to:

- Operating a system that is incomplete, cannot be serviced, or has been modified without authorization
- Failing to observe hazard requirements in the manual and/or on safety labels
- Combining or interfacing non-MARKEM equipment with this system, other than as intended
- Permitting a person who has not been fully trained to operate and/or service the system
- Using unspecified supplies or material which may produce unsatisfactory or unexpected results

4.4   MARKEM Training Programs

Operators, maintenance personnel, and service technicians are considered "qualified" when they have gained, through training and experience, an understanding of safe and correct methods of operation, maintenance, or repair.

MARKEM conducts training programs. In addition to ongoing courses about current machine models, customers are invited to inquire about any training need.

4.5   Removal from Service

Follow these instructions to remove the Model 811 from service. These instructions also pertain to transporting or storing the machine.

Figure 1–2

1. Turn off the power to the machine.

2. Disconnect the power cable from the system.

3. Disconnect all other cables from the system.

4. Disconnect the air supply.

5. Remove tape supplies from the rewind and supply hubs.

6. Tape the rewind U-pin to the rewind hub.

7. Put the rewind dancer in the forward position.

8. Lock the supply hub and the supply outer disk.

9. Being careful because of the weight of the machine, remove the machine from the stand.

10. Carefully move the machine to the desired location and repackage the system in the original shipping containers.

5.0 Label and Symbol Identification

FCC ID Compliance Label

This label is affixed to the rear plate of the Model 811.
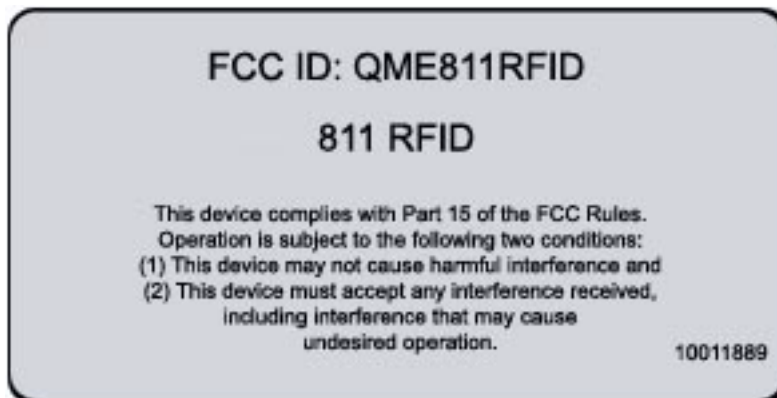
Serial/I.D./Rating Label

This label is affixed to the rear of the enclosure and indicates the following:

Model number
IType of equipment
Information about MARKEM
Patents covered
Serial number (Serial number is also affixed inside the enclosure)
Electrical specifications

AC voltage configuration ~

Fuse information ⊏□⊐

(X0) Serial Port

This symbol indicates the serial (RS232) ports and connects to the reader.

(X8) Interface Device Port (1)

This symbol indicates the interface device port that is used for the scanner port.
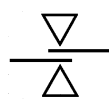
(X1) Sensor (2)

This symbol indicates the feed sensor port.
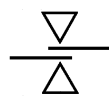
(X7) Sensor (1)

This symbol indicates the apply sensor port.

(X6) Beacon Light

This symbol indicates the beacon light port.
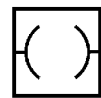
(X5) Interface Device Port (2)

This symbol indicates the interface device port that is used for a second scanner port.
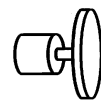
(X4) Encoder

This symbol indicates the encoder port.
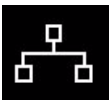
Ethernet Port

This symbol indicates the port for the Ethernet cable.

(Antenna Port

This symbol indicates the antenna port.

Voltage Configuration Labels

Spare voltage configuration labels are provided. If the AC voltage configuration of your machine changes, affix the appropriate voltage configuration label to the Serial/I.D./Rating label on the rear panel of the enclosure, so it covers the old voltage configuration rating.

Serial Number Label

This label appears inside the enclosure and matched the serial number on the Serial/I.D./Rating label when the machine was shipped from the factory. If the serial number on the Serial/I.D./Rating label and on the label inside the enclosure do not match, the serial number on the label inside the enclosure is the correct serial number. (The machine cover may have been switched from another machine.)

6.0   Components

The Model 811 is a high speed, compact RFID tag dispenser and applicator and can be supplied with options: an adjustable height stand; signal tower; signal inputs.

6.1   Dispenser

The dispenser is the main body of the machine and houses the electronics and mechanical components.

The dispenser supports a variety of different mountable applicator modules.

The dispenser consists of:

- The tape drive
- Sensors for tag control
- Local user interface (LUI)

6.2   Tape Drive

The tape drive system is shown in Figure 1-3.
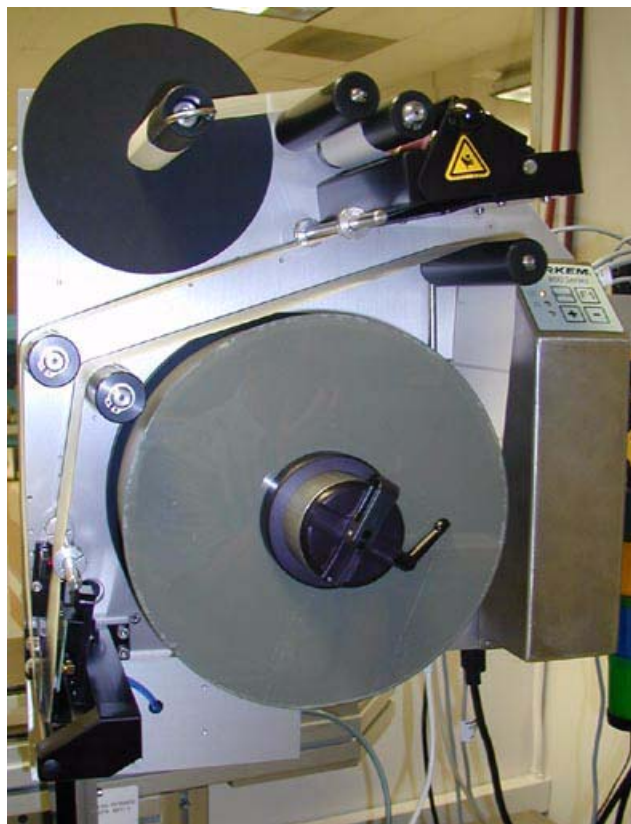
Figure 1–3

6.3   Applicator

Applicators are available in blow or tamp to meet your different requirements.

The different applicators apply tags in different ways. The choice of applicator also determines the face of the product that is tagged.

6.3.1   Model 824 Blow Applicator

Figure 1–4

6.3.2   Model 854 Tamp Applicator

Figure 1–5

6.4 Reader/Programmer

The device containing the digital electronics that extract and separate the information from the format definition.

Figure 1–6

6.5 Networking

The Model 811 provides options for communicating with PCs and other computers. The methods available are:

- A serial link to a single PC
- Ethernet link

The Web user interface (Web UI) connects to the Model 811 via a Windows-based PC and is needed for such purposes as controlling settings, querying machine status, and monitoring faults.

6.6 Beacon Light (Optional)

The optional beacon light, which is mounted in a prominent position on or near the machine has three lamps: green, blue, and amber to alert the operator of machine status.

Figure 1–7

SECTION 2

Installation Guide

1.0 Installation Requirements

The Model 811 system includes:

- the dispenser
- applicator
- reader/programmer
- connections for electrical and air supply
- options, such as a stand, beacon light, and product sensor

The Model 811 must be installed by qualified and trained personnel in accordance with applicable requirements. Installation by the customer must be sanctioned by MARKEM.

WARNING: Failure to perform installation as stated above will invalidate the machine warranty.

1.1 Machine Requirements

Ensure that the required services and control signals are available:

- Power: 100/115/200/208/230V single phase power supply rated at 450W
- Compressed air: a dry, clean air supply at 6 bar (90psi)
- Interfaces and trigger signals appropriate for the application
- Sufficient space for installation and operation
- Machine mounting point

1.2 Installation Overview

Determine a location for the Model 811 that will:

- Provide access to the front and rear of the dispenser
- Provide sturdy, level mounting
- Meet environmental, electrical, air supply, and communications specifications

Model 811 installation includes:

- Removing the Model 811 and associated components from the packaging.
- Assembling the stand (optional)
- Securing the Model 811 to the stand or other mounting
- Positioning/Leveling the Model 811
- Verifying or changing the voltage configuration
- Mounting the air supply
- Mounting the reader
- Mounting the beacon light (optional)
- Installing options, such as a product sensor
- Connecting power, devices, and other interfaces

- Connecting to Web UI
- Verifying that the mechanical settings are appropriate for the RFID tag stock or making necessary changes
- Verifying that the software parameter settings are appropriate for the RFID tag stock or making necessary changes

1.3 Unpacking the Model 811

Move the cartons containing the Model 811 and associate components to the installation site.

1. Remove the Model 811 and associated components from the packaging.

2. If a stand was ordered, unpack the stand.

2.0 Assembling the Stand (Optional)

If the optional stand was purchased, it will need to be assembled. The stand comes in two boxes: the T-base is in one box and the upright is in the other.

1. The T-base is in two parts with the feet and casters already attached. To assemble the T-base, remove the bolt and washer. Fit the two pieces together and then re-install the bolt.

2. To install the upright, remove the nut and washer from the upright. Place the upright onto the T-base by guiding the floating bolt into the proper hole. Re-install the nut and washer.

3. The crank is assembled at the factory. However, using an allen wrench, the handle needs to be flipped to the opposite side of the mating piece.

4. A package of M6 button head screws is provided for mounting the machine to the L-piece. The mounting plate is attached to the upright with the hardware loosely in place to receive the L-piece. Remove the 2" bar from the L-piece. The Model 811 has its own longer 2" bar attached to its main plate and does not use the bar provided on the stand.

