

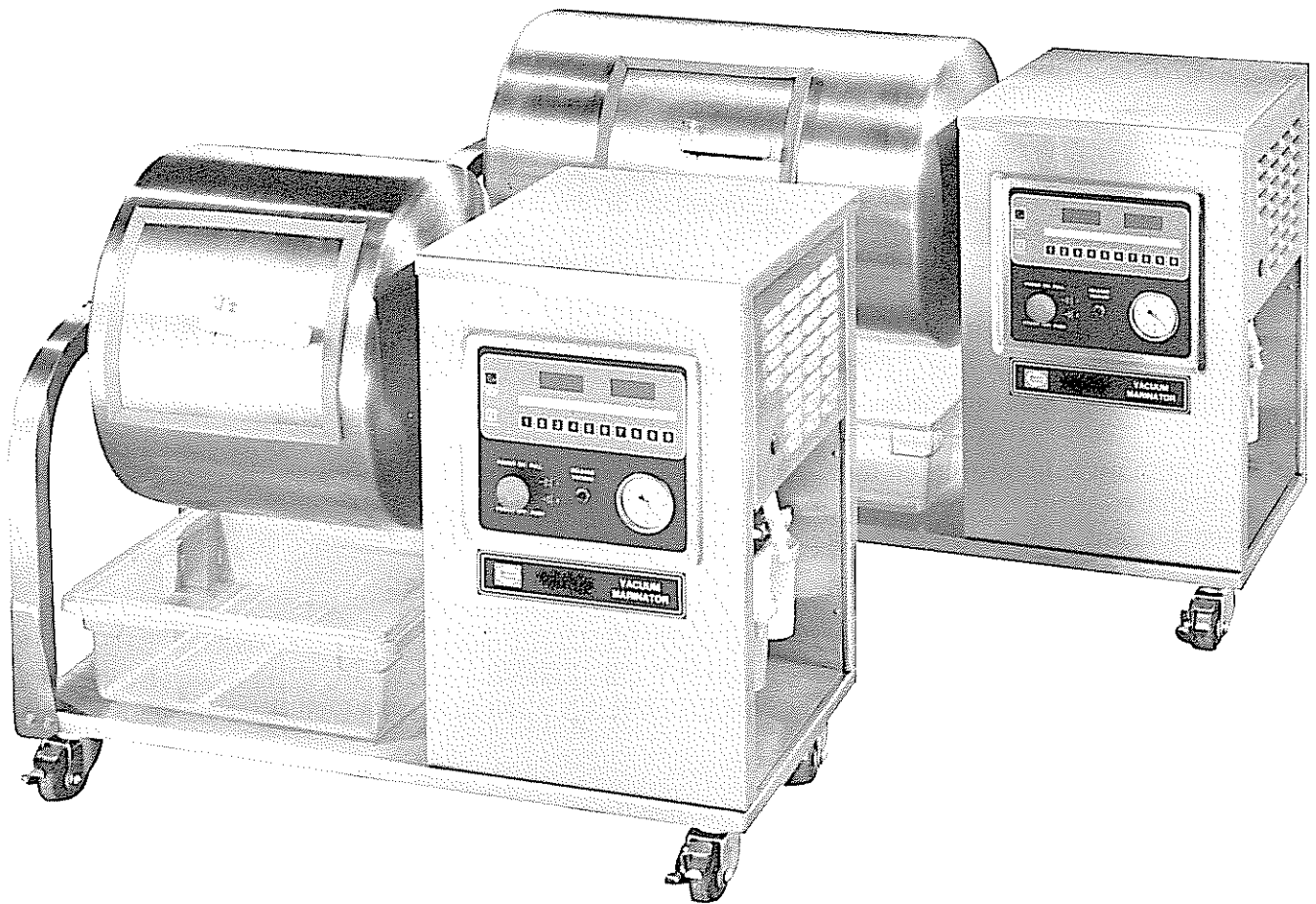
HENNY PENNY™
Global Foodservice Solutions

**Henny Penny
Vacuum Marinator
Model VM-60
Model VM-120**

SERVICE MANUAL

Henny Penny Vacuum Marinator

Model: VM-60
VM-120



Product Number
03470-VM-60
03472-VM-120

LIMITED WARRANTY FOR HENNY PENNY APPLIANCES

Subject to the following conditions, Henny Penny Corporation makes the following limited warranties to the original purchaser only for Henny Penny appliances and replacement parts:

NEW EQUIPMENT: Any part of a new appliance, except lamps and fuses, which proves to be defective in material or workmanship within two (2) years from date of original installation, will be repaired or replaced without charge F.O.B. factory, Eaton, Ohio, or F.O.B. authorized distributor. To validate this warranty, the registration card for the appliance must be mailed to Henny Penny within ten (10) days after installation.

REPLACEMENT PARTS: Any appliance replacement part, except lamps and fuses, which proves to be defective in material or workmanship within ninety (90) days from date of original installation will be repaired or replaced without charge F.O.B. factory, Eaton, Ohio, or F.O.B. authorized distributor.

The warranty for new equipment and replacement parts covers only the repair or replacement of the defective part and does not include any labor charges for the removal and installation of any parts, travel or other expenses incidental to the repair or replacement of a part.

EXTENDED FRYPOT WARRANTY: Henny Penny will replace any frypot that fails due to manufacturing or workmanship issues for a period of up to seven (7) years from date of manufacture. This warranty shall not cover any frypot that fails due to any misuse or abuse, such as heating of the frypot without shortening.

0 TO 3 YEARS: During this time, any frypot that fails due to manufacturing or workmanship issues will be replaced at no charge for parts, labor, or freight. Henny Penny will either install a new frypot at no cost or provide a new or reconditioned replacement fryer at no cost.

3 TO 7 YEARS: During this time, any frypot that fails due to manufacturing or workmanship issues will be replaced at no charge for the frypot only. Any freight charges and labor costs to install the new frypot as well as the cost of any other parts replaced, such as insulation, thermal sensors, high limits, fittings, and hardware, will be the responsibility of the owner.

Any claim must be presented to either Henny Penny or the distributor from whom the appliance was purchased. No allowance will be granted for repairs made by anyone else without Henny Penny's written consent. If damage occurs during shipping, notify the sender at once so that a claim may be filed.

THE ABOVE LIMITED WARRANTY SETS FORTH THE SOLE REMEDY AGAINST HENNY PENNY FOR ANY BREACH OF WARRANTY OR OTHER TERM. BUYER AGREES THAT NO OTHER REMEDY (INCLUDING CLAIMS FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES) SHALL BE AVAILABLE.

The above limited warranty does not apply (a) to damage resulting from accident, alteration, misuse, or abuse; (b) if the equipment's serial number is removed or defaced; or (c) for lamps and fuses. THE ABOVE LIMITED WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS, AND ALL OTHER WARRANTIES ARE EXCLUDED. HENNY PENNY NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER OBLIGATION OR LIABILITY.

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SECTION 1. INTRODUCTION

1-1. HENNY PENNY VACUUM MARINATOR

The Henny Penny Vacuum Marinators, VM-60 and VM-120, employ a patented vacuum process that pulls marinade deep into food - even bone-in product without bruising or damage. Besides improving flavor, vacuum marinating adds moisture and helps cure food for shorter cook times, longer holder periods, and less waste.

