

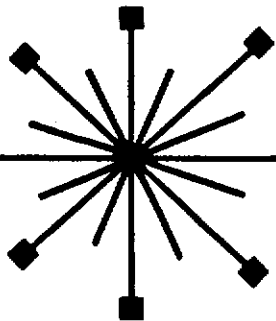
Dixie-Narco[®] INC.

P.O. Box 460 - Lawrence Street
Ranson, West Virginia 25438

(304) 725-3481
(800) 624-0553

SERVICE MANUAL

(Does not include Parts List)



ALL DNCB MODELS

** EMS system (w/ dummy plug)
1 + 4 plug together
2 + 3 left unplugged.*

DIXIE-NARCO

DNCB 432T/252-5-6

Height: 66-5/16
Width: 37-1/16
Depth: 29-1/2
Shipping Wt.: 655 lbs.
Capacity:
Can, 12 oz. 432
Bottle, 16 oz. PLB 252

DNCB 501T/280-7-8

Height: 72
Width: 37-1/16
Depth: 29-1/2
Shipping Wt.: 695 lbs.
Capacity:
Can, 12 oz. 501
Bottle, 16 oz. PLB 280

DNCB 180/105-5

Height: 56-11/16
Width: 28-5/16
Depth: 26
Shipping Wt. 462 lbs.
Capacity:
Can 180
Bottle, Reg. 105
10 oz. PLB

DNCB 522T/300-5-6

Height: 72
Width: 37-1/16
Depth: 29-1/2
Shipping Wt.: 695 lbs.
Capacity:
Can, 12 oz. 522
Bottle, 16 oz. PLB 300

DNCB 600T/340-7-8

Height: 79-1/2
Width: 37-1/16
Depth: 29-1/2
Shipping Wt.: 800 lbs.
Capacity:
Can, 12 oz. 600
Bottle, 16 oz. PLB 340

DNCB 168/99-5-6

Height: 56-11/16
Width: 28-5/16
Depth: 26
Shipping Wt. 462 lbs.
Capacity:
Can, 12 oz. 168
Bottle, Reg. 99
10 oz. PLB 168

DNCB 630T/360-5-6

Height: 79-1/2
Width: 37-1/16
Depth: 29-1/2
Shipping Wt.: 800 lbs.
Capacity:
Can, 12 oz. 630
Bottle, 16 oz. PLB 360

DNCB 630/360-5-6

Height: 79-1/2
Width: 37-1/16
Depth: 33-1/2
Shipping Wt.: 850 lbs.
Capacity:
Can, 12 oz. 630
Bottle, 16 oz. PLB 360

DNCB 240/138-5-6

Height: 66-5/16
Width: 28-5/16
Depth: 26
Shipping Wt. 530 lbs.
Capacity:
Can, 12 oz. 240
Bottle, Reg. 138
10 oz. PLB 228

DNCB 276/162-5-6

Height: 72
Width: 28-5/16
Depth: 26
Shipping Wt. 573 lbs.
Capacity:
Can, 12 oz. 276
Bottle, Reg. 162
10 oz. PLB 264

DNCB 360/210-5-6

Height: 72
Width: 37-1/16
Depth: 26
Shipping Wt. 670 lbs.
Capacity:
Can, 12 oz. 360
Bottle, Reg. 210
10 oz. PLB 348

DNCB 432/246-5-6

Height: 79 1/2
Width: 37-1/16
Depth: 26
Shipping Wt. 716 lbs.
Capacity:
Can, 12 oz. 432
Bottle, Reg. 246
10 oz. PLB 432

DNCB 320/184-7-8

Height: 66-5/16
Width: 37-1/16
Depth: 26
Shipping Wt. 643 lbs.
Capacity:
Can, 12 oz. 320
Bottle, Reg. 184
10 oz. PLB 304

DNCB 368/216-7-8

Height: 72
Width: 37-1/16
Depth: 26
Shipping Wt. 690 lbs.
Capacity:
Can, 12 oz. 368
Bottle, Reg. 216
10 oz. PLB 352

DNCB 440/252-7-8

Height: 79 1/2
Width: 37-1/16
Depth: 26
Shipping Wt. 748 lbs.
Capacity:
Can, 12 oz. 440
Bottle, Reg. 252
10 oz. PLB 432

DNCB 348/206-9-10

Height: 72
Width: 37-1/16
Depth: 26
Shipping Wt. 690 lbs.
Capacity:
Can, 12 oz. 348
Bottle, Reg. 206
10 oz. PLB 328

DNCB 414/239-9-10

Height: 79 1/2
Width: 37-1/16
Depth: 26
Shipping Wt. 748 lbs.
Capacity:
Can, 12 oz. 414
Bottle, Reg. 239
10 oz. PLB 396

DNCB 304/174-9-10

Height: 66-5/16
Width: 37-1/16
Depth: 26
Shipping Wt. 643 lbs.
Capacity:
Can, 12 oz. 304
Bottle, Reg. 174
10 oz. PLB 284

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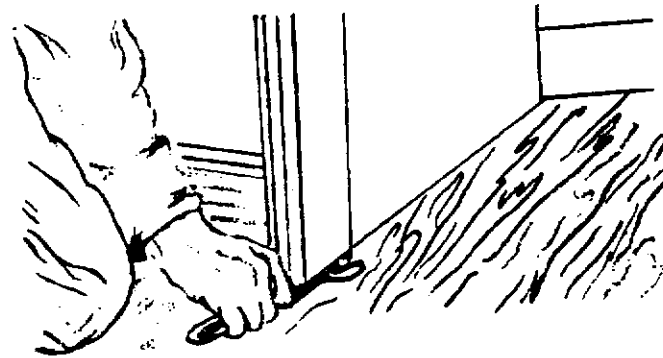
WHAT TO DO WHEN YOU GET A NEW VENDER

— PUT IT TO WORK —

LEVEL THE VENDER

Level the vender. When the vender is level then the door can be opened to any position and it will not move by itself. Try it half closed, straight open and wide open before you decide that the vender is level.

Make sure that all of the leveling screws are touching the floor.



Level the Vender

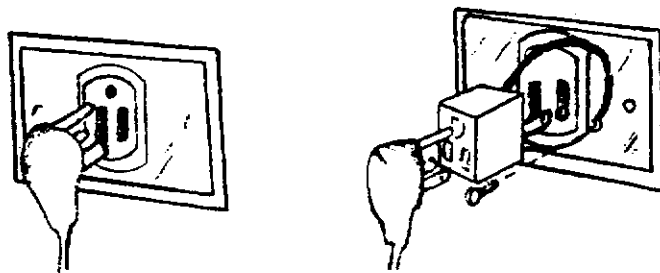
ELECTRIC POWER NEEDED

Look at the serial number plate on the right side to find out what the vender's power needs are. Be sure that the vender gets the right power.

The vender uses 115 volts single phase, 60 cycle, alternating current. The voltage must never be lower than 103 or above 127.

GROUND THE VENDER

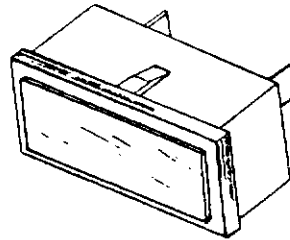
This vender is made with a three prong plug on the supply cord. It grounds when the plug is put into a three prong outlet. If there is no prong outlet near the vender, use a two prong adapter. If a two prong adapter is used, make sure the adapter's ground wire is connected to a good ground.



Ground the Vender

HOW THE VENDING MECHANISM WORKS – ELECTRICAL PARTS –

CORRECT CHANGE LAMP



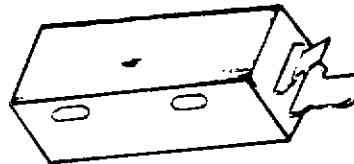
Correct Change Lamp

The correct change lamp is mounted in the coin insert casting and is retained by projections top and bottom.

The correct change lamp is in the coin tube switch circuit and is "OFF" when coins are in the tube.

SELECT SWITCH NO.

1, 2, 3, 4, 5, 6, 7 and 8



Select Switch

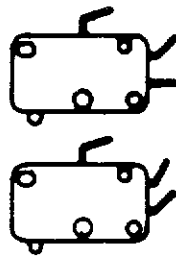
The select switch is located in the selector panel behind the push button and is secured with two (2) screws.

The N.O. contact of the Select Switch is in the Vend Motor Coil and the Sold Out Lamp circuits. This N.O. contact closes and completes the Vend Motor Coil Circuit and the Sold Out Lamp Circuit.

The N.C. contact of the Select Switch is in the Vend Motor Coil Circuits. This N.C. contact opens in the Select Panel Circuit.

LAMP SOLD OUT SWITCH

1, 2, 3, 4, 5, 6, 7 and 8



Lamp Sold Out Switch

The lamp sold out switch (one for each vending circuit) is located near the bottom of the column at the front and is fastened with screws.

The N.C. contact of the (lamp) sold out switch is in the Vend Relay Coil Circuit and the Coin Changer Magnet Circuit. This N.C. contact (kept closed by can or bottle) is in parallel with all of the other N.C. contacts of the Lamp Sold Out Switches and when all are open, the coin changer magnets are turned off and the changer will not accept coins.

The N.O. contact of the (Lamp) sold out switch is in the sold out lamp circuit (kept open by can or bottle). When not kept open by can or bottle, this N.O. contact closes and completes the sold out lamp circuit.

HOW THE VENDING MECHANISM WORKS (Cont.)

— ELECTRICAL PARTS — (Cont.)

SOLD OUT LAMPS

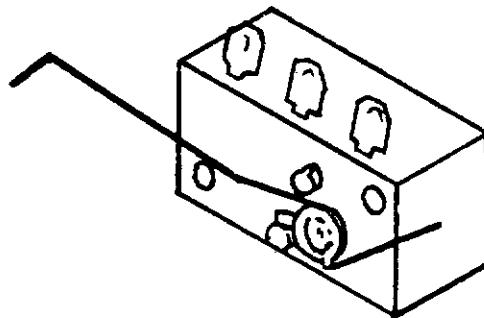


Sold Out Lamp

The Sold Out Lamp (one for each vending circuit) is secured to the back of the select button in the Selector Panel.

The Sold Out Lamp is turned on by the closing of the N.O. contacts of the Lamp Sold Out Switch.

COIN VEND SWITCH (Coin Changer)



Coin Vend Switch

The Coin Vend Switch is located below the slug rejector and is fastened to the coin changer housing with two (2) screws and nuts.

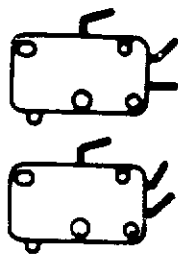
The N.O. contact of the Coin Vend Switch is in the vend relay coil and the coin changer magnet circuits. This N.O. contact closes and completes the vend relay coil circuits.

The N.C. contact of the Coin Vend Switch is in the vend motor coil circuits. This N.C. contact closes in the vend motor coil circuits to set up these circuits so that a selection can be made.

HOW THE VENDING MECHANISM WORKS (Cont.)

– ELECTRICAL PARTS – (Cont.)

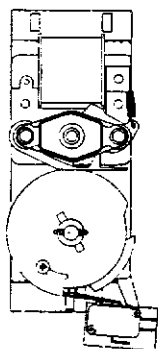
VEND SOLD OUT SWITCH 1, 2, 3, 4, 5, 6, 7 and 8



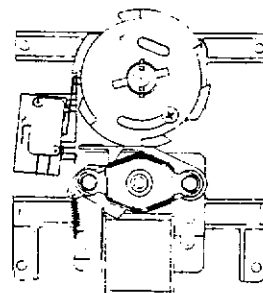
Sold Out Switch

The Vend Sold Out Switch (one for each vending circuit) is located on a bracket at the base of each vend stack.

The N.C. contact of the Vend Sold Out Switch is in the Vend Motor Circuit. This N.C. contact (held closed by can or bottle) stays closed in the vend motor circuit so the Vend Motor Circuit can be completed.



For Narrow Column



For Standard Column

VEND MOTOR

The Vend Motor (one for each vending stack) is mounted on a bracket at the front of the vender.

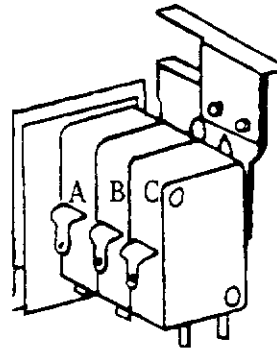
The Vend Motor is in the vend motor coil circuit. The Vend Motor runs when a N.O. select switch (pushed) closes and completes the vend motor circuit. The Vend Motor continues to run through the N.C. contact (worked by the vend motor cam) of the cam hold switch. The Vend Motor stops when the vend motor switch arm drops off of the high side of the vend motor cam.

HOW THE VENDING MECHANISM WORKS (Cont.)

— ELECTRICAL PARTS — (Cont.)

VEND MOTOR SWITCH

- A. Is Vend Motor Switch
- B. Is Cam-Hold Switch
- C. Is By-Pass Switch



The Vend Motor, the Cam-Hold and the By-Pass switches are together and do not come apart. The Vend Motor Switch, one (1) for each circuit, is located on the Vend Motor Assembly secured by two (2) screws.