5. The cable channel is already installed onto the upright from the factory. Remove the cable cover by gently prying and snapping it off. It will be re-installed after all the cables and tubes have been connected.

3.0   Mounting the Dispenser

Determine where the Model 811 will be located.

The dispenser is shipped from the factory with an applicator mounted.

The dispenser is supplied with a mounting bar attached to the main plate. Although the mounting bar is intended to be fastened to the optional stand, it can be modified at the installation site for alternate mounting positions or specialty brackets can be ordered from MARKEM.

1. If not mounting the dispenser to the optional stand, go to step 6.

2. When mounting the dispenser to the optional stand, it is best to support the dispenser on a stable work surface and roll the assembled stand to the dispenser.

3. Using the crank at the top of the stand, adjust the height of the mounting plate until it is in line with the mounting bar.

4. Slide the dovetail groove of the mounting bar onto the mounting plate.

5. Fasten the dispenser's mounting bar to the stand's mounting plate with the supplied screws.

Figure 2–1

3.1   Verifying or Changing the Voltage Configuration / Power Configuration

The power connector (Type STASEI2) is supplied and conforms to EC regulations.

1. Before installing the Model 811, check that the power supply is correctly configured for your electrical service.

    To do this, check whether the AC voltage on the power input module on the bottom of the machine cabinet matches your electrical service. When the white arrows match, the indicated voltage is selected.

    If the AC voltage of the Model 811 matches your electrical service, continue with step 3.

2. To change the AC voltage configuration, use a slotted screwdriver and remove the power input module.

    With the white arrows matching the correct voltage, install the power input module.

3. Machines shipped within the United States include a 115V AC power cord with a molded plug type NEMA 5-15P. If this plug is not compatible with the mating receptacle and rewiring is necessary, use the following wire color codes:

    Line (L): black
    Neutral (N): white
    Ground (G): green/yellow

4. A "pigtail" cable is supplied as a 230V AC power cord. wire the pigtail end of the AC power source to an appropriate plug or terminal block using the following wire color codes:

    Line 1 (L1): brown
    Line 2 (L2/Neutral): blue
    Ground (G): green/yellow

Note: Do not apply power to the machine until installation is complete.

Using the p-clip provided, secure the power cord to the machine.

5) Apply label .... open cover, find AC label... put cover back on. xxxxx

3.2   Mounting and Connecting the Air Supply

A compressed air supply is normally required by the Model 811 to drive the applicator module. This must be set to 6.2 Bar (90psi) with a minimum flow rate of 4cfm (cubic feet per minute) (113 liters/minute) and should be dry, uncontaminated air which should not be lubricated.

A filter regulator assembly is fitted to the base of the stand; this is comprised of a manual isolation valve, a water trap and pressure regulator. The air supply is via a 6mm or 8mm flexible pipe.

A single connection is supplied to the main filter regulator unit; from here, the regulated supply goes to the applicator (if air operated) and the unregulated supply goes to the air input on the dispenser.

UNREGULATED SUPPLY to dispenser

AIR SUPPLY IN

PRESSURE GAUGE

REGULATED SUPPLY to applicator

FILTER
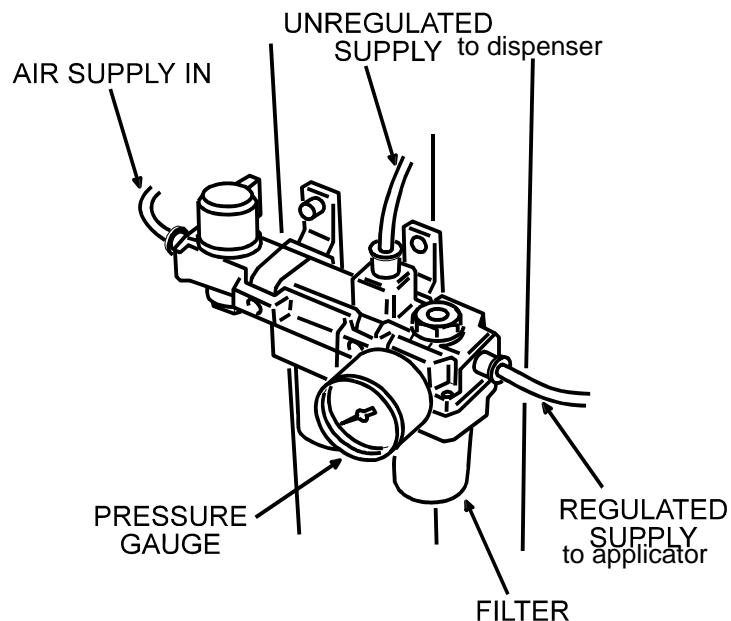
Figure 2–2

WARNING: All applicator cylinders have been factory-set to 27 PSI for safety. If the cylinders are operated over 27 PSI, the machine must be protected by guarding, supplied by the customer.

SAFETY: Do not adjust the applicator regulator pressure above 27 PSI under any circumstances. Doing so could make the machine unsafe.

4.0   Mounting the Reader/Programmer

The Reader/Programmer can be mounted on the optional stand or any other stable structure. The Reader/Programmer must be mounted within approximately 3 feet (1m) of the machine due to the length of the antenna cable. Note that any machine positional adjustments are limited to the cable length.

It is necessary to slide the Reader into the mounting bracket before mounting the bracket.

Reference Assembly Drawing 10004788.

1. Slide the Reader into the mounting bracket.

2. To mount to the optional stand, use the hardware provided to mount the bracket through the center screw to the main post of the stand.

3. To mount to another surface, use either the two outer mounting holes or the single center hole and the hardware provided .

4. Attach the I/O connections as follows:

   - ANT1 > external antenna cable > Model 811 Antenna Input
   - ANT2 > terminated
   - SERIAL > RS232 cable > Model 811 X9 Input
   - +9VDC > power transformer module > Power Supply

< Insert photo with parts called out>

5.0   Mounting the Beacon Light (Optional)

1. If using the optional beacon light, mount it ...

2. Connect the cable to the

6.0   Installing a Product Sensor

6.1 4.0 After Installation

After installing the stand, dispenser, reader, and options, a few more tasks need to be completed before powering on the machine.

6.1.1 Positioning the Model 811

The Model 811 is typically supplied with a stand which allows the positioned tag height on the product to be adjusted within a limited range. The applicator height will be determined by the conveyor height and required position of the tag on the product.

Leveling feet are provided and should be down; care should be taken to align the machine with the product transportation system.

Before final positioning, the machine should be placed so that the applicator arm is square to the product and the position of the machine provides the correct tag position on the product.

CAUTION: If the machine is not secured to the floor, it is possible for the machine to gradually change position during use. It is, therefore, important to mark the provisional position of the machine prior to starting tagging trials.

6.1.2 Final Installation Tasks

1. Verify that all connections are made and are secure.

2. Bundle the cables and tubes in the cable channel and neaten them. Install the cable cover.

3. Power on the machine and open the air regulator.

7.0 Connecting to Web UI

The Web UI is the manager/technician's interface with the Model 811. It is used to control settings, query machine status, monitor faults, and is necessary to help with the initial machine set up.

To launch the home page index from a Windows-based PC:

1. Connect the Windows-based PC to the Ethernet port at the cottom of the Model 811 via a crossover Ethernet cable or network switch.

2. Launch an Internet Explorer Browser.

3. In the address bar, type in the factory default IP address:
   http://010.000.000.015/index.htm
   Select the **GO** button on the browser.

Note: The default address can be altered for communication to more than one machine. If the IP address is altered, it is recommended that it be written on the exterior of the machine for future use.

4. Power-cycle the Model 811 and point the PC's browser to the new IP address. If the altered IP address is lost or forgotten, the factory default address can be restored via the LUI.

The following browser page should be displayed and represents the machine's "Home Page":
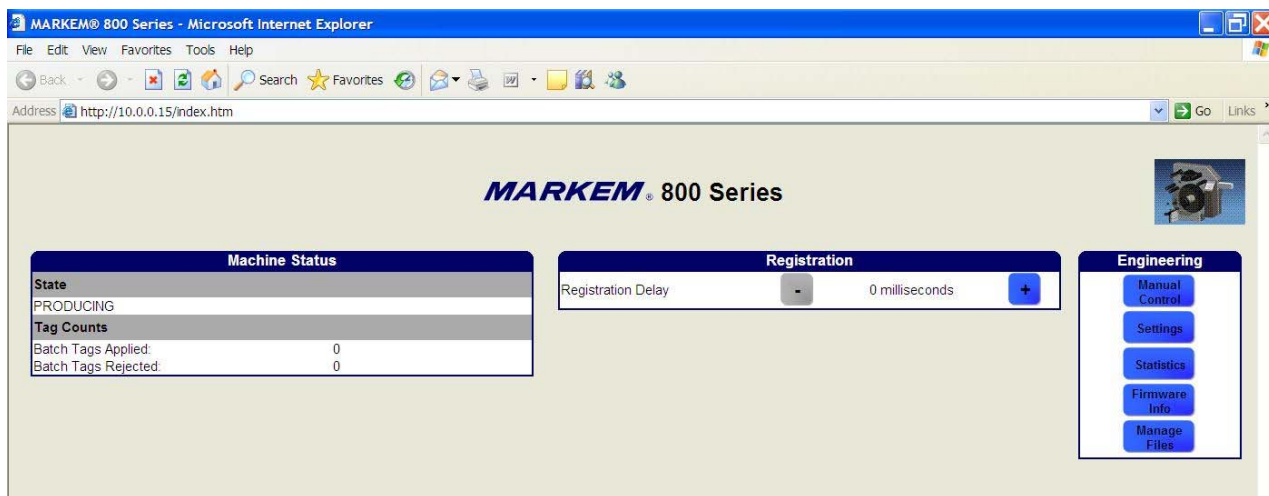
8.0   Verifying Settings

The dispenser and applicator settings are dependent on the RFID tag stock being used. When installing the machine or changing tag type, it is necessary to verify that the mechanical settings are appropriate for the RFID tag stock.

