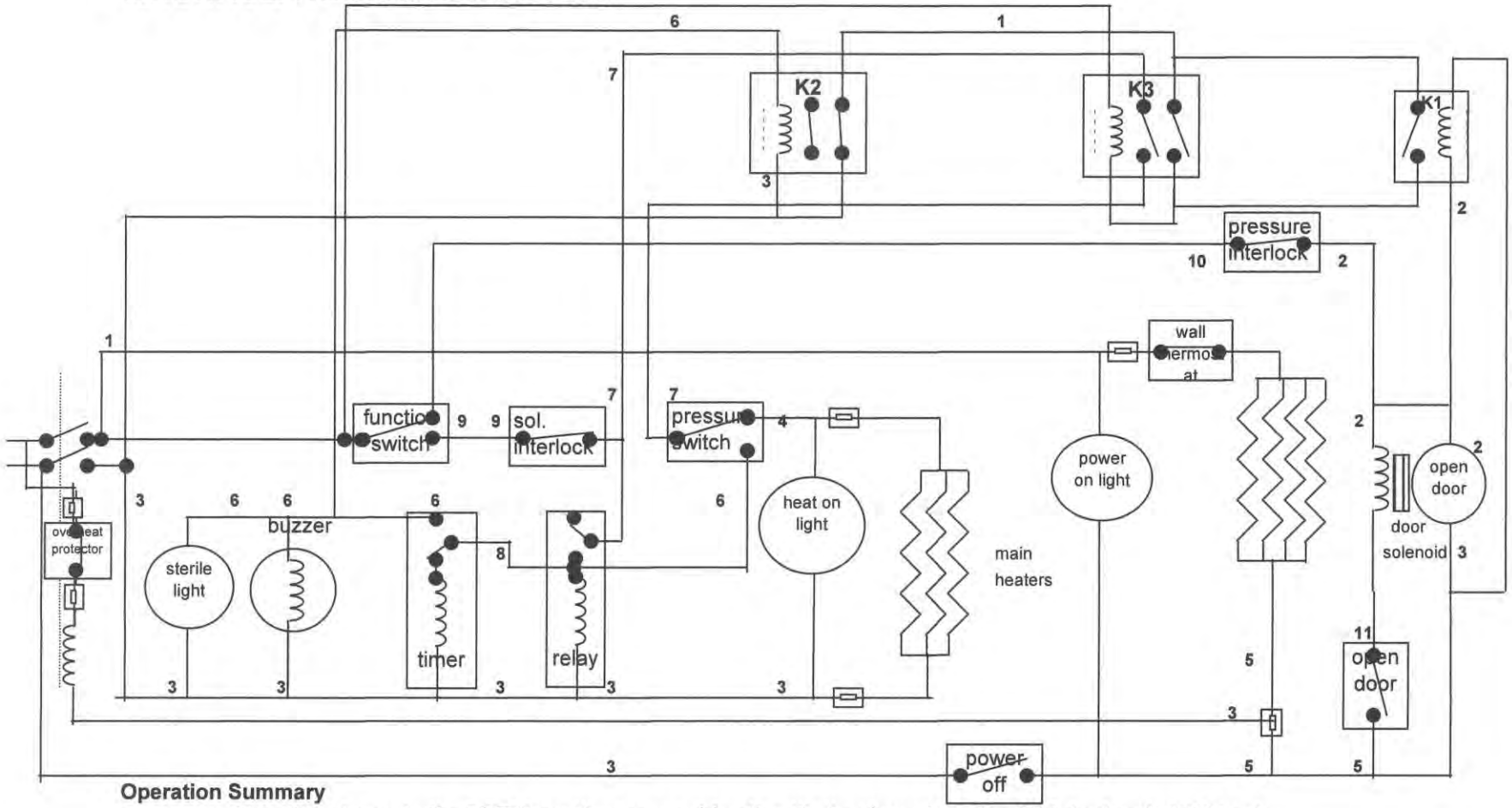
MAGNACLAVE WIRING DIAGRAM



Operation Summary

Circuit is shown in the "OFF" position as a cold unit, with the door closed and latched and TIMER set.

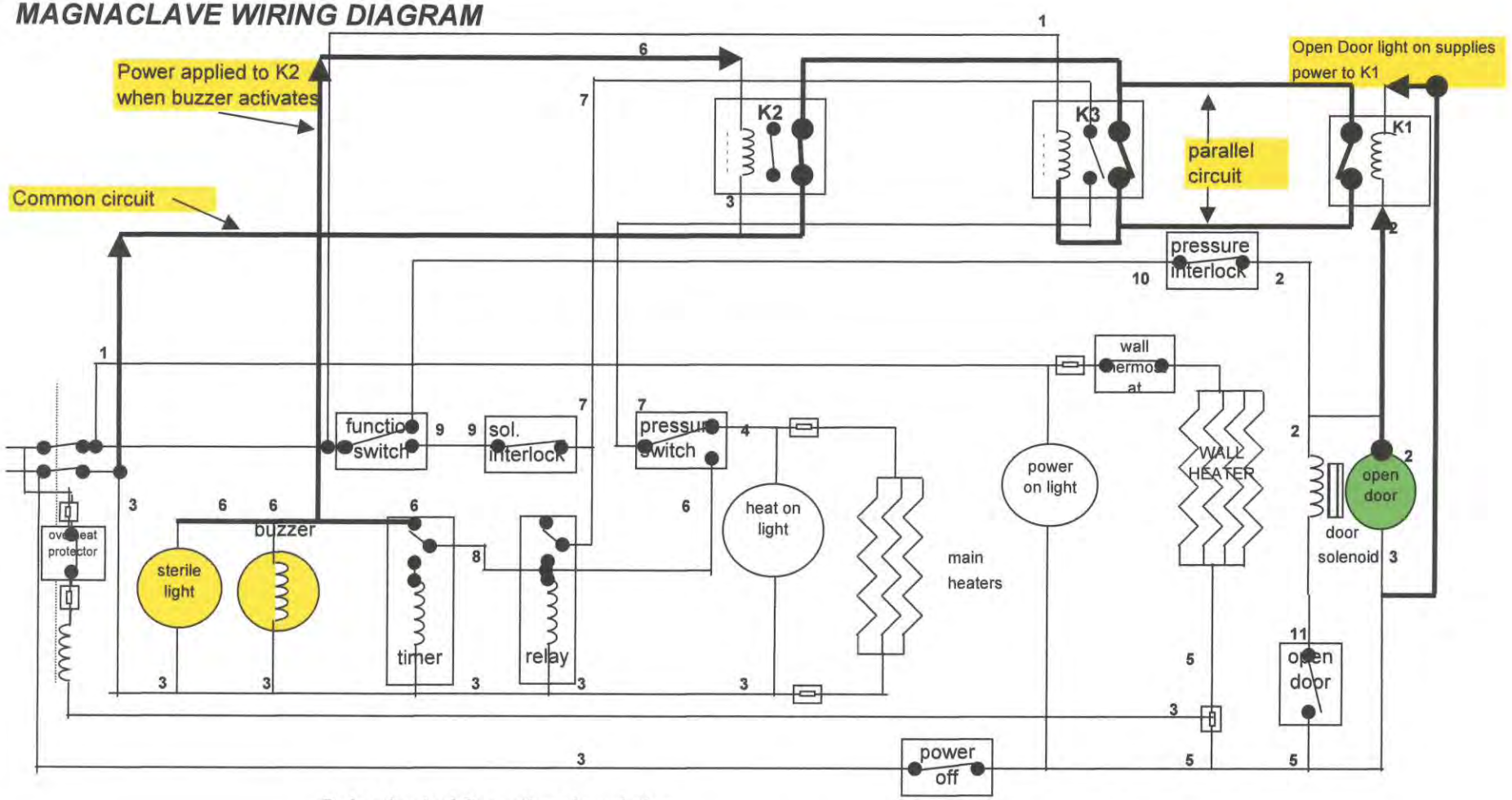
STARTUP: When FUNCTION CONTROL is placed in the FILL position, the POWER SWITCH closes. The PRESSURE INTERLOCK is closed (0 pressure) and the OPEN DOOR light comes on, activating K1, activating and latching K3. The POWER light comes on and the WALL HEATERS begin heating. Water starts filling chamber.

HEATUP: When the FUNCTION CONTROL is placed in STERILIZE and the door is closed and latched , voltage is feed through the FUNCTION SWITCH to the SOLENOID INTERLOCK then through the contacts of K3 to the PRESSURE SWITCH. The HEAT LIGHT comes on and the MAIN HEATERS start heating.

RUN: As the unit warms up the WALL THERMOSTAT reaches its operation temperature and opens, removing power to the WALL HEATERS. The WALL THERMOSTAT may operate off and on several times during a normal cycle. Once the PRESSURE SWITCH reaches the set point, it will switch and the HEAT LIGHT and the MAIN HEATERS will turn off.
In this position the PRESSURE SWITCH applies power to the RELAY and the TIMER. The RELAY is wired as a self latching relay (COIL and N.O. side are tied together) so that power is continuously applied to the RELAY AND TIMER for the rest of the cycle. If the pressure falls the PRESSURE SWITCH will return power to HEATERS, this cycle continues for duration of operation cycle. When the TIMER completes it cycle it switches power to the BUZZER, the STERILE LIGHT and to K2. The BUZZER will activate, the STERILE LIGHT will come on and K2 will activate releasing K3 which will turn off MAIN HEATERS and HEAT ON light.