The N.C. contact of the Vend Motor Switch is in the Coin Changer Circuit. This N.C. contact opens in the Coin Changer Circuit.

The N.O. contact of the Vend Motor Switch is in the Vend Motor Coil Circuit. This N.O. contact closes in the Vend Motor Coil Circuit to keep the Vend Motor running until the arm of the Vend Motor Switch drops into the cam notch and the Vend Motor stops.

CAM HOLD SWITCH

The Vend Motor, Cam-Hold and the By-Pass switches are together and do not come apart. The Cam-Hold switch, one (1) for each circuit, is located on the Vend Motor Assembly secured to a bracket by two (2) screws. This is in the vend motor circuit.

The N.O. contact of the Cam-Hold switch (held closed by the vending cam) is in the Vend Motor circuit. Shortly after the beginning of the vending cycle the arm of the switch (worked by the vending cam) drops into the cam notch and this N.O. contact opens in the circuit to the Select Panel.

When the arm of the switch reaches top side of cam this N.O. contact closes in the circuit to the Select Panel and is still closed at end of the vending cycle.

When the arm of the switch drops into the cam notch, the N.C. contact closes in the Vend Motor Coil Circuit to keep the Vend Motor running. When the arm of the switch reaches top side of cam, this N.C. contact opens in the Vend Motor circuit and is still open at end of the vending cycle.

BY-PASS SWITCH

The Vend Motor, the Cam-Hold and the By-Pass switches are together and do not come apart. The By-Pass Switch, one (1) for each circuit, is located on the Vend Motor Assembly secured by two (2) screws. This switch is a by-pass around the Vend Motor Switch to keep the Coin Changer circuit closed if the Vend Motor stops or is stopped when the arm of the Vend Motor Switch is top side of the vending cam, i.e., all other vending circuits are operative.

HOW THE VENDING MECHANISM WORKS (Cont.)

— ELECTRICAL PARTS — (Cont.)

BY-PASS SWITCH (Cont.)

The N.O. contact of the By-Pass Switch, there is no N.C. (held closed by the vending cam), is in the Coin Changer Circuit. Shortly after the beginning of the vending cycle, the arm of the switch (worked by the vending cam) drops into the Cam notch and this N.O. contact opens in the Coin Changer Circuit. When the arm of the switch reaches top-side of cam this N.O. contact closes in the Coin Changer Circuit and is still closed at end of the vending cycle.

VEND RELAY

VEND RELAY SWITCH NO. 1 N.C. (there is no N.O.)

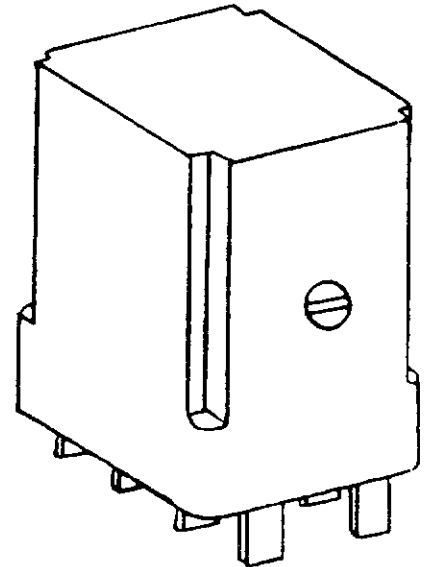
The N.C. contact of Vend Relay Switch No. 1 is the Coin Changer Circuit. This N.C. contact opens and breaks the Coin Changer Magnet Circuit.

VEND RELAY SWITCH NO. 2 N.O. (there is no N.C.)

The N.O. contact of Vend Relay Switch No. 2 is in each of the Vend Motor Coil Circuits. This N.O. contact closes in the Vend Motor Coil Circuits to set up these circuits so that a selection can be made.

VEND RELAY NO. 3 N.O. (there is no N.C.)

The N.O. contact of Vend Relay Switch No. 3 is in the Vend Relay Coil Circuit. This N.O. contact closes in and keeps the Vend Relay Coil Circuit completed.

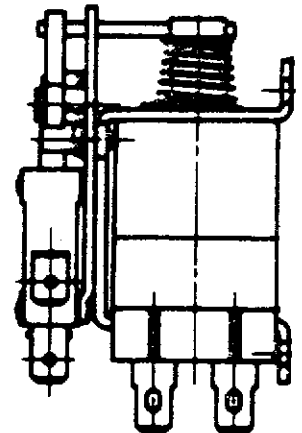


SEQUENCE RELAY

The sequence relay is located on a bracket, adjacent to the vend relay (credit relay) on the inner door and secured with two (2) screws.

When a credit is set up by the Coin Changer and the vend relay is energized, the N.O. vend relay switch #2 closes and completes the sequence relay coil circuit.

The sequence relay coil circuit is broken when the N.O. cam hold switch (held closed by the motor cam) opens in the sequence relay coil circuit.



HOW THE VENDING MECHANISM WORKS (Cont.)

VENDING CYCLE AND

Study-
ACROSS THE LINE WIRING DIAGRAM

Study the written vending cycle beginning on Page 9 in connection with the across the line wiring diagram. The Across the Line Wiring Diagram can serve as an excellent "trouble shooting chart."

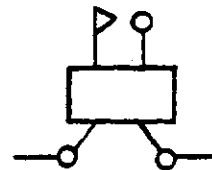
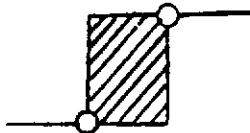
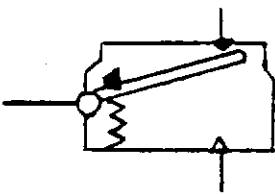
Example: Vender accepts coin.
Vend relay is energized but immediately "pops" out.

Do this: Look at Across the Line Wiring Diagrams beginning of page 44 and locate:

1. coin vend switch

2. vend relay

3. vend relay switch No. 1



- Observations:**
1. Vend relay coil is the affected circuit.
 2. N.O. coin vend switch is in the vend relay coil circuit.
 3. N.O. Vend Relay Switch No. 3 is also in the vend relay coil circuit.
 4. N.O. Vend Relay Switch No. 3 is the "holding switch" for this circuit.

- Conclusions:**
1. N.O. Vend Relay Switch No. 3 did not "hold" or keep the circuit closed.

WHY:

- Check:**
1. Gap between contacts (too far apart).
 2. Dirt between contact.
 3. Weak coil on Vend Relay.

HOW THE VENDING MECHANISM WORKS (Cont.)

* - VEND CYCLE - (Cont.)

WHAT DOES IT	WHAT HAPPENS
The Vending Cam	
A coin	Pushes the coin vend switch arm down and;
The N.O. contact of the coin vend switch	Closes and completes the vend relay coil circuit.
The Vend Relay Coil	<p>Closes the N.O. contact of Vend Relay Switch #3 in the Vend Relay Coil Circuit and at the same time,</p> <p>Opens the N.C. contact of Vend Relay Switch #1 in the Coin Changer Magnet Circuit and at the same time,</p> <p>Closes the N.O. Contact of vend relay switch #2 in the vend motor coil circuits and closes and completes the sequence relay coil circuit.</p>
A spring (in the coin vend switch)	Pulls the vend switch arm back up and,
The N.C. contact of the coin vend switch	Closes in the Vend motor coil circuit,
The customer	Pushes a select button
The select button	Works the N.O. contact of the select switch
The N.O. contact of the select switch	Closes and completes the vend motor coil and the sold out lamp circuit, and
The vend motor	Starts to run and at the same time,
The N.C. contact of the select switch	Opens in the select panel circuit, and at the same time
The vending cam	Works the arm of the cam hold switch -- the arm drops into the cam's notch
The N.O. contact of the Cam Hold Switch (held closed by cam)	Opens in the Select Panel Circuit and opens and breaks the Sequence Relay Coil circuit and at the same time,
The N.C. contact of the Cam Hold switch	Closes in the Vend Motor Coil Circuit to keep the motor turning and at the same time,

*Refer to Across the Line Wiring Diagrams beginning of page 44.

HOW THE VENDING MECHANISM WORKS (Cont.)

* - VEND CYCLE - (Cont.)

WHAT DOES IT	WHAT HAPPENS
The Vending Cam	Works the arm of the by-pass switch - - - the arm drops into the cam's notch and,
The N.O. contact of the by-pass switch (held closed by cam)	Opens in the Coin Changer Circuit and,
The Vending Cam	Works the arm of the vend motor switch - - - the arm rises to high side of cam and
The N.O. contact of the Vend Motor Switch	Closes in the Vend Motor Coil Circuit to keep the Vend Motor running and at the same time
The N.C. contact of the Vend Motor Switch	Opens and breaks the vend relay coil circuit and,
The N.O. contact of Vend Relay Switch #3	Opens in the vend relay coil circuit and at the same time,
The N.C. contact of Vend Relay Switch #1	Closes in the Coin Changer circuit and the arm of the by-pass switch and the cam hold switch ride to high side of cam and,
The N.O. contact of Vend Relay Switch #2	Opens in the Vend Motor Coil Circuits and rapidly thereafter
The N.O. contact of the by-pass switch	Closes in the Coin Changer Circuit and at the same time.
The N.O. contact of the Cam hold switch	Closes in the Select Panel Circuit and at the same time.
The N.C. contact of the Cam hold switch	Opens in the Vend Motor Coil Circuit and,
The Vending Cam	Continues to work the arm of the vend motor switch and the arm drops into the cam notch and
The N.O. contact of the Vend Motor Switch	Opens and breaks the Vend Motor Coil Circuit - - - the Motor stops and the oscillator stops and,
The N.C. contact of the Vend Motor Switch	Closes in the Coin Changer Circuit,

*Refer to Across the Line Wiring Diagrams beginning on page 44.

HOW TO TAKE CARE OF THE VENDER

– WHAT TO CLEAN –

CABINET

Wash the vender exterior with either soap and warm water or a good detergent and warm water.

Wash all plastic parts with a mild soap and warm water.

The vender should be waxed often with a good grade of automobile wax.

Any corrosion inside the vender should be removed with fine steel wool and the area should be painted with aluminum paint.

Keep the condenser clean.

SLUG REJECTOR

Use a clean cloth to remove loose dirt. A dirty rejector should be cleaned with hot water and a good detergent. Dry it with a clean cloth.

Lubricate only the moving parts of the slug rejector. Oil should not be used on these moving parts.

– WHEN AND WHAT TO LUBRICATE –

HOW OFTEN	PART	LUBRICANT
Every six months Every year Every six months	Main Door 1. Lock bolt and nut retainer 2. Hinge pivot points 3. Door gasket Inner Door 1. Latch assembly 2. Hinge pivot points	Mechanics Friend Mechanics Friend Slipicone Mechanics Friend Mechanics Friend

HOW TO TAKE CARE OF THE VENDER (Cont.)

- THINGS TO ADJUST -

<p>TEMPERATURE CONTROL — Ranco No. A12-1558 Ranco K12-L1535 Cutler Hammer No. 9531N272</p>	[Redacted Box]	<p>All Models Except INCB630/360-5 & -6</p>
<p>Cutler Hammer No. 9531N222</p>	[Redacted Box]	<p>DNCB 630/360-5 & -6 Only</p>

This is a "Constant Cut In" type of control which has two (2) adjustments: They are:

1. The temperature control cam on the outside of the temperature control box.
2. The inside range screw or screws - see page 13 for details.

NOTE: The differential screw located between the terminals of the control is sealed and MUST NOT BE CHANGED.

As to No. 1 Adjustment: (Outside Range)

The temperature control cam is set in an approximate neutral position. It can be used to make cut out temperature colder by turning the cam clockwise - or - to make the cut out temperature warmer by turning the cam counter clockwise. When the cam is used the cut in temperature (which governs the defrost) remains constant.

As to No. 2 Adjustment: (Inside Range)

The inside range screw or screws are used for the altitude adjustment, see altitude below. This screw adjusts both the cut out and cut in settings on the RANCO. It may also be used for colder temperatures by turning the screw counter clockwise or warmer by turning screw clockwise.

On the Cutler Hammer there are two (2) screws provided, one (1) for cut in and one (1) for cut out, both must be adjusted for altitude corrections. For temperature adjustment, turn screws clockwise for colder and counter clockwise for warmer. When adjusting for temperature DO NOT TURN more than 1/8 of a turn at a time. Let the machine run over night before making further adjustment.

