

VENTURA FOODS I.O.M. MANUAL



ROTARY CAPPER RC-12-22" **USB MACHINE NO: 94800-1**

US Bottlers Machinery Company, Inc

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A LETTER FROM THE OWNER

In 1906 my great grandfather established his packaging engineering enterprise, which eventually was reconfigured as US Bottlers Machinery Co in 1912. Since that time we have seen our company, as well as our industry, evolve many times over to become what we are today. That journey has taught us a lot about what it means to be a successful company and how reputation, quality, and loyalty impact our business and our future.

Personally, I take tremendous pride in our history and our roots from each of the four generations that have been involved with our family and our company. I value the employees of our company and the customers over these many years; in a manner that I think often gets lost in corporate big business. If you are a new customer of ours – thank you for supporting a modern American manufacturing and design company; and if you are one of our loyal customers from the past – thank you for your continued support. Together we believe that we can work towards simply the best possible relationship in terms of personal service, quality innovation, and superior design and manufacturing capability.

To help assure that goal, US Bottlers has spent the last few years investing in state-of-the-art technology to improve our manufacturing capabilities, restructuring our organization to provide valued customer service, and have increased personnel to improve efficiency in responding to the needs of our growing customer base. All of these moves, I feel, have enhanced the character and image of our company. We have made a commitment to be truly a unique source of modern packaging machinery as well as a full service oriented company for our customers' needs in this demanding business environment.

We invite you to come visit our inspiring facility here in Charlotte NC and I think you will be witness to what is possible with a flexible and very capable organization that focuses on our business with talent, passion, pride, and integrity. It is my goal to continue to make our ancestors proud of where we are today; and of course where we are headed in the future.

Thomas Risser

Thomas Kine

President, US Bottlers Machinery Company

CUSTOMER CARE, AFTERMARKET SALES AND PARTS

Our outstanding Service Department prides itself on satisfying all your needs as a customer, as well as uninterrupted production once you own US Bottlers equipment. US Bottlers Customer Care Staff cheerfully provide answers to your questions and help you resolve any bottling/capping/parts issues by referring your call to the right personnel or department.

- Customer Care-for scheduling equipment installation & maintenance service calls or answering operational questions about your machinery
- Aftermarket Sales- for general or specific information about our equipment including training, service, quotes, rebuilds, and modifications on existing equipment
- Parts- for support with ordering replacement and spare parts

Customer Care

US Bottlers technicians are skilled in electrical, mechanical, and programming to work on stand-alone fillers, cappers, and monoblock systems. Our technicians maintain the highest level of technical skills through continuous vendor training, technical bulletins, and in-house seminars. The service department provides machine installations; start up coverage, training, modifications, audits, preventative maintenance, and troubleshooting.

Troubleshooting inquiries are handled by our skilled Service Technicians with 24-hour access. More then 90% of our troubleshooting calls are solved over the phone. These services can often save you the cost of an unnecessary service trip and eliminate the extra production down time waiting for a service technician to arrive!

Parts

Our Parts Department can fill your replacement and spare parts orders quickly, accurately, and at competitive prices - often less then your local suppliers. In-stock items are shipped the same day you call (overnight if you need it). Warranty claims are easier to process when you use our parts department.



ABOUT THE MANUAL

The instructions contained in this documentation must be read and followed. In order to take advantage of the capabilities of your new machine, it is necessary to thoroughly understand its capabilities, performance levels, and possibilities of use. In order to obtain the maximum lifespan and the best possible levels of service efficiency from this machine it is necessary to comply with the standards contained in this documentation.

It is important that everyone involved (Supervisors, Maintenance Personnel and Operators) receive instruction on the "SAFETY STANDARDS" described in this documentation, before the machine is put to use.

Before starting work, the operator must be aware of the machine's layout, the operation of the controls, the machine's characteristics, and must have read and have access to this documentation in its entirety. All of the instructions, warnings, and accident prevention regulations contained in this documentation must be complied with.

Any modifications to or replacement of any of the machine's parts, without the express authority of the manufacturer, may constitute the potential risk of an accident and therefore relieves the manufacturer from any or all penal and civil responsibilities.

This documentation supplies the information and detailed instructions required for the installation, operation, and maintenance of the machine. Subsequent users or owners of the machine must notify US Bottlers Machinery Co. and request access to the on-line documentation available for the machine.

OPERATOR:

This is an individual who is responsible for the installing, operating, adjusting, and the daytoday maintaining and cleaning of the machine.

QUALIFIED TECHNICIAN:

This is an individual who is qualified and specifically trained and capable of performing maintenance or repair operations that require a specialized knowledge of the machine, its parts, its operation, its safety devices, and their methods of operation.

This documentation is available on-line through the Customer Portal at <u>www.usbottlers.com</u> and will be updated as the machine is modified by USB or with USB notification and approval. An "As Built" digital file will be provided, but will not be updated. Paper "hard copies" are available at an additional cost. The documentation provided via the Customer Portal shall be considered the only current documentation and the customer is held responsible for updating any additional digital or hard copies in their possession as modifications are made. No part of this documentation should be removed or re-written.

Note: US Bottlers Co. declines responsibility for any errors or damage resulting from the failure to update any documentation not supplied on-line.

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ABOUT THE PRODUCT

The product addressed in this manual was designed and manufactured to specific customer defined specifications relative to function and speed. US Bottlers Machinery has employed decades of expertise, cutting edge technology, and a sense of personal pride in the product's outcome and in the customer's satisfaction. It is for this reason that special attention is paid to material selection to ensure a long, low maintenance life of the machine. This machine comes to you with all of the necessary attachments for handling the full range of containers on your order. All attachments are marked or identified for each of the containers submitted. If your order involves more than the set of attachments on the machine at the time of shipment, you may rest assured that each set has been properly installed on the machine and properly timed to handle the containers for which it was intended. For the use of those attachments capable of handling several different containers, refer to the Attachments Reference portion of this manual within the Technical Data unit. For the present, it is guite safe to assume that the attachments on the machine are properly adjusted for handling the container specified on the machine center feed and discharge guide. Therefore, when proceeding with our instructions for acquainting yourself with the machine, you can do so with the knowledge that these attachments have been properly timed for the required containers

US BOTTLERS MACHINERY COMPANY					
Procedure:	Theory Of Operation (RC)) - IN			
Procedure No.:	80100	Revision:	A	Date:	01 Jan 09

THEORY OF OPERATION

Containers are fed back-to-back to the machine via a conveyor chain. An integrated feed worm conveyor specifically designed to work in time with the infeed star, separates the incoming containers. The feed worm is a cylindrical auger apparatus mounted parallel to the conveyor chain and rotates on axis so that each container, when encaptured, is moved forward within the auger's recess to the infeed star.

The infeed star is a circular plate attachment with cutouts around its periphery that are sized and shaped to accommodate the applicable container. The infeed star turns concentrically on a drive shaft and is positioned so that as each container is presented by the feed worm, becomes caught within the available cutout. The rotating motion of the infeed star transfers containers consecutively to the clamp star.

Simultaneously, the cap feed star presents a single cap to each chuck jaw as it rotated by the capper's turret. A cap limit switch is located at the bottom of cap chute and is actuated by a dual combination of electric sensors. One sensor is located within the cabinet area and the other is located at the feed worm. When the cap feed star picks up a cap, the sensor under the cabinet indicates this timing fact, and the sensor at the worm looks for a container so that the next cap can be released to the cap feed star. A cap chute gate is actuated by an electric air solenoid mounted in the capper's pneumatic panel. This solenoid actuates the air-driven, double-acting gate air piston.

The clamp star is also a circular plate attachment with cutouts around its periphery that are sized and shaped for the same container as the infeed star. The clamp star turns concentrically on a drive shaft in unison with the infeed star and retrieves each container within its respective cutouts as they are presented. As the containers travel in a circular motion, chuck assemblies lower to apply a cap to each container.

As the machine continues to rotate, the cap is torqued onto the container, reaching full torque near the back of the machine as it rotates around the center star. The cap spindle then begins to rise due to the overhead lift cam. At this time, the cap jaw is pulled away from the cap and the capping operation is complete.

Chuck assemblies are suspended vertically around the clamp star's drive shaft and spaced perfectly aligned with the star's cutouts. The chuck assembly shafts spin on axis through a centrally located gear mechanism and are designed so that each chuck jaw clasps a single cap and applies it to a container as rotated into position. Each container is then rotated and transferred to the discharge star.

Like the infeed and clamp stars, the discharge star is a circular plate attachment with cutouts around its periphery that are sized and shaped to accommodate specific containers. The discharge star turns concentrically on a drive shaft and is positioned so that as the clamp star presents each capped container, becomes caught in its available cutout. The discharge star then rotates the capped container to the output end of the conveyor chain.

A series of proximity switches, belts, and gears are utilized to maintain proper timing between its primary components.

US BOTTLERS MACHINERY COMPANY					
Procedure:	Unpacking - IS				
Procedure No.:	80150	Revision:	A	Date:	01 Jan 10

UNPACKING

Most machines are shipped FOB Charlotte which places the responsibility to the customer to look for damaged equipment due to shipping or weather and to address those issues with the trucking firm and insurance agencies.

Upon arrival, the customer is to obtain a copy of the Bill Of Lading from the trucker and verify that all items are received. Upon unpacking, ensure that all equipment, assemblies, and components are present. If it is discovered that an item or items are missing and those items are not listed as parts delivered, immediately contact US Bottlers Machinery as to their disposition.

All crates and boxes are to be placed right side up as determined by the printing on their sides and opened in manner that does not damage their contents. All such containers are to be placed on a flat and stable surface to prevent property damage or personal injury.

Unpackaged property is to remain organized to assist in their location and identification during the installation process. Do not remove any identifying labeling or tags from the property until it has been installed unless such identification poses a hindrance to their installation.

ATTENTION: It is advised that the machine's feet be located and isolated first to prevent loss and to facilitate a rapid installation.

This machine has been shipped with many of the major electronic components removed. The main power source is separately packaged.

ATTENTION: Do not make any attempt to install these components on the machine. Instruct your shipping and machinery rigging personnel not to attempt to remove any of the items from the containers marked "Open by U.S.B. Service Personnel Only". These boxes contain electronic components and MUST be properly handled to prevent damage.

The U.S.Bottlers service engineer who will be assisting you in setting up the machine will install and check these components for correctness. This engineer will also train your operators and service personnel in the proper care and use of this machinery.

Uncrate the machine carefully checking all attachments and parts against the main packing slip. Use extreme care to see that no instruction tags are lost or parts misplaced in the wrapping or packing material. If the machine has been uncrated in a distant area from the final installation point, move the filler and skid to the final location before removing the machine from the skid.

US BOTTLERS MACHINERY COMPANY					
Procedure:	Transport - IS				
Procedure No.:	80151	Revision:	А	Date:	01 Jan 09

TRANSPORT

It is very important to observe all transport instructions and safety warnings to prevent possible personal injury or damage to the equipment. Transport and unloading must only be performed by qualified or experienced personnel.

All palletized equipment may only be lifted and moved using a forklift or pallet jack approved for the packaged weight.

