OWNERS MANUAL
M500 AND M625 MODELS
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MACHINE SPECIFICATIONS

PRIMARY ELECTRICAL: 120VAC 7AMPS

CONTROL CIRCUIT: 24VDC

AIR SUPPLY: 80PSIG

CONTROL SYSTEM: MITSUBISHI FX1s-20MT

CONTROL PROGRAM: M1250v10

MATERIAL SIZES: 25MM LAYFLAT – 90MM LAYFLAT

BAND LENGTHS: .5” THROUGH 7”

NOTE: NOT ALL LAYFLAT SIZES AND LENGTHS CAN BE RUN IN COMBINATION AND MAY REQUIRE SPECIAL HARDWARE TO RUN AT ALL

MATERIAL THICKNESS: 40MICRON – 70MICRON

ROLL LENGTHS: TYPICALLY 500 METERS LENGTH, OUTSIDE DIAMETER SHOULD NOT EXCEED 17”

ROLL CORE: CORE I.D. SHOULD BE 5”

SPEED: SPEEDS WILL VARY DRAMATICALLY DEPENDING ON LAYFLAT SIZE, LENGTH OF BAND, CONVEYOR SPEED, AND TARGET APPLICATION. THE MACHINE CAN APPLY BANDS AS QUICK AS 200+BPM FOR SHORT SMALLER SIZES AND SPEEDS WILL GO DOWN FROM THERE.

PRIMARY CONSTRUCTION MATERIALS: 304 STAINLESS STEEL & 6061 HARD ANNODIZED ALUMINUM
M500 THEORY OF OPERATION

The Autocapsealer banding machine is designed to apply a heat shrinkable band to containers. The containers are then transported through a heat source allowing the banding material to shrink and conform to the surface of the container. This is usually for the purpose of tamper-evidence. The material processed through the machine is a tubular material, flattened and wound on a roll sometimes referred to as a roll stock. The material, typically PVC, usually comes wound on a roll in lengths of 500 meters. Because the material is flattened, the machine must open the material to apply the bands over an object. For this task, we insert a cross-folding device into the material. Then, we set the material with the device inside above a set of rollers, which are closer together than the device is wide. Feeding the individual lengths of material plus the weight of the device and the friction of pulling the material causes the device to interact with the roller removing the original crease from the material. This process will cross fold the material. The material is advanced by 2 opposed rollers, which are driven by either a servo or stepper motor. The rollers create their grip on the material because of the pressure against each other. The amount of rotation by the motor is set at the control panel and will, in effect, cause a specific length of material to be advanced. The banding material is then fed through the cutting mechanism to cut off the individual band from the banding material. Directly below the cutting edge is a vacuum block which will hold the band in the ready position until a container passes by. To insure that the vacuum block gets a good grip on the band during the cutting process, we use a band retention spring to hold the band against the vacuum block until the band is completely cut. When the spring is removed the individual band will bounce open to a round position. Because the band bounces open so fast a band stabilizing finger opposite the vacuum block is used to prevent the band from bouncing around. Above the band is a plunger, which will push the band down when the container sensor detects passage of the container. The band is held at an angle relative to that of the container’s path, such that the downstream portion is lower than the upstream portion. By applying the bands at an angle, the band will tend to align itself with the container during application. After the band is applied to the container the process begins all over again until a new band is ready for the next container. The container and band will now be transported through a heat source, such as the Marburg CR6000 heat tunnel, which will shrink the bands to complete the process.
M500 FUNCTIONAL SEQUENCE

• Upon turning the main disconnect to the on position the power will pass through the main fuse and onto the PLC, Servo Drive, Stepper drive (via the transformer), and the relay which will feed the bottle feed motor.
• The PLC will then begin its subroutines, operating the control panel and preparing for the machine to be turned on.
• The user interface control panel on the front of the machine will scroll the menu of which buttons to press to activate the functions of the machine.
• Pressing the “B” button will alternate the “M22” relay in the PLC. With M22 in the true position “Y3” will turn on to turn on SSR1. SSR1 provides power to the motor control for the bottle feed.
• Pressing the “A” button will alternate the M21 relay in the PLC to turn on or off the cycle function. “Y7” will be active until M21 is turned on, Y7 will disable the stepper drive which operates the pre-feed rollers.
• When M21 is turned on Y4 will come on to activate the main air valve and the servo drive. Y6 will also become active turning on the vacuum valve and the plunger valve. After a short delay the subroutine will advance to the next step.
• The machine is now waiting for a cycle signal from the cycle sensor on the X7 input.
• Upon receiving a signal to cycle if the door sensor shows the door is closed (X6) the cycle will begin. The first thing to happen is Y6 deactivates turning off the vacuum and sending down the plunger to apply the waiting band to the passing container. After T32 times out the Y3 will turn on which turns on the cutter valve. This will send the cutter to the back position. After T33 times out, a pulse train is sent to the servo drive via Y0. The quantity of pulses is determined by the “Band Length Value” input in the control panel. After the programmed number of steps are sent to the servo drive T34 gives the servo a short period of time to settle in. After T34 expires Y6 will turn back on turning on the vacuum and sending up the plunger. In addition Y5 will turn off sending the cutter forward again. When T35 expires, the subroutine will go back to the beginning and wait for another input to cycle again.
• During all of this while M21 is active, if the X4 input receives a signal from the prefeed dancer that material is needed, a pulse train is sent out Y1 to the stepper drive. The stepper drive will power the prefeed motor to pull material from the roll. The motor will turn until the dancer is back down and then a preprogrammed period of time after.
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MACHINE COMPONENTS

1 MALE BLADE
2 MATERIAL GUIDE
3 BAND RETENTION SPRING
4 PLUNGER DOWN MOVEMENT SPEED CONTROL
5 PLUNGER
6 FEMALE BLADE

PRE-FEED / PERF ASSY

THE CROSFCOLDING DEVICE SITS ON THE ROLLERS AND IS SUPPORTED VERTICALLY BY THE SUPPORT ARMS. FOR ALL OF THE CROSSFOLDING DEVICES EXCEPT THE TETRAHEDRONS, THE SUPPORT ARMS ARE SPRING LOADED. TRY NOT TO PULL THE ARMS APART TOO MUCH WHILE LOADING THE MATERIAL OR THE SPRINGS WILL NOT DO THEIR JOB.
MACHINE SET-UP

ALONG WITH YOUR MACHINE YOU WILL GET SOME SPACERS, STUDS, NUTS AND WASHERS. THESE ARE FOR SECURING THE MACHINE TO THE CONVEYOR SO THE ADJUSTMENTS STAY PUT WHEN YOU GET THE MACHINE SET.