1-2. FEATURES

- Distinctive compact design
- Preselected automatic controls
- Vacuum reduces tumbling time
- Heavy duty 3/4 hp motor
- Slip clutch disengages motor when drum is obstructed
- Heavy gauge stainless steel construction
- USDA approved, sealed food zone
- Bilateral drum movement for easy loading and cleaning

1-3. ASSISTANCE

Should you require assistance, just call your local independent distributor (refer to the distributor list in the back of this manual).

In addition, feel free to contact our corporate headquarters in Eaton, Ohio by dialing our toll-free number 1-800-543-6243.

1-4. SAFETY

To ensure safe operation of the Henny Penny Marinator, the proper procedures for installation, operation, and maintenance should be followed and properly understood. Where information is of particular importance or is safety related, the words **WARNING**, **CAUTION**, and **NOTE** are used. Their usage is as follows:



The word **WARNING** is used to alert you to a procedure that if not performed properly, may cause personal injury.



The word **CAUTION** is used to alert you to a procedure that, if not performed properly, may damage the unit.

NOTE

The word **NOTE** is used to highlight especially important information.

1-5. PROPER CARE

As with any of our equipment, the Marinator does require care and maintenance, which are discussed in the manual. The careful use of the recommended procedures, coupled with the regular preventive maintenance, will result in few repairs to the equipment.

SECTION 2. INSTALLATION

2-1. INTRODUCTION

This section provides installation instructions for the Henny Penny Marinator.

NOTE

The installation of this unit must conform to all local, state and federal codes.



WARNING

Do Not puncture the Marinator with any objects such as drills or screws as electrical shock, or component damage could result.

NOTE

Installation of this unit should be performed by a qualified service technician.

2-2. LOCATION

The proper location of the unit is very important for operation and convenience. Choose a location which will provide easy loading and unloading without interfering with the final assembly of food orders.



CAUTION

Unit must be placed at least 6 inches from back wall. Damage to unit may result from wall interfering with drum.

2-3. UNPACKING INSTRUCTIONS

The marinator is shipped banded to a wooden base and covered with a cardboard container. The VM-60 is shipped with the plastic tub on top of the unit, and the VM-120 is shipped with the plastic tub under the drum.

1. Cut the banding securing the carton to the wooden base.
2. Unfold the flaps on top of the carton.
3. Remove the corner and top packing.
4. Lift carton up and off unit.
5. Remove protective plastic covering from unit.
6. Lift unit from cardboard stand and set unit down on its casters.



The VM-60 weighs approximately 200 pounds and the VM-120, 250 pounds. Care should be taken when lifting to prevent personal injury.

7. Cut banding securing drum.
8. The unit is now ready to be cleaned for use.

2-4. ELECTRICAL REQUIREMENTS

The Henny Penny Vacuum Marinator is available from the factory wired for 120 volt, 1 phase, 60 Hz service.



The unit must be adequately and safely grounded according to local electrical codes to prevent the possibility of electrical shock.

Model No.	Product No.	Voltage	Phase	Amps
VM-60	03470	120	1	7.0
VM-120	03472	120	1	8.5



DO NOT use extension cord on this unit. Controls may not operate properly.

SECTION 3. OPERATION

3-1. INTRODUCTION

The Henny Penny Vacuum Marinator is computer controlled. The computer control regulates the marinator time and can be manually programmed.

3-2. BASIC OPERATION PROCEDURES

The following steps describe how to run a marinate cycle.

1. Load the product and marinade into the drum.
2. Install the drum door and latch securely.
3. Pull the red knob out to the ON position.
4. Start the timing cycle by pressing the desired number button (1-9). To stop a timing cycle, press and **hold** the number button that is lit.

WARNING

Rotation and vacuum begin immediately! Make sure drum door is latched securely before pressing the button, or the solution will spill from the drum and the door could drop off.

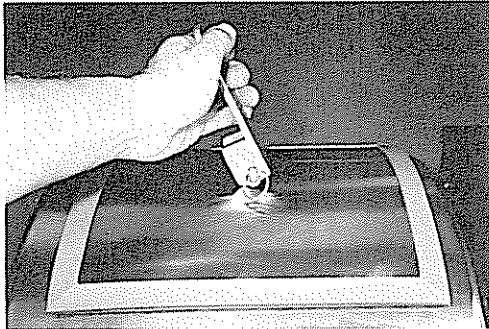
NOTE

The "O" button is a manual mode and can be programmed without entering the program mode. After the time is entered the Program ("P") button is pressed and the cycle starts immediately.

5. When the alarm sounds and the display shows 0:00, press the selected number button. The alarm, rotation, and vacuum all stop.

NOTE

If the marinator loses power during a cycle, the control will flash "run" and beep for four seconds when power is re-applied. After the four seconds, the vacuum motor and rotation motor are turned on and the previous cycle is resumed at the point where it lost power.



3-2. BASIC OPERATION PROCEDURES (continued)

6. Use the rotate button, or turn the drum by hand to position the drum door in an upright position.
7. Press and hold the "Release Vacuum" button until the gauge indicates that the vacuum in the drum has dropped to 0 inches of mercury (IOM).
8. Unlatch and remove the drum door, then unload the marinated product.

NOTE

Since the timer does not start counting down until sufficient vacuum is established, the over-all cycle duration may be longer than the programmed time.

3-3. OPERATING CONTROLS

This section describes the functions of all operating controls. See figure 3-1.

Item No.	Description	Function
1.	Power Switch	The power switch is a two position pull switch used to turn on and off electrical power to the unit.
2.	Vacuum Release	The vacuum release is pressed to release the vacuum in the drum.
3.	Vacuum Gauge	The vacuum gauge shows the amount of vacuum in the drum.
4.	Timer Buttons	When the timer buttons are pressed a timing cycle will start. During a timing cycle, pressing and holding a timer button will abort the cycle.
5.	Timer Displays	The timer displays show the operation and the time shown in hours and minutes. Also, any failures and programming prompts show in the displays.
6.	Rotation Button	The rotation button can be pressed to rotate the drum to a loading or unloading position.
7.	Program Button	When the program button is pressed and held in, any of the timer buttons can be pressed and the timing cycles changed.

