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..... Motor Control Board

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..... 12 © HOBART CORPORATION 1999 Page 2 of 12 MODEL 2912SC SLICER GENERAL GENERAL The model 2912SC, ML-104832 is an automatic slicer that displays the Slicer Count. Six preset values can be user programmed for the slice count. OPERATION Refer to 2912SC Instructions Manual F-34213 (2/99). SERVICE INFORMATION This model can be serviced using 2000 Series Service Manual F-24569 02-98 and this manual. TOOLS Loctite Number 242, part number 520228, used on automatic motor mounting screws. Trimpot tool part number 539123 for adjustment of automatic low/high speeds. Page 3 of 12 MODEL 2912SC SLICER REMOVAL AND REPLACEMENT OF PARTS REMOVAL AND REPLACEMENT OF PARTS CAUTION: CERTAIN COMPONENTS IN THIS SYSTEM ARE SUBJECT TO DAMAGE BY ELECTROSTATIC DISCHARGE DURING FIELD REPAIRS. A FIELD SERVICE GROUNDING KIT IS AVAILABLE TO PREVENT DAMAGE. THE FIELD SERVICE GROUNDING KIT MUST BE USED ANYTIME THE COMPONENTS ARE HANDLED. 6. SLICE COUNT KEYPAD OR BEZEL 7. WARNING: UNPLUG UNIT BEFORE SERVICING. 8. 1. Remove "CARRIAGE TRAY ASSEMBLY". 2. Remove "KNIFE SHARPENER". 3. Turn the slicer up and resting on the sharpener side of the automatic base. 4. Remove the bottom cover by removing nine screws and pull cover upward from behind feet. Unscrew the upper right hand foot. A. Remove four screws to free automatic base from upper base and position automatic base as shown. 5. Disconnect motor wires in speed selector switch cavity and pull them from half grommet. Loosen screw in motor crank link assembly. When reinstalling, place the motor crank link flush with the end of the output shaft and tighten the bolt to 90 inch pounds. Remove retaining ring where motor drive link assembly is attached to the main link assembly. A. Pull motor crank link/motor drive link assemblies from main link assembly and automatic motor shaft. Remove four Allen screws and pull automatic motor from base. When installing the automatic motor mounting screws, use Loctite No. 242 and torque to 25 ± 3 inch pounds. 10. Remove two screws holding automatic/manual switch mounting bracket to automatic base and move out of the way to access slice count bezel mounting screws. 11. Remove six screws holding bezel and gasket to automatic base and carefully pull outward to access keypad cable. A. Disconnect cable from keypad. Page 4 of 12 MODEL 2912SC SLICER REMOVAL AND REPLACEMENT OF PARTS 12. Remove six nuts and lockwashers holding keypad to bezel. 13. Press keypad from bezel using your hands. 14. Clean keypad mounting surface of bezel with alcohol using a soft clean cloth prior to installation of keypad. 15. If installing a new keypad, remove protective paper from over buzzer and backing from perimeter of keypad. 16. Reassemble in reverse order. 17. Check unit for proper operation. 4. Remove four screws to free automatic base from upper base and position automatic base as shown. 5. Remove the upper electrical cover, by removing five screws. A. Pull cover on an angle away from the on/off switch outward and upward for removal. 6. Remove three screws to free switch bracket from base. SLICE SWITCH (3LS) WARNING: UNPLUG UNIT BEFORE SERVICING. 1. Remove "CARRIAGE TRAY ASSEMBLY". 2. Remove "KNIFE SHARPENER". 3. Turn the slicer up and resting on the sharpener side of the automatic base. 7. Remove two screws, nuts and lockwashers to free switch from switch bracket. 8. Remove P clamp. 9. Note location of switch wires, cut wire tie(s) and disconnect wires. 10. Reassemble in reverse order. 11. Check unit for proper operation. Page 5 of 12 MODEL 2912SC SLICER REMOVAL AND REPLACEMENT OF PARTS SLICER CONTROL BOARD MOTOR CONTROL BOARD WARNING: UNPLUG UNIT BEFORE SERVICING. 