



Spindle/Snap Capper Addendum

Revision A



E-PAK Machinery, Inc.

1535 South Highway 39
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(800) 328-0466 www.epakmachinery.com

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Snap Capper

The snap capper is much like the spindle capper. The main assembly of the spindle capper is replaced with the snap capper compression belt assembly.

Spindle/Snap Capper

A Spindle/Snap Capper is combination of two machines. The main assembly of the spindle capper remains in the machine and the snap capper compression belt assembly is added.

(See the following attached print of the compression belt assembly)
5006-003

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REV.	REV. DATE	DESCRIPTION	REV.	REV. DATE	REV.
B		QTE ALL PURCHASE PARTS P/F'S		4-22-02	LD

ITEM	QTY.	DESCRIPTION	DWS/PART NO.
1	1	BAR, CROSS (SNAP CAPPER CHILL)	1010-142
2	1	BAR, CROSS (SPINDLE/SNAP CAPPER)	1010-212
3	1	BLOCK, STABILIZER HEIGHT ADJUSTMENT	1011-348
4	1	BLOCK, HANGER	1011-342
5	2	BRACKET, HANGER	1000-027
6	1	BAR, SHAFT	1010-210
7	1 EA.	BRACKET, HANGER (L.H. & RH.)	1000-028
8	2	BRACKET, ROLLER MTC.	1000-178
9	1	SHAFT, IDLE	1004-333
10	1	SHAFT, TENSION ROLLER	1004-158
11	1	TENSION ROLLER, FLANGED	1002-017
12	2	TENSION ROLLER, FLANGE	1002-087
13	7	P/W PLATE BRG. 1/2" ID-5/8" OD x 1.00 LG.	1074-057
14	1	SAGED NEEDLE ROLLER BRG. - TORRINGTON	1077-061
15	2	SHOULDER BOLT 1/2" x 1 1/2" LG.	1050-186
16	2	FLAT WASHER 1/2"	
17	4	FLAT HD. SOCKET CAP SCREW 5/16-18 x 7/8 LG.	
18	4	HEX. HD. CAP SCREW 1/4-20 x 1" LG.	
19	4	FLAT WASHER 1/4"	
20	4	LOCK WASHER 1/4"	
21	1	HEX. HD. CAP SCREW 3/8-16 x 3 1/2" LG.	
22	1	FLAT WASHER 3/8"	
23	1	LOCK WASHER 3/8"	
24	2	HEX. HD. CAP SCREW 5/16-18 x 2" LG.	
25	6	HEX. HD. CAP SCREW 5/16-18 x 1 1/2" LG.	
26	2	HEX. HD. CAP SCREW 5/16-18 x 7/8 LG.	
27	10	FLAT WASHER 5/16"	
28	10	LOCK WASHER 5/16"	
29	1	BELT, TIMING	1000-102
30	2	FOLLOW BLOCK 1/2" BORE - DAYTON	1100-607
31	1	GUIDE, SNAP CAPPER BELT BACKING	1024-505
32	1	PULLEY, AL 3/4" BORE 1 1/2" O.D. DIA.	1078-058
33	2	SHAFT SET COLLAR, 20 ID.	

PREPARED BY: EBC-1171 DRAWN BY: SPINDLE/SNAP CAPPER CHECKED BY: CLAYTON B. BENTON DATE: 11/21/01		E-PAK MACHINERY, INC. 1535 SOUTH HIGHWAY 39 LA PORTE, INDIANA 46350 USA (800) 328-0466
PART NO. 5008-003 REV. 1 DATE 11-21-01 DRAWN BY BENTON		

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3-Station Screw Capper Manual

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1.0 SAFETY

1.1 GENERAL SAFETY

E-PAK Machinery designs and manufactures all of its products so they can be operated safely. However the real responsibility for safety rests with those who use and maintain these products. The following safety precautions are offered as a guide that if conscientiously followed, will minimize the possibility of accidents throughout the useful life of this equipment.

Only those who have been trained and delegated to do so and have read and understood this Operator's Manual should operate all equipment. Failure to follow the instructions, procedures and safety precautions in this manual can result in accidents and injuries.

DO NOT modify the equipment except with written factory approval. Equipment modifications will void warranty.

Each day walk around the equipment and inspect for leaks, parts which are loose, missing or damaged components and parts out of adjustment. Perform all recommended daily maintenance noted in this manual.

EQUIPMENT SHOULD ALWAYS BE DE-ENERGIZED BEFORE MAKING MECHANICAL ADJUSTMENTS.

1.2 ELECTRICAL SHOCK

- To avoid electrical shock hazard, make sure this equipment is properly grounded.
- Keep all parts of the body and hand held tools, or other conductive *objects away from* exposed live-parts of electrical system. Maintain dry footing, stand on insulating surfaces and DO NOT contact any portion of the equipment when adjusting or making repair to exposed live parts of electrical system.
- Attempt repair methods only in clean, dry, well-lighted and ventilated area.
- Dangerous voltages are present within the electrical enclosures. DO NOT operate this equipment with electrical covers open or removed.

1.3 CONTACT MATERIALS COMPATIBILITY

E-PAK endeavors to make all contact parts compatible with buyer's products, if known. Because of the wide variety of possible products, E-PAK Machinery cannot be responsible or liable for ensuring compatibility of contact material with products. Evaluate material compatibility prior to machine use. Failure to follow this procedure can result in machine damage, fire, operator injury or death.

1.4 SAFETY COMPLIANCE LIABILITY

E-PAK endeavors to make machinery as safe to operate as possible. National, state and local laws related to safety in the workplace, apply primarily to the responsibilities of the employer, and not the equipment manufacturer. The seller agrees to cooperate with the buyer in finding feasible answers to compliance problems. However, because E-PAK has little control of the many factors which may significantly affect the environment that this equipment is installed, the seller does not warrant this equipment to be in compliance with OSHA or any like state or local laws or regulations. It is the buyer's responsibility to provide the modifications necessary to assure compliance with the laws and regulations at the point of installation ***A complete inspection of product is necessary until the machinery is proven to produce acceptable results. This should also be performed after every changeover.***

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2.0 MACHINE FEATURES & SPECIFICATIONS

2.1 INTRODUCTION: CW-2X00 Economy Semi-Automatic Capper CW-3X00 Standard Semi-Automatic Capper

A central control panel controls the operation of this capper. Easily adjustable containment belts and tightening spindle wheels enable quick set-up and operation of your E-PAK machine. The operator may alter speeds with the use of speed dials. With the addition of the cap chute this versatile machine places the chute supplied cap onto the container, and tightens. An operator can supply the chute as a semi-automatic application, or the application can be fully automated with the addition of a cap sorter. The cap sorter unscrambles bulk caps, orients the caps, and supplies the cap chute for a fully automatic application. A fully automatic capper is shown in Figure 4-1.