ATTACH THE MATERIAL DISK HOLDER TO THE REAR OF THE FRAME. THERE ARE 2 SCREWS SUPPLIED, THEY GO FROM THE BOTTOM UP THROUGH THE FRAME INTO THE EXTENTION BRACKET. ATTACH THE SPRING AND SET THE DISK ON THE POST. THE SPRING WILL GET THE ROLL IN MOTION WHEN MATERIAL IS PULLED AND ACTIVATE THE BRAKE WHEN SUFFICIENT MATERIAL HAS BEEN UNWOUND.

ATTACH THE AIR TO THE COALESCING FILTER AND POWER TO THE CONTROL PANEL. THE AIR SHOULD BE 80PSIG MINIMUM AND THE POWER SHOULD BE 120VAC. A STANDARD OUTLET WILL BE MORE THAN SUFFICIENT.

YOU ARE NOW READY TO ADJUST THE GIBS (A) ON THE SUPPORT POST (B). LOOSEN THE LOCK NUTS (D) AND LOOSEN THE SCREWS (C). WIGGLE THE HEAD WITH ONE HAND AND TIGHTEN THE SCREWS WITH THE OTHER HAND. DO NOT USE A WRENCH FOR THIS. TIGHTEN THE SCREWS UNTIL THE HEAD WILL NOT WIGGLE ANY MORE. NOW TIGHTEN THE NUTS WITH A 7/16” WRENCH WHILE HOLDING THE SCREW WITH A WRENCH TO KEEP IT FROM OVERTIGHTENING. THE GIBS ARE NOW SET TO RAISE AND LOWER THE HEAD JUST BY TURNING THE HANDLE UNDER THE SUPPORT POST.
THREADING THE MATERIAL INTO THE MACHINE


THE CROSSFOLDING DEVICE IS PLACED INTO THE MATERIAL IS SUPPORTED AN OPPOSING SET OF BEARINGS PLACED SUCH THAT THE CROSSFOLDING DEVICE CANNOT FALL PAST. THE CROSSFOLDING DEVICE IS HELD IN PLACE BY THE GUIDE ARMS. CHECK TO SEE THAT THE DEVICE IS PROPERLY IN PLACE, RESTING ON THE BEARINGS, AND BETWEEN THE GUIDE ARMS. IF THE DEVICE IS SET IN CROOKED, THE FEED ROLLERS WILL HAVE TO PULL TOO HARD, THE LENGTH WILL NOT BE CORRECT, AND FURTHER CYCLING WILL CAUSE THE MATERIAL TO JAM IN THE MACHINE. THE MATERIAL IS THEN PUSHED
DOWN THROUGH THE FEED ROLLERS TO THE CUTTING ASSEMBLY. WHEN YOU FIRST FEED A NEW STRETCH OF MATERIAL YOU MIGHT CRINKLE THE EDGES AND THE MATERIAL MAY NOT OPEN PROPERLY. CYCLE A FEW BANDS OUT OF THE MACHINE TO REMOVE ANY CRINKLED MATERIAL.

THE MATERIAL WILL STAY BETWEEN THE GUIDES HANGING FROM THE MATERIAL FEED PLATE. IT MAY STILL BE NECESSARY TO FEED THE LEADER ALL THE WAY INTO THE CUTTER.

IN BOTH OF THE LAST 2 PICTURES A DIFFERENT SIZE OF MATERIAL IS BEING UTILIZED. WITH CLOSE OBSERVATION YOU WILL NOTICE THAT THE CUT BAND IS SUSPENDED DIRECTLY UNDER THE PLUNGER WAITING TO BE APPLIED. THE BAND IS HELD THERE BY THE VACUUM BLOCK BUT YOU WILL ALSO NOTICE THE BAND IS IN THE OPEN AND READY STATE. THE BAND IS TRYING TO OPEN BECAUSE IT HAS BEEN CROSSFOLDED. THE BAND STABILIZING FINGER IS A PHYSICAL BARRIER TO PREVENT THE BAND FROM BOUNCING DURING OPERATION. IT ALSO CONTAINS THE BAND TO A PRESET OPEN POSITION. YOU WILL HAVE TO PIVOT THE STABILIZING FINGER ACCORDING TO THE SIZE BAND YOU ARE GOING TO RUN THROUGH THE MACHINE.

THE 2 SCREWS WILL HOLD
THE PLATE AT THE DESIRED
ANGLE. TO CHANGE THE
ANGLE LOOSEN SCREWS (A)
AND PUSH THE CUTTER
CYLINDER UP FOR MORE
ANGLE OR PULL DOWN FOR
LESS ANGLE. YOU CAN READ
THE SCALE (B) TO DETERMINE
WHAT ANGLE YOU ARE SET
AT. THE VARIATION IS FROM
ABOUT 4-DEG. TO CLOSE TO
30-DEG.