VENT: When the FUNCTION CONTROL is placed in VENT the FUNCTION SWITCH feeds voltage to the PRESSURE INTERLOCK. When the unit vents down to 0 psi the PRESSURE INTERLOCK will switch allowing the OPEN DOOR light to comes on. Pressing the button on the Magnaclave will energize door solenoid.

MAGNACLAVE WIRING DIAGRAM

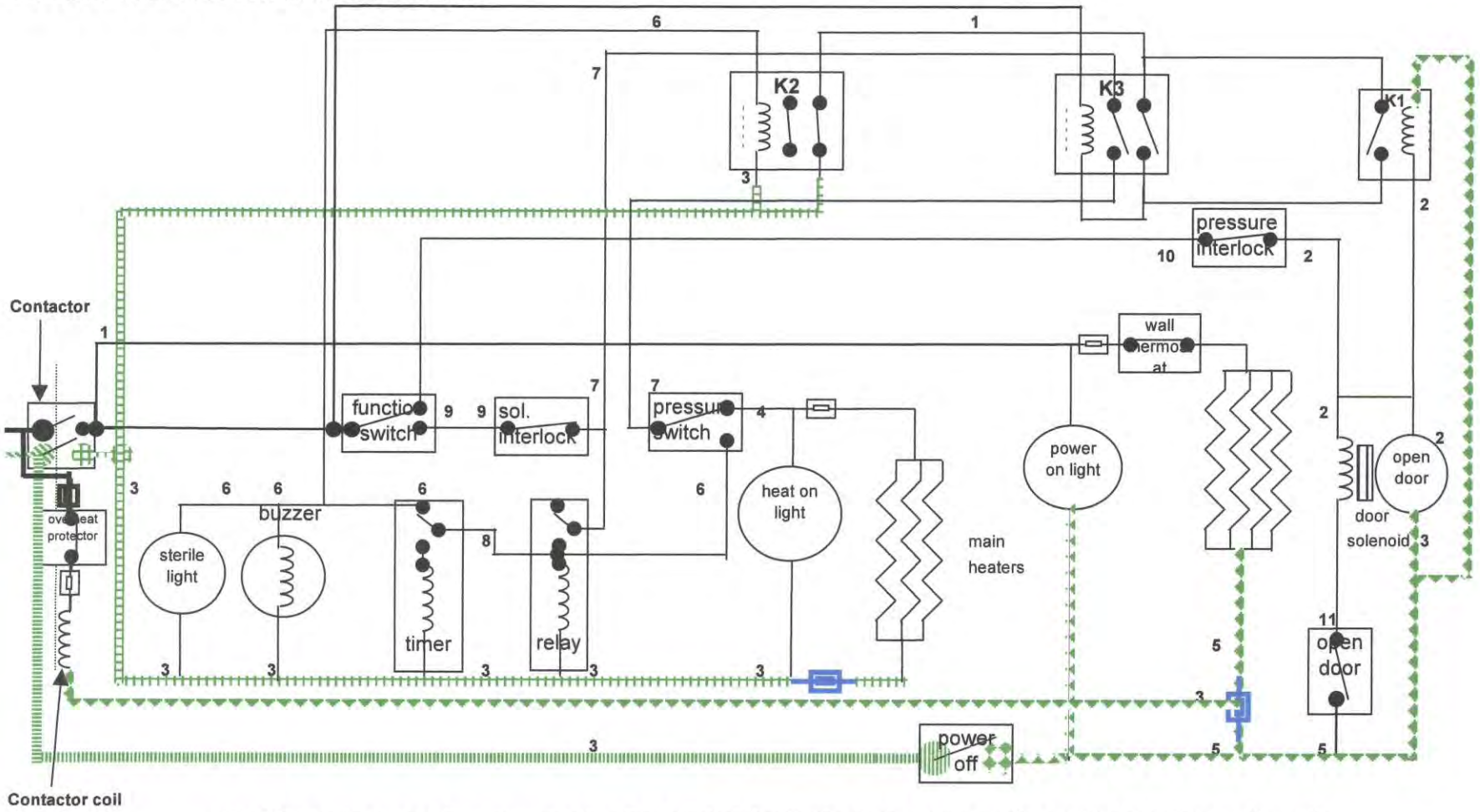


Relay Control Operation description.
Circuit is shown in the "FILL" position as a cold unit.

Whenever the "OPEN DOOR" light is on voltage is applied to the coil of K1.
When the contact of K1 is closed it completes the circuit for K3's coil causing K3 to activate.
One set of K3's contacts are in parallel with K1's contacts, they latch K3 in the activated position.
The Second set on contacts on K3 closes the circuit for wire 7 between solenoid interlock and pressure switch.
The common circuit for K1 and K3 are feed through a normally closed contact on K2.
K2's coil is connected across the buzzer. When the buzzer activates, K2 activates removing the common from K3 causing it to unlatch.

Note: Since K3 is held in by it's on contact, a disruption in power will cause it to unlatch. It will not latch again until the "OPEN DOOR" light comes back on. This is a safety feature that keeps the unit from automatically restarting after an overheat condition or a power failure.

MAGNACLAVE WIRING DIAGRAM



The Magnaclave uses the common circuit to control the Contactor to power up the control circuitry on the unit. Circuit is shown in the "OFF" position as a cold unit.

Circuit common; all voltage checks should be referenced to this line.

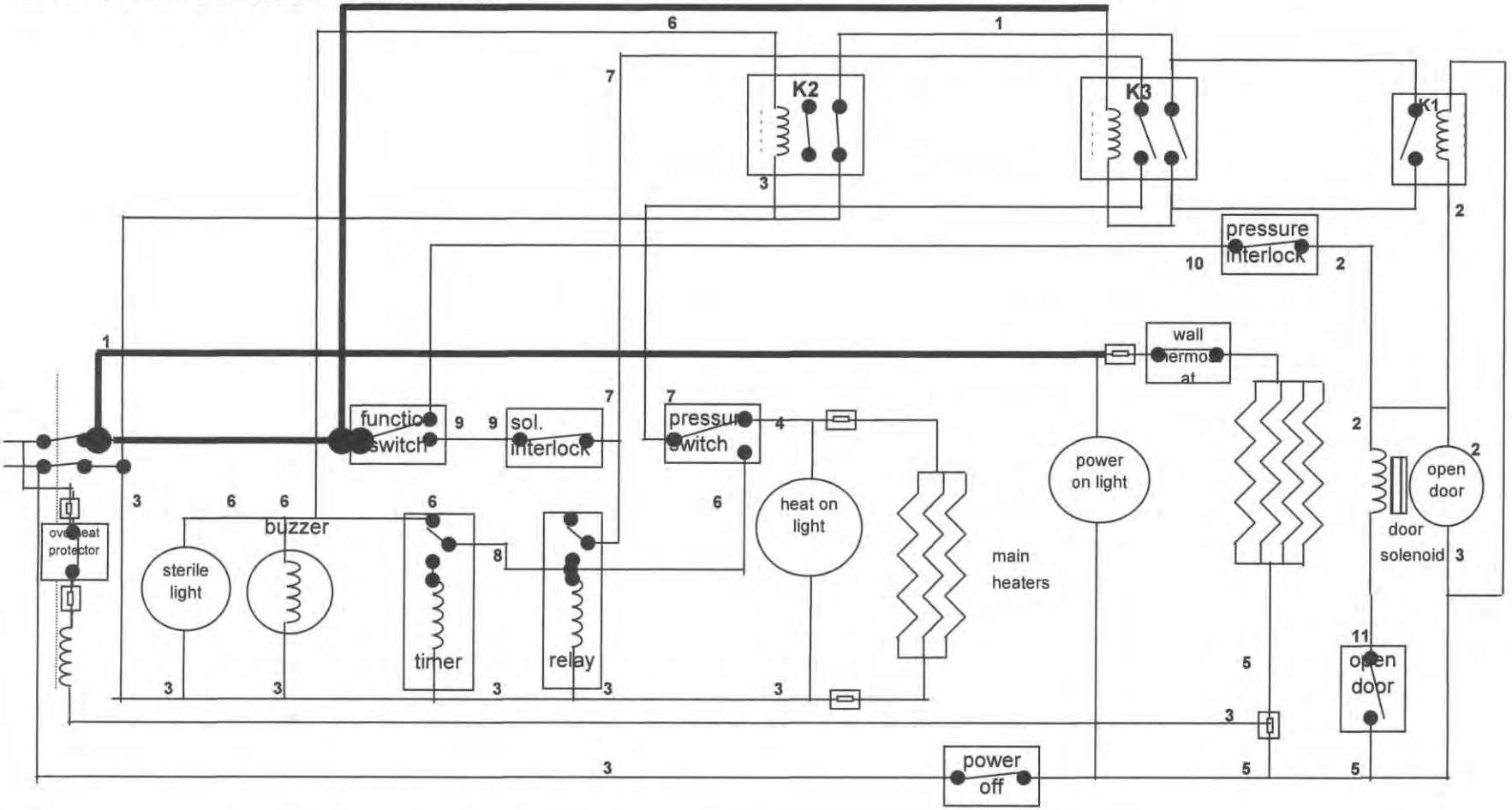
Line in (208 or 240)

Setting function switch to any setting except "OFF" makes this line Circuit common.

note: The power switch section of the function switch completes a circuit from Line in through the overheat protector to the coil of the Contactor to Common to activate the contactor and pull in contacts. This provides power to operate the unit.