TEMPERATURE CONTROL ALTITUDE ADJUSTMENT

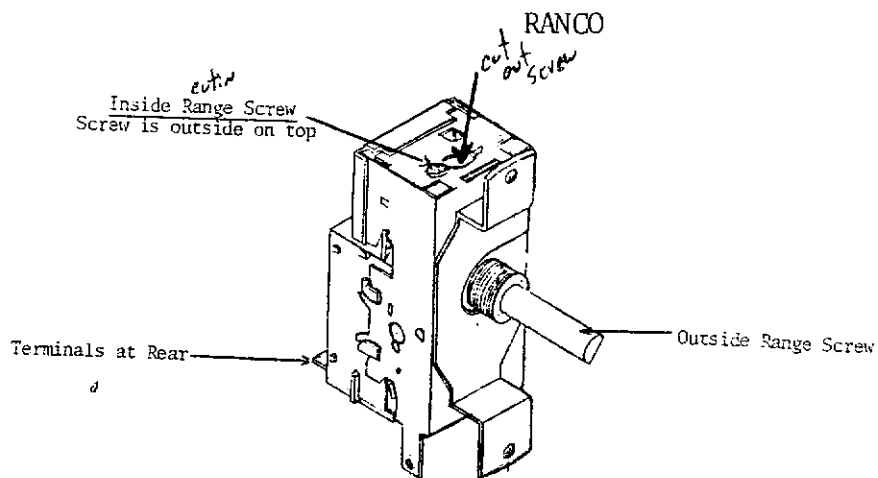
Control is factory set at altitude of 500 ft. For higher altitudes, control should be adjusted to prevent freeze-up of product. Adjust inside range screw as follows:

Altitude Ft:	Ranco A12-1558 <u>Screw Clockwise</u>	Ranco K12-L1535 <u>Screw Clockwise</u>	Cutler-Hammer 9531N272 - 9531N222 Both Screws <u>Counter-Clockwise</u>
2000	1/4 Turn	1/4 Turn	1/8 Turn
4000	1/2 Turn	5/8 Turn	1/4 Turn
6000	3/4 Turn	1 Turn	1/2 Turn
8000	1 Turn	1 3/8 Turn	5/8 Turn

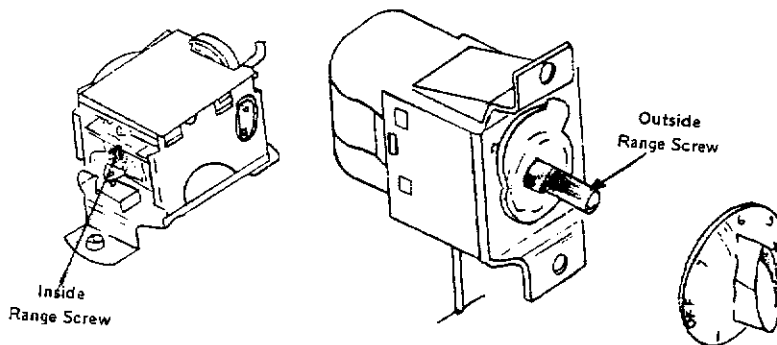
HOW TO TAKE CARE OF THE VENDER (Cont.)

-THINGS TO ADJUST-(Cont.)

TEMPERATURE CONTROL

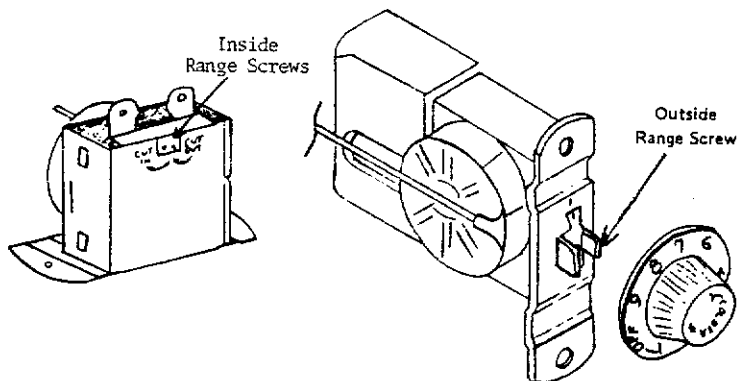


Ranco No. K12-L1535



Ranco No. A12-1558

CULTER-HAMMER

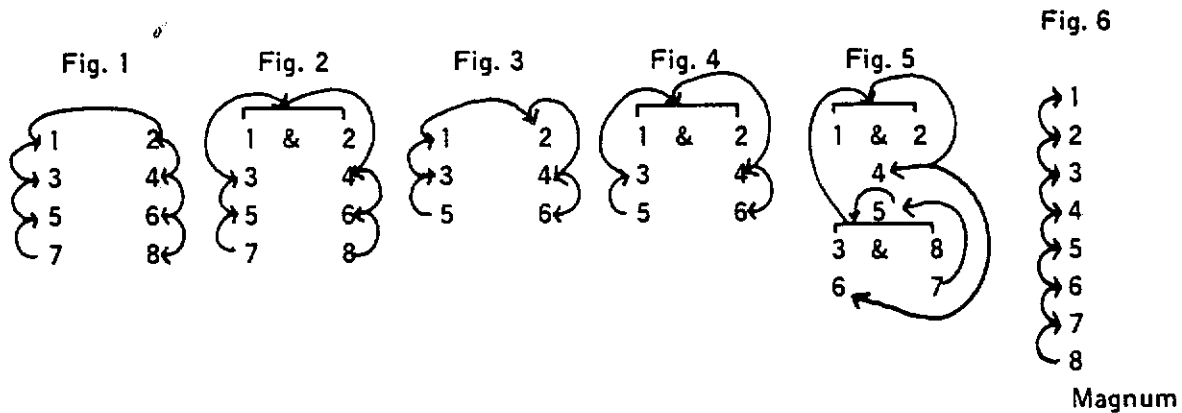


HOW TO CORRECT COMMON VENDING TROUBLES

- (1) ACCEPTS COINS WILL NOT VEND –
- (2) REJECTS ALL GOOD COINS –

It should be remembered that when one (1) or more circuits become inoperative on a Dixie-Narco Vender that has been operating satisfactorily, it is usually (1) component that has failed, and it is with this in mind that the accompanying trouble shooting schematic is presented.

Control Panel
Electrical Feed
Thru NC's of Each Select Switch



(CONTROL PANEL: Select Button and Select Switch Location)

The control panels shown represent some of the panels used on Dixie-Narco venders.

IMPORTANT to keep in mind is the feed of electrical current thru the select switches. The electrical feed always begins with the largest odd number and proceeds as:

- 7, 5, 3, 1, 2, 4, 6, 8 (Fig. 1)
- or
- 7, 5, 3, 1 & 2, 4, 6, 8 (Fig. 2)
- or
- 5, 3, 1, 2, 4, 6 (Fig. 3)
- or
- 5, 3, 1 & 2, 4, 6 (Fig. 4)

On the inside of the Control Panel, all select buttons and switches are numbered. If not numbered, then Push Button arrangement is as shown in (1) one of the foregoing diagrams, i.e. Figures 1, 2, 3, or 4.

Figure 5: Figure 5 represents a Control Panel in actual use on a production model vender. (There are other Control Panels similar to it.) The Control Panel is shown to emphasize the need to know the actual location of the various Push Button Select Switches so that the electrical feed can be followed from select switch to select switch as already outlined i.e., 7, 5, 3, 1, 2, 4, 6, 8.

HOW TO CORRECT COMMON VENDING TROUBLES
(1) ACCEPTS COINS WILL NOT VEND
(Accepts coins - will not vend from one (1) or more circuits)

Although all circuit problems are not necessarily found to be (1) one or more inoperative select switches, the examples listed below are typical of select switch problems occurring in the control panel.

Refer to Figure 1:

PROBLEM 1: Selections 7 and 5 work.
Selections 3, 1, 2, 4, 6, and 8 do not work.
Selections 3, 1, 2, 4, 6, and 8 do not work.
Recall the feed of electrical current at 7, 5, 3, 1, 2, 4, 6, and 8.

ANSWER: Check N.C. & C. of Select Switch 5.

PROBLEM 2: Selection 7 works.
Selections 5, 3, 1, 2, 4, 6, and 8 do not work.
Recall the feed of electrical current.

ANSWER: Check N.C. & C. of Select Switch 7.

PROBLEM 3: Selections 7, 5, 3, 1, 2, 4, and 6 work.
Selection 8 does not work.
Recall the feed of electrical current.


ANSWER: Check N.C. & C. of Select Switch 6.
Check N.O. & C. of Select Switch 8.

Refer to Figure 2:

PROBLEM 4: Selection 7 works.
Selections 5, 3, 1, 2, 4, 6, and 8 do not work.
Recall the feed of electrical current.

ANSWER: Check N.C. & C. of Select Switch 7.

PROBLEM 5: Selections 7, 5, 3, 1 & 2 work.
Selections 4, 6, and 8 do not work.
Recall the feed of electrical current.

ANSWER: Check N.C. & C. of Select Switch 1 & 2.
(The symbol , i.e., 1 & 2, indicates that one select switch serves two circuits.)

Refer to Figure 3:

PROBLEM 6: Selection 5 works.
Selections 3, 1, 2, 4, and 6 do not work.
Recall the feed of electrical current.

ANSWER: Check N.C. & C. of Select Switch 5.

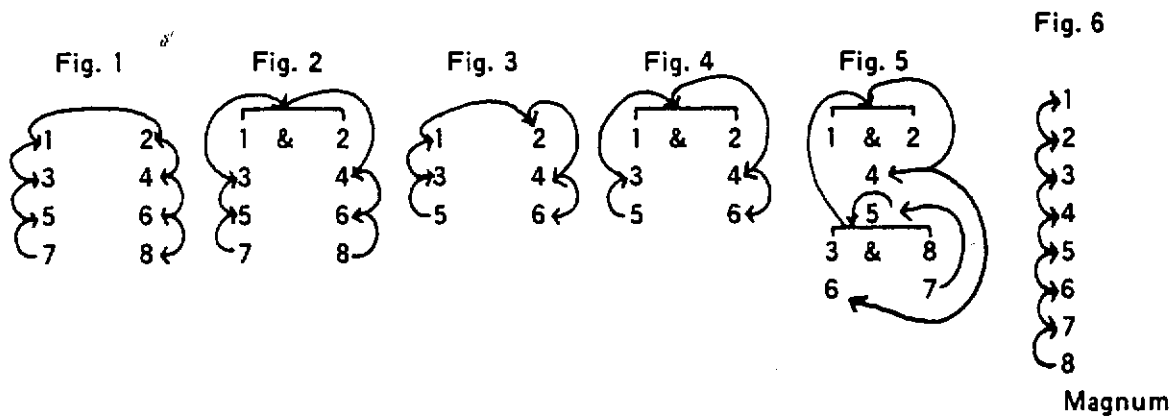
HOW TO CORRECT COMMON VENDING TROUBLES

– (1) ACCEPTS COINS WILL NOT VEND –

– (2) REJECTS ALL GOOD COINS –

It should be remembered that when one (1) or more circuits become inoperative on a Dixie-Narco Vender that has been operating satisfactorily, it is usually (1) component that has failed, and it is with this in mind that the accompanying trouble shooting schematic is presented.

Control Panel
Electrical Feed
Thru NC's of Each Select Switch



(CONTROL PANEL: Select Button and Select Switch Location)

The control panels shown represent some of the panels used on Dixie-Narco venders.

IMPORTANT to keep in mind is the feed of electrical current thru the select switches. The electrical feed always begins with the largest odd number and proceeds as:

- 7, 5, 3, 1, 2, 4, 6, 8 (Fig. 1)
- or
- 7, 5, 3, 1 & 2, 4, 6, 8 (Fig. 2)
- or
- 5, 3, 1, 2, 4, 6 (Fig. 3)
- or
- 5, 3, 1 & 2, 4, 6 (Fig. 4)

On the inside of the Control Panel, all select buttons and switches are numbered. If not numbered, then Push Button arrangement is as shown in (1) one of the foregoing diagrams, i.e. Figures 1, 2, 3, or 4.

Figure 5: Figure 5 represents a Control Panel in actual use on a production model vender. (There are other Control Panels similar to it.) The Control Panel is shown to emphasize the need to know the actual location of the various Push Button Select Switches so that the electrical feed can be followed from select switch to select switch as already outlined i.e., 7, 5, 3, 1, 2, 4, 6, 8.

HOW TO CORRECT COMMON VENDING TROUBLES
(1) ACCEPTS COINS WILL NOT VEND
 (Accepts coins - will not vend from one (1) or more circuits)

- CONTINUED -

Refer to Figure 3:

PROBLEM 7: Selections 5, 3, and 1 work.
 Selections 2, 4, and 6 do not work.
 Recall the feed of electrical current.

ANSWER: Check N.C. & C. of Select Switch 1.

Refer to Figure 5:

PROBLEM 8: Selections 7 and 5 work.
 Selections $\overbrace{3 \ \& \ 8}$, $\overbrace{1 \ \& \ 2}$, 4 and 6 do not work.
 Recall the feed of electrical current.

ANSWER: Check N.C. & C. of Select Switch 5.

PROBLEM 9: Selections 7, 5, $\overbrace{3 \ \& \ 8}$, $\overbrace{1 \ \& \ 2}$ work.
 Selections 4 and 6 do not work.
 Recall the feed of electrical current.

ANSWER: Check N.C. & C. of Select Switch 1 & 2.

This symbol $\overbrace{\quad}$ i.e., $\overbrace{1 \ \& \ 2}$ and/or $\overbrace{3 \ \& \ 8}$ indicates that one (1) Select Switch serves two (2) circuits.