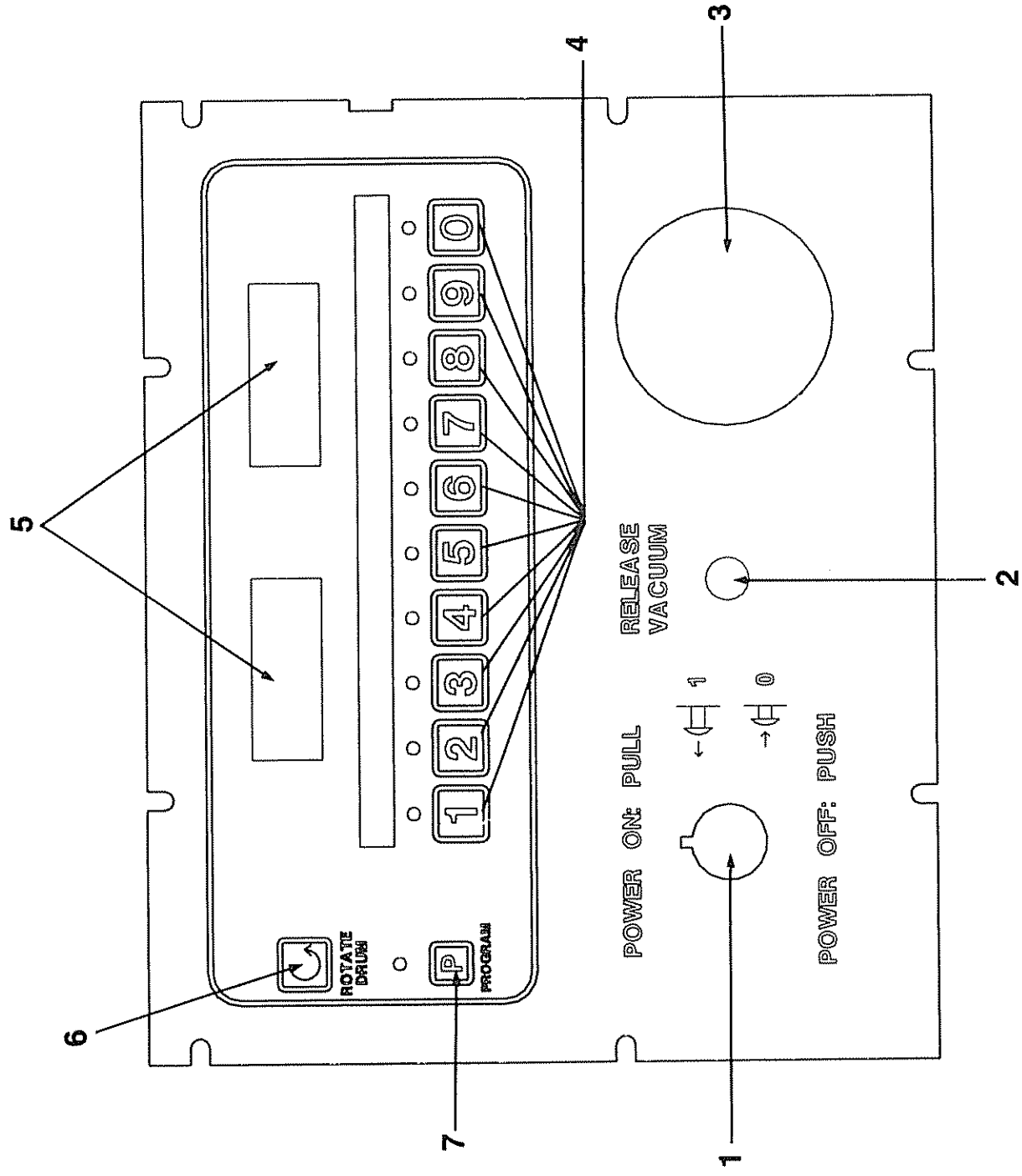


Figure 3-1

3-4. PROGRAM MODE OPERATION

The control has ten product cycles which may be programmed for specific products. Each cycle consists of the desired hours and minutes for each product.

1. Pull the red power knob out to the ON position. The unit is in the Standby Mode and the left display shows "LOAD" and the right display scrolls "PUSH 1-9 to run — —."
2. Once the drum is filled, press the desired, preprogrammed, product button (1-9). Rotation and vacuum begin immediately.

WARNING

Make sure the drum door is secure before pressing the product button, or the solution and product will spill from the drum and the door could drop off.

NOTE

The "O" Product button is a "Manual Mode" which can be programmed without entering the program mode. The user can program this cycle by pressing the "O" button and entering the time, then pressing the Program ("P") button. The rotation and vacuum begin immediately after pressing the "P" button.

3. At the start of the cycle, the left display flashes "run" and the right display scrolls "building VAC— —."
4. Once the vacuum sensor detects proper vacuum (23 IOM) the control will start the cycle timer. The left display flashes "run" and the right display shows the time remaining in the cycle.

NOTE

If the vacuum sensor does not detect the appropriate vacuum level within two minutes, the control will cancel the cycle and the display will flash "VAC FAIL." The beeper can be turned off by pressing any button, but the marinator power must be turned off and back on to clear error. (See Troubleshooting Section.)

**3-4. PROGRAM MODE
OPERATION (continued)**

5. Once the control counts down to 0:00, the beeper will sound and the display will flash "done 00:00."

NOTE

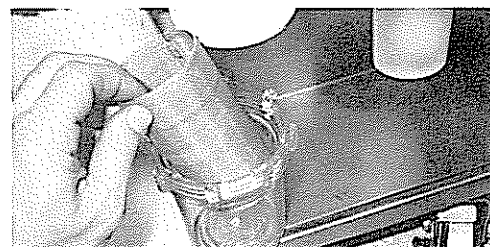
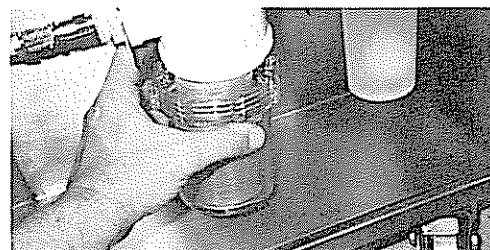
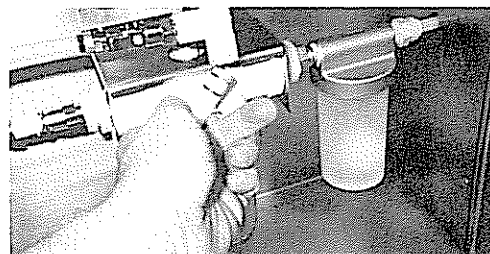
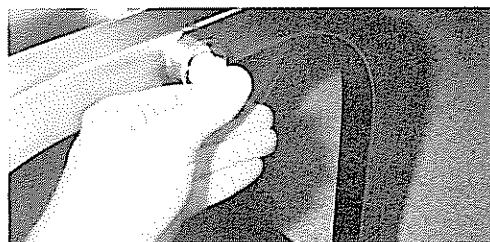
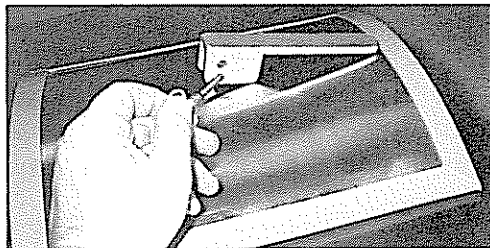
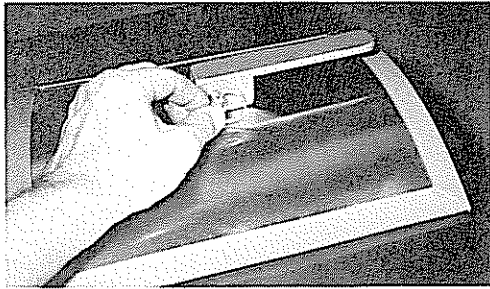
A cycle can be cancelled at any time by pressing and holding the product button for two seconds.

6. Press the product button to stop the beep, rotation, and vacuum.
7. Use the "Rotate" button, or turn the drum by hand, to position drum to remove product.
8. Push and hold the "Release Vacuum" switch until the gauge shows "O" IOM. Then unlatch the drum door and remove product.

NOTE

If the vacuum sensor does sense the proper vacuum, but during a cycle the vacuum drops below the proper vacuum, the cycle will stop and "VAC LOSS" will show in display. (See Troubleshooting Section.)