This line becomes common when the contactor closes.

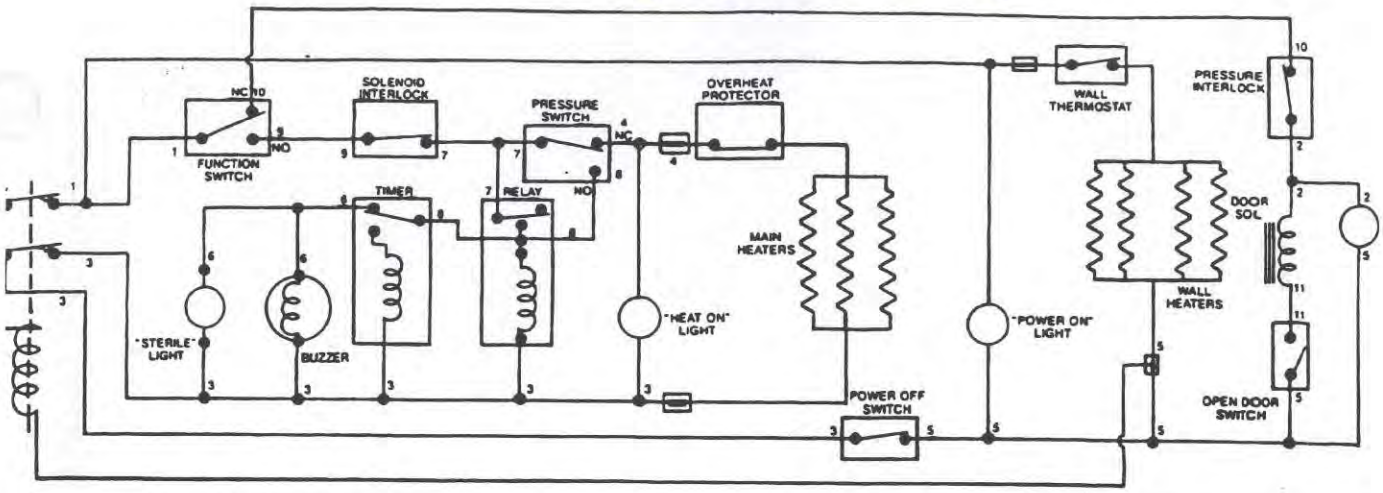
MAGNACLAVE WIRING DIAGRAM

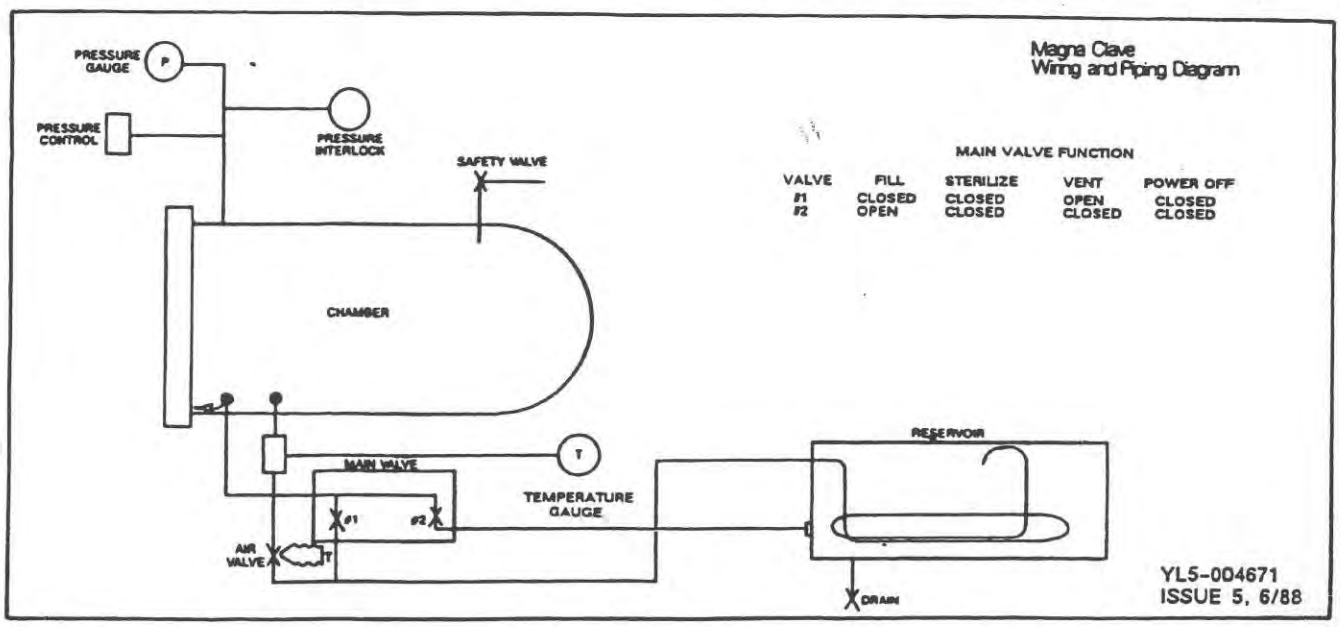


Circuit is shown in the "FILL" position as a cold unit.

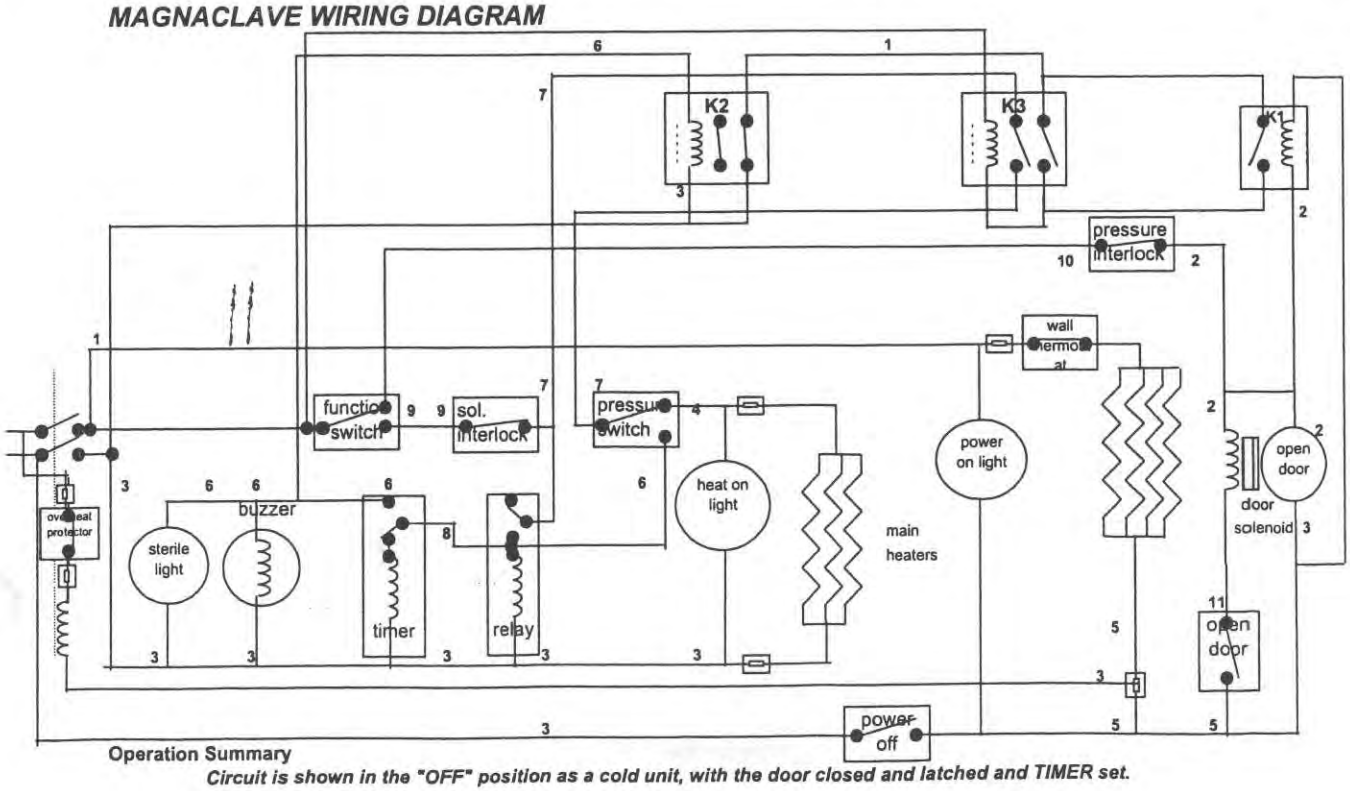
This line becomes line in when contactor closes (208 or 240 from Circuit Common).

OLD STYLE?