Refer to Figure 4:

PROBLEM 10: Selections 5 and 3 work.
 Selections $\overbrace{1 \ \& \ 2}$, 4, and 6 do not work.
 Recall the feed of electrical current.

ANSWER: Check N.C. & C. of Select Switch 3.

HOW TO CORRECT COMMON VENDING TROUBLES

– (1) ACCEPTS COINS WILL NOT VEND –

– (2) REJECTS ALL GOOD COINS –

PROBLEM 1: Accepts coins will not vend.

EXAMPLE:

#3 Selection will not vend.

Check:

N.O. of #3 Select Switch. (Note: If Sold Out Lamp comes on when button is pushed, select switch is OK.)

Check:

Sold Out Switch in vending circuit.

Check: Vend Motor.

PROBLEM 2: Rejects all good coins.

Coin changer will not accept coins - blocking fingers out.

Put product in each column.

Follow the arrow WHICH IS THE DIRECTION OF FLOW OF ELECTRICAL CURRENT.

Do This:

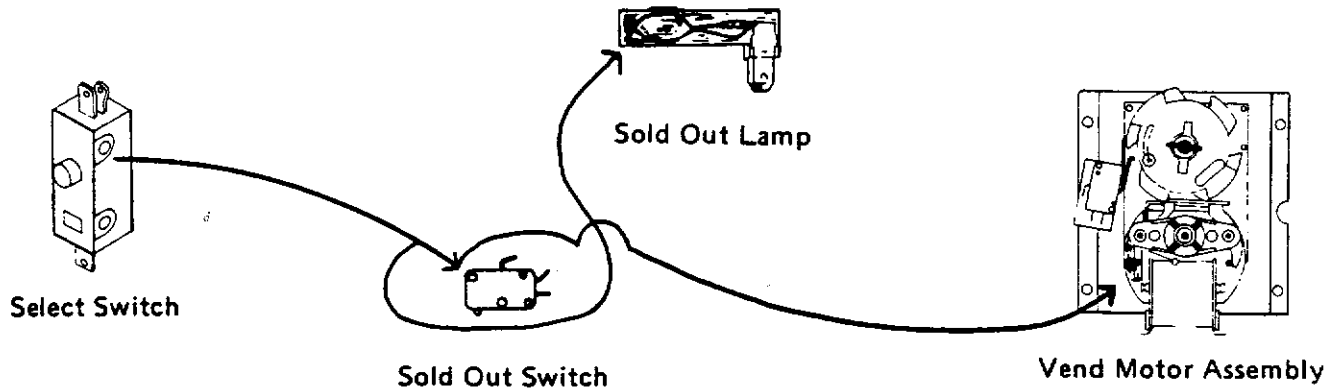
1. Make sure product is in each column. Sold Out Lamps off.
2. Follow the arrows from Left to Right.
3. a. Push Vend Motor Switch - Motor F - Vend Motor Cycles.
b. Push Vend Motor Switch - Motor E - Vend Motor Cycles.
c. Push Vend Motor Switch - Motor D - Vend Motor Cycles.
d. Push Vend Motor Switch - Motor C - Vend Motor does not cycle. Problem is Vend Motor Switch and By Pass Switch on Motor C and/or Motor D.
e. If problem is not found, continue this procedure through Motors B and A.
f. If problem is not found, replace Vend Relay.
g. If problem is not found, the last component to check would be the coin changer.

HOW TO CORRECT COMMON VENDING TROUBLES

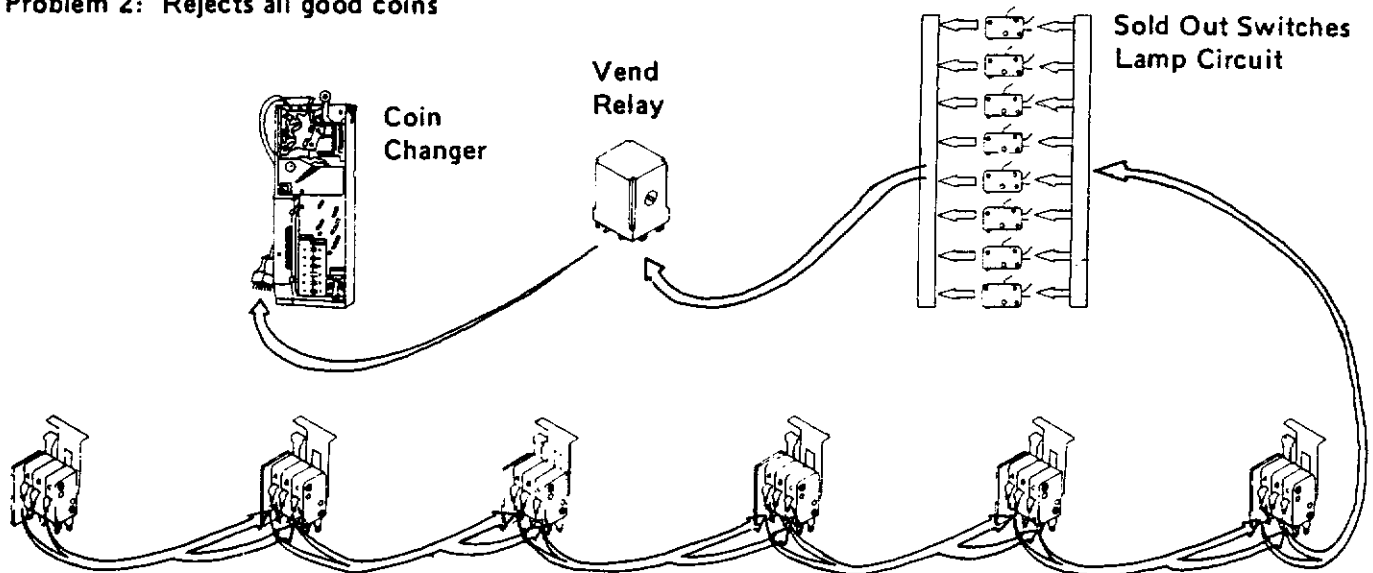
— (1) ACCEPTS COINS WILL NOT VEND —

— (2) REJECTS ALL GOOD COINS —

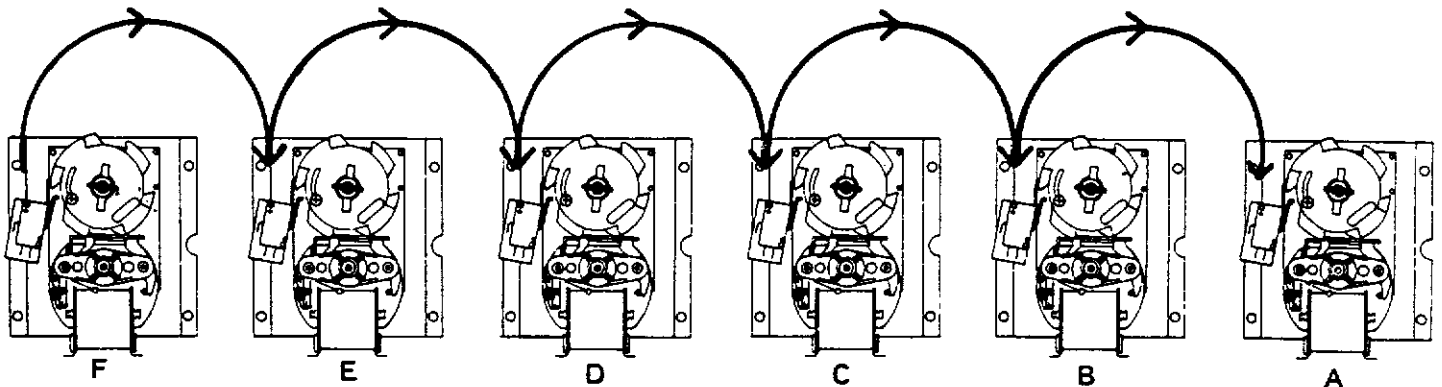
Problem 1: Accepts coins will not vend



Problem 2: Rejects all good coins



The written procedure on opposite page is a rapid check of both vend motor and bypass switches in the coin changer circuit.



ALL VEND MOTORS IN STAND-BY POSITION

The Arrows Show The Directions of Electrical Current Flow

HOW TO CORRECT COMMON VENDING TROUBLES

— (1) ACCEPTS COINS WILL NOT VEND —

Problem:

Set Up Credit

Push All Selections

No Vend

Do This:

1. Unplug Coin Changer
2. Remove Vend Relay
3. Push each Vend Motor switch arm till motor runs and all arms are at bottom of notch. See Motors A through F. Follow Arrows

Plug In Cheater Cord

Does Not Correct

Install New Vend Relay

Does Not Correct

Depress Cheater Cord

Motor A Cycle

Depress Cheater Cord

Motor B Cycle

Depress Cheater Cord

Motor C Cycle

Example: If Motor C does not cycle then problem is Cam/ Hold Switch on Motor C or Motor B.

Now Continue,
Depress Cheater Cord

Motor D Cycle

Depress Cheater Cord

Motor E Cycle

Depress Cheater Cord

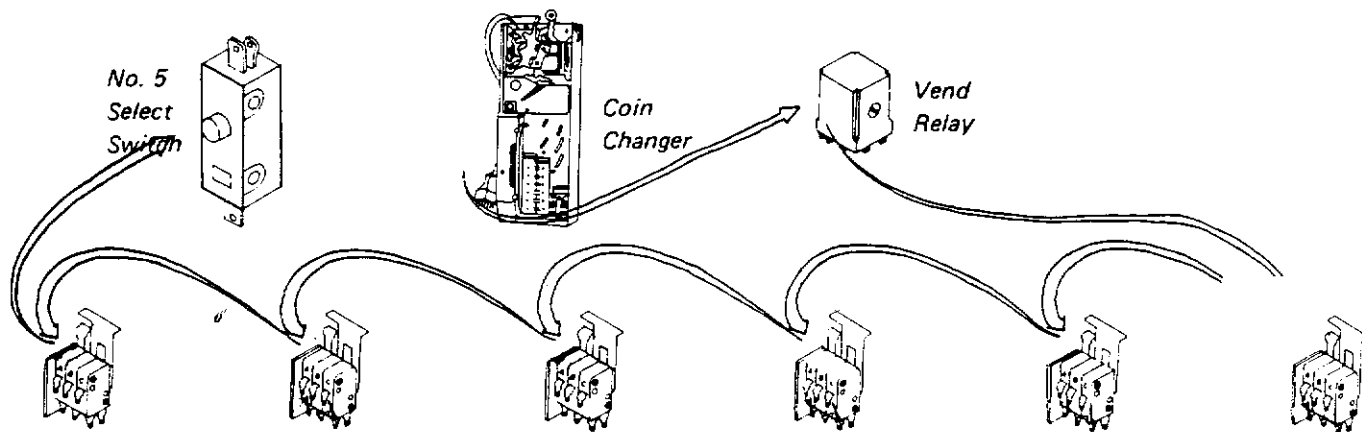
Motor F Cycle

If still no correction,
Continuity test Cam/Hold Switch Motor F

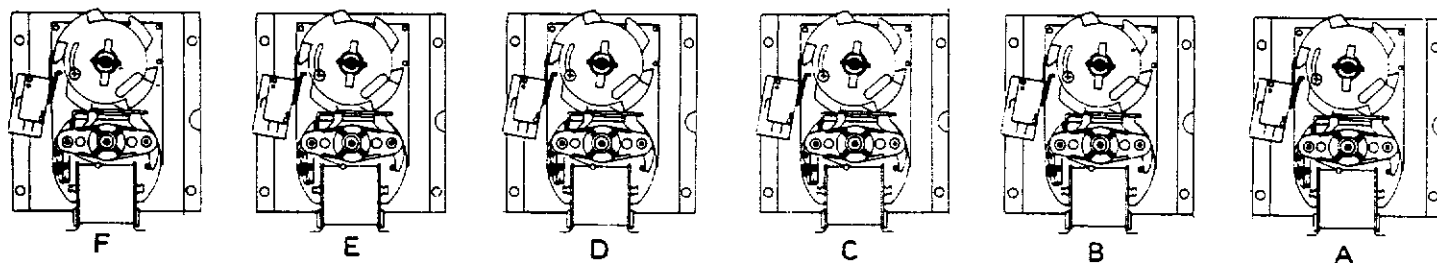
If still no correction,
Continuity test #5 Select Switch

HOW TO CORRECT COMMON VENDING TROUBLES

— (1) ACCEPTS COINS WILL NOT VEND —



THE ARROWS SHOW THE DIRECTION OF ELECTRICAL CURRENT FLOW



ALL SWITCH ARMS ARE SHOWN IN CAM NOTCH

HOW THE CLUSTER OF SWITCHES WORKS

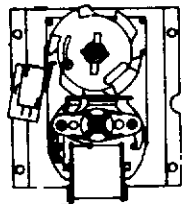


Figure 1
VIEW OF VEND MOTOR

- A. Is Vend Motor Switch
- B. Is Cam-Hold Switch
- C. Is By-Pass Switch

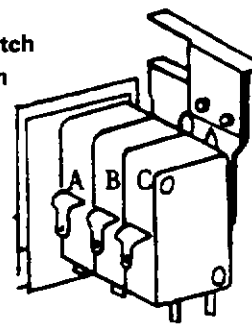


Figure 2
VIEW OF SWITCHES

1. See Vend Motor and cluster switches in stand-by position Figure 1 and Figure 2.

Arm of Vend Motor Switch A is in cam notch - Figure 2

Arm of Cam Hold Switch B is on top of cam - Figure 2

Arm of By Pass Switch C is on top of cam - Figure 2

2. a. Set up a credit.

b. Push a selection.