2.2 PERFORMANCE SPECIFICATIONS

- Actual Capping Rate: dependent upon bottle length and stability
(Up to 200 products per minute)
- Accuracy: ± 5 in/Lbs is traditional on a 38/400 cap finish
(Sample testing will validate accuracy at determined speed)
- Utilities: 115VAC, 60Hz, 20AMPS
(Additional options will increase current rating)
(Other supply voltages available)

2.3 MECHANICAL DIMENSIONS & LOADING

- Height: 61" (may increase when conveyor is raised)
- Width: 41.5"
- Length: 29"(approx. 54" with cap chute)
- Approximate Net Shipping Weight: 725 lbs. (271 kg) (capper only) Weight varies considerably with options.

2.4 ELECTRICAL SPECIFICATIONS & REQUIREMENTS

Voltage AC: 110VAC, 1 PHASE, 60 Hz @ 20AMPS (requirements may vary with options)

2.5 AIR SPECIFICATIONS & REQUIREMENTS

Air Requirements: 90 PSI @ 5 CFM

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3.0 INSTALLATION & START-UP

3.1 INSTALLATION PROCEDURES

NOTE: If the capper appears to have any damage, or missing parts, you must report it to E-PAK Machinery's Service Dept. at (800) 328-0466 prior to operation.

Your E-PAK capper can be installed by an E-PAK service technician. Please contact your regional sales manager or E-Pak service department for availability and pricing. In order to facilitate installation, your company should have installed a main disconnect switch with branch circuit protection. An air line of 100 PSI @ 10 CFM should also be available.

The installation of the capping machine begins with leveling the capper conveyor so that product flows without restriction to the entry separating device or to the gripper belts. The capper should then be positioned so that the gripper-belts are center and level with the conveyor. Connect the conveyor motor and all optional separator cables to the control unit.

3.2 START-UP & COMMISSIONING

This manual should be read completely before powering-up the capping system. Commissioning of the capper should be performed by a trained technician with products that match samples provided to E-PAK Machinery.

3.3 REQUIRED CALIBRATIONS & ADJUSTMENTS

Your E-PAK capping machine has many adjustments to allow for a variety of cap-bottle styles and sizes. Cap size adjustments can be made with the chute, spindles, and cap stabilizer. Bottle size adjustments can be made to the capper main housing height, gripper belts width, and gripper belt height adjustments. (Figure 4-1)

- Gripper Belts: should be adjusted so that the belts contact the strongest surface of the container. The belts should also be positioned as close to the neck finish as possible.
- Cap Stabilizer: should be positioned 1/32" above the staged cap in the chute with the stabilizer front foot angle positioned in the center of the cap.
- Tightening Spindle Wheels: should be adjusted to contact the closure (cap) evenly on both sides without moving the container side to side, or forward to back.
- Cap Chute: must be adjusted after the belts are positioned. Grasp the container with the belts, then with the chute adjusted to contain the cap on top and sides. The cap should be position at the fingers, hanging to be picked (stripped) by the bottle neck finish.
- Air Clutch: should be adjusted to slightly stall the 3rd set of spindles to eliminate sliding friction and provide a consistent torque.
- Conveyor: should be railed to smoothly enter the bottles into the gripper belts. The conveyor speed should also match the speed of the gripper belts.
- Separator: is an optional unit that runs slightly slower than the conveyor to provide a gap between bottles. The separator should contact the bottle near the bottom of the bottle to avoid tipping.

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4.0 OPERATION

4.1 THEORY OF OPERATION

The cap tightening completion unit with a chute is a semi-automatic capping system that positions cap on the bottle, and tightening wheels spin down the cap as the bottle is stabilized by gripping belts. Adding a cap sorting bowl upgrades the capper to an automatic system. The cap sorter will supply the chute on demand with caps correctly positioned for stripping from the chute. The stripping of the cap begins with gripping the bottle with belts, and moving the container to the chute. The strip is completed with the neck of the bottle pulling the cap out of the containment end of the chute onto the bottle. The cap is prevented from moving by the contact of the cap stabilizer, and the tightening spindle wheels rotate the cap onto the bottle.

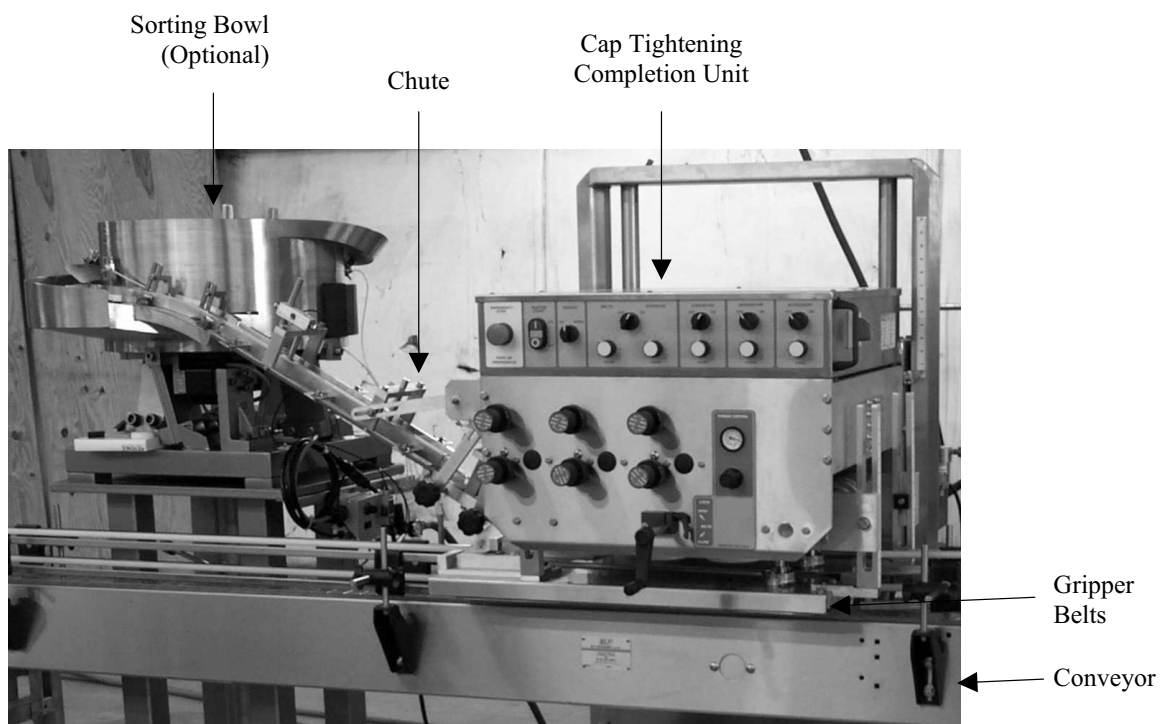


Figure 4-1
CW-3000 with vibratory sorter, adjustable cap chute and double gripper belts.