MAGNACLAVE WIRING DIAGRAM



NEW STYLE

Operation Summary

Circuit is shown in the "OFF" position as a cold unit, with the door closed and latched and TIMER set.

REFERENCE

REFERENCE ONLY

USA 208-240

Amp. 22-24 with ...

WIRE - 10-12 - 220°

WALL HEATERS CUT OFF AT 220°

WALL circuit

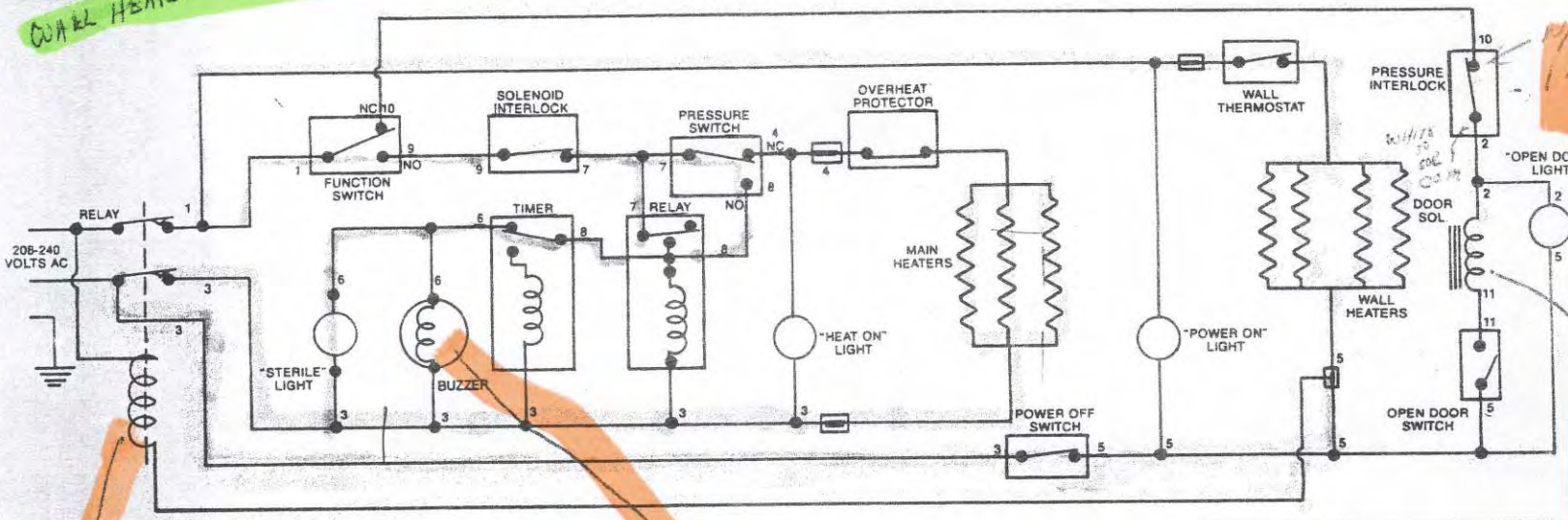
TIMER CIRCUIT

MAIN HEATER

#10 WHITE

Timer 9.6 KΩ

9.6 KΩ

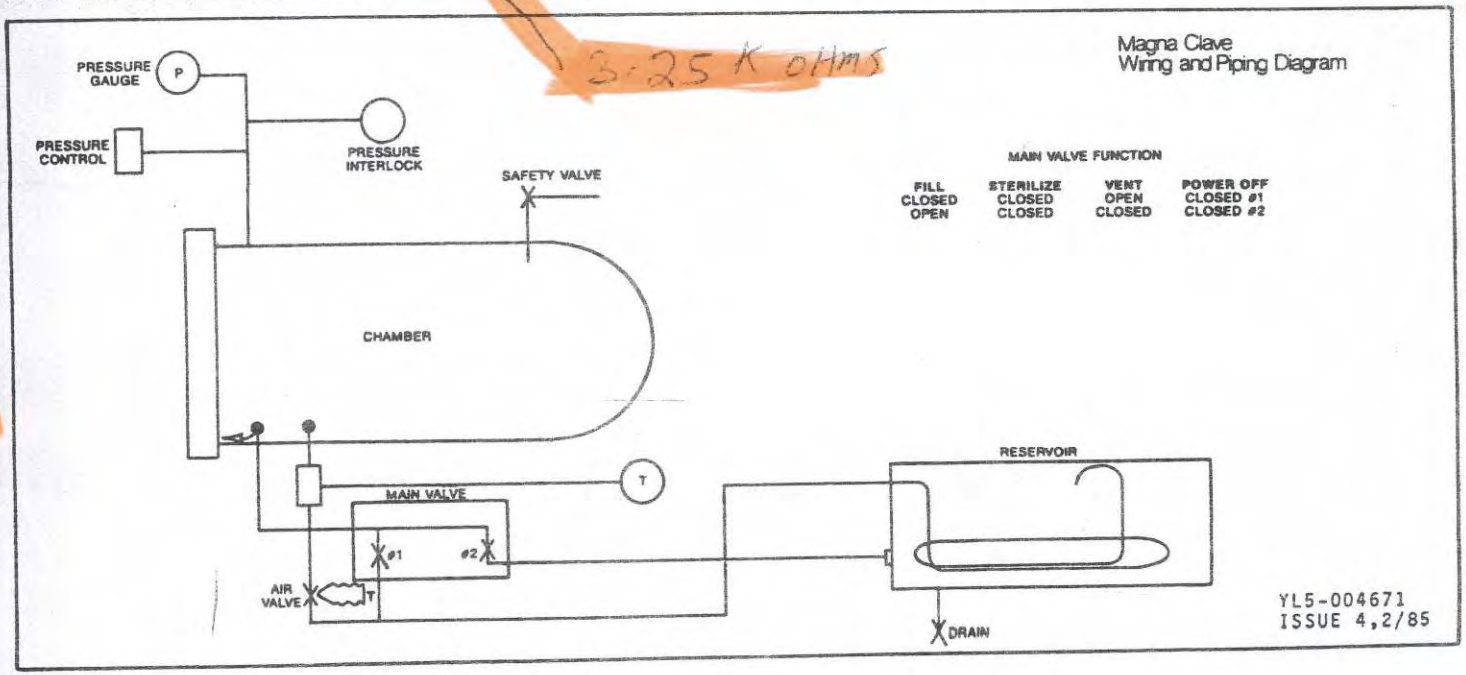


1 LB PRESSURE SWITCH

284 OHMS DOOR SOLE

3.25 K OHMS

865 OHMS MAIN RELAY



TROUBLE SHOOTING QUICK GUIDE

A. PRESSURE AND TEMPERATURE OVERRIDE PRESET LEVEL

1. PRESSURE SWITCH—ADJUST OR REPLACE (Part # 004800, switch only – 004478)
2. WALL THERMOSTAT—WALL HEATERS SHOULD CUT OFF AT APPROX. 220 DEG. F. (THERMOSTAT SHOULD BE TIGHT AGAINST CHAMBER) Wall T-stat kit #004836
3. RESERVOIR FILTER STOPPED UP AND CANNOT BLEED AIR FROM CHAMBER (004543)
4. BELLOWS DEFECTIVE AND CANNOT BLEED AIR FROM CHAMBER (004048)

B. WILL NOT BUILD TEMPERATURE OR PRESSURE

1. INSUFFICIENT WATER IN CHAMBER (NOT LEVEL-SLIGHTLY LOWER IN FRONT)
2. AIR VALVE LEAKS EXCESSIVELY
    a. trash
    b. bad bellows (004048)
    c. seat damaged
3. DEFECTIVE OVER HEAT SWITCH (004505)
4. DEFECTIVE TEMPERATURE OR PRESSURE GAUGE
5. FUNCTION SWITCH OUT OF ADJUSTMENT (004079)
6. DOOR INTERLOCK NOT CLOSING (004545)
7. DEFECTIVE HEATERS
8. MAIN VALVE LEAKING
    a. trash on seat – check main valve for debris
    b. seat cut (valve kit 017706)

C. TAKES TO LONG TO BUILD PRESSURE AND TEMPERATURE

1. LOAD TO LARGE (FLUIDS OR INSTRUMENTS)
2. DEFECTIVE WALL THERMOSTAT (OPEN) (Wall T-stat kit 004836)
3. AIR VALVE LEAKS EXCESSIVELY (BELLOWS OR SEAT)
4. LOW LINE VOLTAGE (208 OR 220)
5. OVERHEAT THERMOSTAT SET TO LOW
6. HEATER BURNED OUT

D. SCORCHING PACKS

1. INSUFFICIENT WATER IN CHAMBER
2. PACKS TOUCHING CHAMBER WALL
3. WALL THERMOSTAT NOT CUTTING POWER TO WALL HEATERS
    a. defective (Wall T-stat kit 004836)
    b. not touching wall
    c. leaving unit on after buzzer has sounded (for units prior to Serial # 7525)

E. WILL NOT DRY PACKS

1. CHAMBER NOT LEVEL
2. FILTER NOT TOUCHING THE BOTTOM OF THE CHAMBER
3. OVER LOADED CHAMBER – PACKED TOO TIGHTLY
4. PACKS ARE BEING SOAKED- SOAKED PACKS DO NOT DRY READILY
5. FAILURE TO CRACK DOOR AT THE END OF THE CYCLE