(Pushing of a select switch causes vend motor to run and arm of cam hold switch to drop into cam notch). Then

c. Cam hold switch runs the Vend Motor through the notch and

d. The arm of the Vend Motor switch reaches top side of cam and Breaks circuit to vend relay (cancels credit) Causes vend motor to continue to run.

e. A fraction of a second later the bypass switch arm reaches top side of cam and forms a bypass around vend motor switch. If a jam occurs, all other circuits work.

f. Vend Motor continues to run to stand-by position.

DRIFTING MOTOR AND PRE SELECT

PROBLEM

Vend Motor Drifts
All Switch Arms in Cam Notch

CHECK

Vend Motor Switch

Vend Motor Switch Arm
relationship to Cam

White Pawl for looseness.
Should be loose.

Pawl Spring

Long Brake Arm.
Should be loose.

Projections-
2 of them on rotor.

IF FAULTY

Replace Switch

If too close to cam, bend arm
away from cam-slightly

If tight-replace

If off-Correct
If elongated-Replace

If tight-clean at pivot

If Broken-
Replace Vend Motor Ass'y.

Two Cans for a given cycle and next cycle is a dry run.	Follow checking procedure for a drifting motor	
Two Cans for a given cycle	Shimming	Correct
	Follow checking procedure for a drifting motor.	
Pre-Select i.e.,	Select Switch. If sticking or incorrectly wired.	Replace
Set up credit. Push no button and same product is vended time after time.	Cam Hold Switch	Replace
	Follow checking procedure for a drifting motor.	
If checking fails to correct drifting motor.		Replace Vend Motor
If replacement Vend Motor is not available, as an emergency measure -		Loosen 2 screw in oil bearing bracket. Tighten to a reasonable tightness.

**HOW TO CORRECT COMMON VENDING TROUBLES
ACCEPTS COINS AND WILL VEND, THEN
REJECTS COINS BUT WILL CONTINUE TO FREE VEND**

PROBLEM: Set up Credit	Push a Selection	It will vend
	Push same Selection	It will vend
Rejects Coins	Push same Selection	It will continue to vend
REASON: Credit is not being broken by Vend Motor Switch.		
DO THIS: Pull Harness from bypass switch in problem circuit	Push a Selection	It will vend
Set up Credit	Push same Selection	If it does not vend
CHECK: Bypass switch electrically	If faulty	Replace
Bypass switch for a sticking plunger	If faulty	Replace
Set up Credit	Push a Selection	It will vend
	Push same Selection	If it vends
CHECK: Vend Motor Switch	If faulty	Replace

HOW THE REFRIGERATION SYSTEM WORKS

— MECHANICAL PARTS —

COMPRESSOR MOTOR

The compressor motor (sealed in the compressor housing) drives the compressor with a shaft that is shared by both parts.

COMPRESSOR

The compressor (sealed in the compressor housing) sucks cold, low pressure freon gas from the evaporator and pumps hot, pressure freon gas out to the condenser.

CONDENSER

The condenser, located in the base of the vender, at the front, takes heat out of the hot, high pressure gas that comes from the compressor. The gas loses heat as it goes through the condenser coils, and changes into a liquid because it is still under high pressure.

CONDENSER FAN

The condenser fan (between the condenser and motor compressor) first sucks air from the outside of the vender through the condenser. This air takes heat from the condenser first and then is blown over the compressor housing from which it also takes heat before going back outside of the vender. The condenser fan runs when the motor compressor runs.

MOLECULAR STRAINER DRYER

The molecular strainer dryer is in the liquid line between the condenser and the capillary tube. This dryer traps and holds water molecules but lets oil molecules and freon molecules go through into the capillary tube.

CAPILLARY TUBE

The capillary tube (between the condenser and the evaporator in the refrigerant line) has a very small inside diameter, so the flow of the liquid freon from the condenser into the evaporator is slow, but steady, even with the pressure the compressor builds up in the condenser. This helps to keep the pressure in the evaporator low.

HOW THE REFRIGERATION SYSTEM WORKS (Cont.)

— ELECTRICAL PARTS — (Cont.)

EVAPORATOR

The evaporator (in the vender cabinet) takes heat from the air in the vender cabinet and gives this heat to the liquid refrigerant. The liquid refrigerant is evaporated (boiled off) as a gas, and the gas is sucked out by the compressor and so the pressure is kept low.

EVAPORATOR FAN

The evaporator fan sucks warm air from around the cans or bottles in the cooling compartment and blows it across the evaporator. As the air goes across the evaporator, it gives up heat to the evaporator. As the air goes across the evaporator, it gives up heat to the evaporator, then goes back to the cans or bottles, and takes heat from them. This fan runs all the time when the vender is plugged in.

CONDENSATE PAN

The condensate pan (located in the compressor compartment) collects the water which runs from the vender during the defrost cycle. The water is evaporated into the surrounding air by means of soakers, and the air movement resulting from the condenser fan blade rotation. The soakers extend down into the pan to absorb the water. Exposure to the surrounding air vaporizes the water in the soakers, and the water vapor is carried into the air by the action of the condenser fan blade.

— ELECTRICAL PARTS —

TEMPERATURE CONTROL

The temperature control is the name of a part that is made up of a control bulb connected by a small metal tube to a bellows. The control bulb is in a tube back of the evaporator. The bellows and a switch known as the temperature control switch are in the temperature control box which is fastened to the right side inside the vender.

The control bulb and the bellows have a vapor in them. When the temperature of the vapor in the bulb rises, it builds up pressure in the bellows tube. This pushes the bellows out, makes it longer. When the control bulb is cool, the vapor shrinks back, and the bellows pull in and get shorter. These movements of the bellows work the switch — called the temperature control switch — closing it when the bulb is heated and opening it when the bulb is cooled.

HOW THE REFRIGERATION SYSTEM WORKS (Cont.)

– ELECTRICAL PARTS – (Cont.)

TEMPERATURE CONTROL (Cont.)

The contacts of the temperature control switch are in the compressor motor's running and starting circuits. They are also in the condenser fan motor circuit.

When the cabinet temperature gets up to the cut-on setting, the temperature control switch closes in the compressor motor's starting and running circuits and in the condenser fan circuit. When the cabinet temperature gets down to the cut-off setting, the temperature control switch opens in these circuits.

CAUTION: To adjust temperature control see pages 12 and 13 "Things to Adjust".

STARTING RELAY

The starting relay (in the terminal box on the side of the compressor shell) is an electromagnetic relay whose contacts are closed by the magnetic field of the relay coil, and are opened by gravity. It is made up of a relay coil and one set of contacts. The relay coil is in the running circuit of the compressor motor. The relay contacts are in the compressor motor's starting circuit and can complete or break only that circuit.

When the compressor motor and the condenser fan motor first start, the starting relay closes and completes the compressor motor starting, winding circuit. After the compressor motor gets up speed, the starting relay is opened by the force of gravity and the starting winding circuit is broken.

COMPRESSOR MOTOR

The compressor motor (sealed in the compressor housing) runs the compressor. It is started by the temperature control switch, the starting relay and the thermal overload switch. It is stopped by the temperature control switch, and, if it gets overloaded, by the thermal overload switch.

HOW THE REFRIGERATION SYSTEM WORKS (Cont.)**– ELECTRICAL PARTS – (Cont.)****THERMAL OVERLOAD ASSEMBLY**

The thermal overload assembly (in the terminal box on the side of the compressor shell) is the name of a part that is made up of a switch (the thermal overload switch) and a heating wire. The heating wire is in the compressor motor's running and starting circuits. The thermal overload switch can complete or break the compressor motor's starting circuit and running circuit. If the compressor motor gets too warm, or draws too much current (which will make the heating wire get hot) the heat makes the thermal overload switch open in the running and starting circuit of the compressor and break those circuits. When the thermal overload assembly, the motor, and the compressor shell have all cooled enough to run safely, the thermal overload switch closes in these circuits and completes them.

CONDENSER FAN MOTOR

The condenser fan motor (between the condenser and the motor compressor) runs a fan that sucks air through the condenser coils. It starts when the temperature control switch is closed and it stops when the temperature control switch is open.

HOW THE REFRIGERATION SYSTEM WORKS (Cont.)

– ELECTRICAL OPERATION –

WHAT DOES IT	WHAT HAPPENS
WHEN THE VENDER TEMPERATURE GETS UP TO THE CUT-ON SETTING	
<p>The temperature control switch</p>	<p>Closes in the running winding circuit of the compressor motor and completes that circuit.</p> <p>Closes in the starting relay coil circuit, and completes that circuit.</p> <p>Closes in the starting winding circuit of the compressor motor.</p> <p>Closes in the condenser fan motor circuit, completing the circuit.</p>
THE HEAVY CURRENT, DRAWN BY THE RUNNING WINDING, ALSO FLOWS IN THE STARTING RELAY COIL, AND:	
<p>The starting relay coil</p>	<p>Closes the starting relay contacts in the starting winding circuit of the compressor motor, completing that circuit.</p>
WHEN THE COMPRESSOR MOTOR GETS UP TO SPEED	
<p>The force of gravity</p>	<p>Pulls the starting relay contacts apart because</p>
<p>The starting relay coil</p>	<p>No longer gets enough current to hold the contacts closed, and</p>
<p>The starting relay contacts</p>	<p>Open in the starting winding circuit of the compressor motor, and break that circuit.</p>
IF EITHER THE COMPRESSOR MOTOR OR THE CONDENSER FAN DRAWS TOO MUCH CURRENT AND CAUSES THE THERMAL OVERLOAD ASSEMBLY TO GET TOO WARM	
<p>The thermal overload switch</p>	<p>Opens in the running winding circuit and the starting winding circuit of the compressor motor, and breaks both those circuits.</p>

HOW THE REFRIGERATION SYSTEM WORKS (Cont.)

– ELECTRICAL OPERATION – (Cont.)

WHAT DOES IT	WHAT HAPPENS
WHEN THE THERMAL OVERLOAD ASSEMBLY COOLS DOWN AGAIN	
The thermal overload switch	Closes in both the running winding circuit and the starting winding circuit of the compressor motor.
WHEN THE VENDER TEMPERATURE GETS DOWN TO THE CUT-OFF SETTING	
The temperature control switch	Opens in the running winding circuit of the compressor motor, and breaks that circuit. Opens in the starting relay coil circuit, and breaks that circuit: Opens in the starting winding circuit of the compressor motor.

HOW THE REFRIGERATION SYSTEM WORKS (Cont.)

– ELECTRIC CIRCUITS AND CIRCUIT DIAGRAMS –

CONDENSER FAN CIRCUIT

SWITCHES IN THE WIRING	WHAT THE SWITCHES DO	WHAT MAKES THE SWITCHES WORK
Temperature control switch	Turns the condenser fan motor on and off.	The temperature in the vender has come up to the cut-on point (or gotten down to the cut-off point) set on the temperature control.

COMPRESSOR MOTOR RUNNING WINDING CIRCUIT

SWITCHES IN THE WIRING	WHAT THE SWITCHES DO	WHAT MAKES THE SWITCHES WORK
Thermal overload switch	Turns the running windings of the compressor motor on.	Current drawn by the motor or heat from the compressor can raise the temperature of the thermal overload assembly and make the thermal overload switch cut off.

HOW THE REFRIGERATION SYSTEM WORKS (Cont.)

- REFRIGERATION CYCLE -

WHAT DOES IT	WHAT HAPPENS
The rising temperature in the venter	Warms the temperature control bulb and the liquid in it.
The liquid in the control bulb	Expands and pushes through the control tube and stretches the temperature control bellows.
The bellows	Moves, and closes the temperature control switch.
The temperature control switch	Turns the compressor motor on. Turns the condenser fan motor on.
The compressor motor	Drives the compressor.
The condenser fan motor	Drives the condenser fan.
The condenser fan motor	Sucks air through the condenser, cooling it.
The compressor	Sucks low pressure refrigerant gas from the evaporator, compresses the gas, and pumps it to the condenser.
The cooled condenser	Takes the heat out of the high pressure refrigerant gas.
The cooled gas	Turns into liquid refrigerant.
More hot gas coming from the compressor	Pushes the liquid refrigerant into the capillary tube.
The capillary tube	Lets only a certain amount of liquid refrigerant run into the evaporator.
The evaporator	(Where the pressure is kept low by the suction of the compressor) heats the liquid refrigerant.
The liquid refrigerant	Changes into gas at low pressure and is sucked below into the compressor.
The falling temperature in the venter	Cools the temperature control bulb and the liquid in it.

HOW THE REFRIGERATION SYSTEM WORKS (Cont.)