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4.2 ADJUSTMENT FOR BOTTLE AND CAP

- Adjust the gripper belt spacing to provide adequate clearance for the container to be moved freely by hand within the capping chamber. This is to accommodate the first steps of setup and will be reset later.
- Raise the cap stabilizer enough to provide room for future adjustment.
- Adjust the width of the tightening spindles to allow sufficient clearance for the bottle and cap. Do this by loosening the inner lock screw knob.
- Place a container with a cap resting loosely atop its threads in the entry of the capping chamber.
- Adjust the machine height by pressing the height control switch on the faceplate in the appropriate direction until the top of the tightening wheels are even with the top of the cap, or by turning the crank if you have the manual height actuator.
- Adjust the chute channel width using the adjustment knob. Caps should slide down the channel without restriction.
- Adjust the cap chute height guide to allow comfortable transfer of the cap held in the retainer fingers to the top of the container neck finish. Adjustments are made by loosening the chute mounting bolts. The chute must be in line, or parallel with the conveyor belt.
- With the container still in the capping chamber, adjust the height of the gripper-belt T-nut retainer enough for the belts to be moved with light force.
- Position the belts nearest the top of the container at the strongest point on the bottle.
- Using the measuring scales on both ends of the belts, insure that the measurement is the same to obtain a level belt.

NOTE: Belts out of level will cause a bind condition.

- Insure the belts are level to one another.
- Close the belts onto the bottle by use of the gripper-belt crank handle on the faceplate.
- Insure that the belts contain the bottle without distortion to the bottle or neck finish.
- Jog the machine by quickly turning on the main power allowing the bottle to enter the capper and stripping a cap.
- Center the bottle between the first set of tightening wheels and adjust the spindles to touch, but not tilt, the bottle.
- Do the same to all three sets of tightening wheel sets.
- Repeat jogging another bottle into the capper. Tighten all wheels evenly 1/8 (45°) rotation until the container has achieved the tightness desired. The center set of wheels will allow for a slightly harder touch on the cap.
- Lock adjustment knobs on tightening wheels and lock pin on the gripper-belts.

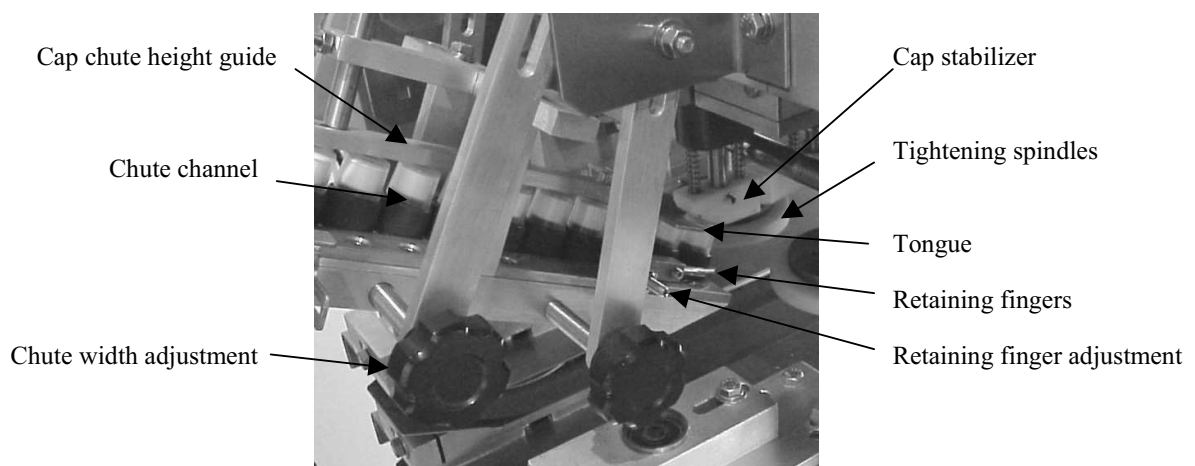


Figure 4-2
Chute Head

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4.3 MACHINE ADJUSTMENTS AND PROCEDURES

- See adjustments to bottle and cap (Section 4.2).
- Caps may have to be contained more in the chute by tightening the tension of the spring-loaded finger. This is a good benchmark for small caps.
- Caps may have to be contained less in the chute by loosening the tension of the spring-loaded finger.
- The retaining fingers may need to be repositioned near the bottom of the cap for tall caps. This is a good benchmark for tall caps.
- Belt tension is adjusted by loosening the lock bolt on the top of the bearing assembly on the entry to the capper chamber. Then, tighten the bolt on the front of the bearing block to tight belt tension. The proper tension should provide ½” to ¾” of slack in the belt.

CAUTION: Too much belt tension could cause damage to the Tolomatic right angle drives.

4.4 AIR CONTROL SYSTEM

The air pressure system provides a means of supplying pressurized air for operating the system, which consists of the following parts:

- Air Pressure Gauge: provides a visual means of monitoring the pressure applied to the system (Figure 4-3).
- Air Pressure Regulator: is used to mechanically maintain a set air pressure to the system. This component regulates the amount of air pressure to 90PSI without changing the flow of air available to the valves.
- Air Filter Water Trap: provides a means of connecting to an air source, filtering some of the impurities and water associated with compressed air (Figure 4-4).

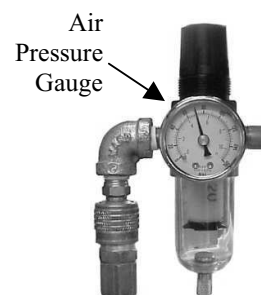


Figure 4-3
Air Regulator



Figure 4-4
Air Filter
Water Trap

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5.0 CONTROLS

5.1 CONTROLS & LOCATIONS

The capper controls are located on the capper faceplate. The main power switch sends power to the machine. The 2-position toggle switches are for an optional conveyor, separator, or an f-style cap spacer. The controls for the height adjustment for the capping head and the rotary speed adjustments for gripper-belts and spindle wheels are on the faceplate as well.