Once unpacked, the machinery can usually be lifted from the bottom by a forklift and then moved. If transporting by this method, the forklift operator is to ensure that the forks traverse fully from one side of the machine to the opposite and that the forks only make contact with the machine's frame structure.

If a gantry crane is the transport method, cross members are to inserted through the frame structure at each end and chokers of equal lengths are to be used that comply with weight requirements. All transport equipment, cross members, chokers, and shackles are to be supplied by the customer and are the customer's responsibility in the manner of use and performance ability.

WARNING: NEVER STAND UNDER A SUSPENDED LOAD. THERE SHOULD ALWAYS BE A PERSON STATIONED ON EACH SIDE OF THE EQUIPMENT TO ENSURE THE PATH IS CLEAR OF OBSTRUCTION.

WARNING: ONLY USE LIFTS AND LIFTING GEAR CERTIFIED TO ACCOMMODATE A LOAD CAPACITY THAT EXCEEDS THE EQUIPMENT BEING MOVED.

CAUTION: WHEN TRANSPORTING THE MACHINE FOR THE PURPOSE OF INSTALLATION, IT IS ADVISED THAT THE UNIT BE LIFTED AND POSITIONED AT THE CORRECT ANGLE.

CAUTION: BEFORE MOVING THE EQUIPMENT, ENSURE THERE IS ADEQUATE CLEARANCE IN PASSAGES AND DOORWAYS.

ATTENTION: To prevent possible damage, it is recommended that the machine's doors closest to the forklift be removed prior to lifting.

US BOTTLERS MACHINERY COMPANY					
Procedure:	Machine Installation - IS				
Procedure No.:	80152	Revision:	А	Date:	20 Sep 09

MACHINE INSTALLATION

Installation must be carried out in accordance with these instructions and must only be performed by experienced contractors or personnel to ensure a safe and correct installation.

Before beginning installation, it is wise to ensure that access to the machine's installation site is clear and reasonably level. Ensure that adequate power supply is available, all lifting equipment and hardware is available, and the work area is free of debris.

> WARNING: ONLY BEGIN INSTALLATION AFTER ALL OF THE LITERATURE HAS BEEN REVIEWED. OBSERVE ALL INSTRUCTIONS AS DIRECTED. CONTACT US BOTTLERS MACHINERY IF ANY DRAWINGS OR LITERATURE IS MISSING.

> WARNING: KEEP FINGERS AWAY FROM POSSIBLE PINCH POINTS TO AVOID INJURY. WORK WITH CARE.

> NOTE: Figure 3-1 below is a representation displaying a typical machine to be transported. The machine displayed is not the machine ordered.



Move the uncrated machine into position and, after placing it in line with the proper conveyor, level the filler making use of the jack screws. Adjust the jack screws so that the machine is level using a finished surface such as the filler cabinet or bridge plate as a reference. See to it that the weight of the filler is evenly distributed upon each foot It will not be necessary to attach the machine to the floor when the weight is properly distributed because the machine is heavy enough to eliminate vibrations. Ensure that the jack screws used for leveling the machine are positioned in the center of the foot pedestals and that the load of the machine is equally distributed on each jack screw.

Your machine has been provided with the bridge plate built to accommodate the type of conveyor chain that you specified on your order. Connect the feed and discharge conveyor track and check carefully for alignment of these sections of conveyor. Run your conveyor chain through the machine and feed the return back through the return plate support beneath the bridge plate.

After the final machine installation is complete, rotate the filler and observe the action of all rotary or moving parts to see that they move smoothly through their complete cycle. Pay particular attention to cam followers and rollers that should flow smoothly from one cam track into another cam track. Abnormal rapid wear can occur on a machine that has been improperly installed.

After the machine has been installed in the proper position in the packaging line and the conveyor system has been installed, proceed to install the liquid piping system, and the main machine control enclosure, and provide power to the electronic power source and connect this unit to the main machine junction box terminal strip. Ensure that all motor control wires are run in a separate conduit. Do not allow any additional electrical conduit or cable to run next to the power conduit from the filler power panel to the Host Computer console.

Please read carefully the separate USB pamphlet concerning electrical grounding techniques and understanding electrical noise. This booklet has been included with this operating manual and is important in order to insure correct machine installation.

After all the primary services have been installed and connected to the filler, the U.S.B. service engineer should be scheduled. This engineer will be able to install the remaining items on the filler and run the necessary diagnostic tests within 1 to 2 days. During this period, the personnel responsible for the service of the machine should be present to work with the U.S.B. engineer and receive instruction in the operation and maintenance of the system. Bottle handling and product testing should be scheduled for the third day and, generally, the service engineer should complete his work on the fourth day.

US BOTTLERS MACHINERY COMPANY					
Procedure:	Electricals - IS				
Procedure No.:	80153	Revision:	А	Date:	01 Jan 09

ELECTRICALS

A wiring diagram and cable schedule is provided as part of the literature package included with this machine. All cable work between the machine, control panel, junction box, and the power supply connection must be in accordance to the information provided in the wiring diagram.

WARNING: ENSURE THE POWER SUPPLY IS DISCONNECTED AND FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES WHEN PERFORMING ANY ELECTRICAL ACTIVITY.

WARNING: ALL ELECTRICAL ACTIVITY MUST BE PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATIONS BY LEGALLY QUALIFIED PERSONNEL.

WARNING: DO NOT APPLY POWER TO THE MACHINE UNTIL ALL WIRING CONNECTIONS HAS BEEN VERIFIED. FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY OR COMPONENT FAILURE.

CAUTION: ANY TERMINAL SLEEVES REMOVED DURING LEAD CONNECTION MUST BE REPLACED AFTERWARD.

CAUTION: ENSURE TO USE ONLY THE RECOMMENDED WIRING AND CABLING SPECIFICIED IN THIS DOCUMENT OR IN OTHER MATERIAL PROVIDED WITH THE MACHINE.

CAUTION: TO ENSURE PROPER MACHINE OPERATION, EACH LEVEL OF WIRING MUST BE RUN IN ITS OWN CONDUIT OR SEPARATED IN THE WIREWAY WITH THE APPROPRIATE BARRIERS TO ENSURE ADEQUATE ISOLATION.

CAUTION: ENSURE ALL GROUND WIRES ARE CONNECTED AS DIRECTED IN THE SCHEMATICS PROVIDED.

US BOTTLERS MACHINERY COMPANY					
Procedure:	Pneumatics - IS				
Procedure No.:	80155	Revision:	А	Date:	01 Jan 09

PNEUMATICS

This machine requires clean, dry, oil-free air. The amount of compressed air required depends mainly on the pressure used; however, size of the container being filled and capped does not affect the volume of compressed air required.

Care should be used in running your. This line should not have pockets or bends that will permit the collection of moisture or oil vapors that may be carried over from your compressor. Corrosion resisting fittings are required.

CAUTION: IF THE MAIN AIR LINE PRESSURE IS IN EXCESS OF OUR MAXIMUM RECOMMENDED OPERATING PRESSURE OF 100 PSI, A REDUCING VALVE MUST BE USED AT THE MACHINE.

CAUTION: DO NOT EXCEED 15 PSI AT ANY BLADDER STYLE BOTTLE STOPS. THE BLADDERS WILL BURST.

 $\ensuremath{\mathsf{CAUTION:}}$ SUPPLY ONLY CLEAN, DRY AIR TO THE MACHINE - NEVER SUPPLY LUBRICATED AIR.

ATTENTION: If you have doubts as to the proper installation, it is recommended that you contact a local field engineer supplying compressors and filters. A good field engineer should be fully acquainted with your requirements and be able to provide the proper recommendations.

PNEUMATICS

Exercise care in running the facility airline to the machine. This line should not have pockets or bends that will permit the collection of moisture or oil vapors that may be carried over from the compressor.

CAUTION: IF THE MAIN AIR LINE PRESSURE IS IN EXCESS OF OUR MAXIMUM RECOMMENDED OPERATING PRESSURE OF 100 PSI, A REDUCING VAVLE MUST BE USED AT THE MACHINE.

Carefully select a good air and oil filter and separator of sufficient capacity to handle nearly double the volume of your air requirements. Install it as close to the cleaner as possible and provide it with a well-located blow-down valve.

ATTENTION: If you have doubts as to the proper installation, it is recommended that you contact a local field engineer supplying compressors and filters. A good field engineer should be fully acquainted with your requirements and be able to provide the proper recommendations.

The machine requires clean, dry, oil-free air. The amount of compressed air required depends mainly on the pressure used; however, size of the container being filled and capped does not affect the volume of compressed air required.

Care should be used in running your airline to the machine. This line should not have pockets or bends that will permit the collection of moisture or oil vapors that may be carried over from your compressor. Corrosion resisting fittings are to used required.

CAUTION: DO NOT EXCEED 15 PSI AT ANY BLADDER STYLE BOTTLE STOPS. THE BLADDERS WILL BURST.

CAUTION: SUPPLY ONLY CLEAN, DRY AIR TO THE MACHINE - NEVER SUPPLY LUBRICATED AIR.

US BOTTLERS MACHINERY COMPANY					
Procedure: Instal	lation Checklist - IS			-	
Procedure No.: 801	59	Revision:	А	Date:	01 Oct 09
INSTALLATION CHEC	KLIST				
Machinery	 Filler & Capp Filler & Capp Conveyor fra Conveyor ch 	per positioned an per height adjuste ames connected. ain installed.	d attacheo ed and fee	d to each c t locked.	other.
Tanks	 Product sup Overflow tan Product & O 	oly tank positione k positioned. verflow tanks hei	ed. ght adjust	ed and fee	et greased/locked.
Electrical	 Main PLC pa High voltage Power suppl Point to poin DC wiring co 	anel mounted. conduit run and y cable/s run and t I/O wiring run a omplete.	mounted. I connecte nd connec	ed. cted.	
Hydraulic Piping	 Piping run al Flex connec Tested for lice 	nd mounted. tion. quid seal.			
Pneumatics	 Facility supp Point to poin Tested for let 	ly run, mounted, t lines connected aks.	and conno	ected.	