— REFRIGERATION CYCLE — (Cont.)

WHAT DOES IT	WHAT HAPPENS
The liquid in the control bulb	Shrinks, and lets the temperature control bellows pull back
The bellows	Move, and open the temperature control switch.
The temperature control switch	Turns the compressor motor off. Turns the condenser fan motor on.
The compressor	Stops.
The condenser fan motor	Stops.
(With the vender "Plugged In" the evaporator fan motor runs constantly)	

HOW TO TAKE CARE OF THE REFRIGERATION SYSTEM

— WHAT TO CLEAN —

Clean dirt and lint from the condenser with a brush, vacuum cleaner or compressed air

— WHEN AND WHAT TO LUBRICATE —

The refrigeration system is sealed up and does not have to be oiled or greased. Enough oil is put into the condenser and evaporator fan motors when they are manufactured to last as long as they will run.

— CORRECTING TROUBLES —

When the refrigeration system is not working right, go to the table called "Correcting Common Refrigeration Troubles" on the next pages. Find your trouble, see what the possible causes are, and try the tests (in the center column): they will let you know when you have the true cause of the trouble. When you have found the cause of the trouble, either make the adjustment, repair the part or put a new part in, whatever the table says to do. This table does not list all of the possible causes of any of the troubles — but it does have all of the common causes. If your vender has a trouble that is not shown on the chart, or the trouble is not the result of one of the causes shown on the chart, study the section on "How The Refrigeration Mechanism Works" and you will be able to find out what is wrong and fix it.

HOW TO CORRECT
COMMON REFRIGERATION TROUBLES

TROUBLE

THE COMPRESSOR WILL NOT RUN AT ALL 34

THE COMPRESSOR STARTS BUT WILL NOT KEEP RUNNING 36

THE COMPRESSOR RUNS BUT THE CANS/BOTTLES AREN'T COLD ENOUGH 38

THE CANS/BOTTLES ARE TOO COLD 41

THE REFRIGERATION UNIT IS NOISY 41

THE COMPRESSOR MOTOR NEVER STOPS RUNNING 42

HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

THE COMPRESSOR WILL NOT RUN AT ALL

A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
1. The vender is not plugged in.	Look, and if it isn't,	Plug the vender in.
2. The power is off	Plug a 110V lamp into the outlet, if it doesn't light.	Have someone who knows how, get power to the outlet.
3. The refrigeration unit is not made for the voltage it is getting.	Look at the nameplate on the vender to find out what voltage and cycle it is made for. Ask the local power company if they supply this kind of current. If they don't,	Put a vender in that is made for the kind of current you are getting.
4. A wire in the supply cord or control cable is broken.	Put the prods of 110V test lamp on terminal L of the starting relay and on terminal 3 of thermal overload switch (make sure the temperature control switch is closed). If it doesn't light,	Put a new supply harness on
5. The thermal overload switch is stuck open.	Unplug the vender for at least 15 minutes. Then plug the vender in and put the prods of a 110V test lamp on terminal L of the starting relay and on the common terminal of the compressor motor. If the lamp doesn't light,	Put a new thermal overload assembly in.
6. The temperature control bulb is either touching the evaporator or it is covered with ice and frost.	Look at it. If it is touching the evaporator or is covered with ice or frost	Defrost the evaporator and be sure the bulb is mounted right.

HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

THE COMPRESSOR WILL NOT RUN AT ALL (Cont.)

A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
7. The temperature control bellows do not work.	Warm the temperature control bulb with your hand for about one minute. If the temperature control switch doesn't close,	Put a new temperature control in.
8. The temperature control switch contacts need cleaning.	Clean them and see if this helps	Clean the faces of the contacts with "Cobehn".
9. The starting relay contacts aren't closing.	Warm the temperature control bulb to close the temperature control switch. If the starting relay contacts don't close at the same time,	Check the relay out as explained in the next two steps. If they do close, skip the next two steps and go on to step twelve of this section.
10.	Put the prods of a 110V test lamp across M of the relay and 3 of the overload protector. If the lamp does not light.	Put in a new relay.
11. The starting relay contacts are stuck open.	Warm the temperature control bulb to close the temperature control switch. If the starting relay contacts don't close when the temperature control switch does,	Put a new starting relay in.
12. The compressor motor's starting or running winding is burned out.	Unplug the vender. Take all wires off the compressor terminals. Connect a 110V line to compressor motor terminals (C) and (R). At once, with an insulated wire, connect (for 2 seconds) compressor terminals (R) and (S). If the compressor does not start,	Put a new motor compressor in.

HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

THE COMPRESSOR STARTS, BUT WILL NOT KEEP RUNNING

A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
<p>1. The thermal overload switch opens every time, or almost every time, the compressor motor starts.</p>	<p>Wait until the compressor motor stops then unplug the vender and open the temperature control. See if switch is closed. If it is,</p>	<p>Check the "Possible Causes" in the next 6 steps. If it is not, skip the next 6 steps and go to step 8 of this section.</p>
<p>2. The tube from the compressor to the condenser is kinked or bent sharply.</p>	<p>Look, if it is,</p>	<p>Try to get the kink out</p>
<p>3. The capillary tube is kinked or bent sharply,</p>	<p>Look, if it is, If this does not help and no other cause can be found for the trouble,</p>	<p>Try to get the kink out Put a new capillary tube on</p>
<p>4. The starting relay contacts are sticking closed.</p>	<p>Plug the vender back in. Then while the compressor is running see if the starting relay contacts stay closed. If they do, If the starting relay contacts stick closed again after cleaning.</p>	<p>Clean the relay contacts with "Cobehn". Put a new starting relay in</p>
<p>5. The voltage at the vender is either too high or too low.</p>	<p>1. When an extension cord is not used on the supply cord. While the compressor is running put one prod of a volt meter on terminal (L) of the starting relay and the other prod on terminal (M) of the starting relay. If the voltage is not between 103V and 127V.</p>	<p>Have the person in charge of the vender tell the power company so they can take care of it.</p>

HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

THE COMPRESSOR STARTS, BUT WILL NOT KEEP RUNNING (Cont.)

A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
	<p>2. When an extension is used on the supply cord. Put a double socket on the plug end of the extension and plug it into the outlet. While the compressor is running, put the prods of a volt meter into one of the other sides of the double socket. If the voltage is not between 103V and 127V.</p>	<p>Have the person in charge of the vender tell the power company so they can take care of it.</p>
<p>6. The cut-on temperature is set too close to the cut-off temperature.</p>	<p>Put a thermometer on the control bulb. Read the temperature when the refrigeration unit cuts on. Read the temperature again when it cuts off. If the two temperatures are less than 16°F apart.</p>	<p>Turn the outside range screw clockwise.</p>
<p>7. The thermal overload switch opens after the compressor has been running a short time but before the temperature control switch cuts off.</p>	<p>Wait until the compressor stops then unplug the vender and open the temperature control box to see if the temperature control switch is closed. If it is,</p>	<p>Check the "Possible Causes" in the next 3 steps.</p>
<p>8. Not enough air is getting to the condenser.</p>	<p>See if there is anything around the outside of the vender. If there is,</p>	<p>Take it away.</p>
<p>9. The condenser is dirty</p>	<p>Look. Also feel the tube from the compressor to the condenser. If the tube is very hot or if you see dirt on the condenser.</p>	<p>Clean the condenser with either a vacuum cleaner, a brush or compressed air.</p>
<p>10. The condenser fan motor is burned out.</p>	<p>With the condenser fan motor leads correctly connected to the compressor motor terminals (see wiring diagram) see if the condenser fan runs when the compressor does. If it doesn't,</p>	<p>Put a new condenser fan motor in.</p>

HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

THE COMPRESSOR RUNS BUT THE CANS/BOTTLES AREN'T COLD ENOUGH

A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
1. The evaporator fan is not working.	Look, if it is not working,	Check the "Possible Causes" in the next step. If it is working, skip the next step and go on to step 3 of this section.
2. The evaporator fan motor is burned out.	Remove black rubber junction block located on the fan motor bracket. Connect a 110V line to the evaporator fan motor leads. If the evaporator fan motor doesn't start,	Put a new evaporator fan motor in.
3. The temperature control cam is set too warm (high).	Turn the outside range screw of the temperature control clockwise to a colder setting and let the vender run overnight. If the cans/bottles get cold enough,	Leave the temperature control at that setting.
4. The evaporator is covered with frost and ice.	If the cans/bottles did not get colder, Look at it,	Put a new temperature control in. Defrost the evaporator then check the "Possible Causes" in the next 2 steps. If it isn't, skip the next 2 steps and go to step 8 of this section.
5. The temperature control cam is set too cold and the evaporator is not defrosting.	Look at the evaporator for frost. If there is frost, If the evaporator coil does not defrost on each cycle. If, after the second setting, the coil still does not defrost.	Turn the inside range screw. Turn the inside range screw. Put a new temperature control in.

HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

THE COMPRESSOR RUNS BUT THE CANS/BOTTLES AREN'T COLD ENOUGH (Cont.)

A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
6. The temperature control switch contacts stick closed.	If the unit runs all the time, and the evaporator builds up frost.	Put a new temperature control in.
7. The temperature control bulb sleeve is touching the evaporator.	Look at it, if it is touching the evaporator tube,	Bend the bracket so that there will be space between the bulb sleeve and the evaporator tube.
8. The control bulb is not in the sleeve (holder).	Look, if it is not,	Put the bulb in the sleeve (holder).
9. The temperature control bellows is not working,	Warm the temperature control bulb with your hand for about one minute. If the temperature control switch doesn't close,	Put a new temperature control in.
10. The refrigerant tubing is kinked or bent sharply,	Look, if it is, If this does not help and no other cause can be found for the trouble.	Try to get the kink out. Put some new refrigerant tubing in.
11. There isn't enough refrigerant in the refrigeration system or the capillary tube is partly plugged.	Let the vender run at least 15 minutes and then see if the evaporator is frosted all over. If it isn't,	Try to blow the plug out of the capillary tube, evacuate the system and then put a new charge of gas in the refrigeration unit.
12. The condenser isn't getting enough air.	See if there is anything around the outside of the vender to keep the air out. If there is,	Take it away.
13. The condenser is dirty.	Look. Also feel the tube from the compressor to the condenser. If the tube is very hot, or if you see dirt,	Clean the condenser with either a vacuum cleaner, a brush or compressed air.

HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

THE COMPRESSOR RUNS BUT THE CANS/BOTTLES AREN'T COLD ENOUGH (Cont.)

A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
<p>14. The condenser fan motor is burned out.</p>	<p>With the condenser fan motor leads correctly connected to the compressor terminal, see if the condenser fan runs when the compressor does. If it doesn't,</p>	<p>Put a new condenser fan motor in.</p>
<p>15. The thermal overload switch is starting and stopping the compressor.</p>	<p>Unplug the vender for at least 15 minutes, then plug it in again. Be sure the temperature control switch is closed. (Warm the temperature control bulb with your hand to close it.) If the compressor motor cuts off then on, then off while the temperature control switch stays closed.</p>	<p>Check the "Possible Causes" in steps 16 and 17.</p>
<p>16. The voltage at the vender is either too high or too low.</p>	<ol style="list-style-type: none"> 1. When an extension is not used on the supply cord: While the compressor is running put one prod of a volt meter on terminal (S) of the starting relay and the other prod on terminal (L) of the starting relay. If the voltage is not between 103V and 127V. 2. When an extension is used on the supply cord: Put a double socket on the plug end of the extension and plug it into the outlet. While the compressor is running, put the prods of a volt meter on terminal (S) of the starting relay and the other prod on terminal (L) of the starting relay. If the voltage is not between 103V and 127V. 	<p>Have the person in charge of the vender tell the power company so they can take care of it</p> <p>Have the person in charge of the vender tell the power company so they can take care of it.</p>

HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

THE COMPRESSOR RUNS BUT THE CANS/BOTTLES AREN'T COLD ENOUGH (Cont.)

A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
17. The starting relay contacts are sticking closed.	Look and see, if they are,	Put a new starting relay in..
THE CANS/BOTTLES ARE TOO COLD		
1. The temperature control bulb is not in its tube.	Look and see, if it isn't,	Put the bulb in its tube.
2. The temperature control cam is set too cold.	Turn the outside range screw of the temperature control cam counter-clockwise to a warmer setting and let the vender run over night. If the cans/bottles get cold enough but not too cold, unplug the vender and let the evaporator fan come to a stop.	Leave the temperature control cam at that setting
3. The temperature control switch is stuck closed.	Then block the fan blade so it can't turn. Remove the temperature control bulb from its tube and touch it to the evaporator tube. Plug the vender back in and let the compressor run until it cuts off, but not more than 30 minutes. If the vender has not cut off.	
THE REFRIGERATION UNIT IS NOISY		
1. The refrigerant lines rattle.	Hold them between your fingers. If the rattle stops.	Bend them gently away from whatever they are hitting.