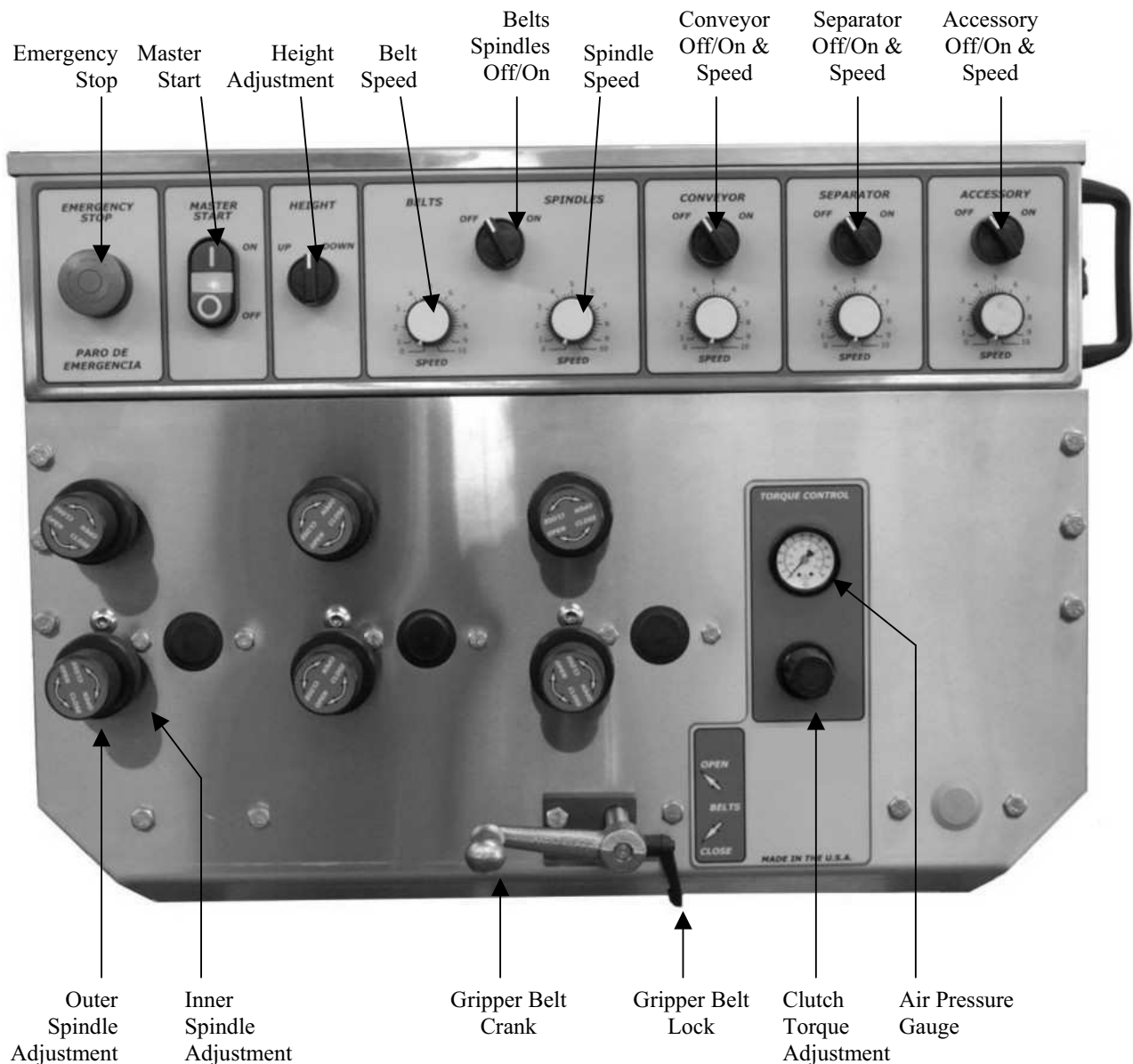


Figure 5-1
Standard Model Control Locations

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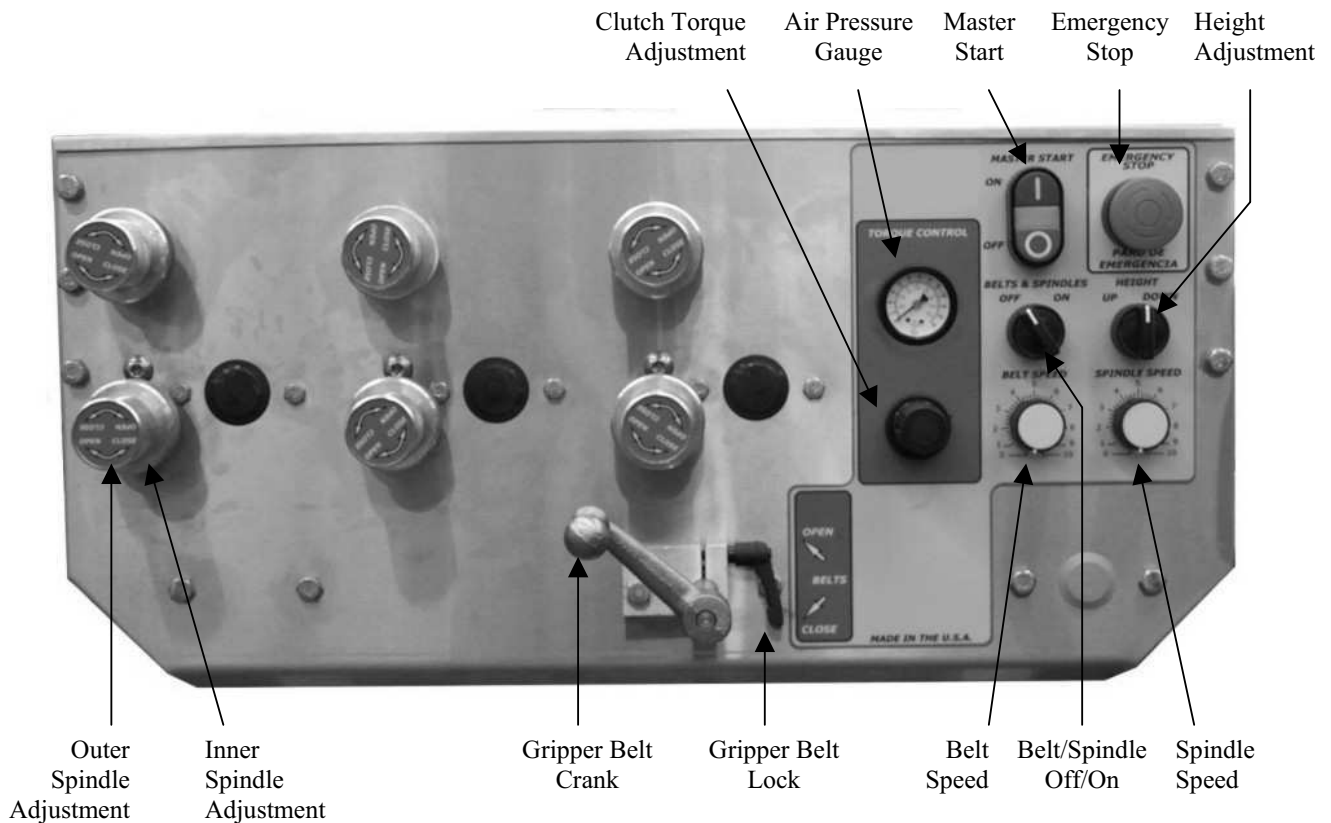


Figure 5-2
Economy Model Control Locations

5.2 CONTROL DESCRIPTIONS

- Emergency Stop: stops all power to the machine.
- Master Start: switch that turns capping machine on or off.
- Conveyor Off/On: toggle switch that turns the conveyor on or off.
NOTE: Conveyor can still run if main power is turned off.
- Conveyor Speed Dial: adjusts the speed of the conveyor.
- Separator Off/On: toggle switch that turns the separator on or off.
NOTE: Separator can still run if main power is turned off.
- Separator Speed Dial: adjusts the speed of the separator.
- Spindle Speed: digitally adjusts the speed of the spindles.
- Gripper Belt Speed: digitally adjusts the speed of the Gripper-Belts.
- Height Adjustment: raises or lowers the capper head.
NOTE: Capper head can still raise & lower if main power is turned off.
- Torque Clutch Adjustment: adjusts the air pressure going to the clutch which runs the third set of spindles.
- Air Gauge: shows the amount of air going to the clutch.
- Gripper Belt Crank: adjusts the gripper belts in or out for different bottle sizes.
- Gripper Belt Lock: locks the crank in place.
- Inner Spindle Knob: locks the spindle so its position can't change during operation.
- Outer Spindle Knob: adjusts the spindles in or out.
NOTE: Inner spindle knob must be unlocked to adjust the outer spindle knob.
- Circuit Breaker Button: 8 amp breakers for the gripper belt and spindle motor.