1. Remove "CARRIAGE TRAY ASSEMBLY". 2. Remove "KNIFE SHARPENER". 3. Turn the slicer up and resting on the sharpener side of the automatic base. WARNING: UNPLUG UNIT BEFORE SERVICING. 1. Remove "CARRIAGE TRAY ASSEMBLY". 2. Remove "KNIFE SHARPENER". 3. Turn the slicer up and resting on the sharpener side of the automatic base. 4. Remove the electrical cover assembly by removing eight screws and carefully pull assembly outward to access wiring connections. 5. Note the location of the wires and disconnect them. Remove the mounting hardware to free the board from the electrical cover assembly. Reassemble in reverse order. Check unit for proper operation. 5. Note the location of the wires and disconnect them. 6. Remove the mounting hardware to free the board from the electrical cover assembly. 7. Reinstall the board and connect the wires. 8. Perform "AUTOMATIC LOW/HIGH SPEED ADJUSTMENT", beginning at Step 5. 6. 7. 8. Page 6 of 12 MODEL 2912SC SLICER SERVICE PROCEDURES AND ADJUSTMENTS SERVICE PROCEDURES AND ADJUSTMENTS WARNING: CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TESTS OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND REPLY POWER TO TEST. THE MOTOR CONTROL BOARD AND AUTOMATIC DRIVE MOTOR TEST NOTE: DUE TO THE OPERATING CHARACTERISTICS OF THE MOTOR CONTROL BOARD, AN OPEN CIRCUIT OR A NO LOAD CONDITION AT J6 AND J7 MAY RESULT IN VOLTAGE READINGS WHICH COULD LEAD THE SERVICE TECHNICIAN TO AN INCORRECT CONCLUSION. 1. Remove "CARRIAGE TRAY ASSEMBLY". Disconnect the motor wires from J6 and J7 and continuity check the motor and motor wiring including the brushes. 2. Remove "KNIFE SHARPENER". A. 4 to 8 ohms is the normal range. 3. Turn the slicer up and resting on the sharpener side of the automatic base. B. Reconnect motor after continuity has been verified. WARNING: UNPLUG UNIT BEFORE SERVICING. 8. 9. Check for correct voltage to the slicer. 10. Turn the Index knob above "0". 11. Turn on the Slicer. 12. Place Lever in automatic position. 13. Press and release the SLICE/PAUSE switch. 14. Check for 120 VAC input at J2 and J1 of motor control board. 4. Remove the electrical cover assembly by removing eight screws and carefully pull assembly outward to access wiring connections. 5. Remove the bottom cover by removing nine screws and pull cover upward from behind feet. 6. Place the connected electrical cover assembly in front of the automatic base. 7. Carefully return the slicer to the upright position taking care to leave clearance between the automatic base and the electrical cover assembly. A. If incorrect, trace back to find the source of voltage loss. B. If voltage is present: 1) Disconnect J3 from motor control board. The automatic drive motor should run in low speed. 2) Disconnect J3 and J4, short the connectors on the board. The motor should run in high speed. 15. If the motor does not run as stated above, replace motor control board, and adjust as outlined in "AUTOMATIC LOW/HIGH SPEED ADJUSTMENT". 16. Reassemble and check for proper operation. Page 7 of 12 MODEL 2912SC SLICER SERVICE PROCEDURES AND ADJUSTMENTS 8. 9. 10. 11. AUTOMATIC LOW/HIGH SPEED ADJUSTMENT WARNING: UNPLUG UNIT BEFORE SERVICING UNIT. NOTE: The speed adjustment should be made with a cold automatic motor. Use the trimpot tool to make potentiometer adjustments. After each potentiometer adjustment on the motor control board the carriage assembly must cycle three complete strokes before the accurate adjusted strokes per minute are displayed. Turn the potentiometer clockwise for higher number of strokes, counterclockwise for a lower number. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 1. 