8.1   Mechanical Settings

If the mechanical settings are inappropriate for the RFID tag stock, adjustments must be made or the machine may fail to operate properly.

Some of the mechanical adjustments must be accompanied with software parameter setting adjustments using the Web UI.

8.1.1   Supply Arbor

The supply arbor position should be checked during installation and with every new roll added to the machine.

The supply arbor is driven by a motor which is powered by signals from the supply dancer position. The tag supply roll must be firmly coupled to the supply arbor for the machine to operate properly.

1. To check the supply arbor position, place the cam handle in the locked position and try to physically rotate the tag stock on the supply arbor. If the supply arbor rotates, it is necessary to adjust the supply arbor compression sleeve pressure.

2. Make sure the machine is the machine in the aborted state.

3. To change compression sleeve pressure, open the cam handle. Rotate it clockwise to increase pressure or counter clockwise to decrease pressure.

4. Lock the cam handle against the supply arbor.

5. Verify the adjustment by trying to physically rotate the tag stock on the supply arbor. .

photo

8.1.2 **Tag Guides**

The tag guides help guide the tag stock axially in the machine. The surface of the inner tag guides that are adjacent to the tag are set to a height of 1.19" (30.2mm) at the factory and should be coplanar with the supply inner disk and the rewind disk. The outer tag guide can be adjusted to match the tag width.

The outer tag guide is set at the factory to be appropriate for the tag stock specified at the time of machine order. The outer tag guide does not need to be changed during installation unless changing to a different tag stock than what was ordered.

To change the outer tag guides:

1. Remove power from machine.

2. Loosen the screw holding the clamp collar to the shaft.

3. Slide the outer clamp collar to a position on the shaft that allows approximately 1/32" (0.75mm) of axial tag stock movement.

4. Refasten the clamp collar screw.

photo

8.1.3   Adjusting Pressure Rolls

The pressure rolls should be checked during installation and with every new roll added to the machine.

The pressure rolls apply a force which couples the tag stock against the drive roll. The inner pressure roll is justified against the main plate while the outer pressure roll can be adjusted to match the tag width. The gap between the rolls should bridge the RFID chip.

Proper pressure roll adjustment will help with tag tracking and will prevent the pressure roll and/or the drive roll from prematurely wearing by the RFID chip.

photo

To change the outer pressure roll position for wider tags:

1. Remove power from machine.

2. Loosen the clamp collars holding the pressure roll.

3. Slide the clamp collars, washers and pressure rolls into their new position.

4. Refasten the clamp collars. Note that the pressure roll should have approximately 1/64"-1/32" (0.25mm-0.75mm) axial movement.

To change the outer pressure roll position for thinner tags:

1. Remove power from machine.

2. Remove the pressure roll guard by removing the four screws.

3. Loosen all the clamp collars.

4. Loosen the two set screws in the lever plate that holds the pressure roll shaft.

5. Place the pressure roll drive in the open position. Note that the mechanism is under spring tension. Care should be taken lock this mechanism in the open position so as to not cause an injury.

6. Slide the roll shaft out of the lever plate while removing the clamp collars, washers and pressure rolls.

7. Reassemble as shown in Figure X.X.

photo

8. Tighten the two set screws in the lever plate onto the flats of the pressure roll shaft.

9. Refasten the clamp collars. Note that the pressure roll should have approximately 1/64"-1/32" (0.25mm-0.75mm) axial movement.

10. Fasten the pressure roll guard to the lever arm.

8.1.4   Gap Sensor Position

The gap sensor position is set at the factory to be appropriate for the tag stock specified at the time of machine order. The gap sensor position does not need to be changed during installation unless changing to a different tag stock than what was ordered.

When changing to a different tag stock, the gap sensor position should be adjusted to optimize machine speed capabilities and to reduce tag queuing and tag waste.

For instructions on changing the gap sensor position, refer to "Changing the Gap Sensor Position" in section 7, *Technical Information*.

8.2   Software Parameter Settings

Detailed instructions on how to adjust parameter settings can be found in section 4, *Web User Interface* of this manual.

SECTION 3
Operation Guide

1.0 Preparing for Operation

Installation of the Model 811 is normally carried out by a qualified MARKEM service technician and usually involves connecting an apply sensor to the product conveyor transport system and setting parameters.

Once the machine has been installed and checked for safety, the machine can be loaded with tags ready for use.

The machine uses inside-wound tags.

Note: The tag manufacturer should be qualified by MARKEM to assure reliability of tag stock.

2.0 Operating the Model 811

The operator loads tags onto the tape drive system and uses the LUI or the Web UI to apply RFID tags to the product.

2.1 Power Switch

The power switch is located at the bottom of the machine cabinet (Figure 3-1).

Figure 3–1

2.2 Air Supply

The air supply is used by the applicator to apply tags to the product.

Figure 3–2

2.3 Powering Up

1. To turn the air supply on, rotate the air supply control valve handle.

2. Check that tags are correctly loaded and that the drive pressure roller is latched in position. See "Loading Tags" in this section if needed.

   WARNING:Be aware that items such as loose clothing or long hair, could become entangled or trapped in the tag drive pressure roller or tape path while operating the machine. A warning sticker highlights the hazard.

3. Make sure that the AC power cord is connected. Locate the power switch at the bottom of the machine cabinet and turn it on (**I** position). (Figure 3-1)

4. During power up, the machine calibrates and goes into Automatic mode unless a fault is detected.

5. If the Fault LED on the keypad is blinking, clear the fault.

6. The machine is now ready to operate.

2.4   LUI

The keypad (Figure 3-2) on the front of the machine has four keys and three LEDs to facilitate setup and to inform the operator of critical status conditions. The keypad is also referred to as the local user interface (LUI).

Figure 3–3

2.4.1   Keys

The keypad has the following keys:

- Mode key
- F1 key
- "+" (Plus or increment) key
- "-" (Minus or decrement) key

The function of these keys is detailed in Table 3-1.

2.4.2   Web UI

Key / Command	Automatic Mode Producing State	Automatic Mode Aborted State	Manual Mode
Press Mode Key	Go to Manual Mode	NA	Go To Producing State
Press F1 Key	NA	Clear Fault	NA
Hold F1, Press '-' Key	Decrement Registration Delay	NA	Reject Tag
Hold F1, Press '+' Key	Increment Registration Delay	NA	Feed & Apply
Hold F1, Press Mode Key	NA	NA	Starts / Stops Continuous Test Write Without Reject - Blue Lamp: Success, Fault Lamp: Fail
Press '+' Key	NA	NA	Increment Feed Forward
Press '-' Key	NA	NA	Decrement Feed Forward
Press '+' and '-' Keys	NA	NA	Reset Feed Forward To Default
Hold '+', Press '-', 'F1', Mode Keys in Sequence	NA	Restore To Factory Defaults	NA
Hold F1, Press Mode, '-' Keys in Sequence	NA	NA	Burst 5 Feed & Apply
Web UI Manual Control Buttons	No	No	Yes
Line Manager GetStatus	Yes	Yes	Yes
Line Manager ReadTag	Yes	No	Yes
Line Manager WriteTag	Yes	No	No
Line Manager Enable Run Mode	No	No	Yes
Line Manager Abort	Yes	No	No
Line Manager RejectTag	Yes	No	No
Line Manager Good Tag Cycle	Yes	No	No

Table 3–1

2.4.3 Keypad LEDs

The LEDs are designed to help the operator determine the status of the machine. The function of the LEDs are detailed in Table 3-2.

Indicator	Automatic Mode Producing State	Automatic Mode Aborted State	Manual Mode
Green / Amber LED	On - Green	Off	On - Amber
Fault LED	Off	Blinking	Blinks when Failed Tag Program Test
Blue LED	Off	Off	Blinks when Successful Tag Program Test

Table 3–2

2.5 Beacon Light (Optional)

The optional beacon has three lamps: green, blue, and amber which correspond with the LED indicators on the keypad. The function of the lamp depends on the operational state of the machine.

Indicator	Automatic Mode Producing State	Automatic Mode Aborted State	Manual Mode
Green Beacon Lamp	On	Off	Off
Blue Beacon Lamp	Off	Off	Blinks when Successful Tag Program Test
Amber Fault Beacon Lamp	Off	Blinking	Blinks when Failed Tag Program Test