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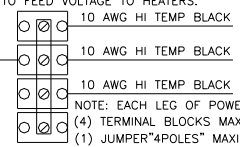
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5.3 ELECTRICAL WIRING DIAGRAMS & SCHEMATICS

PLEASE NOTE: THESE ARE FOR REFERENCE ONLY, AND MAY NOT APPLY TO YOUR PARTICULAR MACHINERY. PLEASE REFER TO YOUR MACHINE SPECIFIC DOCUMENTATION.

GENERAL WIRING AND PANEL CONSTRUCTION NOTES

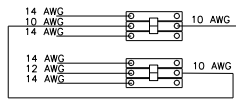
NOTE: SAMPLE OF POWER LAYOUT FOR HIGH CURRENT TERMINAL BLOCK USED TO FEED VOLTAGE TO HEATERS.



NOTE: EACH LEG OF POWER WILL NEED
(4) TERMINAL BLOCKS MAXIMUM CURRENT 105 AMPS #1203-301
(1) JUMPER "4POLES" MAXIMUM CURRENT 105 AMPS #1203-302

NOTE: IF LESS THEN 4 TERMINAL BLOCKS ARE USED,
MUST CUT JUMPER TO FIT NUMBER OF BLOCKS.

NOTE: SAMPLE OF POWER LAYOUT OF STANDARD TERMINAL BLOCK.
NOTE: STANDARD TERMINAL BLOCKS FOR 25 AMPS MAXIMUM CURRENT.



NOTE: THIS SAMPLE OF POWER LAYOUT OF TERMINAL BLOCKS ARE TO BE THREE (3) TERMINAL BLOCKS AND, (2) JUMPERS PER SET.

- 1: WIRE ALL DEVICES TOP TO BOTTOM—POWER ENTERS AT THE TOP OR LEFT SIDE, THEN EXITS AT BOTTOM OR RIGHT.
- 2: CANADA & THE UNITED STATES WHITE WIRE CAN ONLY BE USED FOR 115VAC NEUTRAL.
- 3: GREEN, OR GREEN & YELLOW WIRE USED ONLY FOR GROUND.
- 4: MAIN FUSE MUST BE TYPE "FRN OR FNO" ONLY.
- 5: ALL PNEUMATIC VALVES MUST BE MOUNTED ON OUTSIDE OF CONTROL ENCLOSURE (EXCEPTION: HAZARDOUS LOCATION).
- 6: TO AVOID POTENTIAL ELECTRIC SHOCK, MUST COVER FILTER AND DC MOTOR DRIVES WITH "PVC" COVER.
- 7: TO MEET CE SPECIFICATIONS IT IS NECESSARY TO SHIELD THE MOTOR LEADS FROM THE CONTROLLER TO THE MOTOR. AND GROUND AT EACH END.
- 8: IT IS NECESSARY TO SHIELD THE ANALOG SIGNAL AND THE GROUND AT THE POTENTIOMETER END. (DO NOT CUT BACK SHIELD MORE THAN 1").
- 9: ALL SOLENOID VALVES MUST BE GROUNDED.
- 10: MOUNT FILTER ON FLAT SURFACE.
- 11: LOW VOLTAGE MUST BE SEPARATED FROM HIGH VOLTAGE.
- 12: ENCLOSURE DOOR REQUIRES A DEDICATED GROUND WIRE.
- 13: ALL GROUNDS MUST BE TERMINATED TO A SINGLE GROUND BAR.
- 14: TERMINAL BLOCKS AND WIRE MUST BE SIZED TO LOAD.
- 15: MINIMUM SIZE WIRE TO BE USED FOR ALL DC MOTOR DRIVES POWER FEED IN AND DC POWER OUT: 14 AWG.
- 16: ALL MOTORS MUST HAVE DEDICATED GROUND WIRE.
- 17: POWER CABLE E-PAK#1219-260 MAXIMUM CURRENT RATING OF 15 AMPS AT 115VAC.
- 18: CONTROL ENCLOSURES THAT REQUIRE MORE THEN 15 AMPS CANNOT USE POWER CABLE E-PAK#1219-260.
- 19: FILL HEAD VALVES MUST BE ISOLATED FROM ALL OTHER MACHINE VALVES.
- 20: MAXIMUM OF SIX (6) FILL HEAD VALVES PER MANIFOLD IS ALLOWED.
- 21: ALL STANDARD 22.5mm SWITCHES: 10 AMPS OR LESS.
- 22: SUPPLY TANK DRAIN SWITCH OPTION REQUIRES PUSH BUTTON COVER E-PAK#1216-596.
- 23: SHIELDED CABLE MUST BE USED BETWEEN FLOAT SYSTEM CONTROLLER OPTION "INTRINSICALLY SAFE RELAY" AND FLOAT.
- 24: MINIMUM WIRE SIZE ON HEATERS: 12 AWG.
- 25: HEATERS REQUIRE A DEDICATED GROUND.
- 26: THERMOCOUPLES REQUIRE THE USE OF THERMOCOUPLE CABLE/WIRE INSIDE ENCLOSURE.
- 27: THERMOCOUPLES REQUIRE THE USE OF THERMOCOUPLE TERMINAL BLOCK E-PAK#1203-280.
- 28: THERMOCOUPLE WIRING TYPE AND POLARITY SPECIFIED: "J TYPE", RED LEAD - AND WHITE LEAD +.
- 29: MINIMUM SIZE GROUND WIRE TO BE USED OUTSIDE OF ENCLOSURE: 14 AWG.
- 30: EUROPEAN ORDERS REQUIRE THE USE OF WIRE END CAPS/FERRULES
- 31: VACUUM SYSTEMS REQUIRE DEDICATED PNEUMATIC VALVE(S) TO BE ISOLATED & PRESSURE REGULATED FROM ALL OTHER VALVES
- 32: RESERVE SPACE IN PANEL FOR PLC CARD EXPANSION, 4" OR MORE ON THE RIGHT SIDE OF THE PLC
- 33: COOLING FAN USED IN ENCLOSURE MUST HAVE DEDICATED GROUND.

NOTE: THIS LINE AROUND ANY PART OF THIS PRINT IS AN "OPTION IF NEEDED".

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WIRE COLOR CODE

BLACK :	AC POWER
GRAY :	DC POWER (90VDC)
RED:	AC CONTROL (115VAC) (115VAC PLC INPUTS AND OUTPUTS).
BLUE:	DC CONTROL/Common/ 0V (24VDC PLC INPUTS AND OUTPUTS).
BROWN:	DC POWER (+24VDC).
YELLOW:	INTERLOCK OR EXTERNAL POWER (IN THE UNITED STATES & CANADA-UL/NEC/CSA).
ORANGE:	INTERLOCK OR EXTERNAL POWER (IN EUROPE-CE).
WHITE*:	NEUTRAL (IN THE UNITED STATES & CANADA-UL/NEC/CSA).
LIGHT BLUE**:	NEUTRAL (IN EUROPE-CE).
GREEN W/YELLOW***:	GROUND
PINK:	24VAC
PURPLE:	LOW VOLTAGE OTHER THEN 24VDC (INHIBIT, TIMERS, ETC).
SHIELDED CABLE:	INTRINSICALLY SAFE CONTROLS AND MOTOR SPEED POTENTIOMETER.