1. DEFECTIVE DOOR GASKET (004497)
2. OPENING DOOR WITH PRESSURE ON IT

G. DOOR LOCKING RING CLOSES HARD

1. REAR GUIDE PIN ON CLAMP RING OUT OF THE SLOT
2. GALLING BETWEEN LOCK RING AND DOOR (SMOOTH BURRS WITH OIL STONE)
3. WORN HINGE PIN BUSHINGS (Bushing 004594)

H. HEAT ON LIGHT NOT ON WHEN TURNED TO STERILIZE

1. DOOR LOCKING PIN NOT ENGAGED
    a. pin not fully closed
    b. pin mechanism binding
    c. solenoid interlock switch out of adjustment (interlock switch 004545)

I. FILLS TOO SLOWLY

1. DIRTY FILTER (1881031)
2. INSUFFICIENT WATER IN RESERVOIR
3. DEBRIS IN MAIN VALVE BLOCK (Rebuild Kit 017706)

J. VENTS TO SLOWLY

1. CLOGGED FILTER IN RESERVOIR (004543)
2. NOT LEVEL
3. CHAMBER FILTER NOT IN PLACE
4. BROKEN VALVE OPERATOR

K. DOOR WILL NOT OPEN

1. MUST HAVE POWER TO UNIT FOR SOLENOID TO WORK
2. DEPRESS DOOR OPEN BUTTON
3. SOLENOID JAMMED OR DEFECTIVE (Solenoid Kit 5473041)
4. ONE POUND PRESSURE SWITCH DEFECTIVE (004461)
5. DOOR LOCKING MECHANISM PIN SHEARED OR MISSING
6. PRESSURE IN CHAMBER
7. LISTEN FOR "DOOR SWITCH" WHEN BUTTTON IS PUSHED. IF NO ACTIVATION ADJUST DOOR SWITCH PUSH ROD.

L. TIMER DOES NOT RUN

1. DEFECTIVE TIMER (part# 041001)
2. DEFECTIVE LATCHING RELAY – When pressure is reached, observe relay to see if it activates (part # 052141)
3. DEFECTIVE PRESSURE SWITCH (MICRO SWITCH) (part # 004478)
4. UNIT HAS NOT REACHED PRESSURE

M. BUZZER DOES NOT SOUND

1. DEFECTIVE BUZZER (004491)
2. DEFECTIVE TIMER (041001)
3. DEFECTIVE LATCHING RELAY (052141)

1. CHECK FUNCTION SWITCH ON MAIN VALVE ASSY. FOR ACTIVATION IN "STERILIZE" POSITION. ADJUST OR REPLACE PART # 004079.
2. CHECK VOLTAGE AT MAIN HEATERS. IF VOLTAGE NOT PRESENT, CHECK OVERHEAT THERMOSTAT, P/N 004505

240V VERSION MAIN HEATERS
57.6 OHMS EACH
19.2 OHMS ALL THREE HEATERS IN PARALLEL

240 V VERSION WALL HEATERS
115 OHMS EACH
28.75 OHMS ALLFOUR IN PARALLEL

208V VERSION MAIN HEATERS
43 OHMS EACH
14.67 OHMS ALL THREE HEATERS IN PARALLEL

208 V VERSION WALL HEATERS
85 OHMS EACH
21.15 OHMS ALLFOUR IN PARALLEL

AMPERAGE DRAW
240 VOLT – 21.5 amps
208 VOLT – 24 amps

MAGNACLAVE

DOOR OPEN LIGHT DOES NOT COME ON VOLTAGE CHECKS

TURN TO VENT POSITION

1. FROM RED#34 WIRE ON POWER SWITCH TO #10 WHITE WIRE ON FUNCTION SWITCH. SHOULD READ 220 VOLTS. REPLACE DEFECTIVE FUNCTION SWITCH PART #004079

2. FROM #2 WHITE WIRE ON 1LB PRESSURE SWITCH (NORMALLY CLOSED) TO RED #34 WIRE ON POWER SWITCH. SHOULD READ 220 VOLTS REPLACE DEFECTIVE 1LB PRESSURE SWITCH PART #004461

PROBLEM: NO HEAT ON LIGHT DOOR OPEN LIGHT IS ON VOLTAGE CHECKS

1. SET TEMPERATURE KNOB TO 260 DEGREES

2. TURN FUNCTION SWITCH TO STERILIZE

3. FROM RED #34 WIRE ON POWER SWITCH TO #9 RED WIRE ON FUNCTION SWITCH. SHOULD READ 220 VOLTS. REPLACE DEFECTIVE FUNCTION SWITCH PART #004079

4. FROM RED #34 WIRE ON POWER SWITCH TO #7 RED WIRE WITH #7 WHITE WIRE ON TERMINAL STRIP. SHOULD READ 220 VOLTS REPLACE DEFECTIVE SOLENOID INTERLOCK SWITCH PART #004545

004467

MAGNACLAVE

PROBLEM: NO HEAT ON LIGHT DOOR OPEN LIGHT IS ON VOLTAGE CHECKS - CONTINUED

5. CHECK FOR 220 VOLTS ON K-1 RELAY BETWEEN WIRES ON TERMINALS 1 & 0. SHOULD READ 0 VOLTS IN STERILIZE. IN FILL & VENT MODES SHOULD READ 220 VOLTS
   REPLACE DEFECTIVE K-1 RELAY PART #045804 * New Style

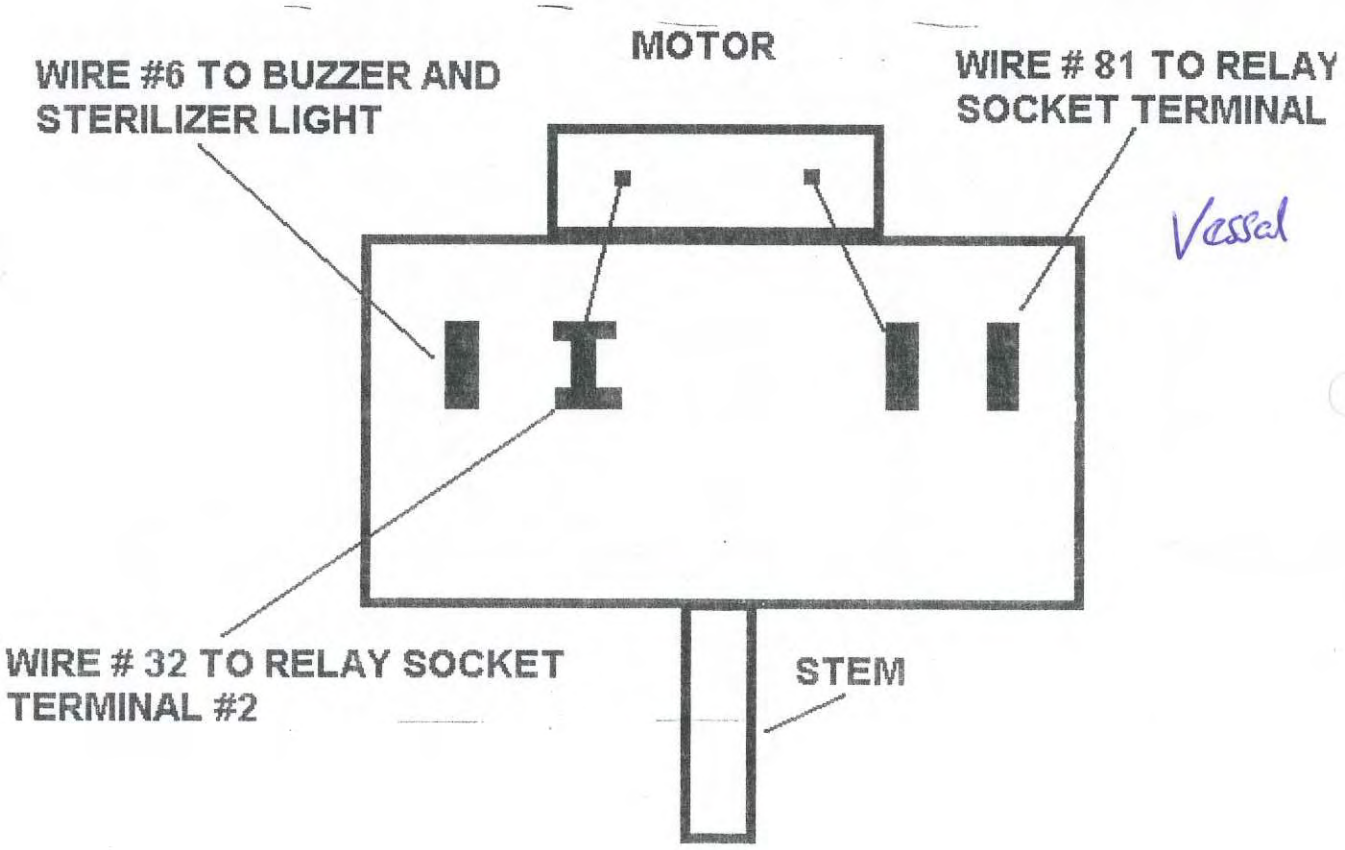
6. FROM COMMON TERMINAL WITH #7 RED WIRE ON TEMPERATURE SWITCH TO #34 RED WIRE ON POWER SWITCH. SHOULD READ 220 VOLTS
   REPLACE DEFECTIVE K-3 RELAY PART #045804 * New style