2. 3. Remove "CARRIAGE TRAY ASSEMBLY". Remove "KNIFE SHARPENER". Turn the slicer up and resting on the sharpener side of the automatic base. 25. Reinstall the "CARRIAGE TRAY ASSEMBLY". Plug unit in. Turn unit on and place in automatic. Press tortoise key until only one LED is lit (low speed). Press slice/pause switch. If motor is not running, adjust low speed potentiometer clockwise until automatic motor runs. Press and hold tortoise key for two seconds to access carriage strokes per minute mode (all LEDs off). Adjust low speed potentiometer until 16 + or - 2 is displayed. Press hare key until carriage speed is on high (all speed LEDs lit). Adjust high speed potentiometer until 50 + or - 2 is displayed. Press slice/pause switch to halt carriage at home. Place unit in manual and turn off. Unplug unit. Remove "CARRIAGE TRAY ASSEMBLY". Turn the slicer up and resting on the sharpener side of the automatic base. Install the electrical cover assembly. Install the bottom cover. Place slicer on the feet and perform Steps 2 and 1 in this procedure. Check unit for proper operation. TESTING THE SLICER CONTROL BOARD WARNING: UNPLUG UNIT BEFORE SERVICING. 1. 4. 5. 6. 7. Remove the electrical cover assembly by removing eight screws and carefully pull assembly outward to access wiring connections. Remove the bottom cover by removing nine screws and pull cover upward from behind feet. Place the connected electrical cover assembly in front of the automatic base. Carefully return the slicer to the upright position taking care to leave clearance between the automatic base and the electrical cover assembly. Perform steps 1-7 and 9-13 of the "THE MOTOR CONTROL BOARD AND AUTOMATIC DRIVE MOTOR TEST". NOTE: 120 VAC REFERS TO THE HOT SIDE OF THE LINE VOLTAGE (BLACK WIRE). 2. Check for 120 VAC at slicer control board J3-4, J3-5, J3-6, J3-7, J3-8, J3-9 and J3-12. NOTE: J3-5, 6, 9 and J3-10 are inputs. 3. If voltages are not present, check the circuits associated with these terminals. 4. If other components check "OK", replace slicer control board. 5. Reassemble and check for proper operation. Page 8 of 12 MODEL 2912SC SLICER ELECTRICAL OPERATIONS ELECTRICAL OPERATION COMPONENT FUNCTION Slice Switch (3LS) - Monitors carriage tray movement for slice count and auto shutoff feature. Slice Count Keypad Indicates slice count. Six LEDs indicate carriage speed selected. Displays information in the service mode. Slicer Control Board Monitors conditions and controls operation of components. Automatic/Manual Switch (3S) Controls mode of operation. NOTE: 120 VAC REFERS TO THE HOT SIDE OF THE LINE VOLTAGE (BLACK WIRE). The following examples are based on a model 2912SC, 120/60/1 with Home Start, Wiring Diagram F-34151A. MANUAL SEQUENCE OF OPERATION (COUNTING UP) 1. 2. 3. 4. 5. 6. 7. AUTOMATIC SEQUENCE OF OPERATION Conditions: A. Correct voltage is supplied to slicer. B. Index knob is turned to "0" or above (Carriage Interlock Switch 1LS closed). C. Carriage Tray Assembly in the home position (Home Start Switch 2LS closed). D. On/off Switch 1SW in OFF position. E. Automatic/Manual 2S/3S Switch in manual position (2S contacts C-NC closed). F. Slicer plugged in 120VAC applied to 1SW4, J3-10, 1CR-2 and 2CR-2. Neutral applied to J3-11, 1CR-0, 2CR-0 and Motor Control Board J2. Operator pulls On-Off switch 1SW to start position. 120VAC applied to J3-9, J3-12, J3-8, J3-7, 1CR energizes through pin J3-7 on slicer control board. A. 1PL lights and 1MTR (knife motor) is energized through 1CR-2/4. 