Table 3–3

2.6 The Tape Drive System

Figure 3-3 shows the tape drive system with parts identified.
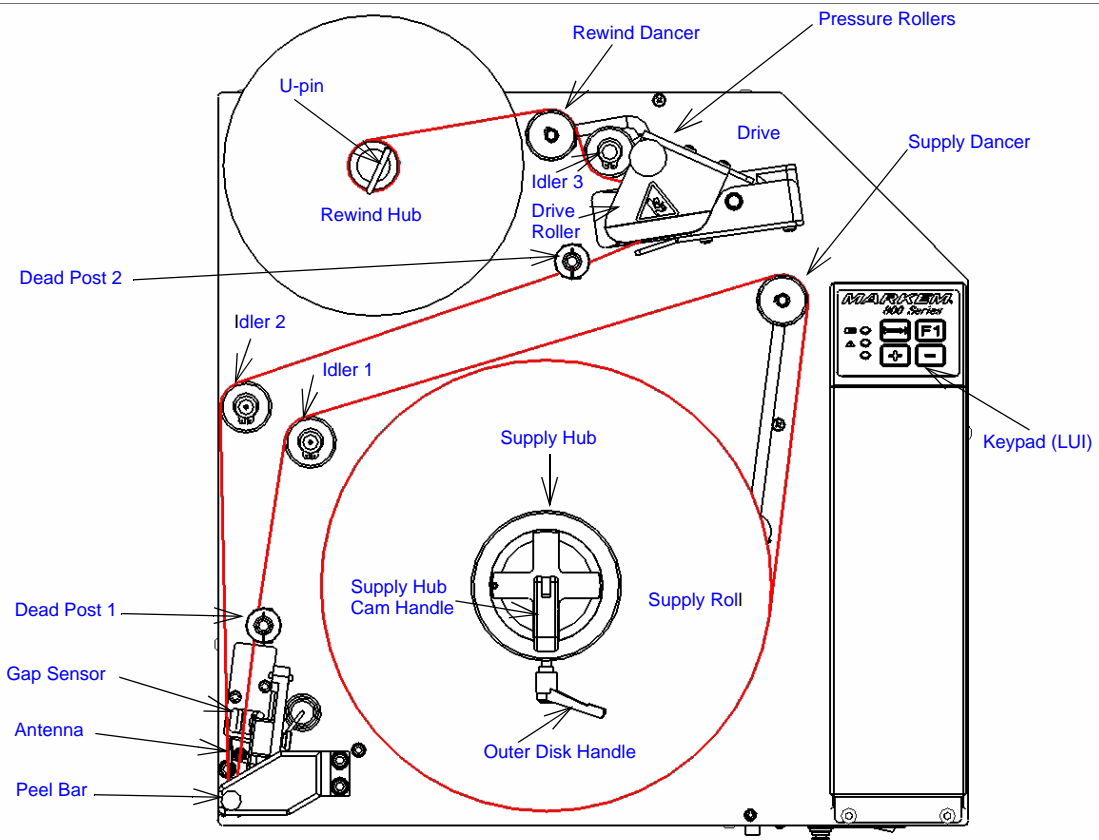
Figure 3–4

3.0   Loading Tags

The tape drive can be loaded either with the power on or off.

1. If the machine is powered on, leave it in Manual Mode or the Fault State.

2. Open the drive pressure roller (1, Figure, 3-2), being careful not to pinch your fingers.

3. Remove the disk from the outer supply roller by rotating the outer disk handle (2, Figure, 3-2) counterclockwise.
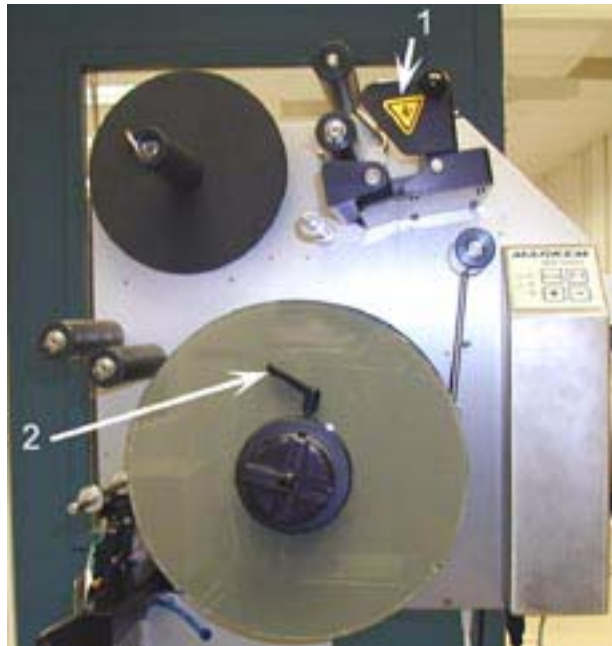
Figure 3–5

4. Open the supply hub cam handle so it points straight out toward you.

5. Remove the supply roller disk. It is suggested that you temporarily place it on the crank handle of the stand for safe keeping.

6. Position a new roll of tags on the supply hub disk with the slack unrolling on your left as shown in Figure 3-3.

Figure 3–6

7. Slide on the supply roller disk, ensuring that the pin in the outer disk handle aligns with the groove in the supply hub (1, Figure 3-4). Ensure that the roll is seated.

8. Lock the cam handle (2, Figure 3-4), making sure it is aligned in one of the four grooves. To increase pressure on the roll, rotate the cam handle clockwise before locking.

Figure 3–7

9. Lock the outer disk by rotating the outer disk handle clockwise.

10. To thread the tape, roll out approximately one meter of leader.
    Thread the tape:
    over the supply dancer
    over idler 1
    over dead post 1
    through the gap sensor
    between the antenna and shield
    around the peel bar
    over idler 2
    under dead post 2
    over the drive roll
    and under idler 3
    (Figure 3-5)
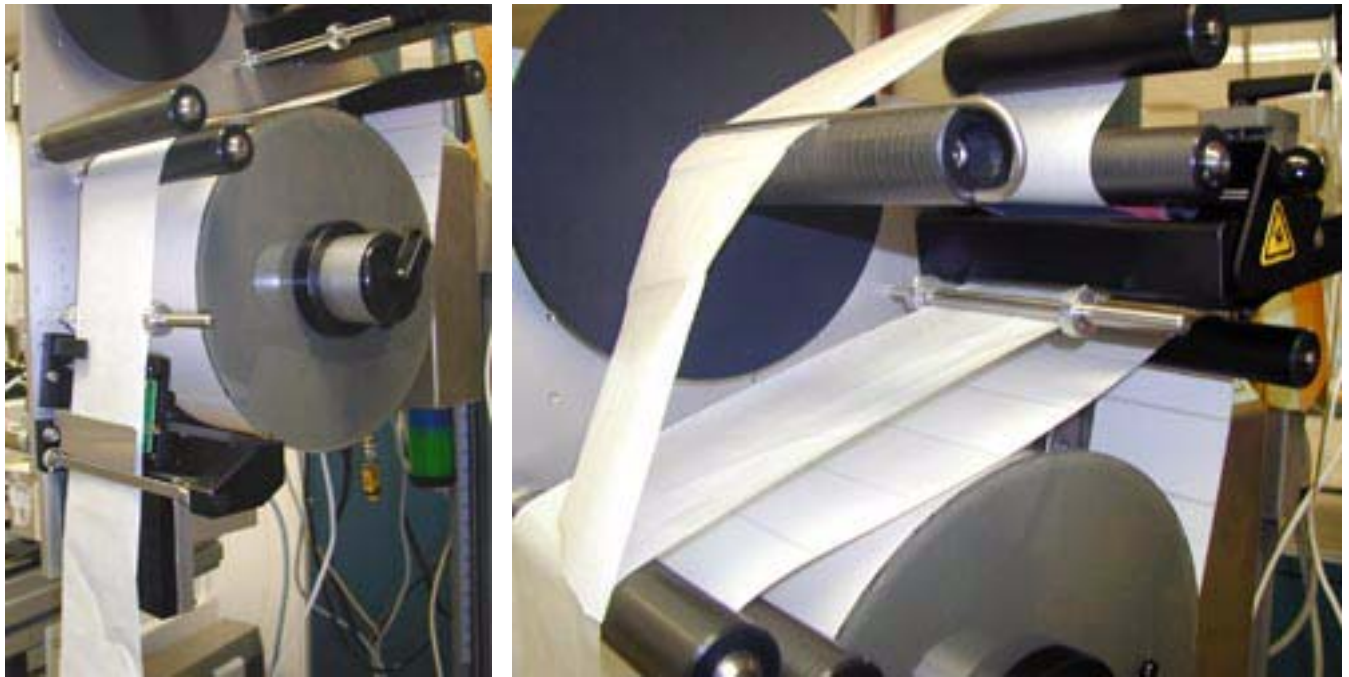
Figure 3–8

11. Close the drive pressure roller, being careful not to pinch your fingers.

12. Wrap the tape over the rewind dancer to the rewind post.

13. Secure the tape to the rewind post using the U-pin: put the long leg of the U-pin over the tape and the short leg of the pin in the hole in the end of the rewind post (1, Figure 3-6).

14. Manually rotate the rewind post counterclockwise until the rewind dancer is against its lower stop.

15. Check the tags above the peel bar, ensuring that they are either removed or securely adhered. Any partially peeling labels may jam when feeding through the drive roller.

Figure 3-6 shows the tape properly threaded.
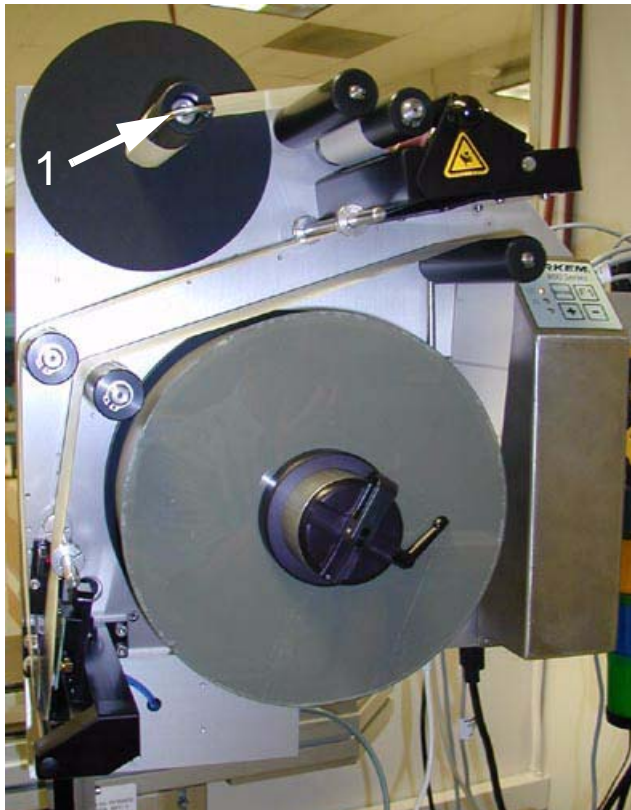
Figure 3–9

4.0   Unloading a Full Rewind Core

1. Remove the disk from the outer supply roller by rotating the outer disk handle counterclockwise.

2. Open the supply hub cam handle so it points straight out toward you.

3. Remove the supply roller disk. It is suggested that you temporarily place it on the crank handle of the stand for safe keeping.