7. FROM NORMALLY CLOSED TERMINAL ON TEMPERATURE SWITCH TO #34 RED WIRE ON POWER SWITCH. SHOULD READ 220 VOLTS WHILE ROTATING TEMPERATURE KNOB
   REPLACE DEFECTIVE TEMPERATURE SWITCH PART #004478

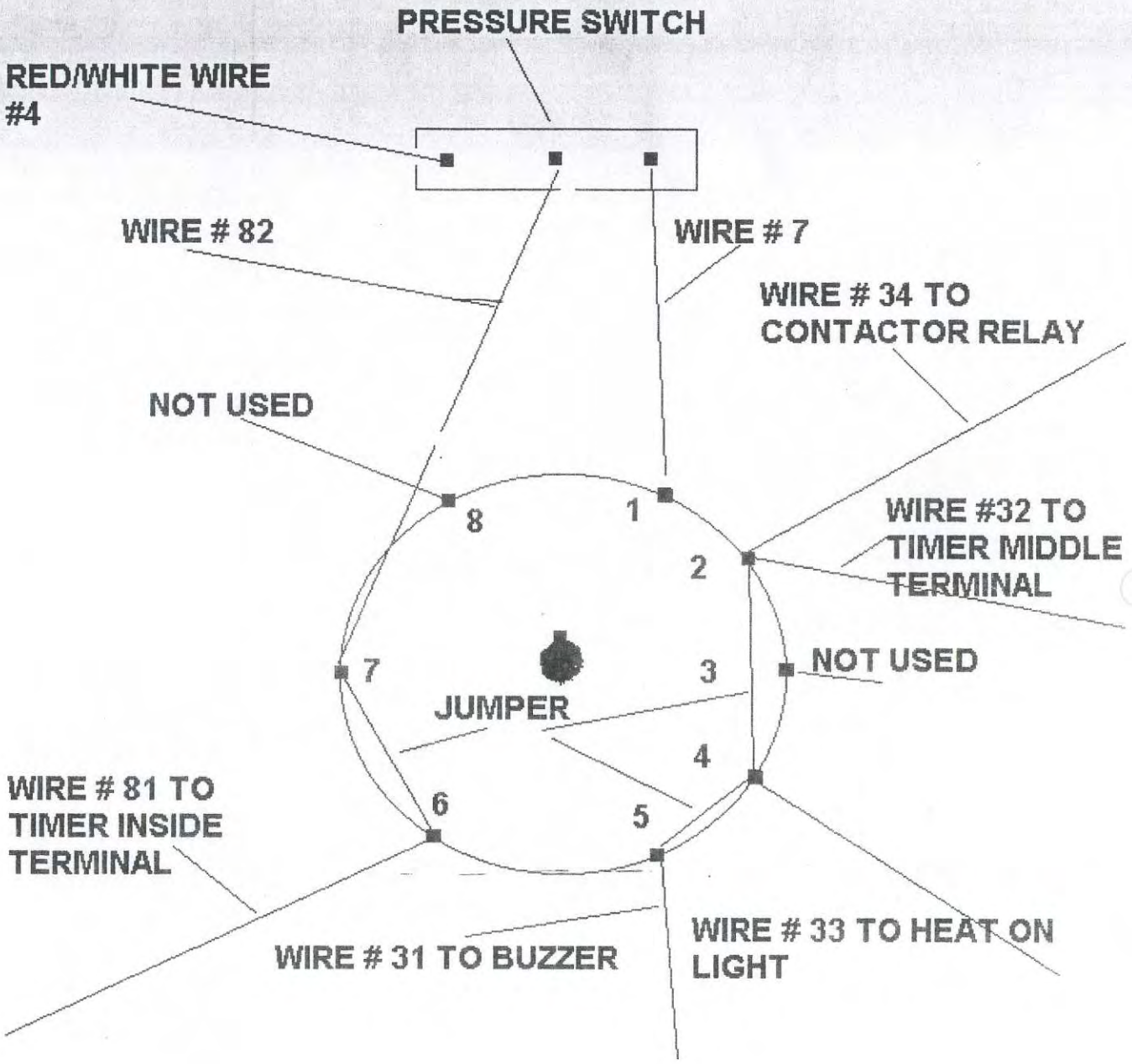
TIMER CHECKS

IF TIMER INOPERABLE CHECK FOR VOLTAGE AFTER HEAT LIGHT STARTS TO CYCLE OFF AND ON. CHECK FOR 220VAC ACROSS LATCHING RELAY WIRES # 32 AND # 81. IF VOLTAGE IS PRESENT TIMER IS BAD, PART # 041001, IF VOLTAGE NOT PRESENT LATCHING RELAY PART #004463 OR TEMPERATURE CONTROL SWITCH IS BAD.

MAGNA-CLAVE TIMER (BOTTOM VIEW)



MAGNA-CLAVE RELAY SOCKET (BOTTOM VIEW)