1CR locks through 1SW-4/1, 1LS and slicer control board. Display shows "0" slices and speed LED(S) are lit. Operator releases 1SW, 1SW-2/3 open, 1SW4/1 stay closed. Operator manually moves carriage transport assembly through one complete stroke, passing slice count switch 3LS and returns to home position. Slice count display increases by one slice per each complete carriage stroke. NOTE: This sequence begins with conditions as stated in Steps 1A thru 1F under "MANUAL SEQUENCE OF OPERATION (COUNTING UP)" in this manual. 1. Operator pulls On-Off switch 1SW to start position. 120VAC applied to J3-9, J3-12, J3-8, J3-7. 1CR energizes through pin J3-7 on slicer control board. A. 1PL lights and 1MTR (knife motor) is energized through 1CR-2/4. 2. 1CR locks through 1SW-4/1, 1LS and slicer control board. 3. Display shows "0" slices and speed LED(S) are lit. 4. Operator releases 1SW, 1SW-2/3 open, 1SW4/1 stay closed. 5. Operator makes speed selection. 6. Operator turns manual/automatic lever to automatic position. Normally open contacts of 2S and 3S close. 120VAC applied to J3-5 thru 2S. A. 120 VAC Neutral at J3-3 from slicer control board. 7. Enter a slice count, if desired. The PRESET LED lights. 8. Operator presses slice/pause switch. Slicer Control Board switches to the automatic mode. 9. 2CR energized through 1SW, 2LS, 2S, J3-5, J3-3 and 3S. A. Page 9 of 12 2CR -2/4 close, 120VAC through 2CB-AB to J1 on motor control board. MODEL 2912SC SLICER ELECTRICAL OPERATIONS 10. Motor control board energizes 2MTR (Automatic Drive Motor). Automatic Carrier Assembly moves and engages pawl on Carriage Transport Assembly. A. 11. Carriage Transport Assembly passes the slice count switch 3LS, on the forward stroke. A. If a slice count other than zero was selected, the count decreases by one. B. If a slice count was not selected, count display increases by one. If the slice count reaches 99, it returns to zero on the next stroke, and a beep will sound. 12. Carriage begins the return stroke. When the unit counts DOWN to zero, the motor speed is reduced as the carriage returns HOME. Display returns to preselected number and the PRESET LED remains lit. NOTE: The motor speed is reduced as the carriage returns HOME to ensure the carriage does not coast beyond the home position. 13. If the Slice/Pause switch is operated anytime during the carriage stroke, the carriage returns home and stops. NOTE: The motor speed is reduced as the carriage returns HOME to ensure the carriage does not coast beyond the home position. Page 10 of 12 MODEL 2912SC SLICER ELECTRICAL OPERATIONS WIRING DIAGRAM Page 11 of 12 MODEL 2912SC SLICER - TROUBLESHOOTING TROUBLESHOOTING NOTE: This troubleshooting covers those symptoms unique to the model 2912SC. SYMPTOM Automatic drive motor (2MTR) will not start, knife motor running. POSSIBLE CAUSES 1. Circuit breaker (2CB) tripped. 2. Automatic/Manual switch 2S/3S inoperative. 3. Relay (2CR) malfunction. 4. Motor control board malfunction. 5. Slicer control board malfunction. 6. Slice count keypad malfunction. 7. Automatic drive motor (2MTR) inoperative. 1. 2CR inoperative. 2. Slicer Control Board malfunction. 1. Slice switch (3LS) malfunction. 2. Slicer control board malfunction No counting of slices, automatic drive motor won't stop when slice/pause switch pressed (automatic operation). 1. Slice switch (3LS) malfunction. 2. Slicer control board malfunction Up/Down arrow for speed selection pressed, next led does not light. 1. Slice count keypad malfunction. 2. Slicer control board malfunction. Beeper on continuously. 1. Slicer Control Board malfunction. Auto Starts, then stops when it leaves home position. No counting of slices. Form 24642 (MARCH 1999) Printed in U.S.A. Thank you for your participation! * Your assessment is very important for improving the workof artificial intelligence, which forms the content of this project