SECTION 4. CLEANING PROCEDURES



1. Turn all controls to OFF and disconnect electrical power supplied to the unit.

WARNING

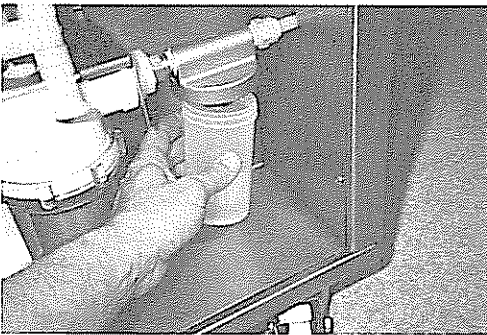
Allow the unit to cool before cleaning, as the exterior and interior of the cabinet may be hot enough to cause burns.

2. Disassemble door handle, seal gasket, bar seal and bar from door cover. Soak in disinfectant detergent, rinse thoroughly and sanitize with sanitizing agent.
3. Remove vacuum tube shroud, inside of drum, and clean in disinfectant detergent, rinse then sanitize.
4. Clean inside of drum with disinfectant detergent. Rinse thoroughly with water and sanitize with sanitizing agent. Turn drum so door opening is in the down position to dry. DO NOT dry with cloth or paper towels after sanitizing.
5. Remove nylon plug from both ends of shaft. Clean shaft by inserting brush (provided) into both ends of shaft. Wash the inside of the shaft with disinfectant detergent using cleaning brush. Rinse thoroughly and sanitize with sanitizing agent by dipping brush into rinse water and sanitize.
6. Wash down outside of equipment with disinfectant detergent, rinse thoroughly with water and sanitize with sanitizing agent.

CAUTION

DO NOT use steel wool, other abrasive cleaners, or cleaner/sanitizer containing chlorine, bromine, iodine, or ammonia chemicals, as these will deteriorate the stainless steel material and shorten the life of the unit.

4-1. CLEANING PROCEDURES (continued)



7. Clean filter jar by unscrewing jar bowl from top. Remove stainless steel filter. Wash both jar and filter in disinfectant detergent. Rinse thoroughly and sanitize with sanitizing agent. Replace filter and screw jar bowl back into top.
8. Clean flexible tubing by removing quick disconnect from shaft coupling and filter jar. Wash flexible tubing in disinfectant detergent. Rinse thoroughly and sanitize with sanitizing agent, then fasten tubing back onto shaft coupling and filter jar.
9. Clean overflow jar and ball float by unscrewing jar from stationary jar top. Wash jar and ball float in disinfectant detergent. Rinse thoroughly and sanitize with sanitizing agent. Replace ball float into jar and screw jar back into top.
10. Replace nylon plugs into proper position at ends of shaft.
11. Reassemble all drum door components.
12. Place drum in upward position.
13. Replace drum door cover. DO NOT lock down handle.
14. Place power supply cord around cord hanger.
15. Store for next use.

NOTE

Vacuum tube cleaning brushes should be inspected after each use. Damaged brushes should be replaced and can be ordered from your Henny Penny Representative.

SECTION 5. PROGRAMMING

The control has Henny Penny recommended cycle times preprogrammed from the factory. But, the cycles can be changed at any time.

1. Press and hold the Program ("P") button until the display shows "Prod Prog," then release the Program button.

2. The left display shows "Code" and enter the access code (1, 2, 3). All product LEDs are turned on and "Prog" shows in the left display and "SELECT Product —" shows in the right display.

NOTE

If an incorrect code is entered, the beeper will sound continuously and the display will flash "bad Code" for 10 seconds, then the control returns to normal operation.

3. Press the desired Product button (1-9). The left display shows "Set" and the current cycle time shows in the right display.
4. Enter the new cycle time by pressing the appropriate Product button (1-0). Ex: (1 hr. 50 min.), the buttons 1, 5 and 0 are pressed.
5. When the correct cycle time shows in the display, press the Program ("P") button and the time is saved.
6. To change other cycle times repeat steps 3 through 5.
7. To exit the Program Mode at any time, press and hold the Program ("P") button until a long beep sounds. The control resumes normal operating mode.

NOTE

The control will automatically exit if no buttons are pressed for 60 seconds.

SECTION 6. TROUBLESHOOTING

6-1. INTRODUCTION

This section provides troubleshooting information in the form of an easy to read table.

If a problem occurs during the first operation of a new marinator, recheck the Installation Section of this manual.

Before troubleshooting always recheck the operation procedure per Section 3 of this manual.

6-2. TROUBLESHOOTING

To isolate a malfunction, proceed as follows:

1. Clearly define the problem (or symptom) and when it occurs.
2. Locate the problem in the Troubleshooting table.
3. Review all possible causes. Then, one-at-a-time work through the list of corrections until problem is solved.
4. Refer to the maintenance procedures in the Maintenance Section to safely and properly make the check out and repair needed.

WARNING

If maintenance procedures are not followed correctly, injuries and/or property damage could result.

6-2. TROUBLESHOOTING (continued)

Problem	Cause	Correction
No Vacuum	<ul style="list-style-type: none"> • Clogged tubes and lines • Bad Vacuum Pump • Bad Vacuum Release 	<ul style="list-style-type: none"> • Clean tubes & lines-refer to cleaning instructions. • Install new pump. • Replace Vacuum Release.
Low Vacuum	<ul style="list-style-type: none"> • Clogged Tubes and Lines • Lid isn't sealed 	<ul style="list-style-type: none"> • Clean Tubes and Lines • DO NOT Overfill Drum • Be sure lid is sealed.
No Rotation	<ul style="list-style-type: none"> • Motor Overload Kicked • Broken Chain • Bad Motor 	<ul style="list-style-type: none"> • Too much product in drum. • Replace Chain • Replace Motor
No Beep	<ul style="list-style-type: none"> • Bad Beeper 	<ul style="list-style-type: none"> • Replace Beeper Control Board
No Power	<ul style="list-style-type: none"> • Ground Fault Protector Kicked 	<ul style="list-style-type: none"> • Press Reset on right side of unit

SECTION 7. MAINTENANCE

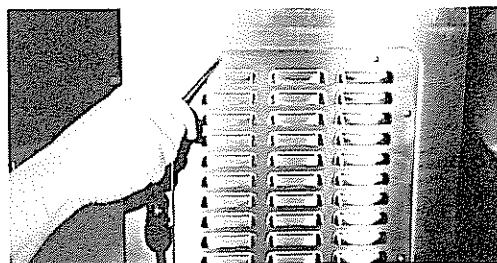
7-1. INTRODUCTION

This section provides procedures for the check out and replacement of the various parts used within the marinator. Before replacing any parts, refer to the Troubleshooting section. It will aid you in determining the cause of the malfunction.

7-2. MAINTENANCE HINTS

1. You may want to use a multimeter to check the electronic components.
2. When the manual refers to the circuit being closed, the multimeter should read zero unless otherwise noted.
3. When the manual refers to the circuit being open, the multimeter will read infinity.