WHEN SETTING THE
PHOTOEYE BRACKET, MAKE
SURE THE PHOTOCYCLE BEAM
IS BLOCKED BY SOMETHING
SOLID. USUALLY IT’S A GOOD
RULE OF THUMB TO BLOCK
THE BEAM WITH THE CAP OF
THE CONTAINER. MANY
TIMES WHEN A MACHINE IS
NOT CONSISTENT, WE SEE
THAT THE PHOTOCYCLE BEAM
IS BEING BROKEN BY THE
NECK OF THE CONTAINER.

THIS CAN CAUSE A PROBLEM WHEN USING GLASS CONTAINERS BECAUSE
THE BEAM CAN BLEED THROUGH THE GLASS.

THE PHOTOCYCLE WILL
INITIATE A CYCLE FROM THE
PASSAGE OF THE
CONTAINER. WHAT THIS
MEANS IS THE SIGNAL
COMES FROM THE BACKSIDE.
IF THE CONVEYOR IS
TRAVELING 60 FT PER MIN.
THE PHOTOCYCLE SHOULD
CAUSE THE MACHINE TO
CYCLE AROUND HERE. YOU
WILL NEED TO ADJUST YOUR
PHOTOCYCLE TO THE LEFT OR
RIGHT FOR OPTIMUM
PERFORMANCE. NOTE: THIS IS ONLY A STARTING POINT.
PHOTOREGISTRATION OPERATION
(OPTIONAL EQUIPMENT)


READING DURING MOVE
THIS IS THE STANDARD AND WILL BE THE METHOD USED UNLESS THERE IS A STICKER INSIDE YOUR CONTROL BOX TO INDICATE DIFFERENT.

1: THE FIRST THING TO DO IS TO DETERMINE THE LENGTH NEEDED TO INPUT INTO THE CONTROL PANEL. YOU CAN EITHER MEASURE THE BAND IMPRESSION OR USE THE TEST AND CHECK METHOD. TYPICALLY I PREFER THE TEST AND CHECK METHOD. TURN OFF THE PHOTO-REGISTRATION FUNCTION. SET IN AN APPROXIMATE LENGTH INTO THE BAND LENGTH REGISTER. FEED OUT A FEW BANDS AND THEN COMPARE ONE AGAINST AN IMPRESSION ON A STRIP OF MATERIAL. PUT THE CUT BAND ON A STRIP WITH ONE END ON A PARTICULAR MARK AND SEE IF THE OTHER END IS AT THE EXACT MARK ON THE NEXT IMPRESSION. IF NOT EITHER MAKE THE BAND LONGER OR SHORTER UNTIL YOU HAVE THE EXACT LENGTH.

2: NOW ADD 2MM TO THE LENGTH. NOW TURN ON THE PHOTO-REGISTRATION FUNCTION.

3: CHECK IF THE EYE IS READING THE MARK (LOOK AT THE “OUTPUT” LED ON THE EYE TO SEE WHAT THE EYE IS DOING). IF THE EYE IS NOT READING THE MARK MAKE THE NECESSARY ADJUSTMENTS TO THE EYE SENSITIVITY.

4: TURN ON THE PHOTOREGISTRATION FUNCTION. ADJUST THE MATERIAL SO THAT THE MARK IS IN FRONT OF THE EYE AND CYCLE A
FEW BANDS. NOW THAT THE MACHINE IS CUTTING THE BANDS THE SAME LENGTH IT IS TIME TO SET THE EYE TO GET THE MATERIAL TO BE CUT IN THE PROPER POSITION.
5: WITH THE CYCLE FUNCTION TURNED OFF MOVE THE BAND MATERIAL SO THAT THE CUTTER WILL CUT THE BAND AT THE BOTTOM OF THE IMPRESSION. NOW MOVE THE EYE UP OR DOWN TO REGISTRATION MARK.
6: TURN ON THE CYCLE FUNCTION AND FEED A FEW BANDS. IF THE POSITION IS A LITTLE OFF ADJUST THE EYE UP OR DOWN ACCORDINGLY. WHEN YOU ARE CUTTING THE IMPRESSIONS AT THE PROPER POSITION YOU ARE READY TO RUN. THE PHOTO-EYE SHOULD NOW HOLD THE POSITION OF THE MATERIAL CONSTANT. YOU CAN DOCUMENT THESE SETTINGS SO YOU DO NOT HAVE TO GO THROUGH THIS WHOLE PROCEDURE NEXT TIME.

READ BEFORE THE MOVE

THIS METHOD IS USED PRIMARILY USED ON THE M500-HS SERIES MACHINE, IF THIS METHOD IS USED, THERE WILL BE A STICKER INSIDE YOUR CONTROL BOX TO INDICATE SO.

1: THE FIRST THING TO DO IS TO DETERMINE THE LENGTH NEEDED TO INPUT INTO THE CONTROL PANEL. YOU CAN EITHER MEASURE THE BAND IMPRESSION OR USE THE TEST AND CHECK METHOD. TYPICALLY I PREFER THE TEST AND CHECK METHOD. TURN OFF THE PHOTO-REGISTRATION FUNCTION. SET IN AN APPROXIMATE LENGTH INTO THE BAND LENGTH REGISTER. FEED OUT A FEW BANDS AND THEN COMPARE ONE AGAINST AN IMPRESSION ON A STRIP OF MATERIAL. PUT THE CUT BAND ON A STRIP WITH ONE END ON A PARTICULAR MARK AND SEE IF THE OTHER END IS AT THE EXACT MARK ON THE NEXT IMPRESSION. IF NOT, EITHER MAKE THE BAND LONGER OR SHORTER UNTIL YOU HAVE THE EXACT LENGTH.
2: CHECK IF THE EYE IS READING THE MARK (LOOK AT THE “OUTPUT” LED ON THE EYE TO SEE WHAT THE EYE IS DOING). IF THE EYE IS NOT READING THE MARK, MAKE THE NECESSARY ADJUSTMENTS TO THE EYE SENSITIVITY.
3: TURN ON THE PHOTOREGISTRATION FUNCTION. ADJUST THE MATERIAL THAT THE MARK IS IN FRONT OF THE EYE AND CYCLE A FEW BANDS. NOW THAT THE MACHINE IS CUTTING THE BANDS THE SAME LENGTH IT IS TIME TO SET THE EYE TO GET THE MATERIAL TO BE CUT IN THE PROPER POSITION.
4: WITH THE CYCLE FUNCTION TURNED OFF MOVE THE BAND MATERIAL SO THAT THE CUTTER WILL CUT THE BAND AT THE BOTTOM OF THE IMPRESSION. NOW MOVE THE EYE UP OR DOWN TO REGISTRATION MARK.
5: TURN ON THE CYCLE FUNCTION AND FEED A FEW BANDS. IF THE POSITION IS A LITTLE OFF ADJUST THE EYE UP OR DOWN ACCORDINGLY. WHEN YOU ARE CUTTING THE IMPRESSIONS AT THE PROPER POSITION YOU ARE READY TO RUN. THE PHOTO-EYE SHOULD NOW HOLD THE POSITION OF THE MATERIAL CONSTANT.