US BOTTLERS MACHINERY COMPANY TECHNICAL DATA

WORK ORDER: 94800

FACILITY REQUIREMENTS			
Environmental Conditions	Enclosed structure, climate controlled, free of visible atmospheric pollutants.		
Electrical Supply	480 VAC, 30 Amps, 3 Phase.		
Pneumatic Supply	80 psi, 20 cfm, .50 inch diameter inlet piping.		
Water Supply	.50 inch inlet piping, municipal pressure		

MACHINE SPECIFICATIONS		
Machine Weight	Machine: 6,000 lbs (estimated) Elevator Sorter: 1,500 lbs (estimated) Electrical Panel: 750 lbs (estimated)	
Machine Dimensions	Machine: 120" x 88" x 67" Elevator Sorter: 156" x 80" x 75" Electrical Panel: 82" x 62" x 18"	
Production Capacity	240 BPM	

MAIN DRIVE MOTOR SPECIFICATIONS			
Volts	230 / 460		
Hertz	60		
Phase	3		
Horsepower	3.0		
Revolutions Per Minute (RPM)	1800		
Enclosure / Application	Vector Duty / Washdown		

TURRET LIFT MOTOR SPECIFICATIONS			
Volts	230 / 460		
Hertz	60		
Phase	3		
Horsepower	1.0		
Revolutions Per Minute (RPM)	1800		
Enclosure / Application	Inverter Duty / Washdown / w/Brake		

CAPPER SPINDLE MOTOR SPECIFICATIONS			
Volts	230 / 460		
Hertz	60		
Phase	3		
Horsepower	3.0		
Revolutions Per Minute (RPM)	1800		
Enclosure / Application	Inverter Duty / Washdown		

SORTER DRIVE MOTOR SPECIFICATIONS		
Volts	230 / 460	
Hertz	60	
Phase	3	
Horsepower	1.0	
Revolutions Per Minute (RPM)	1100	
Enclosure / Application	Inverter Duty / Washdown	

LUBRICATION		
Bearing Grease	Lubricate FGL-1 (Food Grade)	
Gearbox Oil	APG-80W-140	
Chain Lubricant	Customer Determined	

FILLER DRIVE MOTOR SPECIFICATIONS		
Volts	230/460	
Hertz	60	
Phase	3	
Horsepower	5	
Revolutions Per Minute(RPM)	1800	
Enclosure / Application	Vector / Washdown	

US BOTTLERS MACHINERY COMPANY ATTACHMENT REFERENCE & SETUP PARAMETERS

WORK ORDER: 94800

ATTACHMENT REFERENCE			
BOTTLE	CAP	ATTACHMENT	
	38mm	Infeed Neck Guide:	11.5 OZ
		Feed Worm:	11.5 OZ
<u>11.5 OZ.</u>		Center Guide Assembly:	11.5 OZ
2.294" thick x 2.922" wide x		Infeed Star:	11.5 OZ
8.140" tall		Discharge Star:	11.5 OZ
		Clamp Star:	11.5 OZ
		Cap Feed Star:	38MM
	70mm	Infeed Neck Guide:	12 OZ
		Feed Worm:	12 OZ
<u>12 OZ.</u>		Center Guide Assembly:	12 OZ
2.940" thick x 3.404" wide x		Infeed Star:	12 OZ
4.850" tall		Discharge Star:	12 OZ
		Clamp Star:	12 OZ
		Cap Feed Star:	70MM
<u>25 OZ.</u> Oval glass jar 3.746" thick x 4.154" wide x 6.265" tall	70mm	Infeed Neck Guide:	25 OZ
		Feed Worm:	25 OZ
		Center Guide Assembly:	25 OZ
		Infeed Star:	25 OZ
		Discharge Star:	25 OZ
		Clamp Star:	25 OZ

US BOTTLERS MACHINERY COMPANY OPERATOR PANEL DESCRIPTION

Work Order: 82780

OPERATOR PANEL BUTTONS	
BUTTONS	DESCRIPTION
CAPPER START	Initiates machine operation when pressed. Pressing the CAPPER STOP button will pause machine operation.
CAPPER STOP	Ceases machine operation when pressed. Pressing the CAPPER START button will activate machine operation.
CAPPER RESET	Clears the machine's memory of a fault condition if it has been corrected. If a fault exists and it hasn't been corrected, the machine will not be reset and the fault condition will not be cleared from memory.
EMERGENCY STOP	Shuts the machine down in emergency situations where expediency is required.
CAPPER JOG & HOIST CORD	Used during testing and changeovers for metered movement. When the LCD hoist button is off, the button on the side rotates the turret. When LCD hoist button is selected for up or down, the button on the side raises and lowers the hoist.



MENU SELECTION SCREEN		
BUTTONS/DISPLAYS	DESCRIPTION	
RUN SCREEN	When pressed, advances to the Run Screen menu. Is the primary screen for machine operation.	
E-SYNC	Advances to the E-Sync menu screen.	
MAINTENANCE SCREEN	When pressed, advances to the Maintenance menu. This menu allows features to be bypassed and counters to be reset. Contains controls for machine setup and troubleshooting.	
CAPPER TIMING	When pressed, advances to the Capper Timing menu. This menu allows adjustment of the timers for the machine.	
SORTER TIMING	When pressed, advances to the Sorter Timing menu. This menu allows adjustment of the timers for the machine.	
CONFIGURATION SCREEN	When pressed, advances to the Configuration menu. Allows access to the touch screen configuration functions.	
FILLER SELECT	When pressed, advances to the Filler Select screen.	
LOGIN	Advances to the Login menu screen.	



RUN MENU SCREEN		
BUTTONS/DISPLAYS	DESCRIPTION	
MACHINE SETPOINT SPEED	Displays the desired capper speed in bottles per minute.	
MACHINE ACTUAL SPEED	Displays the actual machine production speed.	
CONVEYOR OFF/ON/AUTO	ON:Conveyor run continuously.OFF:Discontinues conveyor operation.AUTO:Follows machine operation.	
CAPS ON/OFF	ON: Allows caps to be released for bottles. OFF: Does not allow caps to be released.	
MENU SCREEN	Advances the operator to the Menu screen.	



CAPPER TIMING SCREEN		
BUTTONS/DISPLAYS	DESCRIPTION	
DISCHARGE BACKUP DELAY	Sets length of time the Discharge Backup sensor has to be blocked before engaging bottle stop. Numbers in 1/100 second.	
DISCHARGE BACKUP CLEAR DELAY	Sets the length of time the Discharge Backup sensor has to be clear before releasing the bottle stop. Numbers in 1/100 second.	
NO CAPS FAULT DELAY	Sets the length of time the upper chute eye has to be clear and the cap sorter running before stopping the machine and indicating a No Cap Fault. Numbers in 1/100 second.	
MENU SCREEN	Advances the operator to the Menu screen.	



SORTER TIMING SCREEN		
BUTTONS/DISPLAYS	DESCRIPTION	
SORTER START DELAY	Sets the length of time the Upper Chute Eye has to be clear before starting the cap sorter. Numbers in 1/100 second.	
SORTER STOP DELAY	Sets the length of time the upper chute eye has to be blocked before stopping the cap sorter. Numbers in 1/100 second.	
CHUTE AIR STOP DELAY	Sets the time length the air remains on after no more caps are needed. Numbers in 1/100 second.	
VIBRATION ON DELAY	Sets the time length that the sorter will wait before beginning. Vibrates once the upper chute eye is clear of caps.	
MENU SCREEN	Advances the operator to the Menu screen.	



PANELVIEW CONFIGURATION SCREEN		
BUTTONS/DISPLAYS	DESCRIPTION	
YES	Advances to the Panelview Configuration Screen.	
NO	Returns to the Main Menu Screen.	



MAINTENANCE MENU SCREEN		
BUTTONS/DISPLAYS	DESCRIPTION	
CAPPER SHIFT REGISTER	This number sets the delay from the bottle present sensor to the release of the cap. This number should not normally change, once set at startup.	
SORTER SPEED	Sets the belt speed of the cap sorter.	
SPINDLE OFF/ON/AUTO	ON: Runs regardless if the machine is stopped.OFF: Discontinues spindle operation.AUTO: Follows machine operation.	
CAPPER HOIST OFF/UP/DOWN	When in the UP or DOWN position, the jog cord is used to activate the hoist for the capper. Once the capper is at the proper height, turn the button to OFF or just go back to the main menu.	
DOOR BYPASS ON/OFF	Allows the machine to operate with one or more doors open.	
OPERATION TIME	Total operation time of the machine.	
MAINTENANCE TIME	A resettable timer for scheduling maintenance.	
HOURS RESET	Resets the maintenance timer to zero.	
MENU SCREEN	Advances the operator to the Menu screen.	



LOGIN MENU SCREEN		
BUTTONS/DISPLAYS	DESCRIPTION	
LOGIN	Activates the popup screen to allow entry of a username and password.	
LOGOUT	Sets the current user to "Default"	
EDIT PASSWORD	Active only when the security level is at an administrator level. This allows the user to modify the current passwords.	
CURRENT USER	Shows the name of the Current user	
MENU	Returns the operator to the Menu screen.	



PASSWORD EDIT SCREEN				
BUTTONS/DISPLAYS DESCRIPTION				
LOGIN	Activates the popup screen to allow entry of a username and password.			
LOGOUT	Sets the current user to "Default".			
CHANGE PASSWORD	Activates the popup screen to allow the current password to be changed.			
CURRENT USER	Shows the name of the Current user.			
MENU	Returns the operator to the Menu screen.			



E-SYNC MENU SCREEN				
BUTTONS/DISPLAYS DESCRIPTION				
CAPPER ADVANCE	Advances the timing of the capper to the capper infeed star.			
CAPPER DISABLED	Disables the timing of the capper to the capper infeed star.			
CAPPER RETARD	Retards the timing of the capper to the capper infeed star.			
MENU SCREEN	Returns the operator to the Menu screen.			



FILLER STATUS					
BUTTONS/DISPLAYS	DESCRIPTION				
NORTH FILLER: SELECT/ACTIVE	When ACTIVE is shown, this is the filler in operation. Pressing SELECT when it is shown will make this filler active.				
NORTH FILLER SHIFT REGISTER	This value is the Shift Register value (Number of bottle pockets) from the north Filler to the Cap Release Gate.				
SOUTH FILLER: SELECT/ACTIVE	When ACTIVE is shown, this is the filler in operation. Pressing SELECT when it is shown will make this filler active.				
SOUTH FILLER SHIFT REGISTER	This value is the Shift Register value (number of bottle pockets) from the south filler to the cap release gate.				
RUN	Takes the operator to the RUN screen.				
MENU:	Takes the operator to the MENU screen.				



US BOTTLERS MACHINERY COMPANY SPARE PARTS LIST

Product:

RC-12-22" ROTARY CAPPER

Customer: Ventura Foods

Work Order No.: 94800-1

When ordering spare parts, it is important to provide the work order number for the machine order followed by the part number and description of each part to be ordered.