4. Remove the empty core from the supply hub disk and discard.

5. Remove the U-pin from the rewind post (Figure 3-7). It is suggested that you temporarily hang it on the crank handle of the stand for safe keeping.

6. To remove the roll, pull the waste tape toward you. Or pull the rewind disk to push the waste tape off. Discard the waste tape.
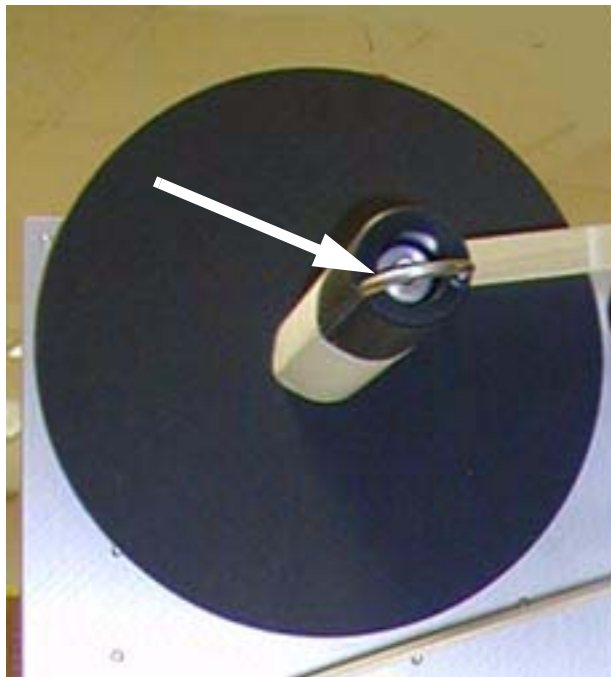
Figure 3–10

SECTION 4

Web User Interface

SECTION 4 Restricted Access Mode User Guide

1.0   Web UI
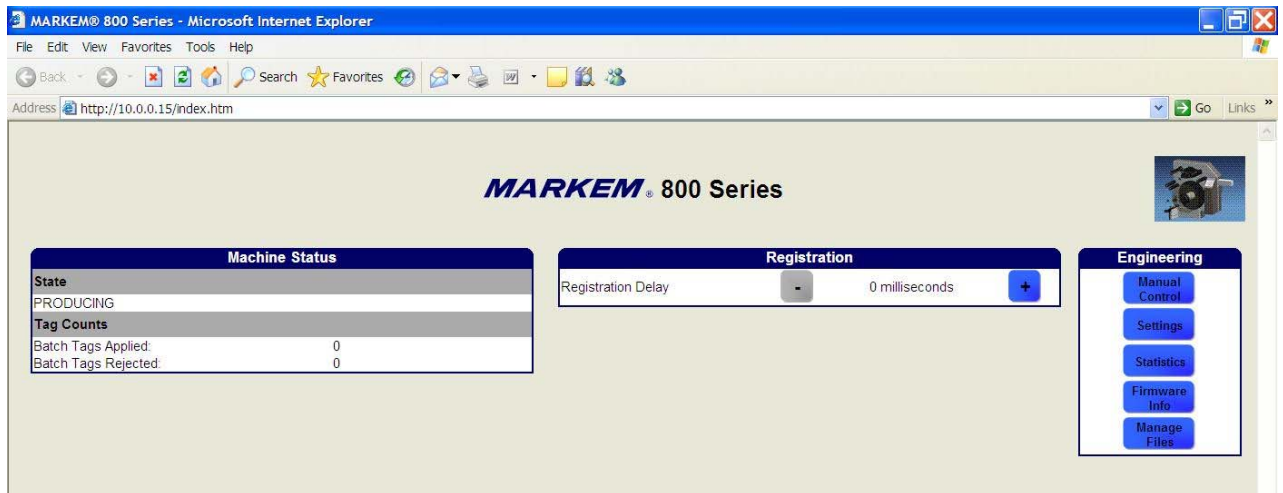
To access the Machine Settings menu, select the "Settings" button.

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SECTION 5

Operating Modes

1.0 Operating Modes

Three LEDs on the LUI and three lamps on the optional beacon inform the operator of the mode or state of the machine.

Automatic Mode

This is the "run" mode or normal operating mode. In this mode, LUI, WebUI, and Line Manager Manual Control commands are disabled.

Starting State

State within Automatic Mode where the machine checks all systems and peripheral devices. If everything is okay, the machine moves to the Producing State. If a problem is encountered, the machine moves to the Aborted State.

Producing State

State within Automatic Mode where the machine is online and ready to encode and apply tags. In this state, the green LED and beacon lamp are on and the only LUI functions that are available are the Mode key and Registration Delay increment and decrement. WebUI functionality is enabled with the exception of Manual Control commands. To exit the Producing State and enter the Manual Mode, the Mode key can be pressed.

Aborted State

State within Automatic Mode where the machine is 'idle' and the motors are off. In this state, all LUI and WebUI Manual Control commands and all Line Manager commands are disabled. This state is entered when a machine fault such as opening the nip occurs. The machine will respond to all communications with a NAK except for "Get Status."

Note: In addition to being the state resulting from a fault, this is the state used to replenish tag stock as the motors are disabled via opening the nip. When in the Aborted State, the Fault LED is blinking and the fault relay signal is activated.

In order to exit the Fault State, the fault condition must be corrected and the F1 key must be pressed. The machine will then transition to Manual Mode so that any necessary setup operations can be performed.

The machine will "boot-up" in the Aborted State.

Manual Mode

This is the "setup" mode for the machine during which the motors are online and all manual control keys on the LUI and WebUI are active. All Line Manager commands are disabled except the "Get Status" Command and the "Enable Run Mode" Command. The top LED will be amber

SECTION 6

Preventive Maintenance Guide

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SECTION 6 Preventive Maintenance Guide

1.0   General Maintenance and Cleaning

For the best performance of your machine, general cleaning must be carried out as a normal part of machine use.

This section describes cleaning and maintenance procedures which will help to keep the machine in good working condition.

1.1   General Information

Carry out a daily general machine inspection, which should include:

- Check all guards to ensure they are correctly fitted using all required fasteners
- Check that movement is smooth and that slides and cylinders are not damaged
- Check for wear
- Check for trapped cabling and pipes
- Check for inaccurate tag placement

1.2   Positioning of Safety Labels

Labels are placed on the Model 811 in various positions by MARKEM to warn of potential safety hazards. As part of regular maintenance, safety labels must be checked and replaced whenever any are missing or damaged.

Refer to **Section 1 – General Information** for further information.

2.0   Maintaining the Compressed Air

The compressed air supply to the machine may contain moisture. A water trap is provided in the main pressure regulator, and this will require draining at regular intervals before machine use.

Carry out the following procedures:

- Check the water level in the water trap
- Place a suitable container under the water trap and drain by pressing the valve pin in the base of the filter
- Check all of the air lines for leaks, security and condition
- Replace any defective air lines or connectors

3.0   Cleaning Adhesive from Machine Components

During operation, adhesive from the tags and liner material will build up on various posts and rolls within the machine. Excessive adhesive build up will increase tension in the system and/or cause tracking errors.

Isopropyl alcohol (IPA) is the recommended solvent to clean adhesive from machine components.

CAUTION: When using IPA to clean the machine, use approved personal protection recommended by the manufacturer.

1. Pour IPA on a clean cloth or paper towel.

2. Wipe adhesive buildup off affected components as needed.

4.0   Cleaning of All Rollers

When tags are fed, the tag adhesive may bleed onto the backing web. This adhesive can build up on the feed roller, tag nip, and idler rollers which may eventually cause feed problems.

To prevent these problems, the machine must be cleaned regularly using a suitable cleaning agent such as Isopropanol. Care must be taken when cleaning to prevent damage to the machine and its delicate components. Cleaning agents which will damage rubber or plastic **MUST NOT** be used. If in doubt, consult MARKEM.

It is recommended that the rollers be cleaned regularly every time the tags are replaced and before using the machine if it has not been operated for several days.

- Turn off power to the machine and remove tags
- Use a cotton swab or soft cloth, moistened in Isopropanol, to remove any residue from the feed roller and the idler rollers

Note: NEVER use abrasive materials or sharp instruments such as screwdrivers to remove residue.

SECTION 7

Technical Information

1.0 Air Requirements

A compressed air supply is required by the Model 811 to drive the applicator. This must be air at 90psi (6 bar) and should be: **dry, uncontaminated air, and not lubricated**.

A filter regulator assembly is fitted to the base of the stand; this is comprised of a manual isolation valve, a water trap, pressure regulator, and dump valve. The air supply is via a 6mm or 8mm flexible pipe.

1.1 System Air Supply

WARNING: Do not adjust the regulator pressure under any circumstances. Doing so could make the Model 811 unsafe.

A filter regulator is provided as standard and includes:

- Isolation value (non-lockable)
- Pressure regulator
- Pressure indication dial (0-10 bar)
- Filter (micro mesh)
- Water trap

The **unregulated** supply goes to the **dispenser**.