DOCUMENT THESE SETTINGS SO YOU DO NOT HAVE TO GO THROUGH THIS WHOLE PROCEDURE NEXT TIME.
CONTROL PANEL DESCRIPTION

From the control panel, all functions can be turned on and off, and band length can be adjusted. The screen will flash prompts to assist you as to which buttons to press for which functions. When the machine is first powered up, certain text will appear on the screen while the electronics check initial readings. When the machine is ready to be turned on, prompt messages will begin to alternately flash on the screen. On the main menu, you will notice the status of the cycle function and the feed function on the top row of text. On the second row, the text will rotate prompts for different functions. On a basic machine there will be 3 different prompt.

Press the “A” button to toggle the machine on and off (default is “off”)  
Will default back to “off” when power is disconnected

Press the “B” button to toggle the spacing wheel on and off (default is “off”)  
Will default back to “off” when power is disconnected

*Note: To change the speed of the spacing wheel, you must use the potentiometer located just inside the cabinet.
Press the “C” button to enter the setup screen.

[A] – Photo Registration
[B] – Band Length Adjustment
[C] – Horizontal Perforator

NOTE: THE CYCLE AND FEED FUNCTIONS CANNOT BE TURNED ON AND OFF UNLESS YOU ARE IN THE MAIN MENU SCREEN

PHOTO REGISTRATION ACTIVATION/DEACTIVATION
To turn the photo registration function on and off on the “Photo-Reg” screen:
1. Press the “A” button to enter the photo-reg screen
2. Press the “A” button to toggle between on and off (default is “off”)
3. Press the “C” button to exit
*Note: If no photo-reg is required, turn option to off.

BAND LENGTH ADJUSTMENT
To change the length of the band on the “Band Length Adjust” screen:
1. Press the “B” button to enter the “Band Length Adjust” screen
2. Press the “SET” button to enter a length value (in millimeters)
3. Press the appropriate number buttons for the length (example, press “3” and “5” for 35mm length).
4. Press the “ENTER” button and the new length is set
5. Press the “C” button to exit this screen and go to main menu

HORIZONTAL PERF. ACTIVATION/DEACTIVATION
To turn the perforator on and off on the “Perf” screen:
1. Press the “C” button to enter the perforator screen
2. Press the “A” button to toggle between on and off (default is “off”)
3. Press the “C” button to exit

Photo Registration and Horizontal Perforation are optional. For hardware and activation code, contact Marburg Ind.
TIMER SETTINGS

IN SOME CASES IT MAY BE BENEFICIAL TO CHANGE THE FACTORY TIMER SETTINGS. SOME BANDS WILL NEED MORE TIME BEFORE SENDING THE CUTTER BACK AND SOME PROJECTS WILL NEED MORE TIME BEFORE FEEDING A NEW LENGTH OF MATERIAL. MOST MACHINES WILL NOT NEED ANY ADJUSTMENTS TO ANY OF THE TIMERS. THE FACTORY TECHNICIAN HAS DONE EXTENSIVE TESTING AND ADJUSTED THE MACHINE FOR YOUR NEEDS BASED ON THE SAMPLES PROVIDED WITH THE PURCHASE ORDER.

TO ACCESS THE TIMERS YOU MUST FIRST CHANGE THE INTERFACE KEY PAD TO MONITOR MODE. IT IS PRESENTLY IN SCREEN MODE. FOR THE PURPOSES OF THIS WE WILL CHANGE THE MODE TO “ALL” SO WE CAN FLIP/FLOP BACK AND FORTH.

1: HOLD THE “ENTER” KEY WHEN POWERING-UP THE MACHINE.
2: SELECT “MODE SETTINGS”
3: SELECT “ALL” AND “ENTER”
4: POWER-DOWN MACHINE


NOTE: IT IS BEST TO WRITE DOWN THE ORIGINAL SETTINGS BEFORE MAKING CHANGES. THE ORIGINAL VALUE CANNOT BE RECALLED AS A DEFAULT, ALTHOUGH THE ORIGINAL VALUE CAN BE REENTERED. AFTER MAKING CHANGES PRESS THE “F” KEY AGAIN TO REVERT BACK TO THE SCREEN MODE.

NOTE: YOU CAN NOT TURN ON AND OFF THE MACHINE FUNCTIONS FROM THE MONITOR MODE

BEFORE ADJUSTING THE TIMERS READ THE “TIMERS AND FUNCTIONS” LIST TO HAVE AN UNDERSTANDING OF THE TIMERS.

NOTE: IT IS NOT RECOMMENDED TO LEAVE THE INTERFACE PAD IN THE “ALL” MODE AS THE SETTINGS CAN ACCIDENTLY GET CHANGED. WHEN ANY ADJUSTMENTS ARE MADE, AND ACCEPTABLE RESULTS ARE ACHIEVED, RESET THE INTERFACE PAD TO THE “SCREEN” MODE ONLY OPTION.