P/N	QTY	DESCRIPTION	CODE	UNIT\$\$	EXTENDED
A16631	1	Sensor, Proximity	А		
A21179	1	Clutch, Mechanical, 2"	А		
A91944	1	Door Switch	А		
C11504	1	Roller Carrier	А		
A18957	3	Bushing, 1-1/4", Plain Bearing	А		
B11989	2	Shaft, Chuck	А		
A17357	2	Roller Sleeve, Urethane	А		
A17744	2	Bearing, Roller Assembly, SS	А		
X80408	3	Chuck Jaw, Lined	А		
X83163	3	Jaw Assembly, Lined	А		
A16248	1	Photo Cell Reflector, 3" Dia.	А		
A18259	6	Liner for Chucks	А		
A19303	9	Pin, Drive	А		
A18958	2	Bearing, 1-1/4"	А		
A18959	1	Gear, 3", Pinion	А		
A20544	2	Rod, Knockout	А		
A16550	2	Ball End Knockdown	А		
A16197	1	Clamp Belt	А		
A18000	1	Solenoid Valve	А		
A17726	1	Sprocket, Worm Drive	В		
A17739	1	Timing Belt	В		
A17722	1	Sprocket Worm Drive	В		
A18468	2	Universal Joint, 1" x 1"	В		
A19874	3	Spring, Chuck Release	В		
X72643	3	Chuck Jaw Body	В		
X72641	3	Jaw Stem	В		
C11533	3	Chuck Jaw Body	В		
C11534	3	Jaw Stem	В		
X70259	1	Stop Arm, Cap/No Cap Device (A20259)	В		
A90552	1	Cylinder, ¾" Bore, 1" Stroke	В		
A19278	2	Bushing, Garlock, 1-1/8"	В		
A19279	3	Bushing, 7/8"	В		
A22231	3	Stripper	В		

P/N	QTY	DESCRIPTION	CODE	UNIT\$\$	EXTENDED
A21580	3	Magnetic Clutch	В		
A18947	2	Bushing, 1" ID	В		
A16179	2	Pivot Bushing	В		
X70428	1	Pulley Body	В		
X70429	1	Pulley Cover	В		
A17744	2	Bearing	В		
A18462	1	Bearing	С		
A19491	1	Catch, Female	С		
A19492	2	Ball, Spring Loaded	С		
A19490	1	Catch, Male	С		
A16118	1	Bearing Assembly, Ball, 3-7/16"	С		
A17446	1	Bearing, 1" Bore, Adjustable Takeup	С		
A10515	1	Bearing, 2-Bolt Flange	С		
A92185	1	Ball, Vibrator	С		
A18740	1	Motor, 1-hp, 1100rpm	С		
A91275	1	Photo Eye, AB	С		
A91808	1	Chute Air Valve	С		
A90818	1	Jog Cord, 12", H20 Tight	С		
A19275	1	Brass nut	С		
A18669	3	Screw, Brass Nut	С		
A18173	2	Spring, Chuck Release	С		
B11520	1	Bearing, Main	D		
B11982	1	Gear, Bull, 22" PD	D		
B12324	1	Star Gear	D		
A90110	1	Gearbox, Main Drive	D		
A90170	1	Motor, Main Drive	D		
B11502-16T	1	Belt, Elevator Sorter	D		
A19647	1	Motor, 3 hp	D		
A19645	1	Gearbox	D		

Estimated Total:

CODE DESIGNATIONS		
А	Items critical to machine operation and inventory is imperative.	
В	High wear items that will require replacement within the first year.	
С	Low wear items that will require replacement beyond the first year.	
D	Non-shelf items that require long lead times for delivery.	

ALL PRICES ARE HONORED FOR 30 DAYS FROM DATE OF QUOTATION ALL PRICES ARE IN US DOLLARS

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US BOTTLERS MACHINERY COMPANY						
Procedure: Cap Feed & Chuck Height Adjustment - OP						
Procedure No.: 80200 Revision: A Date: 02 Jun 09						

To establish the height adjustment of the capper chucks, the correct cap slide plate must be mounted to the slide plate posts. Position a chuck over the cap slide plate on the last drop of the lifting cam and lowered to the cap retrieve depth and with the jaw closed.

CAUTION: EXERCIZE CARE WHEN PERFORMING THIS PROCEDURE. IF THE CHUCKS ARE NOT SET AT THE PROPER HEIGHT, MECHANICAL DAMAGE CAN OCCUR WHEN ROTATING THE MACHINE UNDER POWER.

- 1. Open safety doors as necessary to access the cap feed assembly.
- 2. Use the jog & hoist cord of the machine's operator panel to fully raise the chuck assembly.
- 3. Remove the height spacers from each of the three cap slide plate posts.
- 4. Loosen the friction clamp locking levers of each cap slide plate post.
- 5. Insert alternate height spacers to upper portion of each cap slide post to establish proper plate height. Retighten each friction clamp locking lever to secure.

NOTE: A set of height spacers has been supplied to accommodate each changeover configuration. Ensure to select the applicable set.

NOTE: For some applications each of the height spacers of a given set may be of different lengths. For those applications, ensure that each spacer is placed onto its respective post.

- 6. Use the jog & hoist cord to rotate a chuck assembly over the cap slide plate stopping at its lowest point.
- 7. Place the thickness gauge flatly onto the top surface of the cap slide plate centered beneath the chuck assembly.
- 8. Use the jog & hoist cord to lower the capper's chuck assembly toward the cap slide plate until almost making contact. Remove thickness gauge.



US BOTTLERS MACHINERY COMPANY						
Procedure: Limit Rail & Feed Worm Adjustment - OP						
Procedure No.: 80203 Revision: A Date: 30 Jun 09						

Most container size changes will require the position adjustment of the limit rail and the feed worm. Their proper positioning will allow the container to travel on the conveyor chain without any lateral movement due to contact with either components.

ATTENTION: A properly adjusted limit rail and feed worm will allow the containers to move freely and in single file without applying pressure on either side. A 1/8 to 1/4 inch space on either side of the container will suffice.

The limit rail is secured into position by two knob bolts located underneath their respective brackets. Slightly loosen these bolts to freely move the limit rail inward or outward as required. Retighten the bolts when proper positioning is achieved.



The feed worm is secured into position by two quick release levers. Slightly loosen these levers to freely move the feed worm inward or outward as required. Retighten the levers when proper positioning is achieved.



LIMIT RAIL & FEED WORM ADJUSTMENT

Most product size changes will require the position adjustment of the limit rail and the feed worm. Their proper positioning should allow the container to travel on the conveyor chain without any lateral movement due to contact with either components.

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The limit rail is secured into position by two knob bolts located underneath their respective brackets. Slightly loosen these bolts to freely move the limit rail inward or outward as required. Retighten the bolts when proper positioning is achieved.



The feed worm is secured into position by two quick release levers. Slightly loosen these levers to freely move the feed worm inward or outward as required. Retighten the levers when proper positioning is achieved.


US BOTTLERS MACHINERY COMPANY						
Procedure: Conveyor Rail Adjustment - OP						
Procedure No.:	ure No.: 80204 Revision: A Date: 30 Jun 09					

CONFIGURATION A

To determine if the conveyor rails are properly set, place a container onto the center of the conveyor at each end of the rail assemblies. Visually regard the rail assemblies in relation to the container to determine if the spacing and height is desirable.

NOTE: Properly adjusted conveyor rails will allow the containers to move freely and in single file without applying pressure on either side. A 1/8 to 1/4 inch space on either side of the container will suffice.

If horizontal adjustment is required, loosen the knob set bolts and manually adjust the rails assemblies inward or outward as necessary to achieve equal and proper spacing to the bottles on each end. Retighten the knob set bolts onto their respective rail assembly shafts when complete.

If vertical adjustment is required to improve container stability while being conveyed, loosen the height set bolts to vertically free the conveyor rails and manually raise or lower as desired. Hold each rail assembly in position while retightening the height set bolts.



CONFIGURATION B

To determine if the conveyor rails are properly set, place a container onto the center of the conveyor at each end of the rail assemblies. Visually regard the rail assemblies in relation to the container to determine if the spacing and height is desirable.

NOTE: Properly adjusted conveyor rails will allow the containers to move freely and in single file without applying pressure on either side. A 1/8 to 1/4 inch space on either side of the container will suffice.

If horizontal adjustment is required, loosen the knob set bolts and manually adjust the rails assemblies inward or outward as necessary to achieve equal and proper spacing to the bottles on each end. Retighten the knob set bolts onto their respective rail assembly shafts when complete.

If vertical adjustment is required to improve container stability while being conveyed, loosen the bolts securing the conveyor rail brackets to the conveyor channel, then manually raise or lower as desired. Hold each rail assembly in position while retightening the bolts.



	US BOTTLERS MACHINERY COMPANY					
Procedure:	Capper Independent Spindle Speed Adjustment (Allen-Bradley PowerFlex HIM) - OP					
Procedure No	b.: 80206	Revision: A	Date: 24 Jul 09			

This feature allows the capper's spindle rotational speed to be independently adjusted from the turret's rotational speed to accommodate the application profile of various cap types through the increase or decrease of spindle/chuck revolutions.

This procedure requires the use of the Allen-Bradley, PowerFlex, 4-Class, Series A Human Interface Module. Connect the module to the drive controller within the machine's electrical panel.



US BOTTLERS MACHINERY COMPANY						
Procedure: Feed Worm Change - OP						
Procedure No.: 80209	Revision:	А	Date:	18 Jan 10		

To remove the feed worm, lift upward on the knurled release pin, then push outward on the adjustment knob while supporting the feed worm. When the adjustable bracket is clear of the feed worm, lift upward on its free end and pull it outward from the stationary bracket.

To install the alternate feed worm, insert one end into the stationary bracket, then lower the worm's free end to align with the adjustable bracket. Grasp the adjustment knob and pull inward to move the adjustable bracket to couple with the feed worm. Lower the knurled release pin.



US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Clamping Belt Tension Adjustment - OP						
Procedure No.:	80211	Revision:	А	Date:	24 Feb 10	

The belt tension air pressure can be adjusted on the pneumatics panel to ensure that containers do not spin during the capping process. If the container is lightweight plastic and subject to squeezing, the belt tension may be too great. If this cannot be resolved through pneumatic adjustment, a special attachment may be required.

If the belt's tension is too tight or too loose and it cannot be remedied through pneumatic means, one or both of the adjustable pulleys may be loosened and moved toward or backward as necessary to remedy the problem.



US BOTTLERS MACHINERY COMPANY						
Procedure: Pneumatic Regulator Block - OP						
Procedure No.:	Procedure No.: 80212 Revision: A Date: 03 Feb 10					

The minimum desired input air supply pressure to the regulator is 80psi. Its respective pressure adjustment dial allows manual pressure regulation by turning the dial clockwise until the desired or optimum pressure is achieved. The pressure level may be read by the supply pressure gauge attached to the face of the regulator.

Supply Air

The input pneumatic regulator is equipped with a filter vessel to catch excess fluids from the air supply lines. Periodically, the vessel must be emptied to continue to provide service. Unscrew the knurled, filter bleed valve located at the bottom of the vessel to drain the accumulated fluids.

Low Air

The low air pressure switch is preset at a little less than 50psi and should not require adjustment unless the switch is replaced.

Cap Gate

Regulates the open and close speed of the cap gate.

Cap Chuck

Regulates the positioning of individual caps for the cap chuck. This switch setting will vary depending on the pressure required for proper positioning.

Capper Chute Air

Controls the supply of air to the capper cap chute to assist the movement of caps through the chute.

Plugger Chute Air

Controls the supply of air to the plugger cap chute to assist the movement of caps through the chute.

Flow Regulator Valves

There is an adjustment knob for the upper and lower valve control. These thresholds may require adjustment from one cap type to another.

Bottle Stop

Controls the air pressure to the bottle stop device.

CAUTION: DO NOT SET THE BOTTLE STOP PRESSURE HIGHER THAN 12 PSI OR THE BLADDER WILL BURST.

Belt Tension

Controls the tension of the bottle clamping belt located on the capper.

Main Air Solenoid

Supplies air to system when all doors and e-stop is clear.

Supply Air Lockout

Provides manual shutoff for air.

Valve Wash Solenoid

Controls fluid flow to the slide ring wash nozzles and the filling valve wash nozzles located on the filler.

US BOTTLERS MACHINERY COMPANY					
Procedure: Capper Lifting Hoist Adjustment - OP					
Procedure No.:	80213	Revision:	А	Date:	20 Sep 09

The capper incorporates a lifting jack on the roof of the machine to enable a quick change-over for bottle height adjustment. When the capper is not rotational, the switch on the front of the operator panel can be used to raise or lower the lifting jacks by activating the reversing motor on the roof of the machine. There is only a total of six inches of adjustment and the rotary actuator limit switch will signal when the limit has been reached and will not allow the operator to move further in that direction. At this point, the only other option is to reverse the motor direction and run the other way.