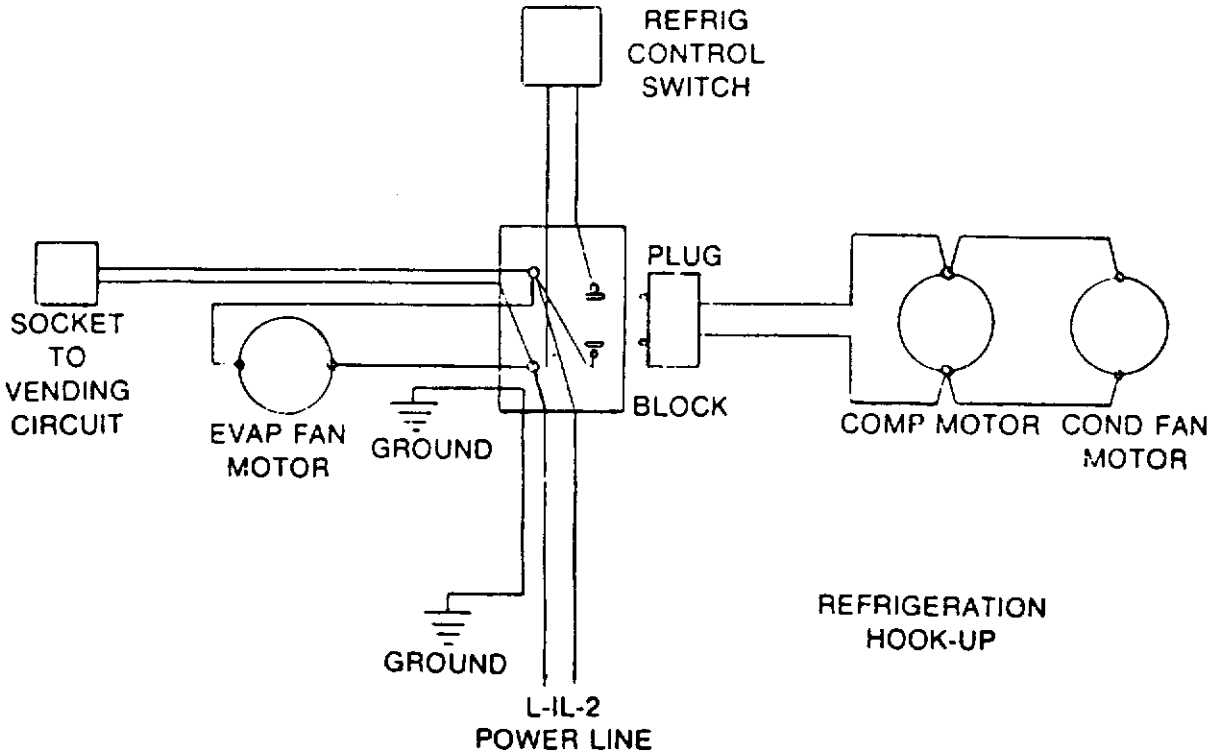
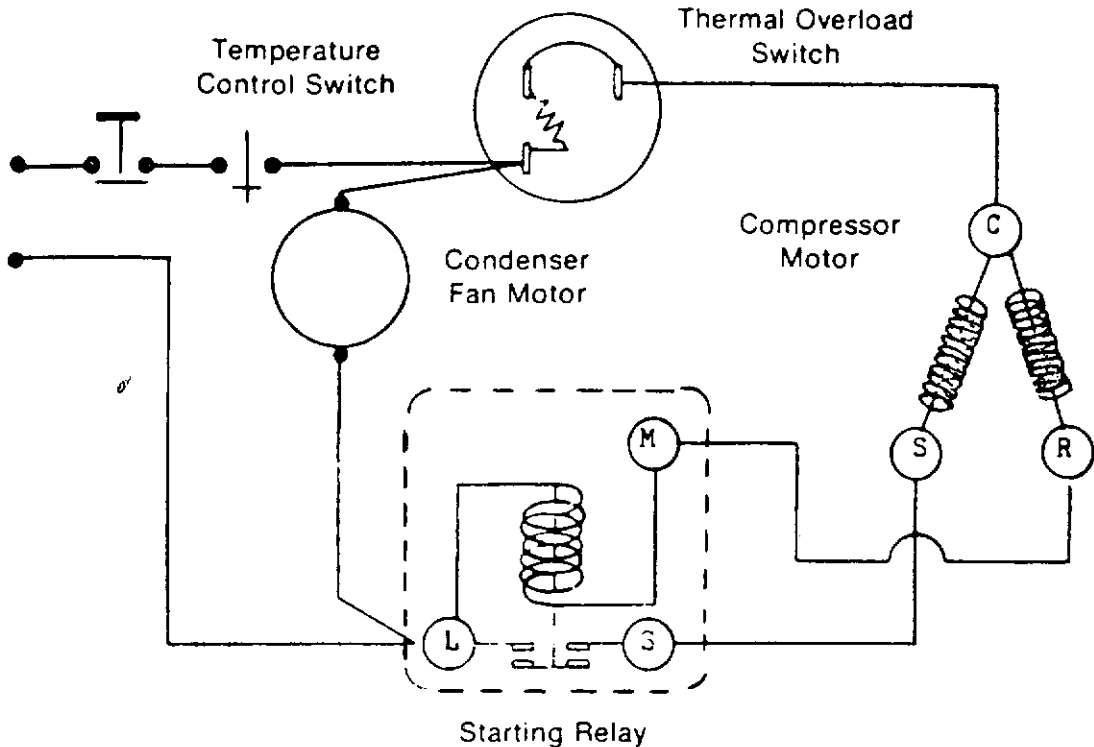
HOW TO CORRECT COMMON REFRIGERATION TROUBLES (Cont.)

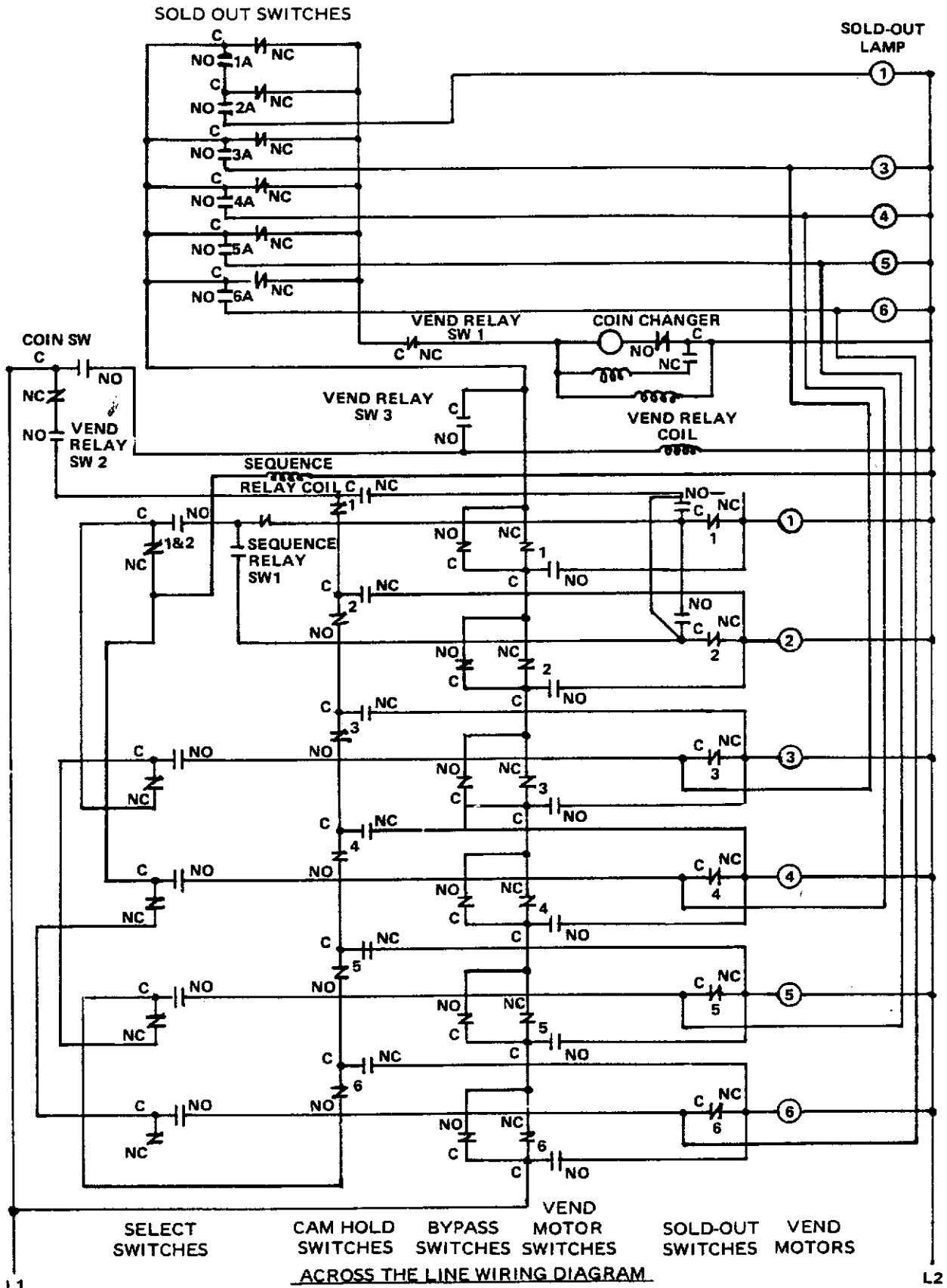
THE COMPRESSOR MOTOR NEVER STOPS RUNNING

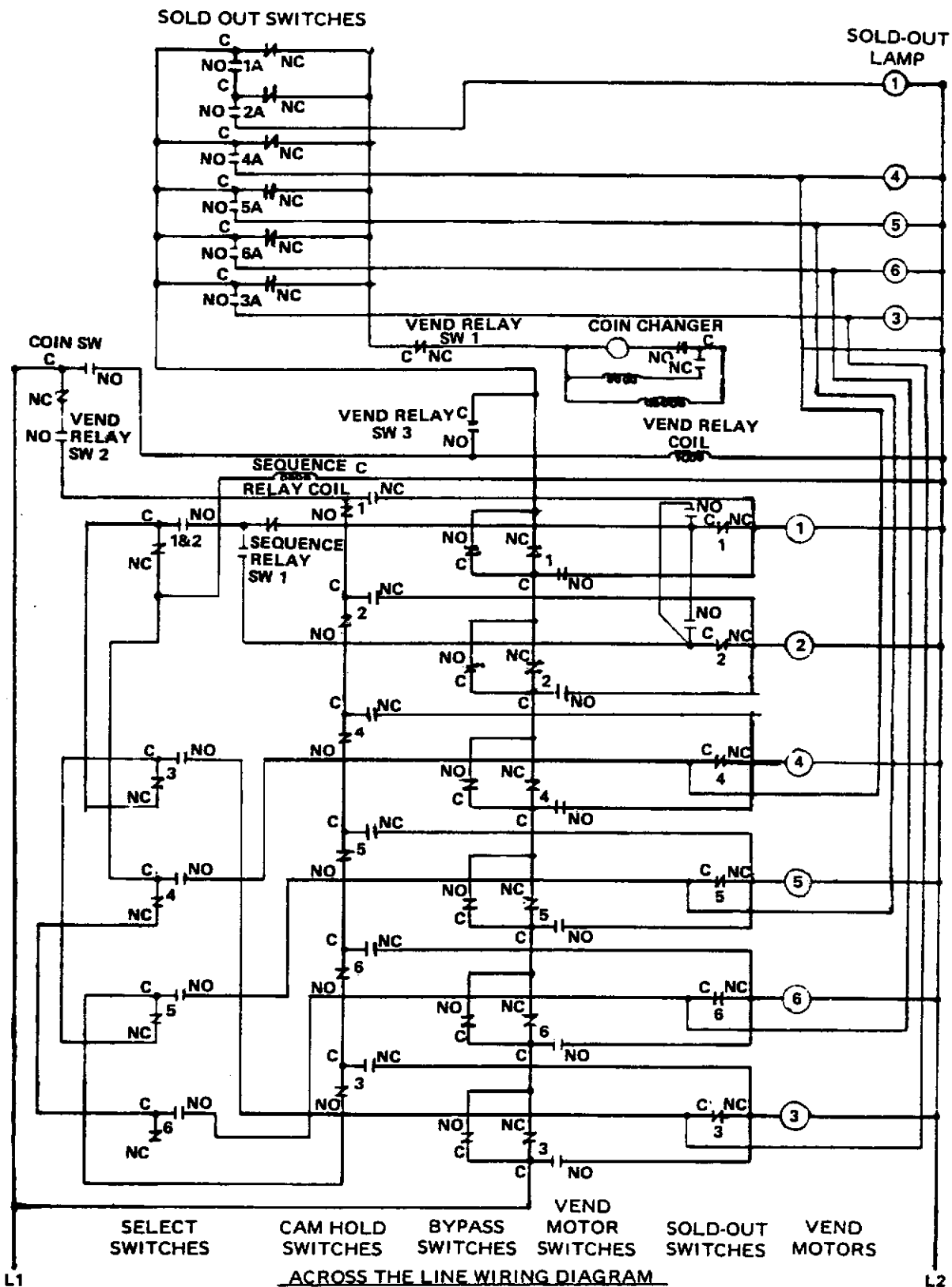
A POSSIBLE CAUSE IS	TO MAKE SURE	THIS IS WHAT TO DO
<p>1. The temperature control switch is stuck closed.</p> <p>2. The compressor has a broken valve or no refrigerant in the refrigeration system.</p>	<p>Turn the inside range screw cam and the range screw to their warmest settings. Let the vender run overnight, or until it stops, if the compressor motor doesn't stop running,</p> <p>The tube from the compressor to the condensor is not warm and the evaporator is not cold,</p> <p>If this does not help,</p>	<p>Put a new temperature control in.</p> <p>Put a new charge of refrigeration in the refrigeration unit.</p> <p>Put a new motor compressor in the refrigeration unit.</p>

HOW TO CORRECT
COMMON REFRIGERATION TROUBLES (Cont.)