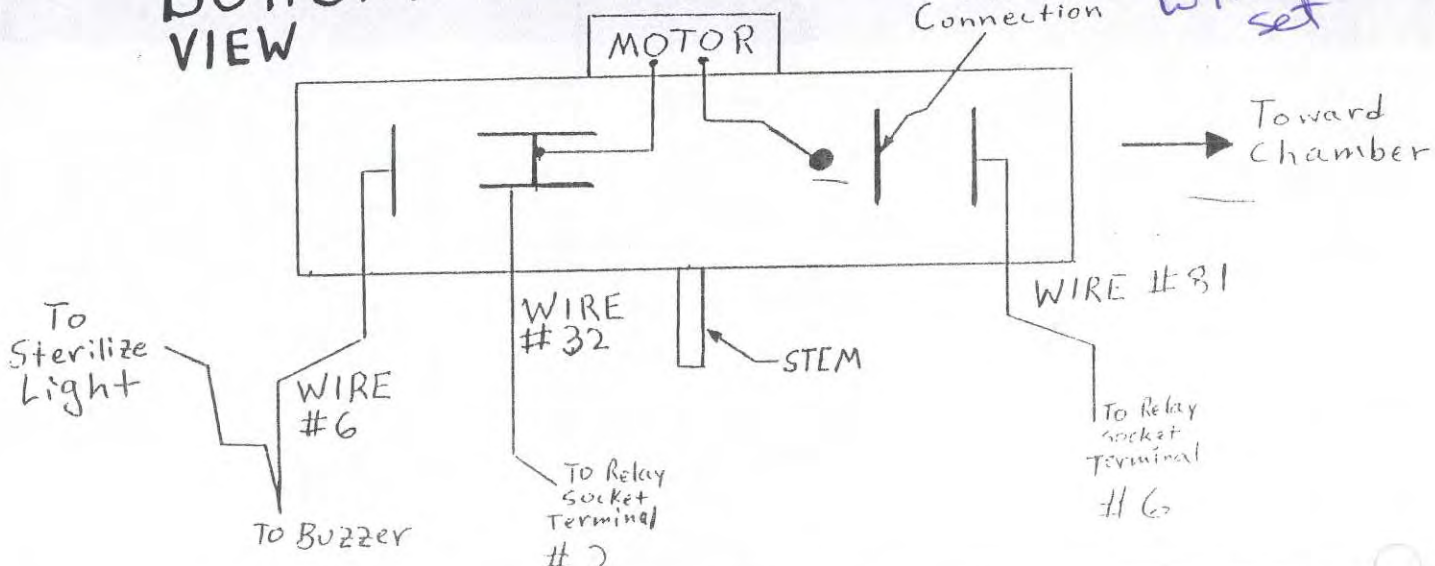
Magna Clave

ELECTRIC TIMER CONNECTIONS

9.6 ~~3.6~~ K52 Across ~~Coil~~ Coil

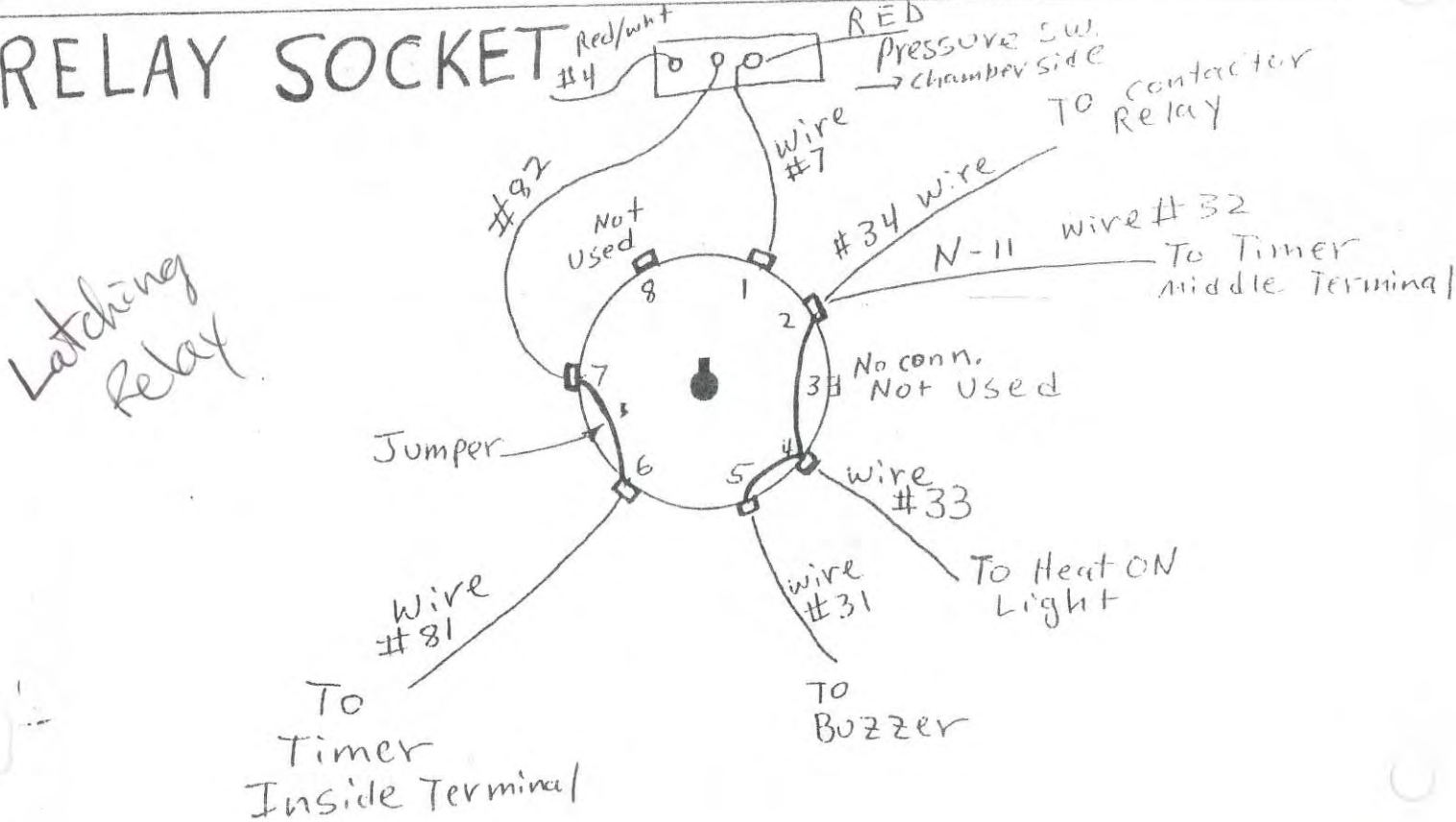
81 to 32 w/timer set

Bottom VIEW

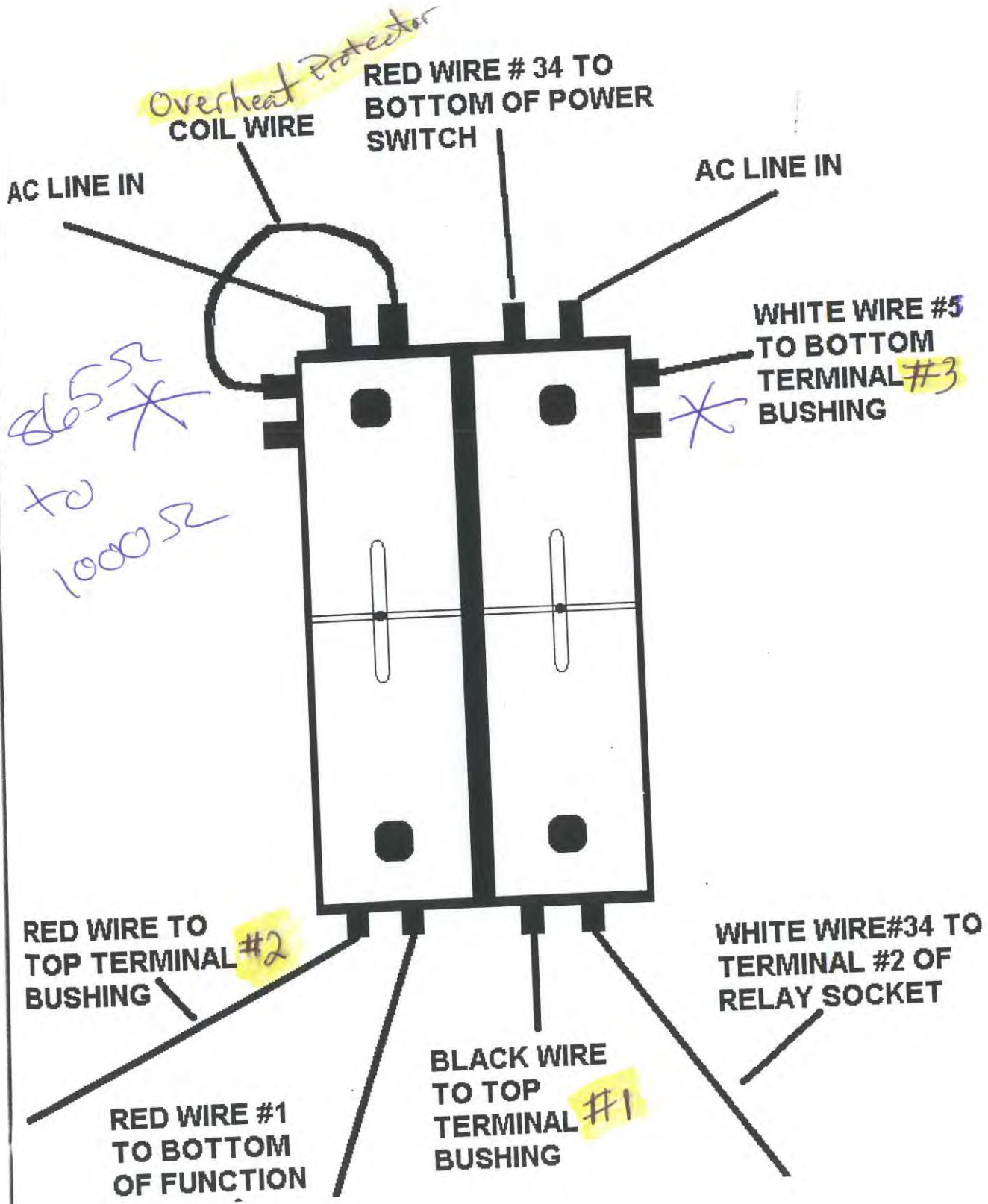


RELAY SOCKET

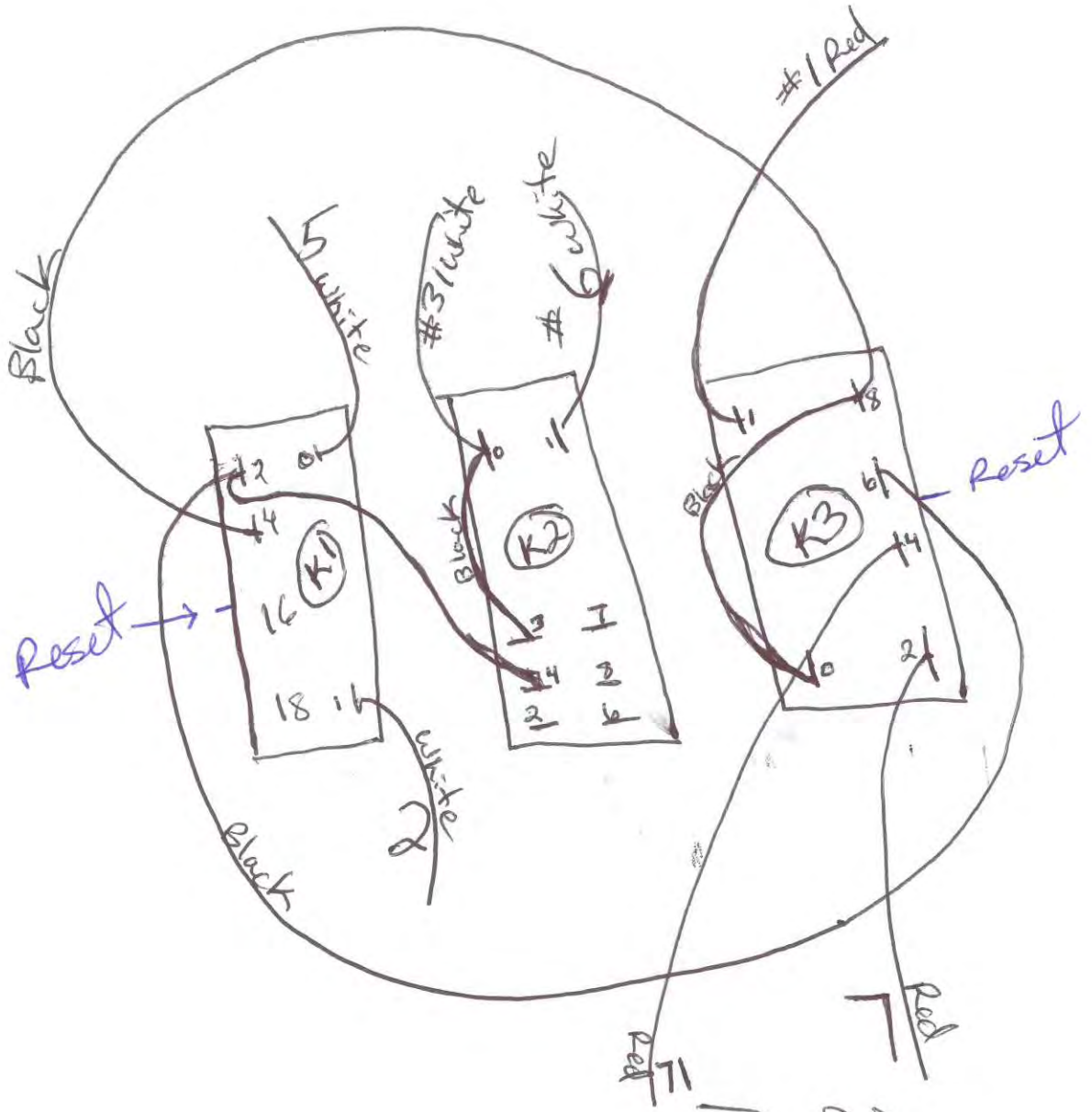
Latching Relay



MAGNA -CLAVE ELECTRICAL CONTACTOR



Chamber ↑



Front of Machine

TO BYPASS relay tie two red wires together

Pelton & Crane P.O. BOX 241147 CHARLOTTE, N.C. 28224

PERFORMANCE CRAFTSMANSHIP

(3) Main Heaters in Parallel 240V 19.20Ω 208V 14.67Ω
Single Heater 57.6Ω 43Ω
(4) Wall Heaters in Parallel 28.75Ω 21.15Ω
Single Heater 115Ω ~~85Ω~~

MAGNA-CLAVE®

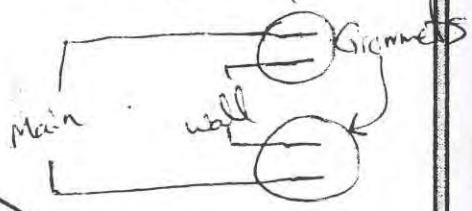
parts list

(includes all serial numbers)

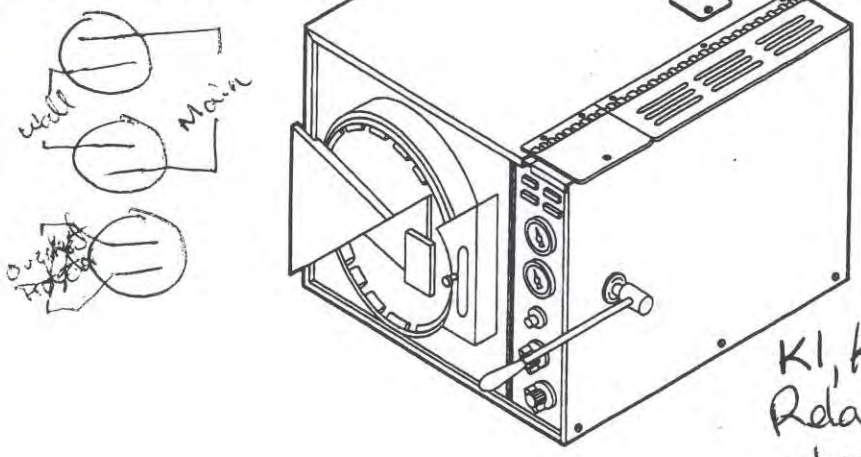
Heaters in parallel

	208V	240V
Main	14.67Ω	19.20Ω
Wall	21.15Ω	28.75Ω

Old Style Heaters



New Style Heaters W/Relays



K1, K2, K3
Relays Added
10/17/2002
w/ S/N-7525

"New Style"

Magnaclave Wiring

White Wires

(3 bushings located on partition, 6 terminals, top terminal is # 1, bottom is # 6)

6 – (004383) 13.5" Stripped both ends from wall heat strip to heat strip
1 – (004811) 14.5" Front wall heater terminal to wall thermostat
1 – (004774) 40" Bottom wall thermostat to bushing terminal # 2
1 – (004773) 28.5" Rear wall heater to bushing terminal # 3
2 – (004772) 17.4" Main heater buss bars ; back to bushing terminal # 1, front buss bar to bushing terminal # 4
2 – (004773) 28.5" Overheat protector to bushings # 5 and # 6

Back Panel Contactor Relay

Left side push on terminal – (046390) Black wire to bottom bushing terminal # 6
Top left relay - (004799) Black- to power cord/ (046389) Black to partition bushing terminal #5
Bottom left relay - # 1 Red from wiring harness, #1 Red from relays and (004776) Red to bushing terminal #2
Bottom right relay- #34 White and (004775) Black wire to top bushing terminal # 1
Top right relay- # 34 Red and (004799) Black to power cord
Right side push on terminal- #5 white to right side push on, # 5 Red & White to bushing terminal #3
 # 4 Red wire from wire harness to bushing terminal #4

Buzzer

6 White from relay and # 6 white from wire harness to inside push on terminal
#31 white from relay and # 31 from wire harness to outside push on terminal

Timer

#81 White to inside terminal
#32 White to double middle terminal
#6 White to outside terminal

Function Control

#1 Red & White to top back push on, if recorder add (004078)double terminal and (046848) white wire
#34 Red to bottom front push on
#10 White to bottom back inside push on
#9 Red to bottom back outside push on
#5 Red and White to top front push on, if recorder add (004078) double terminal and (046848) white wire

Temperature Control

#4 Red & White to outside (near front) screw on terminal
#82 White to middle screw on terminal
#7 Red from relays to inside (near back) screw on terminal
Add (007481) terminal block to top of temp. control, replace outer top screw with (690085 longer screw)
#7Red & White from wiring harness and #71 from relays to same outside terminal on terminal block