To establish the height adjustment of the capper chucks, the correct cap transfer slide plate must be set to the correct height. Positioned a chuck over the cap slide plate on the last drop of the lifting cam and lowered to securely retrieve a cap with the chuck jaw at the appropriate depth and with the jaw closed.

At this point, the chuck jaw should have the cap fully encapsulated. This is to be considered the proper setting so that when the capper is rotated forward, the roller will move along the cam and lift up off of the cap slide plate. Then, when it descends in the rear of the machine, it will fully and properly apply the cap to the container with the roller 1/32" above the cam.



CAUTION: EXERCIZE CARE WHEN PERFORMING THIS PROCEDURE. IF THE CHUCKS ARE NOT SET AT THE PROPER HEIGHT, MECHANICAL DAMAGE CAN OCCUR WHEN ROTATING THE MACHINE UNDER POWER.

For the capper lift mechanism to operate, the:

- capper must be stopped,
- direction selector switch must be set to the correct direction,
- capper lift light must be off,
- button on the cord must be pressed for operation.

If a limit switch is encountered during operation, the PLC will stop movement in that direction and initiate movement in the opposite direction for one second and then stop. This action will clear the limit switch and another operation may then be started.

ATTENTION: During normal operation, the lift limit light should never be continuously illuminated. If so, the operator controls will become inoperable until corrective action is taken to eliminate this condition.

US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Mechanical Chuck Adjustment - OP						
Procedure No.:80214Revision:ADate:11 Feb 10						

CAPPER CHUCK ADJUSTMENT

This chapter provides instruction on how to independently increase/decrease the chuck's gripping strength and tightening strength.

Torque Adjustment (Mechanical Clutch Only)

On the magnetic clutch, loosen the clutch setscrew and then adjust the torque adjustment ring to the desired torque setting. The exterior housing has numbers laser-etched in the stainless steel exterior, and each number represents an increase in the amount of available applied torque based on the internal magnetic components. These numbers represent rough settings for each chuck and can be used as a starting point when attempting to set chuck jaw torque. After testing, a particular chuck may need to be fine-tuned so that the entire machine runs at a consistent torque setting from chuck to chuck. Retighten the clutch setscrew following adjustment.

Grip Adjustment (Single Piece Jaws/Mechanical Clutch Only)

To adjust the chuck's gripping and releasing strength of the cap, unscrew the chuck body from the chuck housing to access the threaded jaw stem. Loosen the two chuck setscrews, then turn the grip adjustment ring to increase/decrease tension on its pressure spring. Retighten the two chuck setscrews, then thread the chuck body onto the chuck housing when complete.



US BOTTLERS MACHINERY COMPANY					
Procedure: Capper Setup/Changeover Procedure - OP					
Procedure No.:	80216	Revision:	А	Date:	02 Jan 10

ATTACHMENTS

Each product change requires the substitution of certain machine attachments to allow for bottle and cap variations. Each set of attachments is stamped with their applicable container/cap identifiers to assist in the changeover process.

Attachment Change

1. Power down the machine.

WARNING: ENSURE THE POWER SUPPLY IS DISCONNECTED AND FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES BEFORE PERFORMING ANY MAINTENANCE ACTIVIES.

- 2. Open safety doors as necessary to access the changeover attachments.
- 3. As applicable, change the setting of the operator panel for the changeover.

NOTE: Refer to the OPERATOR PANEL chapter of this unit for specific menu details.

- 4. Remove three knob bolts securing **LH Neck Guide**. Lift away **LH Neck Guide**.
- 5. Remove two knob bolts securing **RH Neck Guide**. Lift away **RH Neck Guide**.
- 6. Remove six knob bolts securing **Capper Center Star**. Lift away **Capper Center Star**.
- 7. Rotate four **Knob Assys** securing **Infeed Star**. Lift away **Infeed Star**.
- 8. Rotate four **Knob Assys** securing Discharge Star. Lift away Discharge Star.
- 9. Rotate three **Knob Assys** securing Infeed Center Guide and Discharge Center Guide. Lift away guides.
- 10. Install alternates as described in steps 4 through 9.
- 11. Remove feed worm as necessary and install alternate.
- 12. Adjust rear rail adjustment plate.
- 13. Adjust height of cap slide plate.
- 14. Restore power and test cycle to ensure proper function.



US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Spindle Drive Belt Adjustment - PM						
Procedure No.: 80301 Revision: A Date: 22 Apr 09						

Over operational time, the drive belt will stretch and require tension adjustment. To tension the drive belt, loosen the four set nut/bolts securing the motor/gearbox to its mounting plate and manually pull the assembly to increase the distance between its pulleys A and B. Retighten the four set nut/bolts.

WARNING: ENSURE THE POWER SUPPLY IS DISCONNECTED AND FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES BEFORE PERFORMING ANY MAINTENANCE ACTIVIES.

NOTE: A properly adjusted belt will be tensioned so as to prevent slippage, but not provide excessive drag on the drive mechanisms.



US BOTTLERS MACHINERY COMPANY						
Procedure: Feed Worm Drive Belt Adjustment - PM						
Procedure No.:	80302	Revision:	А	Date:	21 Apr 09	

Over operational time, the worm belt will stretch and require tension adjustment. To tension the belt, loosen the four bolts securing the worm drive gearbox to its mounting plate and manually pull the gearbox outward to increase the distance between its two pulleys. Retighten the four bolts.

WARNING: ENSURE THE POWER SUPPLY IS DISCONNECTED AND FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES BEFORE PERFORMING ANY MAINTENANCE ACTIVITIES.

NOTE: A properly adjusted belt will be tensioned so as to prevent slippage, but not provide excessive drag on the drive mechanisms.



US BOTTLERS MACHINERY COMPANY					
Procedure:	Pinion & Bull Gears - PM				
Procedure No.:	80304	Revision:	А	Date:	12 Nov 09

The pinion drive gears and bull gear are to be inspected to ensure that wear or corrosion has not reduced the surface areas of these gears, and that they have not developed cracked or broken teeth.

Pay particular attention to the strength of pinion gear teeth when reviewing because they turn multiple times that of the bull gear. Replace pinion gears as soon as wear is identified.

The bull gear of the machine is subjected to less wear than the pinion gears. Replacing a bull gear is a big job, but if properly serviced, it should have a long operational life. Normally, it is considered good practice to change all gears of any gear set whenever the drive is overhauled. In this case, since the bull gear is so large and costly, and requires so much effort to replace, every attempt should be made to service the pinion gears and replace them separately before they can damage the bull gear.

Use a brush to apply a heavy coating of grease that resists water and steam to the teeth of the gears. If the gears are plastic, do not use a lubricant that will attack nylatron GSM. Inspect the existing grease on the gears for broken glass or any other object that could damage the teeth if left in place.

Check the drive system for backlash. Increasing backlash indicates tooth wear and suggests a possible need for pinion gear and/or bull gear replacement.



US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Chuck Shafts & Rollers - PM						
Procedure No.:	Procedure No.: 80306 Revision: A Date: 05 Feb 10					

There are numerous preventive maintenance activities that must be performed relative to the capper's chuck shaft and rollers. Perform the activities identified below in the frequency identified in the preventive maintenance and lubrication schedules of this chapter. Refer to the Repair Maintenance unit of this manual if determined that components or sub-assemblies must be replaced.

- Visually inspect the cam rollers for excessive wear and flat spots on their cam contact surfaces. If flat spots are present on a cam roller, this is an indication that the roller is seizing. Ensure that all rollers rotate freely and that their attaching hardware is not loose.
- Visually inspect the head spindle gear for tooth wear and brush grease onto their full lengths. The gear must properly engage its mate without slippage or sloppiness.
- Visually inspect the ball-end knockdowns (if present) for excessive wear. The knockdowns require
 replacement if the chuck jaws cease to fully open and close. If deemed acceptable, brush grease
 onto their button ends.
- Visually inspect the cap and lift cams to ensure that the roller hardware has not worn a groove in their contact surfaces. If the cam begins to show signs of wear, it can be reshaped in order to ensure proper rolling action – they can also be adjusted downward since they are slotted. Also, since the width of the knockdown cam is wider than the contact point; it can be spaced out or moved in to wear on unworn surfaces to extend its life. In the event that it is worn excessively, the lift section is to be replaced. Brush a slight film of grease onto the roller and knockdown contact surface of the cams to reduce friction, corrosion, and wear.
- Visually inspect the chuck shafts and head plate pillars for scratches and grooves indicating that their bushings are worn. Manually shake each shaft and pillar for play in the bushing area, this is also a sign that wear is occurring and that the bushings may require replacement.

Note that the shaft bushings do not require lubrication and more specifically, it is recommended that they are not lubricated so as to prevent the attraction and retention of debris. Indeed, some bushing materials may adversely react to the chemical compositions of some lubricants and also, impede desired material transfer for some bushing types.

NOTE: If flakes of material is noticed around the capper's bushings, this is not cause for concern. Some types are designed to transfer part of its material composition to the shaft during normal operation.

- Apply a straight edge to the shafts and pillars to determine if any have become bent. Any shafts or
 pillars discovered to be bent, must be replaced immediately to ensure proper capping and to
 prevent damage to other components during operation.
- Manually shake each chuck shaft in the area of the carrier block bearings. Movement in this area is indicative of worn bearings. If these are determined to be in acceptable condition, fill with grease if fittings are present.
- Visually inspect the upper and lower head plates metal shavings indicating that abnormal wear is incurring. If none is detected, wipe down their surfaces, then rub oil onto them to prevent rust.



US BOTTLERS MACHINERY COMPANY						
Procedure: Crossover Plates, Bedplates, and Conveyor Wear Strips - PM						
Procedure No.: 80309 Revision: A Date: 11 Feb 10						

Review the crossover plate to ensure that the bottle action of moving on and off the conveyor is smooth. When necessary, replace the crossover plate or adjust it upwards to ensure proper transfer. The crossover plate is to always be vertically positioned so that it is slightly higher so the container traveling off the plate doesn't trip.

If the bedplates are badly worn, three things can occur:

- 1) the containers will jostle on the bed plate when entering the filler causing the filling tube to have difficulty aligning with the opening of the bottle;
- 2) 2) spilled liquid can become trapped on the bed plate and drip down through the attachment screws accelerating corrosion; and
- 3) 3) properly filled bottles will not smoothly exit the machine.

Conveyor wear strips that support the conveyor motion and the return conveyor chain section must be inspected to ensure that they have not worn through. Only chain lubricant is necessary for the conveyor wear strips.



US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Chuck Assembly - PM						
Procedure No.:	80310	Revision:	А	Date:	16 Feb 10	

The maintenance areas to review deal with wear surfaces and the single spring.

ATTENTION: Ensure that plenty of spare springs are available should the spring wear or break over an extended period of operation.

Wear areas at the chuck jaw, in particular where the stripper contacts the backside of the jaw and the body closes on the exterior of the jaw, should be evaluated. A small amount of lubrication is to be added to these surfaces to help prevent excessive wear. The serrations of the jaws themselves are be evaluated since these will wear over time; particularly if the settings of the gripping pressure and the release point are out of tune.