* ONLY THE NEUTRAL CONDUCTOR FOR THE UNITED STATES AND CANADA CAN BE WHITE.
NO OTHER CONDUCTOR CAN BE WHITE!

** ONLY THE NEUTRAL CONDUCTOR FOR EUROPE CAN BE LIGHT BLUE.
NO OTHER CONDUCTOR CAN BE LIGHT BLUE!

*** ONLY THE GROUND CONDUCTOR CAN BE GREEN W/YELLOW STRIPE.
NO OTHER CONDUCTOR CAN BE GREEN W/YELLOW STRIPE!

NOTE: TAPING OR COLORING CONDUCTOR INSULATION TO ACHIEVE PROPER COLOR CODING IS ACCEPTABLE.

PNEUMATIC TUBING COLOR CODE

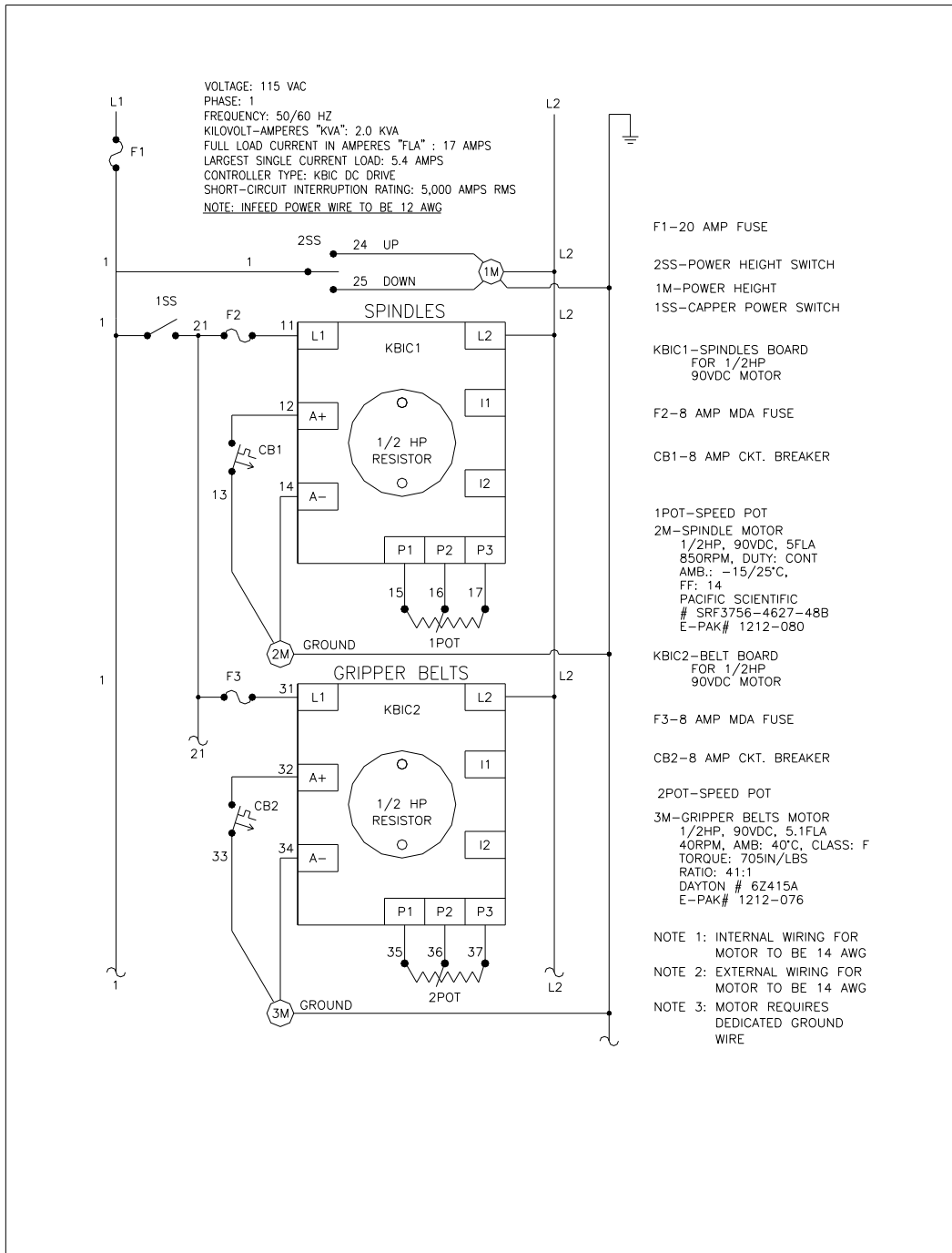
BLACK :	RETRACT OR OFF
WHITE :	EXTEND OR ON

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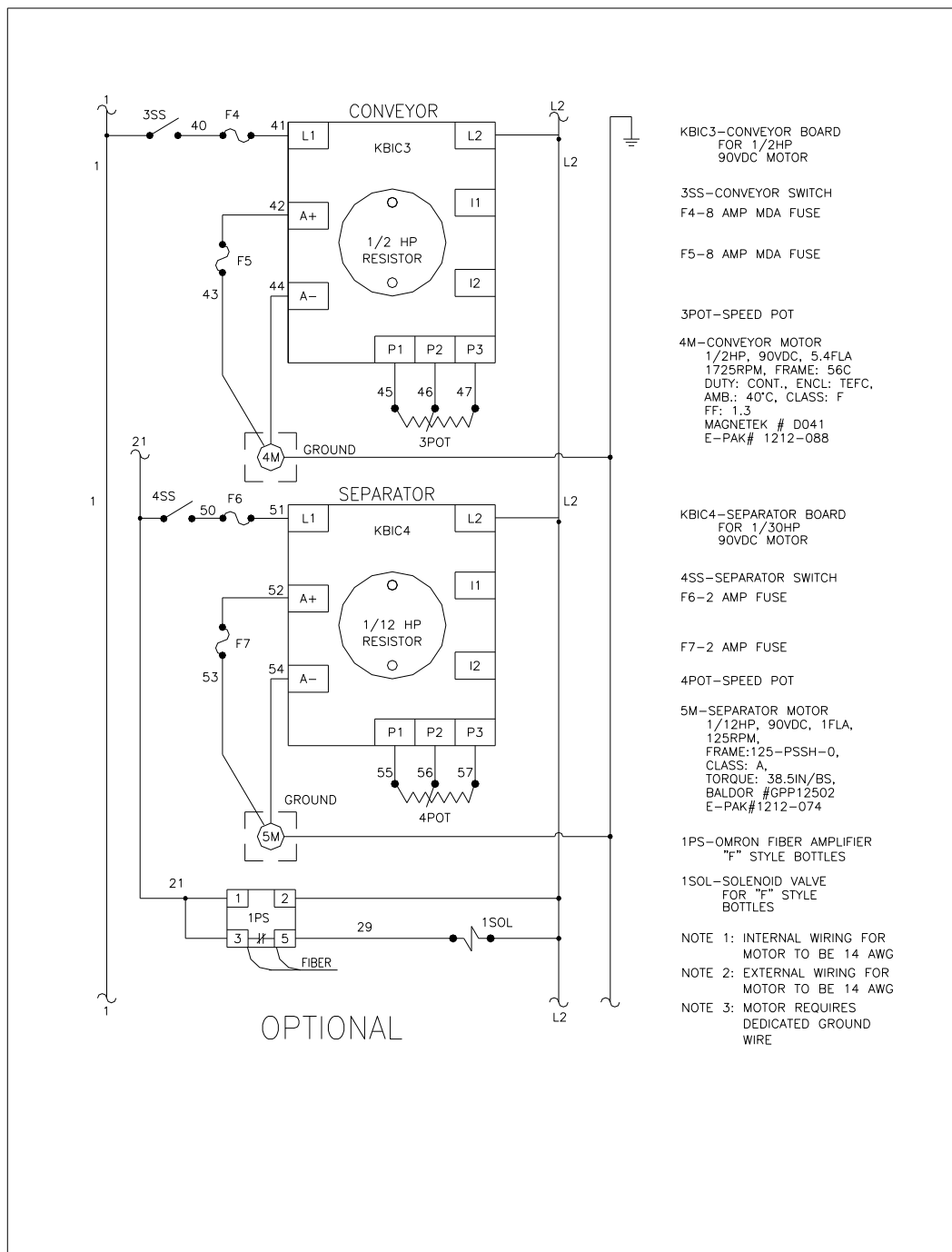