7-3. DRIVE MOTOR



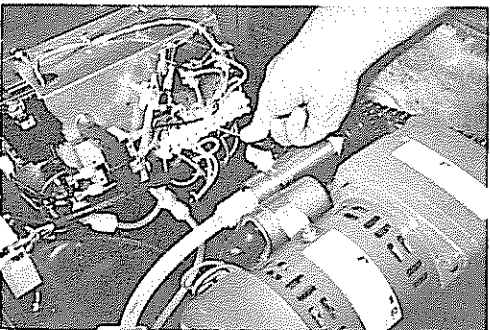
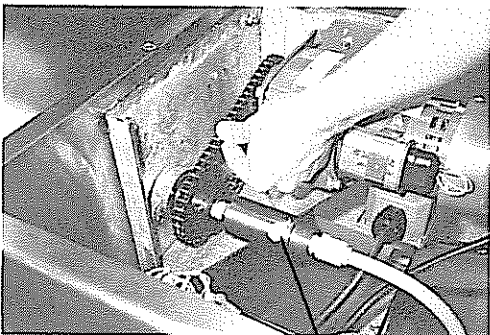
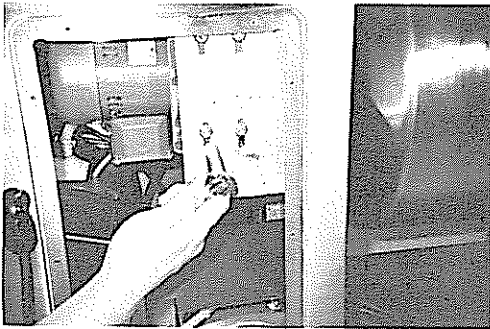
1. Remove electrical power supplied to unit.

WARNING

Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove end and back panels of unit.
3. Remove the (3) nuts securing the top cover to unit and remove cover.

**7-3. DRIVE MOTOR
(continued)**



4. Use 7/16" socket to loosen the four nuts securing the motor to the bracket.
5. Allow motor to slide down to loosen chain and remove chain from motor clutch.
6. Remove wires from terminal block and ground stud.
7. Remove the bolts from backing plate and remove motor from unit.
8. Align new motor with studs on backing plate and loosely screw nuts on studs.
9. Place chain on clutch and lift motor to slide motor up on bracket and tighten nuts onto studs.
10. Re-attach wires to terminal block and grounding stud.
11. Replace covers and unit is now ready for operation.

To tighten clutch: tighten 3 bolts on front of motor on end shaft.

7-4. PUMP AND MOTOR

1. Remove electrical power supplied to the unit.

WARNING

Remove electrical power supplied to the unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove the side and back covers.

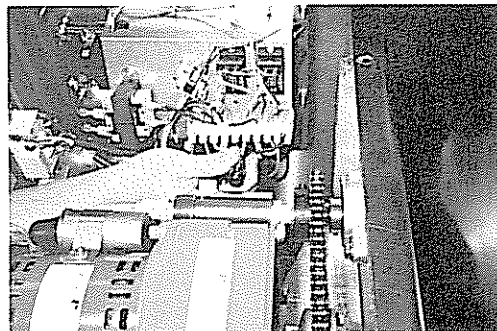
**7-4. PUMP & MOTOR
(continued)**



3. Remove nuts securing top cover and remove cover.

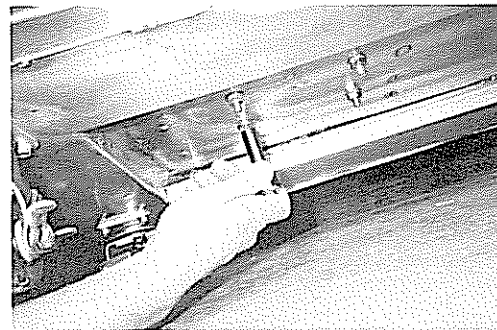


4. Remove protective cover.



5. Unscrew plastic nut on pump tube.

6. Remove and label wires from terminal block and grounding stud.

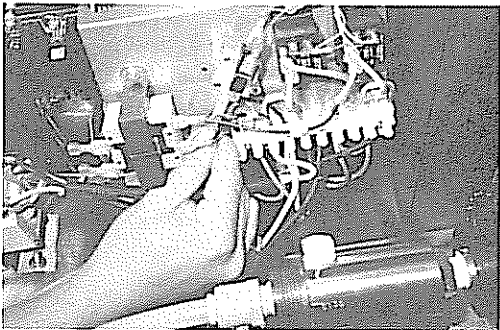
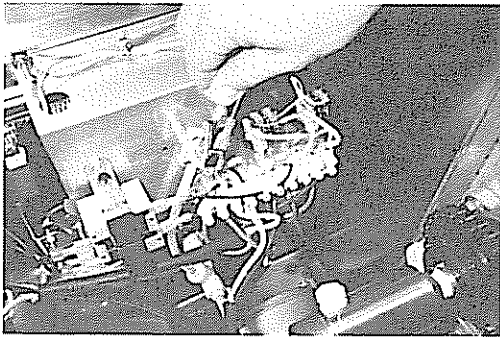


7. Using a 7/16 wrench and socket remove the four nuts securing the motor to base of unit.

8. Lift motor up and out the back of unit.

9. Replace new motor in reverse order.

7-5. VACUUM SENSOR



1. Remove electrical power supplied to the unit.

WARNING

Remove electrical power supplied to the unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove the side cover.
3. Remove nuts from studs of top cover and remove top cover.
4. Remove and label wires from sensor.
5. Pull hose from end of sensor.
6. Using 1/4" socket remove nuts from studs securing sensor and remove sensor.
7. Replace new sensor in reverse order.

7-6. CHAIN



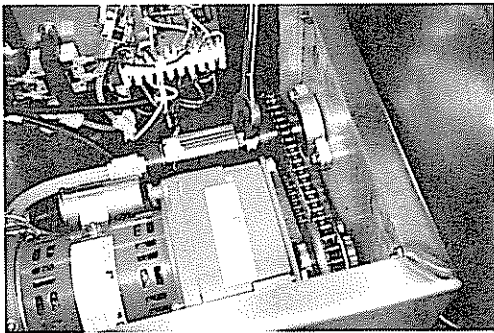
1. Remove electrical power supplied to the unit.

WARNING

Remove electrical power supplied to the unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

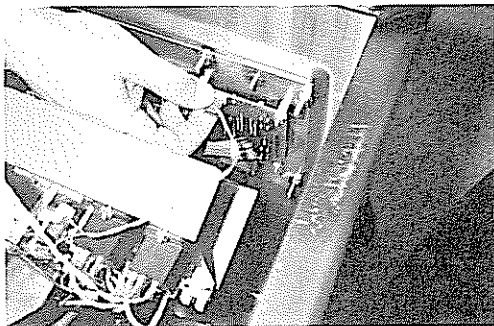
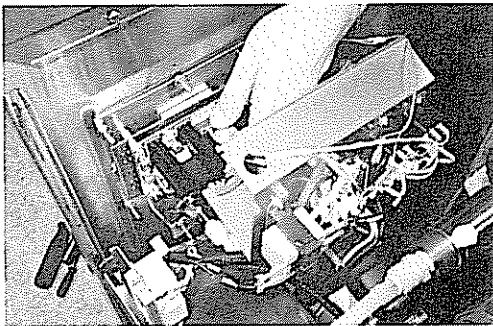
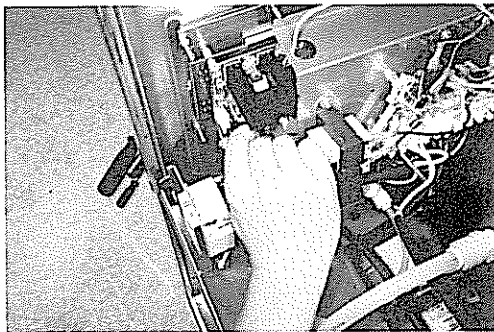
2. Using Phillips head screwdriver remove the side and back cover.
3. Remove the nuts securing the top cover and remove top cover.
4. Using 7/16" socket loosen nuts securing drive motor and slide motor down bracket.