Ensure the nylon-tipped setscrews do not need replacement. If metal-to-metal set screws are used on the threads, they can damage the jaw stem.

Another wear area to review is the jaws themselves. Naturally, some wear will occur from the original sharpness of the jaw, but it is important to ensure that they hold the cap properly when reaching their final torque. While running the capper, view the operation from the capper. Assuming that all the magnetic clutches are correctly set and the bottle is not spinning and the cap jaws grip the cap tightly, you would normally see all magnetic clutches come to a slip point at approximately the same angle based on the thread of the cap and the appropriate applied torque. If you continue to see a particular chuck assembly that does not reach its torque, it should be evaluated as to whether the chuck is slipping on the cap or the bottle is rotating in the pocket.



Procedure:

Preventive Maintenance Schedule (PG-RC) - PM

80370

Procedure No.:

Revision:

А

Date: 01 Oct 09

PREVENTIVE MAINTENANCE SCHEDULE DAILY Limit Switch & Mounting Bracket Verify electrical control logic. Inspect for wear. Clutch Keyways Tighten screws and keyless bushings. Inspect for worn or missing teeth. **Bull Gear & Pinion Gear** Inspect for corrosion. Check for excessive backlash. Check for flat spots. **Roller Bearings** Ensure proper positioning on cam lift sections. Inspect for wear. **Crossover Plate** Ensure proper shimming in relation to rotary table segments and conveyor chain. Verify switches are properly functional. Inspect hinges for damage. Guard Doors, Switches, Hinges Hand clean. Inspect for vibration, grinding, or excessive heat. Check for increasing backlash between input and output Feed Worm Gearbox shaft. Check shaft rotation for tight spots. Chuck Assembly Inspect for loose hardware. Check u-joints for wear, binding, excessive slop, backlash. Check bearing for wear. Ensure feed worm mounting bracket is secure. Ensure limit switches are functional & properly positioned. Feed Worm Drive Assembly Inspect gearbox for vibration, grinding, or excessive heat. Check gearbox for backlash between input/output shafts. Check shaft rotation for tight spots. WEEKLY Hand rub light covering of oil to all unpainted surfaces. Check for bent knobs, broken plates, and damaged **Entire Machine** attachments. Ensure slippage during high speed motor starts. Check for proper mechanical function. **Detent Clutch** Check keyless bushings for tightness. Check shaft key and keyway for excessive wear. Inspect cam stud shafts for corrosion. Ensure roller chains are not excessively stretched. Ensure cam ring and studs are level. Main Chassis Ensure cam adjusting hardware moves freely. Inspect bed plate covers for wear. Check pinion shaft for excessive looseness. Ensure static charge eliminator ground strap is connected.

Main Bearing	Check for deterioration by slowly rotating machine and checking for jerking or rumbling noise.
Head Assembly	Check for loose, worn, or broken roller assemblies.
Cap Feed Assembly	 Inspect air connections and lines for pinching, damage, and degradation. Inspect the pivot bushing for swelling and ream. Check pistons fro proper stoking and cleanliness.
Chuck Assembly	Check for broken or damaged chuck release springs.
Chuck Shaft Assembly	 Check for bent shafts. Check rollers and bearings for wear, corrosion, and flat spots.
Conveyor Assembly	 Inspect conveyor wear strips for wear. Ensure guide rail hardware is firmly tightened. Ensure limit switches are functional and that the electronic control circuits are active. Check the parallel shaft reducer for backlash between input and output shafts. Check parallel shaft reducer for corrosion on top housing plate. Check universal joints and slide couplings for wear. Check timing belt for wear and excessive stretching. Inspect the worm idler end bearing for wear. Check worm mounting for binding between worm and support hardware. Check feed worm gearbox for backlash between input and output shaft. Rotate input shaft and check for tight or rough spots.
Star Drive	 Check micro-switch for correct setting and proper electronic control logic. Ensure lubricant lines are in place and without leaks. Ensure star and drive shaft bearings for sloppy contact.
SEMI-ANNUALLY	
Entire Machine	 Check gears for uneven wear or broken teeth. Check for excessively sloppy bushings.
Feed Worm Gearbox	Rebuild or replace.
Clamping Belt Assembly	 Check pulley bearings for wear and corrosion. Check take-up assembly for wear, corrosion and damage.
Head Assembly	 Check lifting jack for binding. Check pneumatic cam for wear. Check roller carrier bearings for wear, corrosion, and damage.
Main Gearbox	Replace gearbox oil.
Capper Independent Spindle Gearbox	Replace gearbox oil.

US BOTTLERS MACHINERY COMPANY						
Procedure:	Lubrication Sche	edule (PG-RC)				
Procedure No.:	80385	Revis	ion: A [Date: 01 Oct 09		
LUBRICATION	POINTS		I			
Part Name	Lubrication Type	Method	Points/Frequency	Location		
Conveyor Bearings	Grease	Alemite	2 / Daily	Conveyor End		
Capper Main Bearing	Grease	Alemite	1 / Daily	Cabinet Front		
Star Shaft Bearings (top)	Grease	Alemite	2/ Daily	Above Cabinet		
Star Shaft Bearings (bottom)	Grease	Alemite	2 / Daily	Cabinet Front		
Feed Worm Brackets	Grease	Alemite	2 / Daily	Feed Worm Brackets		
Capper Independent Spindle Gears	Grease	Brush	1 / Weekly	Upper Turret Cover		
Upper Bearings	Grease	Alemite	1 / Daily	Upper Guard Rail		
Lower Bearings	Grease	Alemite	1 / Daily	Upper Guard Rail		
Capper Chuck Shaft Spindle Gears	Grease	Brush	1 / Weekly	Upper Capper		
Capper Independent Spindle Gearbox	Spirex Exp 140	Oil Bath	1 / Weekly	Capper Roof		
Center Column	Grease	Alemite	1/ Monthly	Lower Turret		
Lifting Gearbox	Spirex Exp 140	Oil Bath	2 / Year	Capper Roof		
Carrier Bearing Blocks	Grease	Alemite	2xN / Weekly	Lower Turret Cover		
Capper Independent Spindle Gears	Grease	Brush	1 / Weekly	Upper Turret Cover		
Main Gearbox	Spirex Exp 140	Oil Bath	1 / Monthly	Main Gearbox		
Worm Drive Gearbox (upper)	Spirex Exp 140	Oil Bath	1 / Monthly	Cabinet Top		
Worm Drive Gearbox (lower)	Spirex Exp 140	Oil Bath	1 / Monthly	Within Cabinet		
Bull/Star Gears	Grease	Brush	1 / Monthly	Bull/Star Gears		
Chuck Open/Close Cams	Grease	Brush	1 / Monthly	Upper Turret Cover		
Spindle Drive Shaft Bearings (upper)	Grease	Alemite	1 / Monthly	Turret Roof		
Spindle Drive Shaft Bearings (lower)	Grease	Alemite	1 / Monthly	Upper Turret Cover		

US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Cap Feed Assembly - TS						
Procedure No.: 80401 Revision: A Date: 17 Aug 09						

The cap feeder consists of a cap gate system that allows the opening and closing action of a small stainless steel gate. When this gate is open, the cap attempts to move through the chute into the cap star due to the pressure of the gravity-fed caps, as well as the air pressure of chute air jets. However, the cap will not be able to penetrate the pocket of the star until a pocket presents itself. If at that point the gate is still open, the cap will move out into the cap star and rotate between the cap star and the backup guide rail until it moves into position under the chuck jaw.

The chuck jaw will lower itself onto the cap and close around the exterior surface to pull the cap out of the cap star and away from the capping star plate. The logic of the cap gate is such that a signal will be provided for the cap gate to open only when a bottle is present on the conveyor and the timing sprocket below the capper indicates that the time has come to open the gate.

The cap gate is powered by compressed air and can be adjusted for the appropriate speed of the gate, as well as the pressure to close back against incoming caps. Excessive cap gate air pressure can slam the gate against the cap with such force that cap damage can occur. A flat cap star is critical in ensuring that the appropriate stack-up allowing a cap star and a gate to come in contact with the small surface of the cap will allow cap retrieval and proper placement underneath the chuck assembly. This system allows a nice, no bottle, no cap feature to exist. The cap gate will remain open when bottles are continuously present, yet still have the ability to hold back a cap randomly as required when a container is not available for capping purposes. The bottle-present eye should always be used, and caps should not be allowed to be continuously fed when containers are not present.

If the capper is slowly rotated by hand until a single cap is released from the cap chute into the cap star pocket, the operator will observe that an additional small angular movement of the cap star will allow the arm of the air actuator at the chute to move forward and stop the next cap from entering into the following cap star pocket. The cap star must have turned enough to prevent the arm from striking the cap that has just been released into the star pocket. This represents the angular position when the signal for the "no bottle/no cap" logic should be transmitted to the air solenoid that operates the air piston used to control the cap flow into the cap star.

Two pieces of hardware are required to provide the logic that operates the "no bottle/no cap" mechanism. When required, the bottle present sensor looks for the presence of a container so that a cap can be delivered.

At the same time that the bottle present sensor searches for a container, a sensor mounted on underneath also checks a timing tooth in an adjustable sprocket mounted on the star shaft. This sprocket contains one tooth for each of the capper pockets. This sprocket can be turned forward or backward to advance or retard the signal as required for proper fine tuning of the signal.

Since the cap arm must move quickly, the power is provided by a double acting air piston. The signal is controlled through an electrical solenoid mounted in the pneumatics panel which pilots a 5 port air valve. The air valve then routes the proper air signals to the air piston.

If the cap gate appears not to function properly, the first concern should be with the timing of the bottlepresent eye and the timing sprocket underneath the capper. These two signals must exist together to ensure that the gate opens.



The bottle-present eye can be obstructed to maintain the cap gate in the open position in order to ensure that caps flow properly from the chute, transfer plate, and into the cap star. Any tight-fitting areas may be enough to prevent the caps from flowing properly into the cap star. It is also important that the appropriate cap back pressure be available for top rated machine speed on a given cap to ensure their flow through the chute.

CAU	TION: DO	NO	Γ ALLOW TH	IE CAP (CHUCK	ASSEN	/IBLIES
ТО	COME	IN	CONTACT	WITH	THE	CAP	STAR.
COM	PONENT	DAM	1AGE WILL C	OCCUR.			

It also must be evaluated as to how the chuck assembly properly locates above the cap at jog speed as well as full speed, since the pneumatic system activating the closure of the chuck assembly will change slightly as speeds increase.

If the customer has steam in the area of the cap gate, the cap pivot arm bushing should be checked to determine if it is swollen and ream this I.D. as necessary to ensure that it does not bind the capping gate pivot arm. The Bimba cylinder should also be reviewed to ensure that it has not developed any corrosion along the stroking piston, so that it properly strokes.

US BOTTLERS MACHINERY COMPANY						
Procedure: Feed Worm/Conveyor Timing - TS						
Procedure No.: 80407 Revision: A Date: 20 Sep 09						

There are two socket head cap screws located in the worm-driving flange. Loosen these setscrews so that the feed worm can be revolved by hand.