The **regulated** supply goes to the **applicator**.
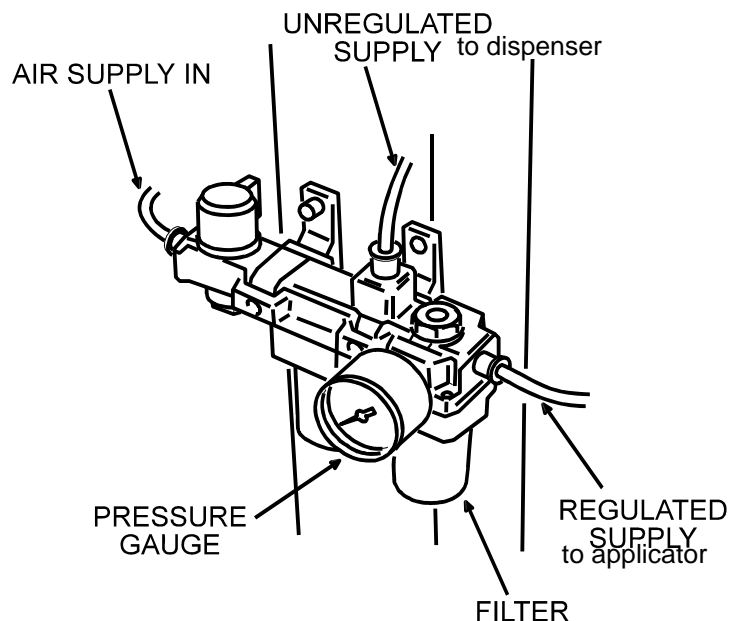
Figure 7–1 Air Filter/Regulator Unit

A 6mm (.236") push fitting is provided to accept flexible pipe.

The supply should be at 90psi (6 bar) and should be dry, clean, and not lubricated.

1.2   Applicator Air Supply

The **applicator** has a separate **air regulator** which is mounted inside the dispenser cover next to the solenoid valve that operates it.
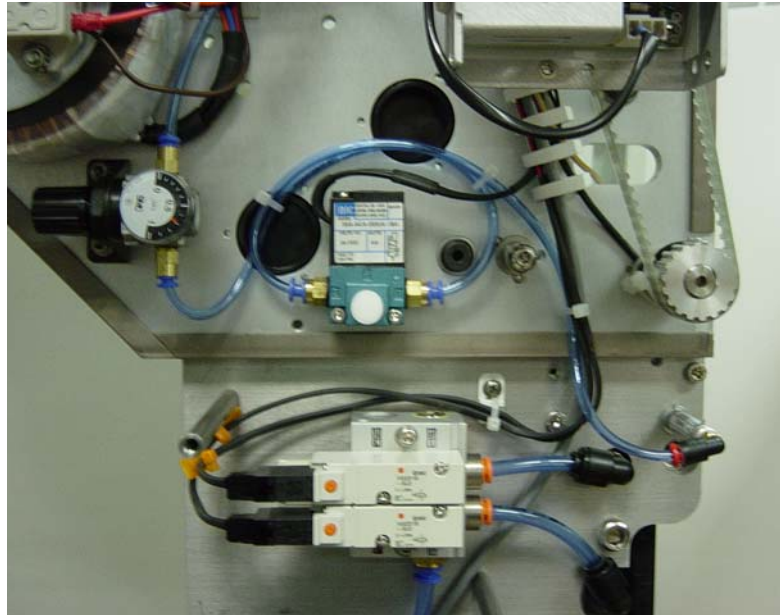
Figure 7–2

The air pressure for the **Tag Reject Mechanism** does not normally have to be adjusted and should be set to 3.5 to 4.0 Bar.

2.0   Gap Sensor

The gap sensor is located inside the machine enclosure and should be adjusted when changing to a different tag stock.

CAUTION: The technician will be working inside the machine with the rear cover removed and the power connected. To prevent injury from electrical shock and moving parts, avoid contact with electrical components, motors, pulleys, and belts.

Figure 8   **Figure 9**

Below are some definitions and illustrations of RFID tags that should be helpful when adjusting and teaching the gap sensor.

RFID: Radio Frequency IDentification. A method of identifying unique items using radio waves. Typically, a reader communicates with a tag, which holds digital information in a microchip.

RFID tag: A microchip attached to an antenna that is packaged in a way that it can be applied to an object. The tag picks up signals from and sends signals to a reader.

Passive tag: An RFID tag without a battery. When radio waves from the reader or programmer reach the chip's antenna, the energy is converted by the antenna into electricity that can power up the microchip in the tag. The tag is able to send back information stored on the chip.

Inlay: An RFID microchip attached to an antenna and mounted on a substrate. Inlays are essentially unfinished RFID labels.

Converted RFID Tag: Assembly of an inlay sandwiched between an adhesive and substrate (usually paper stock) which is then die cut into a specified size.

Gap: The distance between tags (or labels) on the liner (or backing), measured from the bottom of one tag to the top of the next tag.

Components of a converted RFID tag on a backing are shown below.
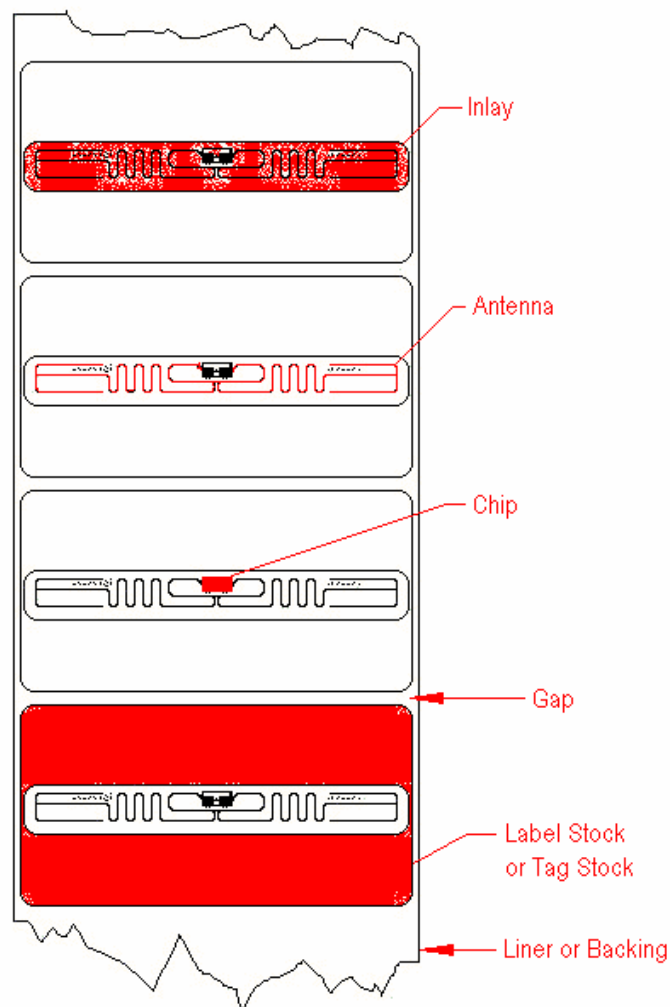
2.1   Changing the Gap Sensor Position

When changing to a different tag stock, the gap sensor position should be adjusted to optimize machine speed capabilities and to reduce tag queuing and tag waste.

To determine current gap sense position, look at the gap sense bracket from the front of the machine; a letter "A" or "B" should be visible.

- Position "A" required for all tags less than 2.00" (50.8mm) high.

- Position "B" required for all tags 2.00" (50.8mm) high and higher.

picture

Figure 7–1

1. Remove power from machine.

2. Remove the rear cover.

3. Release gap sensor amplifier fiber lock by sliding the tab up as shown.

Slides Up to Release Fibers

Plastic Fiber Emitter Port

Plastic Fiber Receiver Port
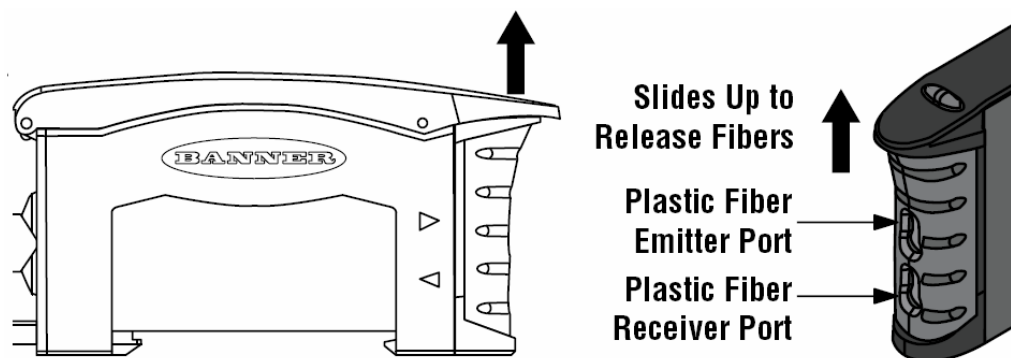
Figure 7–2

4. Slide both fibers out of their ports.

5. Remove the two screws attaching sensor bracket to main plate.

6. Pull the gap sensor and bracket away from main plate.

7. Rotate the sensor and bracket for new position. Thread the fibers through the corresponding holes and fasten the bracket to the main plate. Note that position "A" positions the sensor closer to the peel bar than position "B".

8. Fully seat the fibers back into their ports and slide down the fiber lock.

9. Reinstall the rear cover.

10. Power on the machine and the Windows-based computer.

11. From the Web UI, set the gap sense position:
    Homepage > Settings > General System Configuration >
    Gap Sensor Position - Edit >"Select A or B" > Apply.

2.2 Teaching the Gap Sensor

The gap sensor amplifier and fiber optic gap sense head combination optically scan the tag stock as it moves through the system. A properly programmed amplifier will determine where the gaps are between the tags and provide feed data to the tag drive motor which in turn will index the tag to the proper position on the peel bar.

Gap sensor teach modes should only be performed by trained personnel as this procedure requires working inside the dispenser enclosure with power energized to the machine.

2.2.1 Teach

Once the sensor is properly set up, it needs to be "taught" in the areas it needs to signal on. The Model 811 requires that the sensor trigger on the leading edge of the tag for proper feeding. For the most accurate setting, present the sensor head only, the leading edge gap, and the trailing edge of the tag during the teach session.