7-6. CHAIN (continued)



5. Hold drum and loosen fitting behind pulley hub and pull fitting from hub.
6. Remove chain from unit.
7. Place new chain on pulley and insert hub into bracket and tighten set screws.
8. Place chain on clutch.
9. Pull up on drive motor to tighten chain and then tighten nuts on drive motor bracket.
10. Replace covers and unit is ready for operation.

7-7. CONTROL PANEL



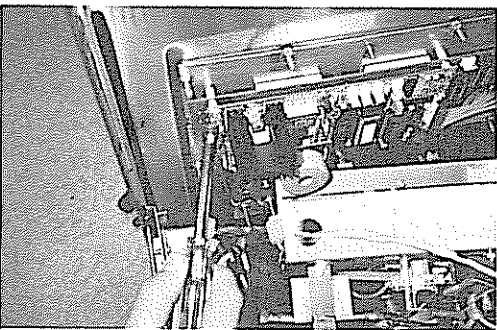
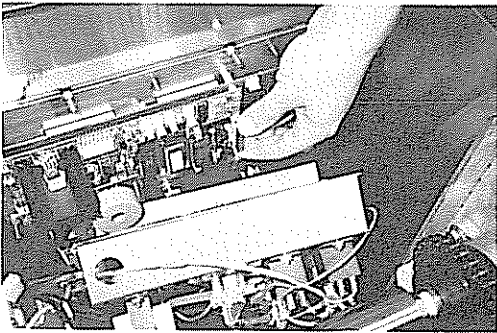
1. Remove electrical power supplied to unit.

WARNING

Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove screws securing the side and back covers and remove covers.
3. Using 5/16" socket remove nuts securing board shield.
4. Unplug transformer, relay, and vacuum sensor from board and pull shield away from boards.

7-7 CONTROL BOARD (continued)



5. Unplug red connector.
6. Using 5/16" socket remove nuts securing board and remove board.
7. Replace new board in reverse order.

7-8. REPLACEABLE BEEPER

1. Remove electrical power supplied to unit.

WARNING

Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove screws securing the side cover and remove side cover.
3. Remove nuts securing the top cover and remove top cover.
4. Using 5/16" socket remove nuts securing board shield.
5. Unplug transformer relay, and vacuum sensor from board and pull shield away from board.
6. Pull blue beeper straight out from board.



**7-8. REPLACEABLE BEEPER
(continued)**

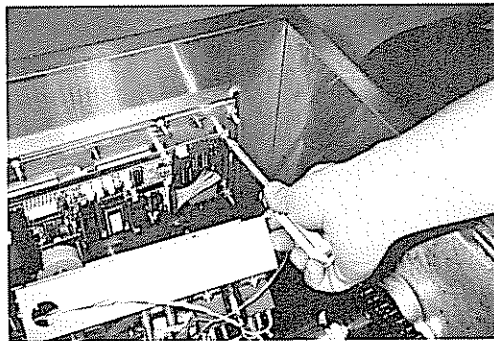
7. Carefully line up prongs on beeper and press straight into board.
8. Replace shield and connectors onto boards.
9. Replace covers and unit is ready for operation.

7-9. DISPLAY BOARD

1. Remove electrical power supplied to unit.

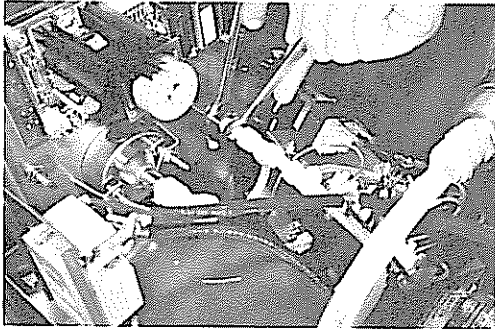
WARNING

Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.



2. Using Phillips head screwdriver remove screws securing the side cover and remove side cover.
3. Remove nuts securing the top cover and remove top cover.
4. Using 5/16" socket remove nuts securing board shield.
5. Unplug transformer, relay, and vacuum sensor from board and pull shield away from boards.
6. Unplug red connector.
7. Using 5/16" socket remove nuts securing control board and remove board.
8. Using 5/16" socket remove the remaining two nuts securing the display board.
9. Remove spacers for control board and pull display board from unit.
10. Install new display board in reverse order.

7-10. VACUUM RELEASE



1. Remove electrical power supplied to unit.

WARNING

Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove the screws securing the side cover and remove cover.
3. Remove nuts from studs and remove top cover.
4. Using 5/16" socket remove nuts securing board shield.
5. Unplug transformer, relays and vacuum sensor from the board and pull shield away from boards.
6. Using a 5/8" and a 9/16" wrench unscrew the plastic tubing from the block.
7. Using a 9/16" wrench remove nut on front of control panel and pull vacuum release from back of panel.
8. Install new vacuum release in reverse order.

7-11. VACUUM GAUGE

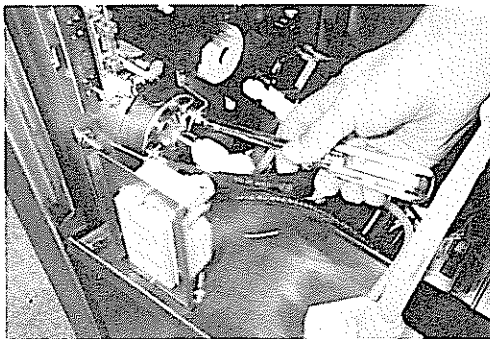
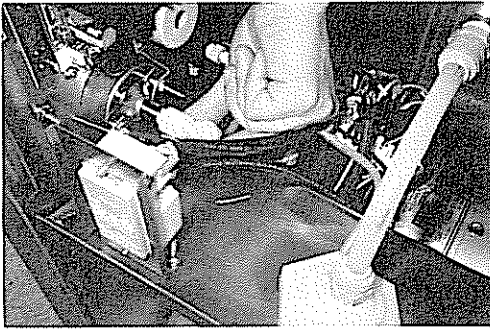
1. Remove electrical power supplied to unit.