Time the feed worm so that when a container is in the last thread of the worm (closest thread to the feed star), and the machine is rotated by hand, the bottle moves into the pocket of the feed star with about 1/8 or 1/4 inch clearance behind the back of the preceding star pocket at the instant the last worm thread releases the container. When proper timing is achieved, retighten the setscrews.

NOTE: Container shape differences may have an affect on the proper timing setting.

The conveyor speed is to be slightly faster than the final lead of the feed worm so the bottle is always held against the leading front edge of the worm.

Set the feed worm so that its diameter is in line with the radius of the center guide. Adjust the worm bracket so as to achieve a smooth transition from the worm to the center guide. Adjust the feed worm parallel with the conveyor and the limit rail, and then retighten all setscrews.

NOTE: Following feed worm adjustment, the limit switch may also require adjustment.

US BOTTLERS MACHINERY COMPANY					
Procedure: Limit Rail Adjustment - TS					
Procedure No.:	80408	Revision:	А	Date:	20 Sep 09

A properly positioned limit rail is oriented so that its face rests just behind the deepest portion of the infeed star's pocket. Loosen the quick release levers located on each adjustment bracket to adjust the limit rail forward or backward as required. Retighten the levers to secure its position.



US BOTTLERS MACHINERY COMPANY						
Procedure: Mechanical Detent Clutch - TS						
Procedure No.: 80411 Revision: A Date: 08 Feb 10						

The detent clutch provides a means of varying the break away torque. Two flange units are attached to each of two concentrically located shafts. These two flanges are pushed together and connected by a number of balls resting in dimples in the flanges. Manual adjustment determines the amount of torque required to force the balls from the dimples that holds the flanges apart.

The clutch is factory lubricated and normally requires very little maintenance except occasional lubrication through fittings located on the side of the unit.

CAUTION: LUBRICATION OF THE CLUTCH IS TO BE PERFORMED IN ACCORDANCE WITH ITS PREVENTIVE MAINTEANCE SCHEDULE. LUBRIATE LIGHTLY TO PREVENT SLIPPAGE DURING OPERATION.

A proximity switch and mounting bracket is provided with the detent clutch. This switch must be accurately positioned in order to register the disengagement of the clutch. It is important that the detent be checked occasionally to ensure that when the detent clutch does disengage, it trips the proximity switch to stop the machine.

Under normal operation, when the clutch is under high pressure, there is a slight separating of the two clutch flanges. The design of the feed star shaft is such that a small vertical movement of the star shaft is not detrimental to the equipment. There are not any limiting devices on the star shaft that will pose problems. Loads are not transmitted to the input or output shaft due to this allowable float. The vertical movement of the shafts should be minimal - no more than 1/32 inch.

If the machine can be rocked forward and back with a large amount of backlash, one may assume that the detent clutch is beginning to wear or is loose. When the clutches' dimpled driving flange plate begins to wear, the angular alignment between the input shaft and the output shaft becomes excessive. Since the clutch no longer positions the load balls in a perfectly round dimpled pocket, the flange, as it wears, produces a groove in the pocket and the clutch turns greater amounts without disengaging. As the wear continues, the clutch allows backlash, and larger amounts of tension is necessary for the same engagement pressure.

CAUTION: OPERATION OF THIS EQUIPMENT WITHOUT PROPER ELECTRICAL CONTROLS MAY RENDER THIS HARWARE INOPERABLE AND VOID ALL WARRANTIES RELATIVE TO THESE DRIVE TRAIN COMPONENTS.

WARNING: FAILURE TO PROPERLY USE THIS SAFETY SYSTEM MAY RESULT IN PERSONAL INJURY.



US BOTTLERS MACHINERY COMPANY						
Procedure: Discharge Star Timing - TS						
Procedure No.:	80415	Revision:	A	Date:	20 Sep 09	

DISCHARGE STAR TIMING (For Core Mounted Stars)

A properly positioned discharge star is oriented so that the star's pocket is aligned 1/16" behind the bottle. To adjust, loosen two set bolts to rotate the star to the proper position on the core plate and retighten the set bolts.



US BOTTLERS MACHINERY COMPANY					
Procedure: Crossover Plates, Bedplates, and Conveyor Wear Strips - TS					
Procedure No.:	80417	Revision:	А	Date:	11 Feb 10

Review the crossover plate to ensure that the bottle action of moving on and off the conveyor is smooth. When necessary, replace the crossover plate or adjust it upwards to ensure proper transfer. The crossover plate is to always be vertically positioned so that it is slightly higher so the container traveling off the plate doesn't trip.

If the bed plate covers become worn or warped, they should be replaced. If the bedplates are badly worn, three things can occur:

- 1) the containers will jostle on the bed plate when entering the filler causing the filling tube to have difficulty aligning with the opening of the bottle;
- 2) 2) spilled liquid can become trapped on the bed plate and drip down through the attachment screws accelerating corrosion; and
- 3) 3) properly filled bottles will not smoothly exit the machine.

Conveyor wear strips that support the conveyor motion and the return conveyor chain section must be inspected to ensure that they have not worn through. Only chain lubricant is necessary for the conveyor wear strips.



US BOTTLERS MACHINERY COMPANY					
Procedure: Capper Pneumatic Panel - TS					
Procedure No.:	80421	Revision:	А	Date:	10 Mar 10

The only preventive maintenance or troubleshooting issues relate to the air fittings, air line connections, and replacement solenoids. There is a pressure switch mounted inside the pneumatics panel that can be adjusted by the customer to ensure that if the air pressure falls below an acceptable level the capper will stop. An indicator light will illuminate and the machine will not operate until this problem has been resolved.



US BOTTLERS MACHINERY COMPANY					
Procedure: Capper Chuck Shafts & Rollers - TS					
Procedure No.:	80427	Revision:	А	Date:	05 Feb 10

Improper cap applications can be the result of worn or damaged capper head components. It is critical that each chuck shaft remain straight and undamaged for proper vertical movement of the head assembly. Inspect the cam rollers to ensure that they have not developed flat spots and that they properly roll on the cam.

ATTENTION: In a reverse capper application, it is critical to ensure that these have not become loose and remain tight to the carrier roller block so that the rollers do not disengage, causing the chuck shaft to drop.

Ensure the bushings that are pressed into each head plate where the chuck shafts and head plate pillars slide in and out, are not worn and are free of product. Excessive slop in these areas will also lead to improper cap applications.

Review the cam and cam lift sections to ensure that the roller hardware has not worn a groove in the cam. If the cam begins to show signs of wear, it can be reshaped in order to ensure proper rolling action. In the event that it is worn excessively, these sections are to be replaced.



US BOTTLERS MACHINERY COMPANY					
Procedure:	Cap Star Timing - TS				
Procedure No.:	80434	Revision:	А	Date:	

CAP STAR TIMING

Figure 1, Cap Star Timing



Figure 2, Cap Star Timing

US BOTTLERS MACHINERY COMPANY					
Procedure:	Troubleshooting ⁻	Table (PG-RC) - TS			
Procedure No.:	80480	Revision:	А	Date:	01 Oct 09

Symptom	Possible Cause/Solution
- Cymptom	- Incorrect food worm in upp: Engure the food worm and the
	 Inconect need worm in use. Ensure the need worm and the container type match.
Containers not properly separated by feed worm.	 Incorrect clearance between worm and limit rail: Ensure positioning with proper spacing.
	• Leading edge of worm excessively worn: Order replacement sending three sample containers to USB.
	Conveyor speed set too low: Adjust the timing speed of the feed worm.
	• Worm improperly timed: Adjust the timing speed of the feed worm.
	 Conveyor speed too fast or slow: Adjust the conveyor timing speed to work in unison with the feed worm.
	• Incorrect feed worm in use: Ensure the feed worm and the container type match.
star.	• Incorrect infeed star in use: Ensure the infeed star and the container type match.
	• Feed worm and limit rail improperly positioned: Reposition the feed worm and limit rail.
	Limit switch incorrectly set: Reset as necessary.
	 Uneven worm crossover plate: Check for smoothness and shim if needed.
	Improper timing of discharge star: Adjust discharge star timing.
	 Improper setting of discharge guide finger: Adjust guide finger setting.
Container not properly leaving capper.	 Improper conveyor speed: Adjust the conveyor timing speed to work in unison with the feed worm.
	 Improper crossover plate height: Ensure flush height, shim or adjust shim as required.
	 Improperly adjusted feed star: Adjust as necessary.
	Use of incorrect attachments: Change as required.
Con not containing on container	 Head improperly timed: loosen clamp bolts, adjust as required, retighten.
opening.	Clamp belt not holding container in pocket: Increase air pressure to clamp belt.
	Clamp belt distorting container: lower air pressure to clamp belt.
	 Cap cocked in chuck jaws: Check for proper gripping. Inspect for excessive flash on cap. Lower air pressure to cap jaw.

	Low air pressure to cap belt: Increase air pressure to cap belt.			
	Clutch slipping: Increase torque on cap clutch.			
Low cap torque.	Jaw slipping: Tighten grip pressure.			
	Machine running below setup speed: Increase machine speed.			
	Low cap jaw grip: Increase air pressure to cap jaw.			
	Over torquing: Decrease torque on cap clutch.			
Scored cap.	 Incorrect chuck jaws: Install proper chuck jaws. 			
	Machine running above setup speed: Decrease machine speed.			
	Foreign material on jaws: clean jaw assemblies.			
	Low air pressure to chuck jaws: Increase air pressure.			
Chuck iour dropping copp	Chuck jaw not closing: Disassemble, clean, and polish.			
Chuck jaw dropping caps.	Machine running above designated speed: Decrease speed.			
	 Discharge star out of time: adjust timing. 			
	Jammed cap chute: clear jam.			
Missing caps.	• Cap gate not releasing caps: Incorrect gate assembly. Gate air lines not connected. Photo eye not seeing container in worm. Defective sensors on discharge star.			
	Use of incorrect attachments: change as required.			
	Incorrect cap for container: Load as required.			
	Worn keyways on drive shaft: Replace all worn parts.			
	 Loose keyless bushings: Tighten as required. 			
Rocking condition in capper.	Worn detent clutch: Replace as required.			
	Worn drive pinion gear/bull gear: Replace as required.			
	Worn main gearbox components: Rebuild as required.			
Jerking action while capper rotates.	 Slides binding on lift cam: check for bent shafts and rods. Check for worn bushings. 			
	• Slide binding: Check for bent shaft and bushing. Clean and lubricate.			
Noise at certain capper station.	• Worn or high point in gear: inspect and adjust or replace as required.			
	• Interference between rotating table and a fixed piece: eliminate interference as required.			
	Malfunctioning detent clutch: Replace as required.			
	 Capper slides binding on lift cam: Inspect for bent slides and worn bushings. Clean. 			
Unable to turn machine under power.	• Main bearing failure: ensure adequate clearance between capper cabinet top and rotary base. Replace bearing as required.			
	Feed worm binding: Check for worn bearings.			
Noise in center of machine when not cycling.	 Main bearing failure: Replace as required. Ensure proper lubrication. 			
Machine on owneds and set of time	Stretched chain or belt: Check tension.			
wachine as a whole goes out of time.	Worn gear teeth: Replace gears as required.			