1. Ensure the machine is in the aborted state.

2. Advance the tag stock by manually rotating the rewind roll counter clockwise until the sensor head (red light) is positioned on the trailing edge of the tag.

3. After entering the dynamic teach mode, rotate the rewind roll counter clockwise again, making sure that a gap and the leading edge of the next tag has been presented to the sensor head.

Dynamic TEACH

- TEACH on-the-fly.
- Sets a single threshold.
- Threshold is adjustable using the "+" and "-".
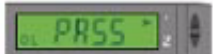
	Push Button	Result
Access Dynamic TEACH Mode	• Press and hold Dynamic (+) button.	• Display flashes "dyn" • Arrow icon turns red
Teach Sensing Conditions	• Present Output ON/OFF conditions while continuing to hold Dynamic button.	
Return to RUN Mode	• Release Dynamic button.	**TEACH conditions acceptable:** • Display flashes "pass," followed by a number (denoting contrast); see table below. **Contrast Values** 500+ — Excellent 100 - 500 — Good 32 - 99 — Low 0 - 31 — Marginal • Sensor returns to RUN mode with new settings. • Arrow icon turns green **TEACH conditions unacceptable:** • Display flashes "fail" • Arrow icon remains red • Sensor returns to RUN mode (Arrow icon turns green) without changing settings.

Figure 7–3

4. Click the static (-) button once quickly after the teach mode is exited.

5. While watching the sensor and tag stock, manually rotate the tag stock through the machine to verify the sensor was taught correctly. The amber output indicator #1 should light at a gap and the amber indicator #2 should trigger at a tag. This should give adequate results with a threshold value that was selected by the amplifier.

2.2.2 Manual Override Teach

With some tag stocks it may be necessary to manually force a threshold value. This is done by first determining the amplifier output value variations for the tag and for the gap. The threshold value between the gap and the tag material can then be manually set.

1. Present the tag portion of the tag stock to the sensor head and move it back and forth between the forks (as shown below) while noting the signal values of the amplifier. Make sure to not include the inlay or copper portion of the tag. Record these values.

2. Present the gap portion of the tag stock to the sensor head and move it back and forth between the forks (as shown in Figure 7-6) while noting the signal values of the amplifier.
   Hint: To increase the sense area of a gap, remove a tag from the backing liner.

3. Record the signal values of the amplifier.
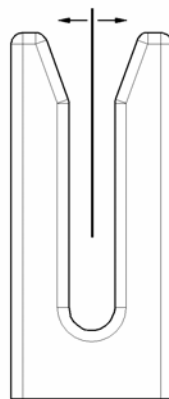
Figure 7–4

4. Set the threshold at the midpoint value between the lowest gap number and highest tag number. Check the current threshold by single clicking either the "+" or "-" button on the amplifier. The display threshold value will briefly display. To change the value to newly calculated midpoint threshold value single click "+" button to increment the value (do not hold the button down) or single click the "-" button to decrement the value.

5. While watching the sensor and tag stock, manually rotate the tag stock through the machine to verify the sensor was taught correctly. The amber output indicator #1 should light at a gap and the amber indicator #2 should trigger at a tag. This should give adequate results with a threshold value that was selected by the amplifier.

Examples:

- Recorded amplifier reading for tag stock varies between 2800-3800
- Recorded amplifier reading for gap varies between 4100-4150
- New Midpoint Threshold value:
  $$3900 = \frac{(\text{lowest gap } 4100 + \text{highest tag } 3800)}{2}$$

Note that the amplifier value will decrease as the material opacity increases. A typical empty sense amplifier value will read approximately 4350 while a totally blocked sense head will typically return a value between 10-20.

Typical readings for the Alien Gen 1 2x4 tag:

- Gap: 4100-4150
- Tag material: 2800-3800
- Inlay: 2130-3100
- Copper: 275-750

2.2.3 Verifying or Changing Amplifier Settings

Channel Selection

The Model 811 only uses the output signal from channel 2. Follow the steps shown to verify/setup the sensor:

Figure 7–5

Setup

The sensor comes stored with factory defaults. Some of these must be altered to work with the Model 811. Follow the steps shown in Figure 7-8 to verify/setup the sensor

The amplifier comes stored with factory defaults. Some of these settings have been altered by MARKEM to work with the Model 811. To verify or change these settings, follow the steps shown in Figure 7-8.

Sensor Setup

- Configures sensor display and operating parameters.
- Changes are updated instantly.

- Click Dynamic (+) or double-pulse remote line to select an option.
- Click Static (-) or single-pulse remote line to advance.
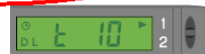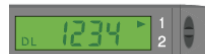
	Push Button	Result
Access SETUP Mode	**1** • Press and hold both buttons concurrently.	• Arrow icon turns red
Select Light/Dark Operate	• Click Dynamic to toggle between selections.	**Light Operate:** • Display flashes "lo" • L icon < Factory Default
	2 • Click Static to save selection and advance to "OFF-Delay."	**Dark Operate:** • Display flashes "do" • D icon
Select OFF-Delay Timing Enable	• Click Dynamic to toggle between selections.	**OFF (No OFF-Delay):** • "t 0" • Clock icon OFF < Factory Default
	3 • Click Static to save selection and advance to "Display."	**2 to 100 ms OFF-Delay:** • "t 2," "t 5," "t 10," "t 15," "t 20," "t 30," "t 40," "t 60," "t 80," or "t100" • Clock icon ON
Select Display Parameters	• Click Dynamic (+) to toggle between selections.	**Raw signal value:** • 1234 < Factory Default
	4 • Click Static (-) to save selection and advance to "Power/Speed."	**Percent of excess signal:** • 123P
Select Power and Speed Combination	**5** • Click Dynamic (+) to toggle between selections.	**Super-high-speed (50-µs response)** • SHS (Complementary outputs; see note below)
		High-speed (200-µs response) • HS < Factory Default
	6 • Click Static (-) to save selection and return to RUN mode.	**High-power (1-ms response)** • HP
		Super-high-power (2.5-ms response) • SHP

Figure 7–6

3.0   Antenna

The antenna shield and program antenna can be adjusted by the user.

3.1   Repositioning the Antenna Shield

The antenna shield limits the range of the RFID program antenna by providing a ground plane for the RF energy. This shield, along with the program antenna, ensures that only the target tag gets programmed. This will eliminate a false read/write of an upstream or downstream (rejected) tag. The factory-set position should work in most instances.

1. Loosen the mounting screw to swivel the shield around the mounting point (Figure 7-9).

2. Ensure that a good tag can be programmed in the target position. Remove the first upstream and all downstream tags from the liner to verify that only the target tag is being programmed.

3. Ensure that upstream and all downstream tags cannot be programmed with the target tag removed from the liner.

4. Refasten the antenna shield.

picture

Figure 7–7

3.2   Program Antenna

The program antenna can be adjusted in two axes in relation to the tag stock as it is threaded in the machine. Aligning the program antenna to the tag antenna will increase the tag writing capability of the machine and eliminate rejects due to poor antenna positioning and eliminate the possibility of writing to the incorrect tag.

3.3   Adjusting the Antenna Cross-track Position

The best position of the program antenna in the axis perpendicular to the tag travel is to have the tag chip aligned as close as possible between the program antenna witness line between the first and second mounting holes. (See Figure 7-10)

picture

Figure 7–8

1. Verify the tag stock is threaded correctly in the machine.

2. Remove the two screws holding program antenna to antenna slide.

3. Reposition the program antenna and re-fasten to the antenna slide, using the two screws.

4. Check the tag chip alignment.

5. If a larger move is required:
    Remove the (two) screws attaching the antenna bracket to the peel bar bracket.
    Reposition the antenna bracket to the alternate mounting holes provided in the peel bar and re-fasten, using the two screws.
    Repeat steps 1-4.

3.4 Adjusting the Antenna In-track Position

The best position of the program antenna in the axis parallel to the tag travel is to have the bottom edge of the antenna in-line with the tag chip. This position may be different for various tag types dependent on the tag antenna design.

If the program antenna does not have enough in-track travel to be properly adjusted to the tag stock, contact MARKEM to obtain a custom bracket.

picture

Figure 7–9

1. Verify the tag stock is threaded correctly in the machine and the machine is in the non producing state.

2. Index the tag stock so it is in its correct peel position.

3. Loosen the two thumb screws that fasten the antenna slide to the antenna bracket.

4. Align the bottom edge of the program antenna to the tag chip by rotating the adjustment screw CW to raise the antenna or CCW to lower it.

5. From the LUI, put the machine into Manual Mode.
   Hold the **F1** key and press the **Mode** key.
   This will put the machine in a continuous program mode.
   A blinking blue LED signifies a successful write while the blinking amber fault lamp signifies a failed write attempt.

6. Continue trying to program a tag while raising and lowering the antenna and watching the program status. Note extremes of antenna travel where the tag stops programming.

7. Position the antenna at the midpoint of the successful write program band.

8. Tighten the two thumb screws that fasten the antenna slide to the antenna bracket.

9. Verify position by feeding tags from the LUI by holding the **F1** key and pressing the **Minus** key to reject tags. Note that even with the program antenna correctly positioned, a small percentage of tags as provided from the manufacturer may not write successfully due to the manufacturing process.

10. From the LUI, hold the **F1** key and press the **Mode** key to remove the machine from continuous program mode.

4.0   Tag Peel Position

The tag peel position is the relative position of peeled tag with respect to the peel bar. This position is critical to the proper transition of the programmed tag from the liner to the applicator faceplate. The position can be adjusted forward or backward from either the Setup screen of the Web UI or the LUI.

Note that the feed forward steps are active and movement can visibly be seen. Backup steps will not be active until the next tag is cycled into position.