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6.0 SERVICING

6.1 RECOMMENDED MAINTENANCE SCHEDULE

COMPONENTS	DAILY	WEEKLY
Check Gripper Belt Tension	X	
Lubricate vertical shafts	X	
Check Gripper-Belts for large cracks or splits	X	
Check Spindles for excess wear	X	
Inspect grease lines for grease and insert grease	X	
Inspect tightness of all adjustment		X
Inspect drive chain and sprockets for excessive wear		X
Inspect connectors for fit and electric cables for cuts		X

- Where grease is required, the recommended type is Valvoline high temperature all-purpose grease, or any other compatible NLGI No. 2 lithium or food grade grease.
- Lubricate the vertical shafts with silicone spray.

6.2 MAINTENANCE PROCEDURES

WARNING: Disconnect power at the source, place breaker off and disconnect power cord before performing any maintenance or cleaning procedures.

6.2.1 SOLID STATE MOTOR SPEED CONTROLS

The KBIC controllers can be tested for proper output as follows:

1. With the equipment power off, disconnect the control panel potentiometer, digital or otherwise, from the controller. Test the potentiometer for its proper maximum resistance of 5K ohms.
2. After establishing that the potentiometer is working properly, reconnect it to the KBIC controller board. With the motor connected to the controller, as well as all other required connections, turn on the equipment's main power.
3. Check the AC voltage from ground to across the AC fuse.
4. If the AC is at the proper level for the equipment, check the DC voltage from ground to across the DC output fuse.
5. Adjust the potentiometer and check for variable output at the proper level for the equipment.
6. If any of these tests fail, check the related fuse or potentiometer, replacing it if there is any doubt. If this does not correct the problem, replace the controller.

6.2.2 MOTORS

If any of the motors fail to operate and the controller have passed the diagnostic tests, do the following:

1. Disconnect the motor from the circuit. Using an ohmmeter, test for open or shorted windings.
2. If moderate resistance is detected, the windings are good. If either zero or infinite resistance is detected then, accordingly, a shorted or open winding is present, and the motor should be replaced.
3. If no defects are detected in this test, check the motor by clipping an external DC power supply with at least 15 amp rating to the motors power wires, applying voltages within the equipment's rating.
4. If the motor still fails to operate, it must be replaced.

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6.2.3 GRIPPER DISK REPLACEMENT

1. Hold gripper disk assembly tightly by hand.
2. Using a 7/8 wrench, loosen Trantorque bushings and slide gripper disk assembly from spindle shafts.
3. Remove the (4) flat head screws. Remove worn wheel and replace with new one.
4. Replace retainer disk and insert screws tightening them in counter order (top, bottom, right, left).
 - Make sure all screws are tightened evenly or the gripper wheel will not spin true.
 - Make sure retainer disk and hub are free of burrs and debris. This will cause the wheel to not spin true.
5. Replace gripper disk assembly on spindle shaft and tighten Trantorque bushings (do not over tighten).
 - Bottom of bushing should be flush with bottom of shaft.

6.2.4 SPINDLE SHAFT REMOVAL

1. Open gripper belts all the way.
2. Close spindle assembly.
3. Remove the 5/8" retaining ring on the bottom of the green hub.
4. Loosen the (2) 6-32 set screws, and remove hub.
5. While holding on to the shaft, remove the locking collar and thrust washer on top of the shaft.
6. Insert 5/8" chaser tube while pulling shaft through the bottom of the Tolomatic.
 - Chaser tubes must be inserted whenever a shaft is removed from a Tolomatic, so as not to lose the drive key that is in the Tolomatic.

6.2.5 SMALL TOLOMATIC REMOVAL

1. Loosen set screws of pillow blocks that the horizontal drive shaft is running through.
2. Remove back cover.
3. Loosen all set screws on spindle shaft support, and remove.
4. Remove spindle drive chain, and v-belt.
5. The drive shaft should now slide in either direction.
6. It is recommended that you slide the shaft out through the back of the machine. This will allow you to leave the sprockets and air clutch tight.
 - Chaser tubes must be inserted whenever a shaft is removed from a Tolomatic.
 - To remove the drive shaft of the first set of spindles, the sprocket must be removed.
 - Remove the locking collar that is visible, and loosen the set screws on the sprocket.
 - Push the shaft forward to remove the sprocket.
 - Leave the locking collar on the backside of the sprocket tight, this will provide for ease in reassembly and sprocket alignment.
7. Once shaft is clear of the Tolomatic, remove the vertical drive shaft.
8. Remove the grease line from the Tolomatic to be replaced
9. Remove the (4) 1/4-20 nuts and replace the Tolomatic by reversing these 9 steps
 - All 3 drive shafts should be set flush with the pillow block bearings on the faceplate.
 - Slide the sprockets against the locking collars, and they should be aligned.
 - Make sure all keys are replaced.
 - It is recommended that you use Loctite on all set screws.

6.2.6 GRIPPER BELT REPLACEMENT

1. Remove the (4) truss head screws on bottom cover of the belt assembly.
 - You may have to either raise the capper head or push the capper offline.
2. Loosen the 5/16" bolt on top of the bearing block.
3. Remove belt tension by loosening the tensioner bolt.
4. Replace the belt and reverse these 3 steps.

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6.2.7 IDLER PULLEY REPLACEMENT

1. Remove the gripper belt.
2. Loosen the set screws on the pulley.
 - One of the set screws is tightened into a hole on the shaft of the bearing. This screw should be saved for use in the new pulley.
3. Place new pulley on shaft and tighten the set screws, making sure the longer set screw goes into the hole on the shaft.
 - Be sure to check the bearing while the pulley is off. If there is any side to side movement of the shaft, or excessive grinding or clicking, then it should be replaced.