Machine as a whole very erratic.	• Electronic short possible: Inspect for machine short to ground. Inspect all electrical devices for shorts to ground.
	Low air pressure: Replace kinked air lines. Open flow valves. Replace supply with larger pipes.
	Incorrect sorter wheel: Install correct sorter wheel.
Sorter not feeding caps.	Incorrect discharge guide: Install correct guide.
	• Upper chute eye not detecting caps: Eye not aligned with reflector. Eye not aligned and sensing chute rails. Blocked or defective chute eye.

US BOTTLERS MACHINERY COMPANY					
Procedure: Capper Spindle Drive Belt Replacement - RM					
Procedure No.:	80505	Revision:	А	Date:	20 Apr 09

1. Power down the machine.

WARNING: ENSURE THE POWER SUPPLY IS DISCONNECTED AND FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES BEFORE PERFORMING ANY MAINTENANCE ACTIVIES.

- 2. Loosen four set nuts/bolts (1) securing motor/gearbox (2) to mounting plate (3).
- 3. Manually move motor/gearbox (3) inward to relieve tension on worn drive belt (4) between pulleys (A) and (B).
- 4. Remove two bolts (5) securing bearing assembly (6) to spacers (7). Lift away assembly (6).
- 5. Withdraw worn drive belt (4) from pulleys (A) and (B) and install replacement belt (4) in its place.
- 6. Apply bearing assembly (6) onto spindle (9) and secure to spacers (8) using two bolts (5).
- 7. Manually maneuver motor/gearbox (2) outward to provide tension on replacement belt (4) between pulleys (B) and (A).

NOTE: A properly adjusted belt will be tensioned so as to prevent slippage, but not provide excessive drag on the drive mechanisms.

8. Tighten four set nuts/bolts (1) to secure motor/gearbox (2) in position on mounting plate (3).


US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Clamping Belt Replacement - RM						
Procedure No.:	80524	Revision:	А	Date:	24 Feb 10	

The spring loaded pulley assembly is the apparatus that provides tension to an installed clamping belt. To remove a clamping belt, manually twist the spring loaded pulley inward toward the clamp star thereby relieving pressure. Then lift the clamping belt upward and away from all of the pulleys.

To install a clamping belt, route the belt around all of the pulleys – saving the spring loaded pulley for last. Manually twist the spring loaded pulley toward the clamp star sufficiently to move the belt down and around that pulley. If the belt seems to be too loose or too tight, one or both of the adjustable pulleys may be loosened and adjusted as necessary. To fine tune the belt's tension, adjust pressure to the pneumatic cylinder at the machine's pneumatic regulator block.

ATTENTION: The capper's clamping belt is considered a high-wear item. Always ensure that spares are maintained in inventory.



US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Chuck Shaft, Pillar, & Bushings Replacement - RM						
Procedure No.:	80541	Revision:	А	Date:	28 Apr 10	

- 1. Remove two screws (1) securing spindle gear (2) to chuck shaft (3).
- 2. Lift spindle gear (2) along with rod assembly (4) from chuck shaft (3). Set aside to reinstall.
- 3. Unscrew chuck assembly (5) from chuck shaft (3). Set aside to reinstall.
- 4. Remove two screws (6) from upper collar (7). Lift away collar (7) and set aside to reinstall.

NOTE: Upper and lower set collars (7) and (9) are different designs and must be kept separated during the disassembly process. Do not mix parts.

- 5. Remove two screws (8) from lower collar (9). Lift away collar (9) and set aside to reinstall.
- 6. Remove two screws (10) from lower collar (11). Lift away collar (11) and set aside to reinstall.
- 7. Remove two bolts with washers (12) securing pillar (13) to upper head plate (14) and lower head plate (15).
- 8. Pivot carrier block (16) so that pillar (13) is clear of head plates (14) and (15).



- 9. Withdraw pillar (13) along with spring (17) from carrier block (16). Discard pillar (11) if damaged, set aside to reinstall if not. Set aside spring (17).
- 10. Withdraw chuck shaft (3) from upper and lower spacers (18), carrier block (16), and upper and lower head plates (14)(15). Discard chuck shaft (3) if damaged, set aside to reinstall if not.
- 11. Tap worn bushings (19) from upper head plate (14) and lower head plate (15) and discard.

- 12. Press replacement bushings (19) into head plates (15) and (14).
- 13. Tap worn upper and lower bushings (20) from carrier block (16) and discard.
- 14. Press replacement bushings (20) into each end of carrier block (16).
- 15. Insert chuck shaft (3) into bushings (19), carrier block (16), and spacers (18).
- 16. Insert pillar shaft (13) through bushing (20) in carrier block (16).
- 17. Insert spring (17) onto lower end of pillar (13).
- 18. Secure pillar (11) to lower head plate (13) and upper head plate (12).
- 19. Apply collar (11) to pillar shaft (13) at its base beneath spring (21), secure using two screws (10).
- 20. Apply lower collar (9) to chuck shaft (3) and secure using two screws (8).
- 21. Apply upper collar (7) to chuck shaft (3) and secure using two screws (6).
- 22. Screw chuck assembly (5) onto the lower end of chuck shaft (3).
- 23. Insert rod assembly (4) along with gear (2), into the upper bore of chuck shaft (3).
- 24. Align the setscrew bores of spindle gear (2) with those of the chuck shaft (3).
- 25. Apply Locktite 242 to the threads of screws (1).
- 26. Secure gear (2) to chuck shaft (3) using two screws (1).



US BOTTLERS MACHINERY COMPANY						
Procedure: Cap Gate Cylinder Replacement - RM						
Procedure No.:	80543	Revision:	А	Date:	21 Apr 10	

The cap gate cylinder is the mechanical device that opens and closes the cap gate assembly through pneumatic supply from the pneumatic regulator block. Since the cylinder is constantly opening and closing during machine operation, eventually the cylinder's piston seals will deteriorate and the cylinder in turn, will fail. To replace the cylinder, follow the instructions below.

- 1. Locate pneumatic regulator block (1) and remove pneumatic supply to the cap gate assembly.
- 2. Detach pneumatic connectors (2) from fittings (3).
- 3. Unthread fittings (3) from defective cylinder (4).
- 4. Withdraw cotter pin (5) and washer (6) from pivot pin (7).
- 5. Withdraw pivot pin (7) from bracket (8) followed by defective cylinder (4).
- 6. Unthread adjustment nut (9) then unthread defective cylinder (4) from clevis (10).
- 7. Thread replacement cylinder (4) into clevis (10) and then swing its free end into bracket (8).
- 8. Insert pivot pin (7) into bracket (8) and cylinder (4).
- 9. Secure pivot pin (7) using washer (6) followed by cotter pin (5). Spread the ends of cotter pin (5).
- 10. Apply thread tape to threads of fittings (3) and screw onto cylinder (4).
- 11. Connect pneumatic connectors (2) to fittings (3), then restore pneumatic supply at block (1).
- 12. Adjust cylinder (4) piston as necessary for proper function, then secure using nut (9).



US BOTTLERS MACHINERY COMPANY						
Procedure: Capper Knockdown Button, Rod, & Spindle Gear Replacement - RM						
Procedure No.:	80544	Revision:	А	Date:	21 Apr 10	

- 1. Detach snap ring (1) from within spindle gear (2).
- 2. Lift cam button (3) along with rod (4) slightly from gear (2).
- 3. Measure and record the distance of set nut (5) from button (3).
- 4. Loosen set nut (5), then unscrew worn button assembly (3) from rod (4). Discard worn button (3).
- 5. Perform steps 6 and 7 only if spindle gear (2) requires replacement. Advance to step 10 if not.
- 6. Remove two setscrews (7) from gear (2), then lift spring (6) and gear (2) from chuck shaft (8).
- 7. Apply replacement gear (2) to shaft (8), then place spring (6) onto top.
- 8. Rotate replacement gear (2) on shaft (8) to align their respective holes.
- 9. Apply Locktite 242 to the threads of two setscrews (7), then tighten into gear (2) and shaft (8).
- 10. Apply Locktite 242 to the threads of replacement button (3), then screw into rod (4).
- 11. Adjust and tighten nut (5) to the same distance as that removed.
- 12. Lower button (3) into gear (2) and secure using snap ring (1).



US BOTTLERS MACHINERY COMPANY					
Procedure: Capper Cam Roller Replacement - RM					
Procedure No.:	80550	Revision:	A	Date:	06 May 10

In order to replace a worn roller, the carrier block must be spun around so that the capper's drum does not impede its removal. Cam rollers are considered high-wear components due to their continued revolution upon the capper's cam. Follow the procedure below to replace a worn cam roller.

- 1. Remove two bolts with washers (1) securing pillar (2) to upper ring (3) and lower ring (4).
- 2. Pivot carrier block (5) along with pillar (2) to gain access to roller assembly (6).
- 3. Remove bolt (7) securing worn roller assembly (6) to carrier block (5).
- 4. Secure replacement roller assembly (6) to carrier block (5) using bolt (7).
- 5. Manually rotate carrier block (5) until pillar (2) is positioned between rings (4) and (3).
- 6. Secure pillar (2) to rings (4) and (3) using two bolts with washers (1).



US BOTTLERS MACHINERY COMPANY Procedure: Capper Carrier Block Bearing Replacement - RM Procedure No.: 80552 Revision: A Date: 28 Apr 10

- 1. Remove two setscrews (1) securing spindle gear (2) to chuck shaft (3).
- 2. Lift spindle gear (2) along with rod assembly (4) from chuck shaft (3). Set aside to reinstall.
- 3. Unscrew chuck assembly (5) from chuck shaft (3). Set aside to reinstall.
- 4. Remove two screws (6) from upper collar (7). Lift away collar (7) and set aside to reinstall.

NOTE: Upper and lower set collars (7) and (9) are different designs and must be kept separated during the disassembly process. Do not mix parts.

- 5. Remove two screws (8) from lower collar (9). Lift away collar (9) and set aside to reinstall.
- 6. Loosen setscrews (not shown) securing carrier block (11) to chuck shaft (3).
- 7. Withdraw chuck shaft (3) from upper and lower spacers (10), carrier block (11), and upper and lower head plates (12)(13). Set aside to reinstall.



- 8. Withdraw worn carrier bearings (14) from the top and bottom of carrier block (11).
- 9. Insert replacement carrier bearings (14) into the top and bottom of carrier block (11).
- 10. Insert chuck shaft (3) into upper head plate (12), spacers (10), carrier block (11), and lower head plate (13).
- 11. Tighten setscrews (not shown) to secure carrier bearings (14) to chuck shaft (3).
- 12. Apply lower collar (9) to chuck shaft (3) and secure using two screws (8).
- 13. Apply upper collar (7) to chuck shaft (3) and secure using two screws (6).

- 14. Screw chuck assembly (5) onto the lower end of chuck shaft (3).
- 15. Insert rod assembly (4) along with gear (2), into the upper bore of chuck shaft (3).
- 16. Align the setscrew bores of spindle gear (2) with those of the chuck shaft (3).
- 17. Apply Locktite 242 to the threads of setscrews (1).
- 18. Secure gear (2) to chuck shaft (3) using two setscrews (1).
- 19. Lubricate bearings (14).