TIMERS RELEVANT TO OPERATION
T32 WILL DELAY THE ACTION OF THE CUTTER TO OPEN. WHEN RUNNING A SMALL LAY-FLAT MATERIAL (TYPICALLY SMALLER THAN 50MM LAY-FLAT) THE VACUUM BLOCK HELPS PROVIDE GUIDANCE AS THE BAND IS PUSHED ONTO THE CONTAINER. LARGER SIZES THE MOVEMENT OF THE CUTTER TENDS NOT TO BE A FACTOR AS THE MATERIAL WILL OPEN FURTHER WITH THE MOVEMENT OF THE CUTTER. THIS TIMER CAN BE SET TO “K0.00” FOR THE LARGER SIZES AND A SLIGHT DELAY OF LESS THAN “K0.10”. MORE THAN 1 TENTH OF A SECOND IS PROBABLY A WASTE AS THE BAND HAS MOST LIKELY BEEN APPLIED BY THAT TIME.

T33 WILL DELAY THE FEEDING OF THE BANDING MATERIAL. THE MINIMUM ON THIS SHOULD NOT BE LESS THAN “K0.06” SECONDS. IF THE TIMER IS SET TOO SHORT THAN THE CUTTER WILL NOT HAVE FULLY OPENED AND THE MATERIAL WILL FEED ON TOP OF THE CUTTER BLADE. WHEN RUNNING FULL BODY BANDS THIS TIMER SHOULD ALSO BE ADJUSTED LONGER. THE OBJECT OF THIS IS TO GIVE TIME FOR THE CONTAINER, WHICH JUST RECEIVED A BAND, TO BE REMOVED FROM THE AREA WHERE THE NEW MATERIAL WILL BE FED. IF THE PREVIOUSLY APPLIED BAND IS IN THE WAY OF THE NEW MATERIAL, THE NEW LENGTH OF BAND MAY NOT HANG PROPERLY FROM THE VACUUM STATION.

NOTE: WHEN RUNNING THE VACUUM ASSIST THIS TIMER WILL NEED TO BE SET AT A VALUE WHICH WILL LET THE BAND ESCAPE WITHOUT THE VACUUM TUBE ENTERING THE BAND AS IT IS LEAVING THE APPLICATION AREA

T34 WILL GIVE THE SERVO MOTOR TIME TO SETTLE DOWN FROM THE RAPID STOP. THE SERVO MOTOR CAN OVER TRAVEL FROM IT’S RAPID STOP BUT WILL REVERSE AND HOLD AT THE CORRECT LOCATION DURING THIS SETTLE IN TIME.

T35 WILL PREVENT THE MACHINE FROM INITIATING A NEW CYCLE BEFORE THE MACHINE IS READY. THE PLUNGER MUST BE ALL THE WAY UP FOR THE BAND TO OPEN UNDER THE PLUNGER. IF THE TIMER IS SET TO SHORT THE MACHINE CAN POTENTIALLY START A NEW CYCLE BEFORE THE NEW BAND HAS OPENED UNDER THE PLUNGER. THE RESULT WOULD BE THE NEW BAND BEING SOMEWHAT PUSHED BUT NOT OPEN AND NOT GETTING APPLIED TO THE CONTAINER.
BLADE REPLACEMENT PROCEDURE

1. CUTTER CYLINDER*
2. CUTTER BASE ASSEMBLY*
3. MALE BLADE
4. MATERIAL GUIDE
5. FEMALE BLADE
6. GUARD
7. VACUUM BLOCK
8. SUCTION CUP
9. 8-32 X .1/2 SOC
10. 10-32 X .625 SOC
11. #10 FLAT WASHER
12. 10-32 X .25 BTN
13. 10-32 X 1 SOC
14. #8 FLAT WASHER
15. PISCO VACUUM GENERATOR
16. CUTTER RAILS
17. SLIDE PLATE
18. SLIDING PLATE BLOCK

*DO NOT TAMPER WITH ITEMS 1 OR 2

MARBURG INDUSTRIES, INC.
CUTTER - EXPLODED VIEW
PROCEDURE STEPS:

WARNING: NEVER ADJUST OR TAMPER WITH ITEMS INDICATED!
WARNING: BLADES HAVE SHARP EDGES. HANDLE WITH CARE!

1. Turn machine power to **OFF**.
2. Unplug AC power cord.
3. Disconnect air lines from cutter cylinder.
4. Disconnect air supply line from vacuum generator.
5. Remove 3ea. 1/4-20 screws from bottom of cutter bracket.
   
   **Note:** These exact screws must be used to re-install cutter.
6. Remove cutter from machine and place on work surface.
Procedure Steps:
7. Using a 9/64” Allen wrench, remove 2 bolts that hold the vacuum block. 
   WARNING: DO NOT LOSE SUCTION CUP!
   Note: Do not remove suction cup from vacuum block unless you plan to replace it.
8. Grab the actuator block attached to the cylinder shaft and make sure that the slide plate moves smoothly in both directions.
   Note: Leave the actuator block in the fully extended position.
9. Using a 5/32” Allen wrench, remove the 2 bolts that hold the material guide on the assembly.
10. Using an 1/8” Allen wrench, remove the guard from the female blade.
11. Using a 5/32” Allen wrench, remove the female blade from the assembly.
ProcedureSteps:

Note: The face of the female blade that the guard was installed on will be the new cutting edge. Inspect the new cutting edge and ensure it is sharp and free of nicks.