6.2.8 DRIVE PULLEY REPLACEMENT

1. Remove the gripper belt.
2. Remove the retaining ring on the top of the vertical drive shaft.
 - Chaser tubes must be inserted while removing any shaft from a Tolomatic in this case you will need a 3/4" tube.
3. Loosen the set screws on the 3/4" pillow block.
4. Pull the drive shaft out following it with the chaser tube.
5. The pulley is pinned to the shaft with a 1/4" roll pin. Remove pin using a punch.
6. Replace worn pulley and reverse steps 1-5.

6.2.9 CLEANING FILTER / REGULATOR

- Open drain valve at the bottom of the bowl (turn clockwise) to drain any water accumulation.
- Inspect to detect cracking, damage, or other deterioration (replace if necessary).
- Clean filter element if dirty.
- Depressurize unit before removing bowl.
- Unscrew bowl and remove.
- Unscrew filter element retainer and let down vane plate disc assembly (replace if bad).
- Check o-ring on disc assembly (replace if bad).
- Unscrew spring cage and remove diaphragm and adjusting spring (replace if diaphragm is stiff or swollen).

NOTE: Clean metal parts with alcohol. Clean filter with air. Clean bowl with household soap.

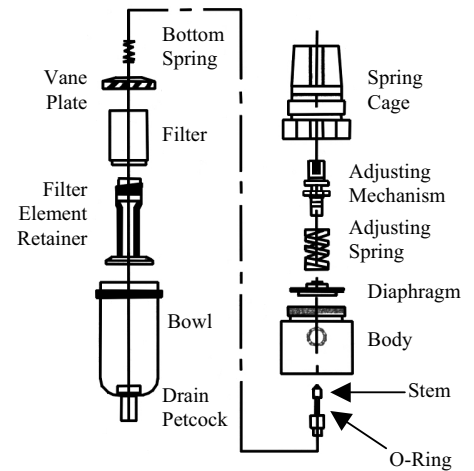


Figure 6-1
Filter/Regulator

6.3 MAINTENANCE LOG

COMPONENT	REPAIR DETAILS	REPLACEMENT DETAILS	DATE

6.4 SPARE PARTS LIST

DESCRIPTION	QTY	PART NUMBER
Gripper Disc, Yellow	24	1016-099
Pulley, Drive-Aluminum 3/4" Wide, 3/4" Bore (L-Series)	1	1076-061
Pressure Gauge, Faceplate	1	1208-002
Small Tolomatic - Left	1	1092-014
Sprocket, Gripper Drive	2	1037-048
Sprocket, Spindle Drive (standard capper)	2	1037-046
Sprocket, Spindle Drive (high speed capper)	2	1037-040
Sprocket, Spindle Drive - motor	1	1037-047
5/8" Thrust Washer	4	1005-062
Large Tolomatic- Right	1	1092-016
Large Tolomatic - Left	1	1092-017
Pulley, Idler-Aluminum 3/4" Wide, 5/8" Bore (L-Series)	1	1076-062
Gripper Belt, 3/4" Wide x 1/4" Thick x 60" long (L-Series)	2	1099-090
Bearing Block Assembly	2	5020-028
V- Belt	1	1099-108
Air Filter	1	1123-031
Air Regulator	1	1114-002
Stabilizer spring	2	1108-020
3/4" Bore pillow block	2	1100-004
5/8" Bore Pillow block	2	1100-008
5/8" External Snap ring	4	1031-016
3/4" External Snap Ring	4	1031-017
#40 Roller Chain (19 links) Gripper Drive	19 Links	1059-032
#40 Roller Chain (32 links) Spindle Drive	32 Links	1059-032
Spring, Extension for Chute Finger - Light	2	1108-014
Spring, Extension for Chute Finger - Heavy	2	1108-012
Spring, Extension for Chute Finger - Medium (standard)	2	1108-013
Motor, Gripper Belts 1/2 HP 90RPM (high speed capper only)	1	1212-065
Trantorque Bushing	2	1074-114

6.5 FACTORY TECHNICAL SUPPORT

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E-PAK Machinery's Customer Service at (800) 328-0466, Ext. 409
E-PAK Machinery's Customer Service, Parts Dept. at (800) 328-0466, Ext. 601

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7.0 TROUBLESHOOTING

7.1 CAPPER TROUBLESHOOTING GUIDE

The information contained in the troubleshooting guide has been compiled from field report data and factory experience. It contains symptoms and usual causes for the described problems. However, DO NOT assume that these are the only problems that may occur. All available data concerning the trouble should be systematically analyzed before undertaking any repairs or component replacement procedures.

A detailed visual inspection is worth performing for all problems thus avoiding unnecessary additional damage to the machine.

Should your problem persist after making the recommended check, consult your E-PAK service technician.

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
Unit Fails to Operate	<ol style="list-style-type: none"> 1. Blown fuse or circuit breaker 2. Defective power switch 3. Loose connection at main power switch 	<ol style="list-style-type: none"> 1. Replace fuse or reset circuit breaker 2. Replace 3. Check, and tighten any loose wires
Spindle, or Gripper motor does not operate	<ol style="list-style-type: none"> 1. Blown fuse on KBIC board 2. Circuit breaker on faceplate blew 3. Loose motor connection 4. Chain too tight 	<ol style="list-style-type: none"> 1. Replace fuse 2. Reset circuit breaker 3. Tighten motor connections 4. Check chain tension, and make sure sprockets are aligned and tight
Excessive Noise	<ol style="list-style-type: none"> 1. Sprocket misalignment 2. Brushes on motor are worn 3. Sprockets are worn 	<ol style="list-style-type: none"> 1. Make sure sprockets are tight and aligned properly 2. Replace brushes or motor 3. Replace
Unit will not raise or lower	<ol style="list-style-type: none"> 1. Loose connection to motor 2. Shafts aren't lubricated 3. Actuator is no good 	<ol style="list-style-type: none"> 1. Tighten motor connections 2. Lubricate with silicone spray 3. Replace with new linear actuator
Spindles won't move in and out	<ol style="list-style-type: none"> 1. Locking knob is engaged 2. Debris has built up on the shafts 3. Tolomatics need lubricated 	<ol style="list-style-type: none"> 1. Disengage locking knob 2. Clean shafts off and check for burrs 3. Grease Tolomatics
Gripper belts won't adjust in and out	<ol style="list-style-type: none"> 1. Debris has built up on shafts 2. Set screws have worked loose, and the assembly is no longer square 	<ol style="list-style-type: none"> 1. Clean shafts off, and check for burrs 2. Crank sprockets should be flush against the 3/4" pillow blocks in the capper housing. Check and re-square if necessary

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7.2 TROUBLESHOOTING RECORD

To better assist you in troubleshooting, please record the following information with the model number from the frame, the problem that is occurring, speed of application, product characteristics (i.e. sport, flat, yorker, etc.).

Model: _____

Company Name: _____

Your Name: _____

Phone Number: _____

FAX Number: _____

Date: _____

ITEM	TYPE	SIZE	PROBLEM
<i>EXAMPLE: Cap</i>	<i>Yorker</i>	<i>35mm</i>	<i>Cap does not maintain a consistent torque.</i>

NOTES

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