Continued next page

Pressure Switch

#2 White to inside (long loose wire)
#10 White to outside

Door Solenoid

#2 White triple to bottom push on terminal (loose wire, small terminal end)
#11 White to top push on (loose wire, small terminal end)

Door Switch Interlock

#7 Red to bottom push on
#9 Red to top push on

Door Open Switch

#11 to top push on (loose wire)
#5 END of triple White to bottom push on & bend wire up out of the way

Lights

POWER ON
#5 CENTER triple White to inside
#1 White to outside
HEAT ON
#33 White double to inside
#4 White to outside
STERILE
#6 White to inside
#33 White to outside
DOOR OPEN
#5 White from relay to inside & #5 White triple wire
#2 White from relay to outside & #2 White short triple wire

Relay Control (045814)

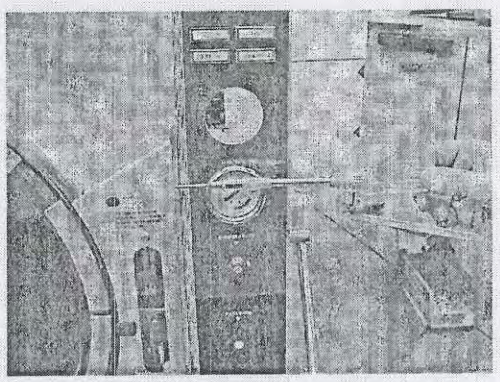
#1Red to contactor inside bottom
#31 White to buzzer outside
#6 White to buzzer inside
#7 Red to temperature control inside
#71 to temperature control terminal strip outside
#2 White to open door light outside
#5 White to open door light inside

Relay orientation –
Relay K1, gray and black relay with reset and black and white wires, located toward front of unit
Relay K2, black relay with black and white wires in center
Relay K3, gray and black relay with reset and black and red wires, located toward back of unit

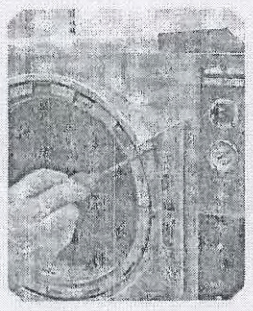
Door Solenoid Adjustment

If the open door button is out of adjustment it can cause the door open solenoid to fail. The solenoid is designed for intermittent duty only and should only be energized when the button is pushed.

With the door-locking lever down use a 3/32" hex driver loosen the setscrew that is accessed through the hole in the side of the door lock cover. Do not remove screw.



The switch that is activated by the door open push button ***must*** not be activated unless the button is pushed. This can be checked by operating the door several times. Determine if the switch is closing when the door open button is pushed and opening when released. The switch can be viewed by opening the access panel on top on magnaclave. The switch is mounted on the partition between chamber and controls and is activated by a plunger .The adjustment to the plunger is made by using a flat bladed screwdriver to adjust the screw that is accessed through the hole in the front of the door lock cover. Counter clockwise rotation backs the plunger away from the switch.



Typical adjustment: Close door, set door lock lever down, set unit to vent. Push "Door Open" button and listen for solenoid to activate. Adjust the screw to where solenoid activates at the very bottom of the push button's travel. Check with door opened.

CHECK ADJUSTMENT, some fine-tuning may be required.
If the adjustment is not done properly the solenoid can remain energized while the door is open and will result in solenoid failure. ***This is not a continuous duty solenoid.*** Operate the door 3 or 4 times to make sure that whether the door is opened or closed, the switch is released when the button is released.
Once adjustment is completed close the door and tighten the setscrew.