12. Using a 9/64” Allen wrench, remove the male blade. Inspect the slide plate surface under the blade. Ensure it is clean and has a light coat of machine oil.
   Wipe off excess oil with a clean cloth.
13. Flip the male blade to expose the new cutting edge.
   Note: The new cutting edge is on the top surface of the blade. Inspect the new cutting edge and ensure it is sharp and free of nicks.
14. Re-assemble the male blade to the cutter assembly with the 2ea. 8-32 x 1/2” screws. Position the male blade so that the screws are in the center of their slots. Hand tighten until they are snug.
   Note: Each screw must have a stack of 4ea. #8 flat washers.
15. Move the cylinder actuator to the fully extended position (cutting position).
BLADE REPLACEMENT PROCEDURE

Procedure Steps:
16. Install female blade with 2ea. 10-32 screws with one #10 flat washer each. Hand tighten screws until they are just snug. Ensure that the new cutting edge is on the inside.
17. Push male blade forward under female blade until its center line is flush with the outside face of the female blade.
   Note: One side will protrude 1/16” and one side will be short 1/16”. This will be the 1/8” shear built into the cutting edge.
18. Ensure that side edges of the male blade are still parallel to guide rails.
19. Tighten the 2ea. 8-32 screws that hold the male blade.
20. Loosen screws holding female blade and allow it to rest on top of male blade.
21. Use 2-3 fingers to apply pressure to the top of the female blade while using the other hand to tighten the 10-32 screws that secure the female blade. Always tighten #1 first and then #2.
22. Re-install the guard on the outside face of the female blade with 2 each 10-32 screws.
**BLADE REPLACEMENT PROCEDURE**

23. Open and close the cutter by grabbing the actuator block and moving forward and backward. Ensure that it moves smoothly. If there is a rough spot or if extreme force is required, loosen the female blade and start the procedure from step 21.

**Note:** As the female blade is re-sharpened, the holes for the material guide will get closer to the male blade. Ensure that enough clearance for the male blade to move from open to close without touching the material guide. Clearance holes on the material guide can be opened up to provide more clearance.

24. Re-install the material guide with the 2 10-23 x 1” screws.

25. Push the actuator block back to the fully retracted position. Look into the throat of the material guide and insure that the edge of the male blade is not visible. If it is, restart the procedure at step 14.

26. Place 1 material thickness of the normal banding material used in the material guide and close the cutter. Material should cut cleanly.

27. Re-install the vacuum block with the 2ea. 8-32 3/8” screws.

28. Refer to sheet 1 of this procedure to re-install the cutter on the machine.
PERIODIC MAINTENANCE

Weekly

1. Put light coat of oil on cutter assembly
2. Drain coalescing bowl (daily if necessary)
3. Check for stress cracks in the Band Retention Spring
4. Inspect for distortion of the suction cup
5. Ensure band is cutting properly
6. Clean debris from photo-eye lens and reflector
7. Check that perforator is still perforating both layers if machine is equipped with optional perforator

Monthly

1. All weekly items
2. Grease material feed rollers
3. Clean excess oil and debris from machine
4. Check for wear in plunger cylinder and replace if necessary
5. Clean or replace vacuum generator
6. Inspect control cabinet for inhaled dirt covering components and clean if necessary

2 Years

1. All monthly items
2. Replace air valves
3. Replace pulleys and drive belt
### PARTS LIST

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### SPACING WHEEL ASSEMBLY

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(USED FOR LOW VOLTAGE/ DC POWER SUPPLY TO COMPLETE SYSTEM)
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**VERTICAL PERFORATION**

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# RECOMMENDED SPARE STOCK LIST

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TROUBLE SHOOTING

PROBLEM: MACHINE WILL NOT TURN ON

POSSIBLE CAUSES:
1. MACHINE NOT PLUGGED IN
2. MAIN DISCONNECT TURNED OFF
3. E-STOP PRESSED
4. LINE FUSE BLOWN
5. 24VDC FUSE BLOWN
6. NO AIR PRESSURE (APPEARS MACHINE IS OFF)
7. DEFECTIVE ELECTRICAL COMPONENTS
8. FUSE IN PLC BLOWN
9. PLC IN STOP POSITION
10. INTERFACE PANEL PLUG LOOSE

CHECK:
1. INCOMING POWER
2. INCOMING AIR
3. MAIN DISCONNECT IN “ON” POSITION
4. E-STOP IN ON POSITION
5. FUSES
6. PLUG IN ALL THE WAY (BOTH ENDS)
7. STEPPER TRANSFORMER STILL GOOD

PROBLEM: SPACING WHEEL WILL NOT TURN

POSSIBLE CAUSES:
1. GUIDE RAIL CAUSING PHYSICAL RESISTENCE
2. FUSE BLOWN ON DC DRIVE
3. SOLID STATE RELAY DEFECTIVE
4. BAD SIGNAL TO RELAY
5. BRUSHES WORN DOWN
6. MOTOR BAD

CHECK:
1. OBSTRUCTIONS TO WHEEL
2. FUSES ON DRIVE
3. POWER COMING OUT OF RELAY
4. PLC OUTPUT
5. BRUSHES
6. GEAR BOX BROKEN OR WORN ON FRONT OF MOTOR
PROBLEM: PRE-FEED WILL NOT PULL MATERIAL

POSSIBLE CAUSES:
1. FUSE BLOWN ON STEPPER DRIVE
2. ROLLERS NOT ENGAGING PROPERLY
3. MATERIAL PATH CROOKED AND CAUSING JAM
4. SPRING SET INCORRECTLY UNDER DISK
5. PROX NOT SET CLOSE ENOUGH TO METAL DISK
6. PROX DEFECTIVE
7. DRIVE BELT BROKEN
8. MOTOR OVER HEATED AND LOSS OF TORQUE
9. TAPE BUILD-UP ON ROLLERS
10. EXTREMELY DIRTY ROLLERS
11. POOR AIR PRESSURE TO MACHINE