4.1   Adjusting the Tag Peel Position Using the Web UI

1. Open the Web UI.

2. Go to: Home Page > Settings > General System Configuration > Feed Forward Steps > Edit >
    + (to advance tag forward) or - (to back up tag) >
    Apply

4.2   Adjusting the Tag Peel Position Using the LUI

1. Set the machine into Manual Mode.

2. Press the "+" key to advance the tag forward or press the "-" key to backup the tag with relation to the peel bar.

5.0   Applicator Selection

In order for the dispenser to communicate with the applicator, the machine firmware must match the applicator type that is mounted to the dispenser. If the improper applicator is selected, the machine will fail to apply tags.

To verify or change the applicator selection:

1. Open the Web UI.

2. Go to: Home Page > Settings > General System Configuration > Applicator Type - Edit > "select the appropriate applicator" > Apply

6.0   Tag Type and SIze

6.1   Verifying and Editing Tag Length

To optimize machine speeds, the tag length needs to be input into Web UI. If a tag length shorter than actual is input into the Web UI, the machine will run at reduced throughput speeds. If a tag length longer than actual is input into the Web UI, the machine will not run.

1)From the host's web based user interface: Homepage > Settings > General System Configuration > Tag Length - Edit > "select the appropriate length" > Apply.

6.2   Verifying and Edting Tag Generation

In order to program an RFID tag, the machine firmware must match the tag type that is being loaded into the machine. If the improper tag generation is selected, the machine will fail to program tags. Check with the manufacturer of the tag to verify type. This information may be found on the manufacturer's label on the inside of the tag stock core.

To Verify/Edit Tag Generation Type:

1)From the host's web based user interface: Homepage > Settings > RFID Configuration > Tag Generation - Edit > "select the appropriate Gen" > Apply.

6.3   Verifying and Editing Tag Data Size

In order to program an RFID tag, the machine firmware must match the tag type that is being loaded into the machine. If the improper tag data size is selected, the machine will fail to program tags. Check with the manufacturer of the tag to verify type. This information may be found on the manufacturer's label on the inside of the tag stock core.

To Verify/Edit Tag Data Size:

1)From the host's web based user interface: Homepage > Settings > RFID Configuration > Tag Data Size - Edit > "select the appropriate bit size" > Apply.

Tag Data Size Selection

In order to program an RFID tag, the machine firmware must match the tag type that is being loaded into the machine. If the improper tag data size is selected, the machine will fail to program tags. Check with the manufacturer of the tag to verify type. This information may be found on the manufacturer's label on the inside of the tag stock core.

To Verify/Edit Tag Data Size:

1)From the host's web based user interface: Homepage > Settings > RFID Configuration > Tag Data Size - Edit > "select the appropriate bit size" > Apply.

Write Power/ Read Power

The amount of RF read and program energy can be adjusted dependant on specific tag requirements. The default setting will work in most conditions for most tag types. If a known good tag cannot be written to after attempts with altering the antenna position, the write/read power can be adjusted. The value of the Read Power should mimic the value of the write power. Note that adjusting the power too high can flood the program area with too much energy and give inadequate results and/or program upstream or downstream tags. Adjusting the power too low may result in a high reject rate.

To Verify/Edit the Write Power:

1)From the host's web based user interface: Homepage > Settings > RFID Configuration > Write Power - Edit > "increment or decrement the write power setting" > Apply.

To Verify/Edit the Read Power:

1)From the host's web based user interface: Homepage > Settings > RFID Configuration > Read Power - Edit > "increment or decrement the read power setting" > Apply.

1.0   Supply Dancer Cam Position

If the supply dancer cam is not positioned correctly, the supply arbor could either unwind the supply or create excessive tensions on the web that could damage the dancer arm.

The dancer cam position should only be adjusted by trained personnel as this procedure requires working inside the dispenser enclosure with power energized to the machine.

The supply dancer cam position is locked to the supply dancer arm with a set screw. The cam profile is read from an inductive proximity sensor which outputs an analog signal to the digital board which controls the supply motor output speed and direction of rotation. The position and distance of the cam to inductive proximity sensor is set at the factory to maintain a constant tension on the web during normal operation of the machine.

1. Remove power and the rear cover from the machine.

2. Disconnect the supply motor connector from the analog board connector X16.

3. If required adjust the cam so the high point is facing the sensor when the dancer is in the home position as shown.
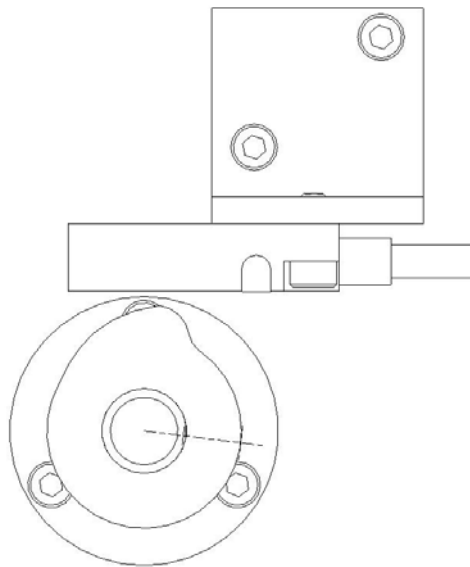

Figure 8–1

4. Connect power to the machine.

5. Attach a multi-meter positive lead to pin 2 on the X10 connector and negative lead to pin 4 on the X10 connector. The multi-meter should read 0.75+/- 0.02 VDC with the dancer arm in the home (back) position.

6. Loosen the screws on the sensor bracket to adjust the sensor distance to the cam which will vary the readings.

7. When the home position is set within the specified limits, tighten the bracket screws.

8. Verify the output is 2.55+/- 0.04 VDC with the dancer arm in the full forward position against the stop. It may be helpful to tie-wrap the arm to the forward stop post. If it is not within the specified limits, the cam is not positioned correctly. Repeat steps 3-7.

9. Disconnect power from the machine. Plug in the supply motor. Connect power to the machine. While moving the dancer arm through its limits, the supply motor should drive the supply arbor as follows:

    • Home position: Rewind
    • Neutral Position: Static
    • Forward position: Unwind
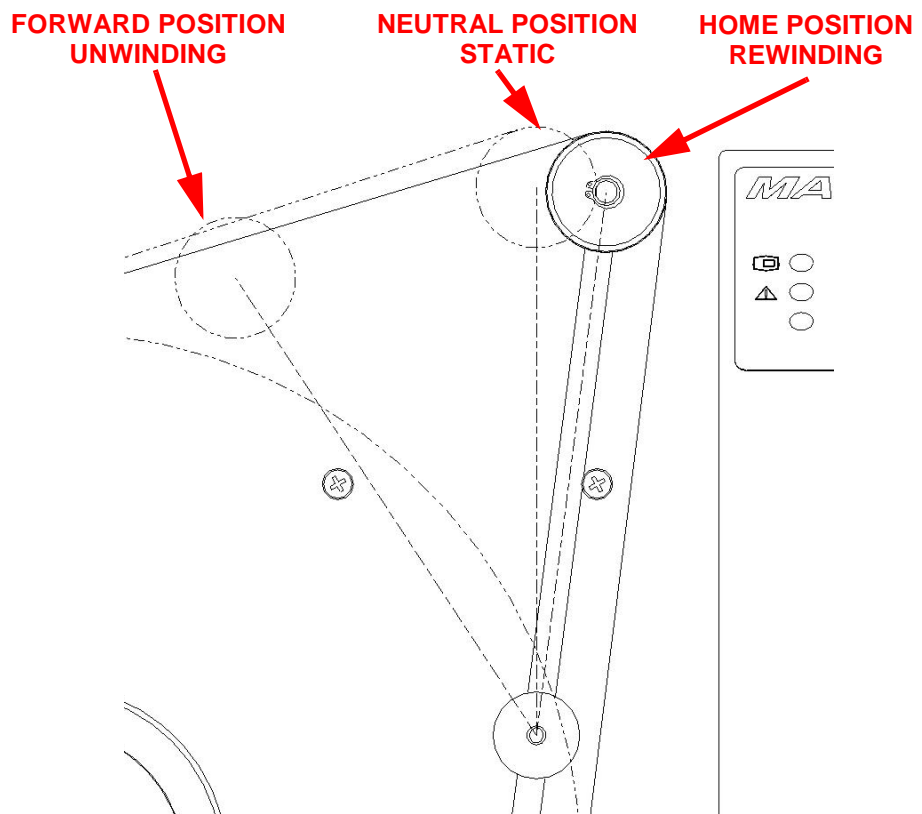
10. When the supply dancer position is correct, install the rear cover on the machine.

2.0   Tag Feed Problems

Tag feed problems can be caused by several things such as:

- Machine being incorrectly webbed
- Drive belts slipping
- Stepper motor stalling
- Faulty gap sensor
- Incorrect parameter settings

2.1   Incorrect Tag Stopping Position

2.2   Erratic Tag Feeding

2.3   Inconsistent Tag Stopping Position

3.0   No Driving of Tags

MARKEM®

SECTION 9
Recommended Spare Parts

MARKEM ®

1.0   Preventive Maintenance Spare Parts

Preventive maintenance spare parts are listed below.

Table 9–1 Preventive Maintenance Spare Parts

Part No.	Qty	Description
0947820	1	Drive Roll (requires bearing Part No. 0210108)
0651328	1	Pinch Roll
1002161	1	Clutch Facing
0686057	1	Fuse

2.0   General Spare Parts

General spare parts are listed below.

Table 9–2 General Spare Parts

Part No.	Qty	Description
0672701	1	Keypad (Local User Interface)
10002277	1	U-Pin
10009448	1	Motor
0630920	1	Belt
0630922	1	Belt
10003908	1	Solenoid

Section 10

Parts Illustrations and Electrical Schematics