WARNING

Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

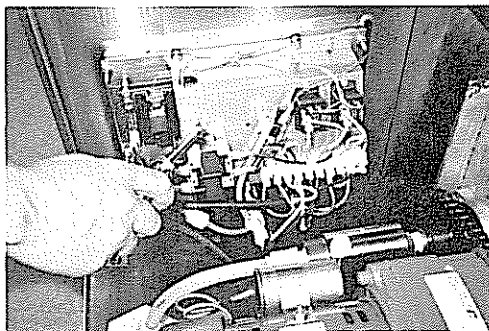
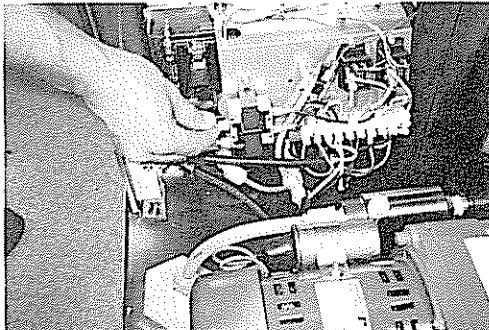
2. Using Phillips head screwdriver remove the screws securing the side panel and remove side panel.
3. Remove nuts from studs securing the top cover and remove top cover.

7-11. VACUUM GAUGE (continued)



4. Using 5/16" socket remove nuts securing board shield.
5. Unplug transformer, relays and vacuum sensor from the board and pull shield away from boards.
6. Unscrew plastic nut from end of gauge.
7. Using 11/32" wrench, unscrew nuts securing bracket to gauge and pull gauge from front of unit.
8. Unscrew plastic elbow from end of gauge and using pipe sealant, screw elbow onto new gauge.
9. Install new gauge in reverse order.

7-12. TRANSFORMER



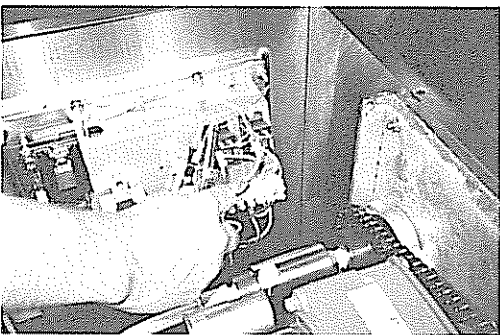
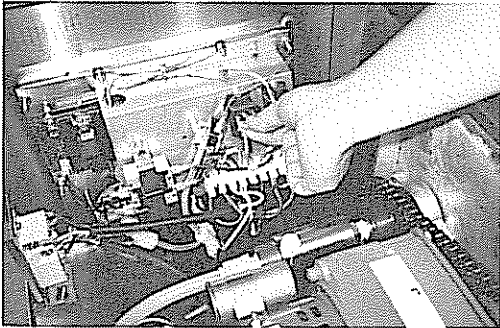
1. Remove electrical power supplied to unit.

WARNING

Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove the screws securing the side cover and remove side cover.
3. Remove nuts securing the top cover and remove top cover.
4. Label and remove wires from transformer.
5. Using 5/16" socket remove nuts securing transformer and remove transformer from unit.
6. Install new transformer in reverse order.

7-13. RELAYS



1. Remove electrical power supplied to unit.

WARNING

Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove the screws securing the side cover and remove side cover.
3. Remove nuts securing the top cover and remove top cover.
4. Label and remove wires from relay.
5. Using 5/16" socket remove nuts securing relay and remove relay from unit.
6. Install new relay in reverse order.

7-14. POWER SWITCH

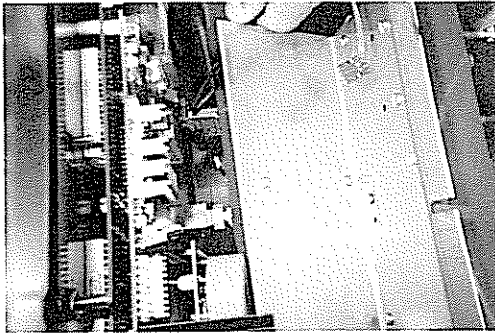
1. Remove electrical power supplied to unit.

WARNING

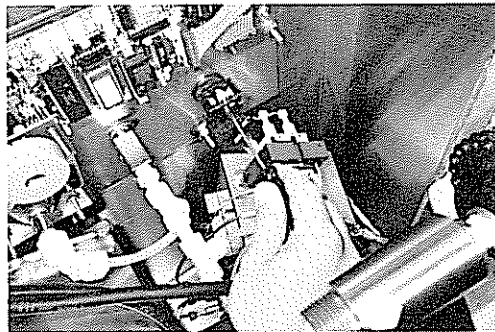
Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver remove the side and back covers.
3. Using 5/16" socket, remove nuts securing control board shield.
4. Pull connectors from board for the vacuum sensor, relays, and transformer.

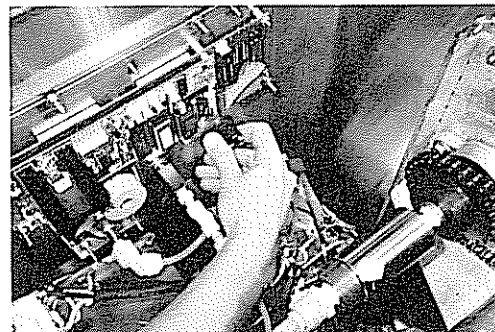
**7-14. POWER SWITCH
(continued)**



5. Pull board shield back and away from board.
6. Using a small blade screwdriver and unsnap the wire connector from terminal block.



7. Using a small flat head screwdriver, unsnap the terminal block from switch (see photo) under grey flange.



8. Unscrew collar from back of switch, and pull switch from front of panel.
9. Install new switch in reverse order.

**7-15. GROUND DEFAULT
PROTECTOR**

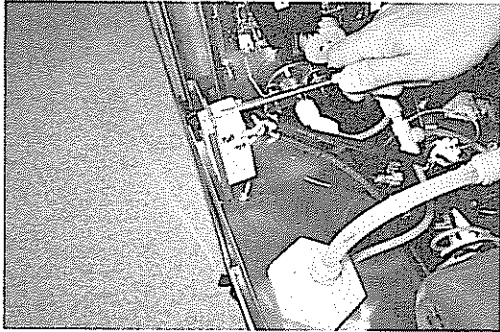
1. Remove electrical power supplied to unit.

WARNING

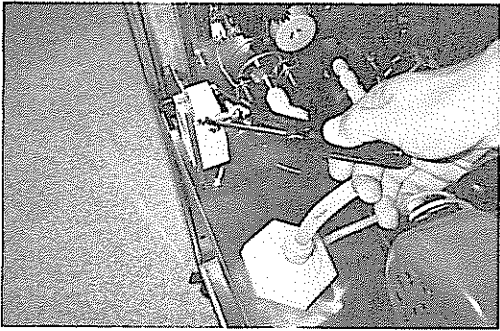
Remove electrical power supplied to unit by unplugging the unit, or by turning off the wall circuit breaker, or electrical shock could result.