CHECK:
1. CONTINUITY OF FUSES ON STEPPER DRIVE
2. CLAMPING MODULE WORKING PROPERLY
3. CHECK IF MATERIAL IS JAMMED INTO SIDE OF ROLLER
4. CHECK TENSION OF MATERIAL FROM DISK
5. CHECK IF LIGHT APPEARS TO FUNCTION PROPERLY ON PROX
6. CHECK PROX WITH METER
7. INSPECT DRIVE BELT
8. CHECK TORQUE SETTING ON DRIVE
9. CHECK IF ROLLERS ARE FREE OF DEBRIS
10. PROPER AIR PRESSURE (MIN 60PSIG)

PROBLEM: INCONSISTENT BAND LENGTHS

POSSIBLE CAUSES:
1. PRE-FEED NOT DOING ITS JOB
2. INCORRECT MATERIAL SIZE
3. INCORRECT TETRAHEDRON FOR MATERIAL
4. GUIDE ARMS SET TOO TIGHT ON TETRAHEDRON
5. CLAMPING MODULE NOT PRESSING WITH FULL FORCE
6. DEBRIS BUILD-UP ON ROLLERS
7. POOR QUALITY MATERIAL WITH TOO MUCH VARIATION
8. COUPLER LOOSE ON MOTOR
9. ERROR ON SERVO DRIVE

CHECK:
1. PRE-FEED WORKING
2. MEASURE MATERIAL TO SEE IF IT IS SAME AS LABEL
3. CHECK TETRAHEDRON TO SEE IF STAMPED FOR SIZE BEING USED
4. ADJUST GUIDE ARMS FOR LESS RESISTANCE
5. CHECK AIR PRESSURE OR RESTRICTIVE MOVEMENT OF ROLLER
6. ROLLERS SHOULD BE CLEAN
7. MATERIAL OUT OF SPECIFICATION OR TOO MUCH VARIANCE
8. MOTOR COUPLER
9. LED READOUT ON SERVO DRIVE
MATERIAL WILL NOT FEED

POSSIBLE CAUSES:
1. SERVO DRIVE IN ERROR MODE
2. COUPLER BETWEEN MOTOR AND FEED ROLLERS BROKEN
3. SERVO MOTOR INOPERATIVE
4. LOOSE CONNECTION BETWEEN PLC AND SERVO DRIVE
5. MATERIAL STUCK IN PREFEED
6. NO AIR PRESSURE

CHECK:
1. INSPECT DISPLAY ON DRIVE IN ELECT CABINET, SHOULD READ “CL”
2. INSPECT COUPLER INTEGRITY
3. CHECK IF DRIVE HAS CONTROL OF MOTOR, TRY TO MOVE ROLLERS OUT OF POSITION BY HAND WHEN POWER IS ON AND CYCLE IS ENGAGED.
4. INSPECT TO SEE THE “Y0” LED LIGHTS DURING THE TIME WHEN MATERIAL SHOULD BE FED. BECAUSE THE SIGNAL IS A VERY FAST PULSE TRAIN TO THE SERVO DRIVE, THE LIGHT WILL NOT LOOK NICE AND BRIGHT LIKE THE OTHERS WHEN LIT, BUT MORE OF A FLICKER LOOK.
5. MATERIAL CAN BE FREELY PULLED
6. MACHINE HAS AIR PRESSURE

MATERIAL FOLDING BETWEEN CROSSFOLDING DEVICE AND CUTTER

POSSIBLE CAUSES:
1. CROSSFOLDING DEVICE WRONG SIZE
2. GUIDE ARMS SET TOO TIGHT AND CANNOT FLOAT
3. MATERIAL WRONG SIZE
4. MATERIAL HAS SEAM IN WRONG POSITION

CHECK:
1. COMPARE MATERIAL SIZE AND SIZE STAMPED ON CROSSFOLDING DEVICE
2. GUIDE ARMS SHOULD BE SET NOT TO MOVE FOR THE TETRAHEDRON STYLE BUT THE ARMS WITH SPRINGS ATTACHED SHOULD BE FREE TO FLOAT AND SELF ADJUST TO CROSSFOLDING DEVICE
3. MATERIAL NOT THE SIZE WHICH IT IS LABELED
4. SEAM IN CENTER OF MATERIAL CAUSING MATERIAL TO TWIST

MATERIAL NOT CUTTING PROPERLY

POSSIBLE CAUSES:
1. BLADE DULL
2. BLADE SET INCORRECTLY
3. POOR AIR PRESSURE

CHECK:
1. INSPECT CONDITION OF BLADE
2. RESET BLADES ACCORDING TO BLADE REPLACEMENT PROCEDURE
3. CHECK THAT A MINIMUM OF 60PSI IS PRESENT TO MACHINE

BANDS NOT GOING ONTO CONTAINER

POSSIBLE CAUSES:
1. TIMING SET INCORRECTLY
2. MACHINE HEIGHT OUT OF ADJUSTMENT
3. CONVEYOR SPEED SET TOO SLOW
4. MATERIAL FEEDING ON CUT BAND
5. BAND HANGING INCONSISTENTLY ON VACUUM BLOCK
6. BAND RETENTION FINGER IMPROPERLY SET
7. VACUUM EJECTOR FILTERS CLOGGED
8. BAND NOT OPENING
9. MATERIAL TWISTING
10. PLUNGER SPEED INCORRECT
11. PLUNGER SET TOO LOW PREVENTING BAND FROM OPENING
12. APPLICATION ANGLE INCORRECT FOR SIZE AND LENGTH
13. MATERIAL INCORRECT SIZE
14. MATERIAL OUT OF SPECIFICATION
15. MATERIAL TOO THIN
16. TETRAHEDRON WRONG SIZE
17. INCONSISTENT BAND LENGTHS
18. CONTAINER NOT IN CENTER LINE OF MACHINE
19. NOT ENOUGH SPACE BETWEEN CONTAINERS
20. CONTAINER LIDS NOT CLEAN
21. CONTAINER LIDS HAVE BURN FRAGMENTS FROM CAPPER