2. Using Phillips head screwdriver, remove nuts securing the side cover, and remove cover.

**7-15. GROUND DEFAULT
PROTECTOR
(continued)**

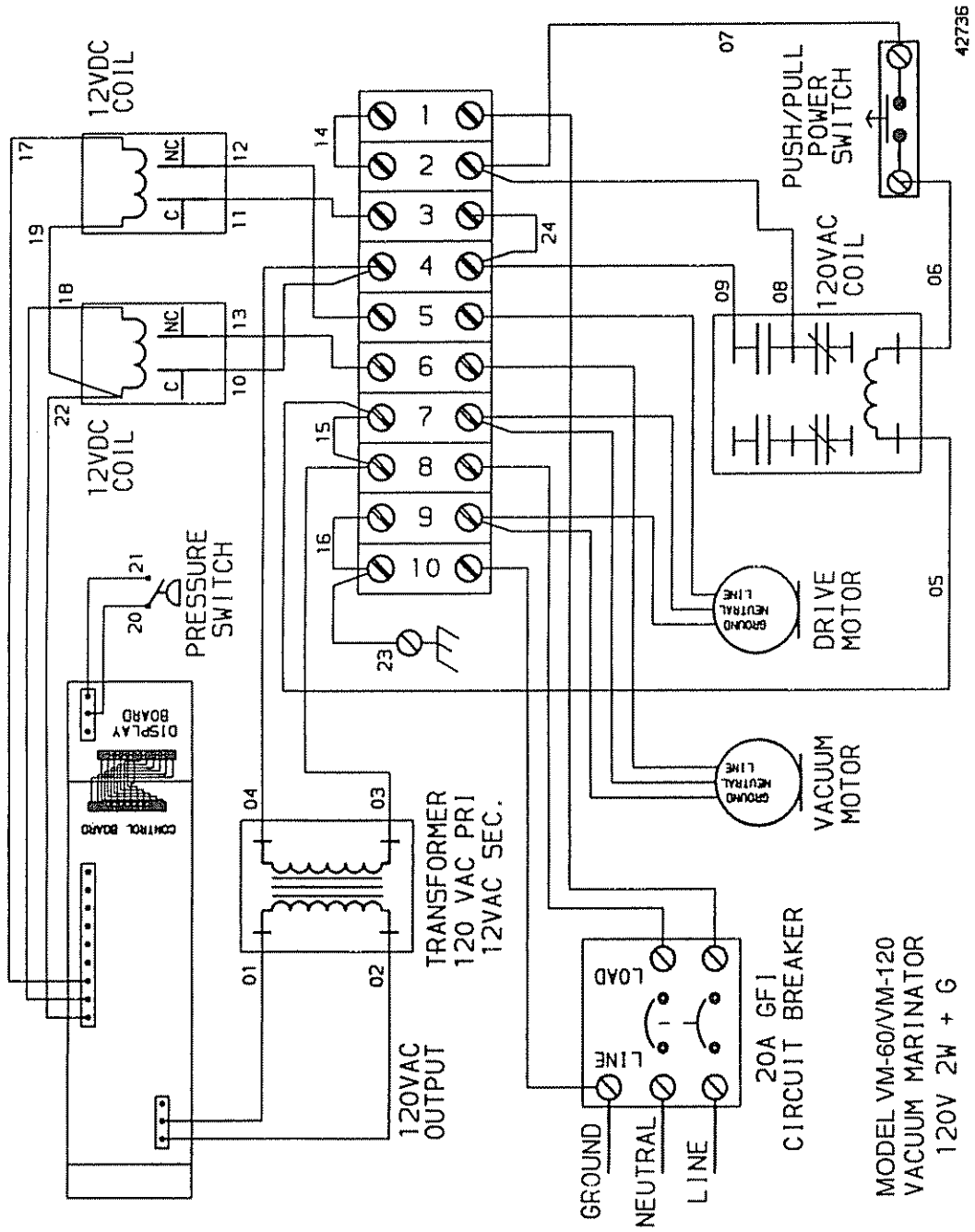


3. Using Phillips head screwdriver, remove protector from bracket.



4. Remove wires from protector.

5. Replace new protector in reverse order.



<u>RECOMMENDED SPARE PARTS FOR DISTRIBUTORS</u>	Recommended replacement parts, stocked by your distributor, are indicated with √ in the parts lists. Please use care when ordering recommended parts, because all voltages and variations are marked. Distributors should order parts based upon common voltages and equipment sold in their territory.
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REPLACEMENT PARTS LIST FOR VM-60/120

DESCRIPTION	H/P P/N
√ 1. Vacuum Tube Plug	42900
2. Lid	42901
3. Handle	42902
4. Handle Bar	42903
5. Handle Pin	42904
√ 6. Lid Gasket	42905
7. Handle Gasket	42906
8. Vacuum Tube -Flexible	42907
9. Filter Cup	42908
10. Filter Cup Gasket	42909
√ 11. Filter Screen	42910
12. Trap Cup	42911
13. Trap Cup Gasket	42912
√ 14. Trap Cup Ball	42913
15. Caster	18646
√ 16. Drive Motor	42914
√ 17. Vacuum Motor/Pump	42915
√ 18. Ground Fault Circuit Interrupter	42916
√ 19. Vacuum Gage	42420
√ 20. Vacuum Release Valve	42421
√ 21. Power Switch Push Button Assy.	42153
22. Power Switch Contact Block	42419
√ 23. Control Board Assembly	42429
√ 24. Brush -Long	42917
√ 25. Brush -Short	42918
26. Lug Pan	42919
27. Vacuum Tube Shroud	42920
√ 28. Transformer	30978
√ 29. Relay 12VDC Coil	ME90-002
√ 30. Relay 120V AC Coil	42156
31. O-Ring	44160
√ 32. Vacuum Switch	42157
33. Drive Sprocket	44161
34. Clutch Assy.	44162
35. Decal -Control and Timer	42151
36. Decal -"VMI20"	42165
37. Decal -"VM60"	42164
√ 38. Control Panel - 240V	51385
40. Reducing Nipple	54184
41. Fitting	54185
42. Tee	54186

√ recommended parts

REPLACEMENT PARTS LIST FOR VM-60/120 (Continued)

DESCRIPTION	H/P P/N
43. FITTING/ELBOW PARKER	53550
√ 44. DRUM CLIP	53551
45. TUBING .250O.D. POLYETHYLENE	54314
46. TUBING .5 OD POLYETHYLENE 8.5"	54315
47. BUSHING -L/8 TT25-BU	54316
48. CHECK VALVE -PUMP	54317
49. PILLOW BLCK-FLANGE MNTNG 1 A399	54318
50. GARLOCK BUSHING 16DU24	54319
51. FORSHEDA SEAL CHIC RAWHIDE	54320
√ 52. ISOLATOR-PUMP MTG GRNGR 3CC05	54321
√ 53. ROTATING FLUID COUPLING	54322
54. PLUG -STRAIN RELIEF	54323
55. FITTING/PLASTIC PARKER A4TMC2	54324
56. FITTING/PLASTIC PARKER A4TU4	54325
57. FITTING/PLASTIC PARKER A6EU6	54326
58. FITTING/ELBOW PARKER N6FE4	54327
59. FITTING/ELBOW PARKER N4FE4(L)	54328
60. REDUCER-BUSHING 3/4-3/8 NPT	54329
61. 1/8" NPT MUFFLER	54330
62. .250 NPT MUFFLER GAST AK840A	54331
63. TRAP -BALL GAST AA673	54332
64. NIPPLE .375	54333
65. FITTING-LOCKING PARKER 393-6~6	54334
66. FITTING PARKER A8MC6	54335
67. FITTING PARKER ABMCB	54336
68. FITTING PARKER A4MC4	54337
69. FITTING PARKER A6MC6	54338
70. FITTING BULKHEAD AROPLAX TF1212	54339
71. KEY - CLUTCH	54340
72. THRUST BEARING	54341
73. TORQUE LIMITER	54342
74. GROUND MACHINED SPROCKET	54343
75. CAP - JAR - NYLON - 1" NPT	54344

√ recommended parts