CHECK:
1. TRY MOVING THE CYCLE SENSOR TO THE LEFT OR RIGHT TO EXPERIMENT WITH RELEASING THE BAND AT DIFFERENT TIMES
2. ALSO TRY DIFFERENT HEIGHTS, THE AMOUNT OF THE LID WHICH GOES INTO THE BAND WILL HAVE A DIRECT IMPACT ON HOW THE SKI WIPES THE BACK DOWN FOR FULL ENGAGEMENT
3. CONVEYOR SHOULD BE APPROX 60 FT PER MIN OR MORE
4. MAKE A VISUAL INSPECTION THAT THE BAND IS LEAVING THE APPLICATION AREA WITHOUT BEING DISTURBED BY MATERIAL BEING FED OUT TO CREATE THE NEXT BAND
5. BAND RETENTION SPRING BROKEN OFF OR PLUNGER RETRACTING TOO FAST
6. BAND RETENTION FINGER MAY NEED TO BE CLOSER OR FURTHER AWAY FROM VACUUM BLOCK TO ALLOW BAND TO BE AT THE PROPER OPENING
7. CLEAN VACUUM EJECTOR, POOR VACUUM WILL CAUSE INCONSISTENT HANG OF BAND FROM VACUUM BLOCK
8. DULL BLADES OR STATIC
9. WRONG CROSSFOLDING DEVICE, INCONSISTENT MATERIAL THICKNESS, SEAM IN CENTER OR CLOSE TO CENTER OF MATERIAL
10. CHANGE PLUNGER SPEED

35
11. SET PLUNGER HEIGHT BY HOW FAR PLUNGER CYLINDER IS SCREWED INTO MOUNT
12. EXPERIMENT WITH DIFFERENT ANGLES
13. MATERIAL MAYBE TOO SMALL?
14. MATERIAL HAS CHANGED SIZE FROM BEGINNING
15. TRY HEAVIER GAUGE MATERIAL
16. ORDER PROPER SIZE CROSSFOLDING DEVICE
17. SEE INCONSISTENT BAND LENGTHS
18. ADJUST GUIDE RAILS, POSSIBLY USE GUIDE RAILS HIGH UP, SOME TALL PLASTIC BOTTLES LEAN TO ONE SIDE OR THE OTHER BUT NOT ALWAYS THE SAME SIDE
19. CONVEYOR SET TOO SLOW
20. STICKY PRODUCT ON LIDS PREVENTING BANDS FROM SLIDING DOWN
21. CAPS DAMAGED FROM CAPPER AND HAVE FRINGES HANGING OFF CATCHING LEADING EDGE OF BAND.
HEAT-SHRINK TUNNEL
(MARBURG Industries Inc.)
DATA SHEET

HEAT TUNNEL

Volt: 240 VAC
Amp: 30 A
Phase: 1
Freq.: 50/60 Hz
Power: 6000 W
Length: 22 inch.
Height: 
Height Adjust: 10 inch.
Base: Stainless Steel
Other Spec: GMP

FAN MOTOR

Company: Dayton
Model: 1TDP6
No: 7021-3483
HP: 1/30
RPM: 3020
Volt: 240 V AC
Freq.: 50/60 Hz
Amp: 0.58 A/0.54 A
Type: V21B
Class: B
Amb: 40 C
Protect: Thermally Protected

ELECTROSTATIC POTENTIOMETER

INF 240 96
CH 252 CSA 0035DM
Volt: 240 V AC
Amp: 15 A
HEAT-SHRINK TUNNEL

-Stainless Steel Construction
-Flow-through ventilation

This productive unit uses standard PVC heat-shrink stock on a wide variety of bottle shapes and sizes for tamper-evident packaging.

The tunnel is a totally enclosed unit with dual controls, for greater flexibility. It operates on 240 VAC and uses two 3000 Watt Cal Rods as the heat source. With flow-through ventilation, hot air is used to lock the band in place and radiant heat is used for finish shrink.

The compact unit is only 22 inches long, which eliminates the need for a lengthy conveyor. Installation is easily done by your in-house staff using standard tools.

“Comes complete with mounting brackets.”
START-UP AND SHUT DOWN

START-UP

TO START THE SHRINK TUNNEL, SIMPLY PUSH THE POWER SWITCH ON THE SHRINK TUNNEL CONTROL PANEL TO THE ON POSITION. THIS WILL ACTIVATE THE HEATING ELEMENTS. THE SHRINK TUNNEL TEMPERATURE WILL RISE TO THE TEMPERATURE SETTING ON THE THERMOSTATIC POTENTIOMETER ON THE SHRINK TUNNEL CONTROL PANEL. TO CHANGE THE TEMPERATURE FROM LOW TO HIGH –TURN THE THERMOSTATIC POTENTIOMETER TO THE RIGHT (CLOCKWISE).

SHUT DOWN

TO SHUT DOWN THE SHRINK TUNNEL, SIMPLY PUSH THE POWER SWITCH ON THE SHRINK TUNNEL CONTROL PANEL TO THE OFF POSITION. THIS WILL CUT OFF THE POWER TO THE HEATING ELEMENTS.

CAUTION:

BEFORE ANY WORK IS TO BE DONE ON THE SHRINK TUNNEL TURN ALL SWITCHES TO THE OFF POSITION, AND DISCONNECT THE MAIN POWER SUPPLY.
WARNING

FAILURE TO INSTALL, SERVICE AND OPERATE THIS TUNNEL IN ACCORDANCE WITH PROPER ENGINEERING AND SAFETY TECHNIQUES MAY RESULT IN SERIOUS BODILY INJURY.

CAUTION

BEFORE ANY WORK IS TO BE DONE ON THE TUNNEL TURN THE POWER ON/OFF SWITCH TO THE OFF POSITION. ALLOW THE TUNNEL TO COOL DOWN PROPERLY, AND THEN DISCONNECT THE MAIN POWER SUPPLY CORD.