- WIRING DIAGRAM -



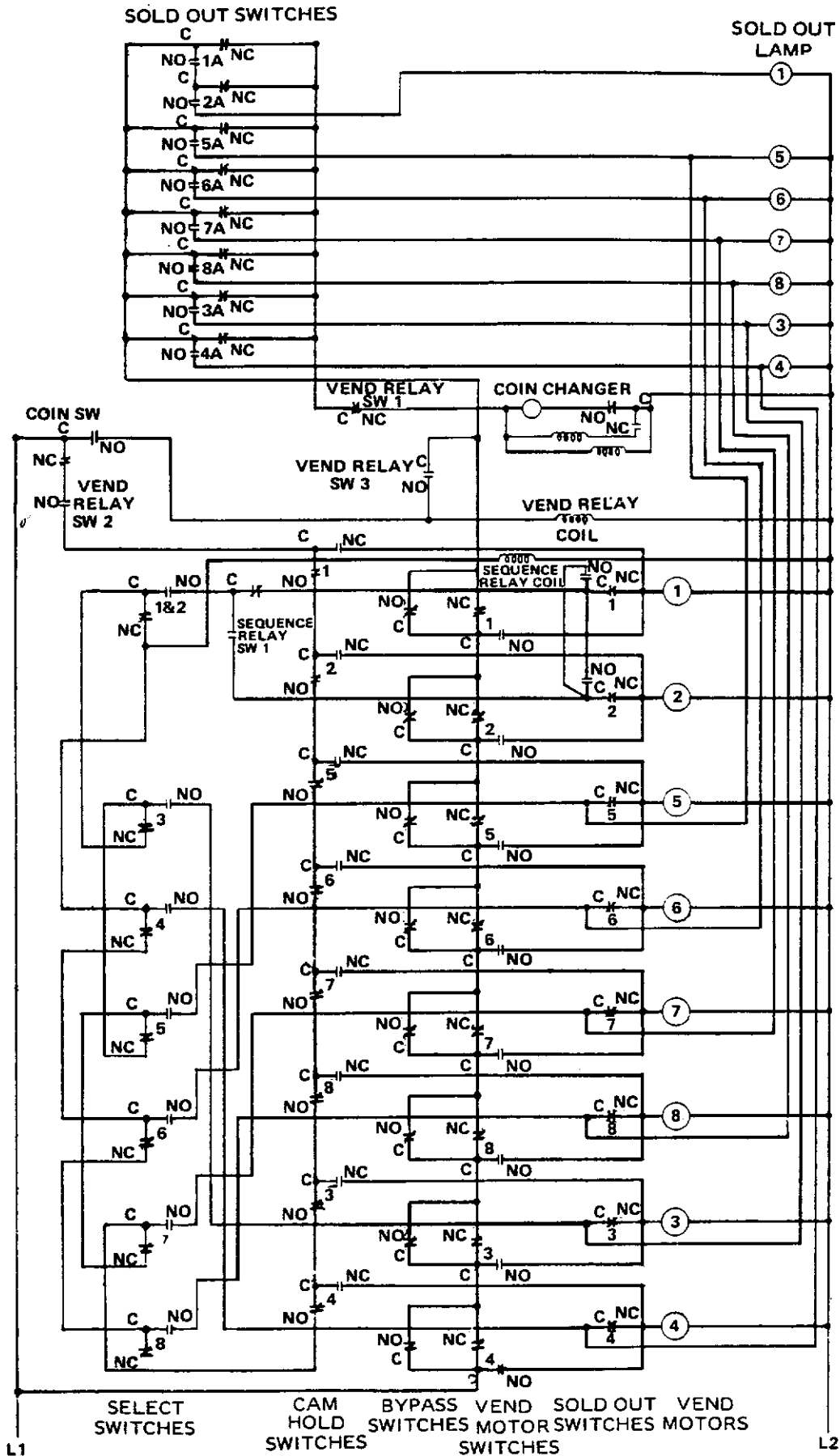




6 COLUMN DUAL ADAPTIBLES, 1 RELAY, LOCKOUT SEQUENCING 1 & 2

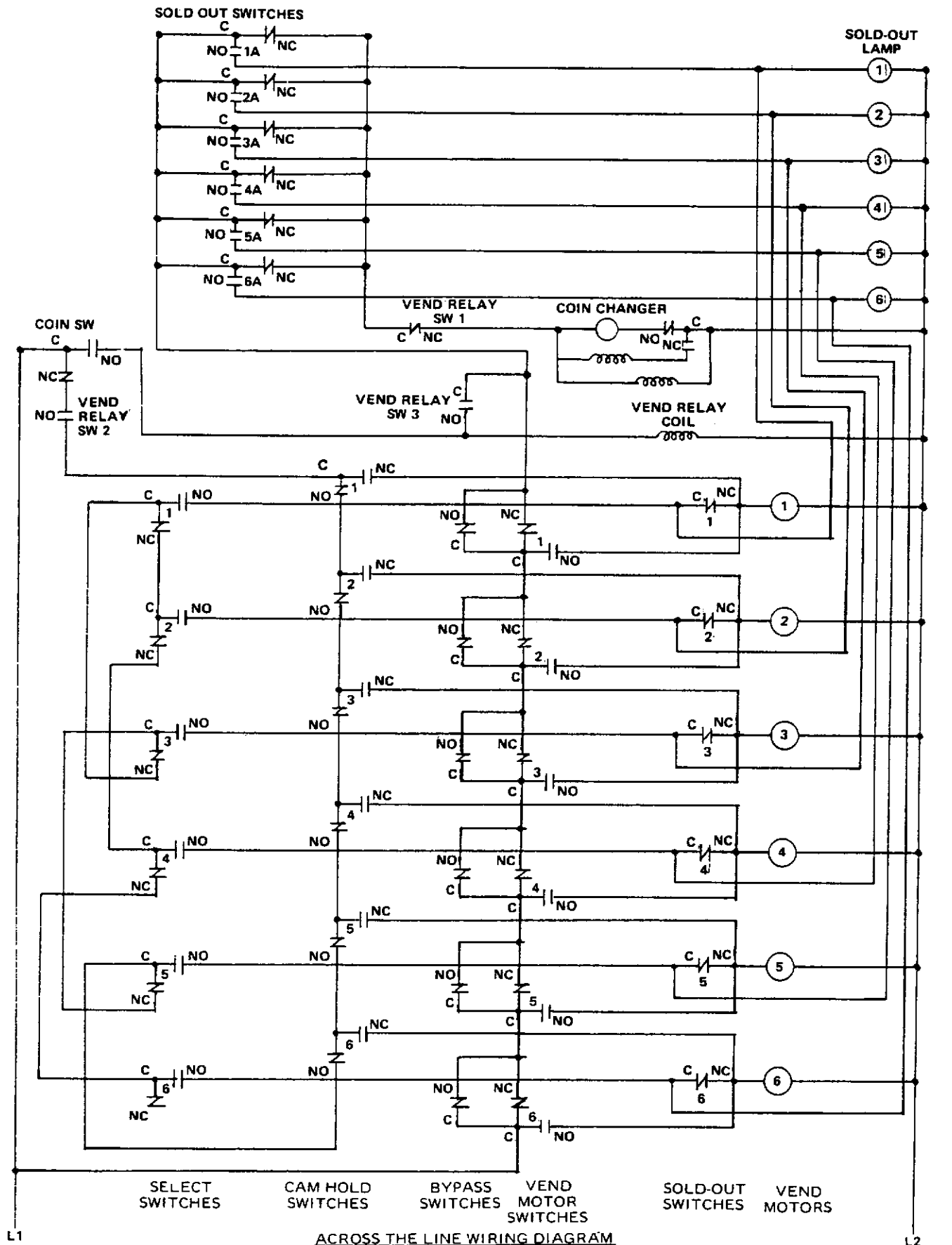
ALL SWITCHES SHOWN IN POSITION WHEN VENDOR IS READY TO ACCEPT COINS

C7290.05
PWJ 12/10/79



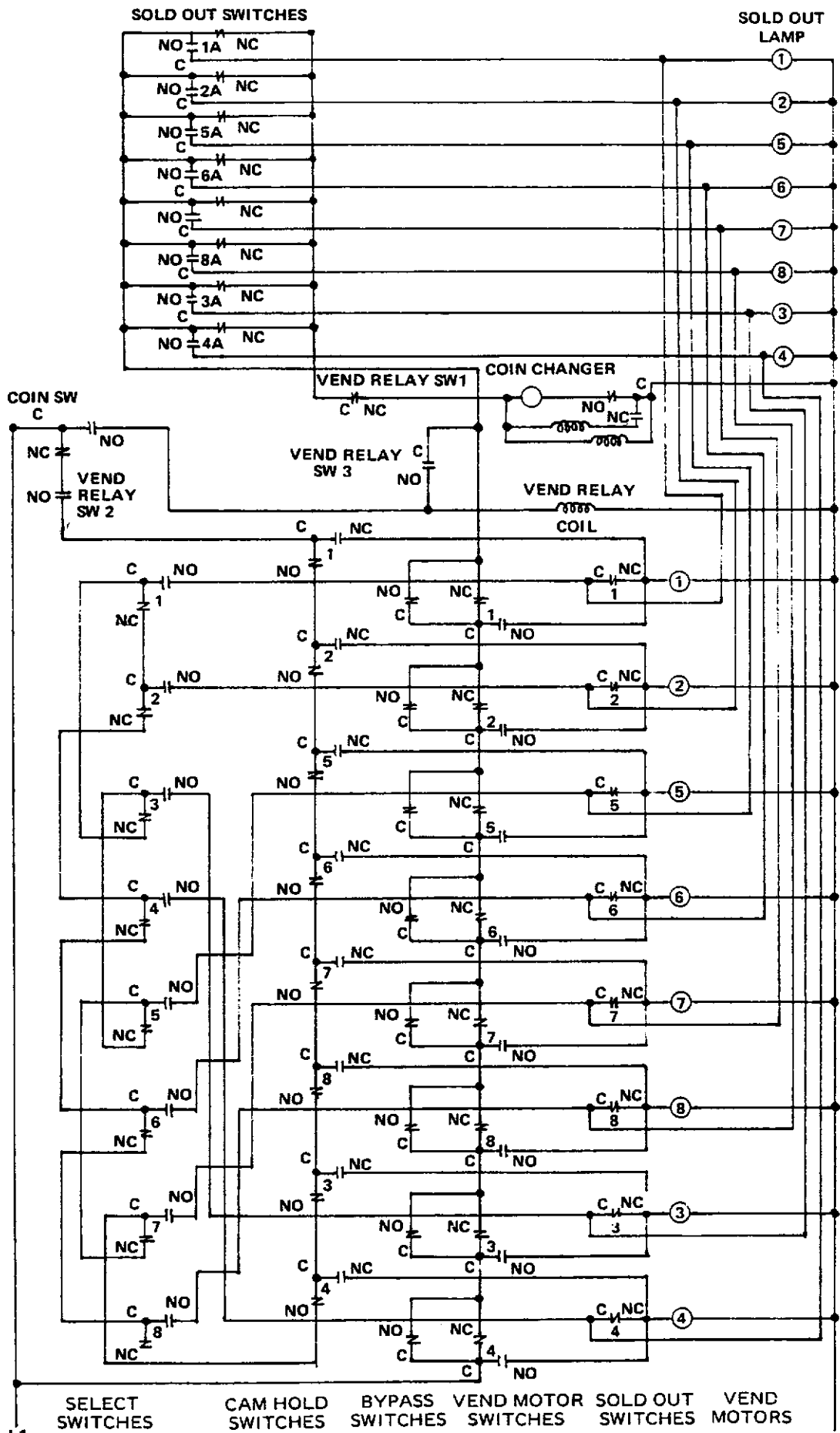
ACROSS THE LINE WIRING DIAGRAM.

8 COLUMN ADAPTABLES, 1 RELAY, LOCKOUT, SEQUENCING 1 & 2
 ALL SWITCHES SHOWN IN POSITION WHEN VENDER IS READY TO ACCEPT COINS



6 COLUMN ADAPTIBLES, 1 RELAY, LOCKOUT

ALL SWITCHES SHOWN IN POSITION WHEN VENDOR IS READY TO ACCEPT COINS

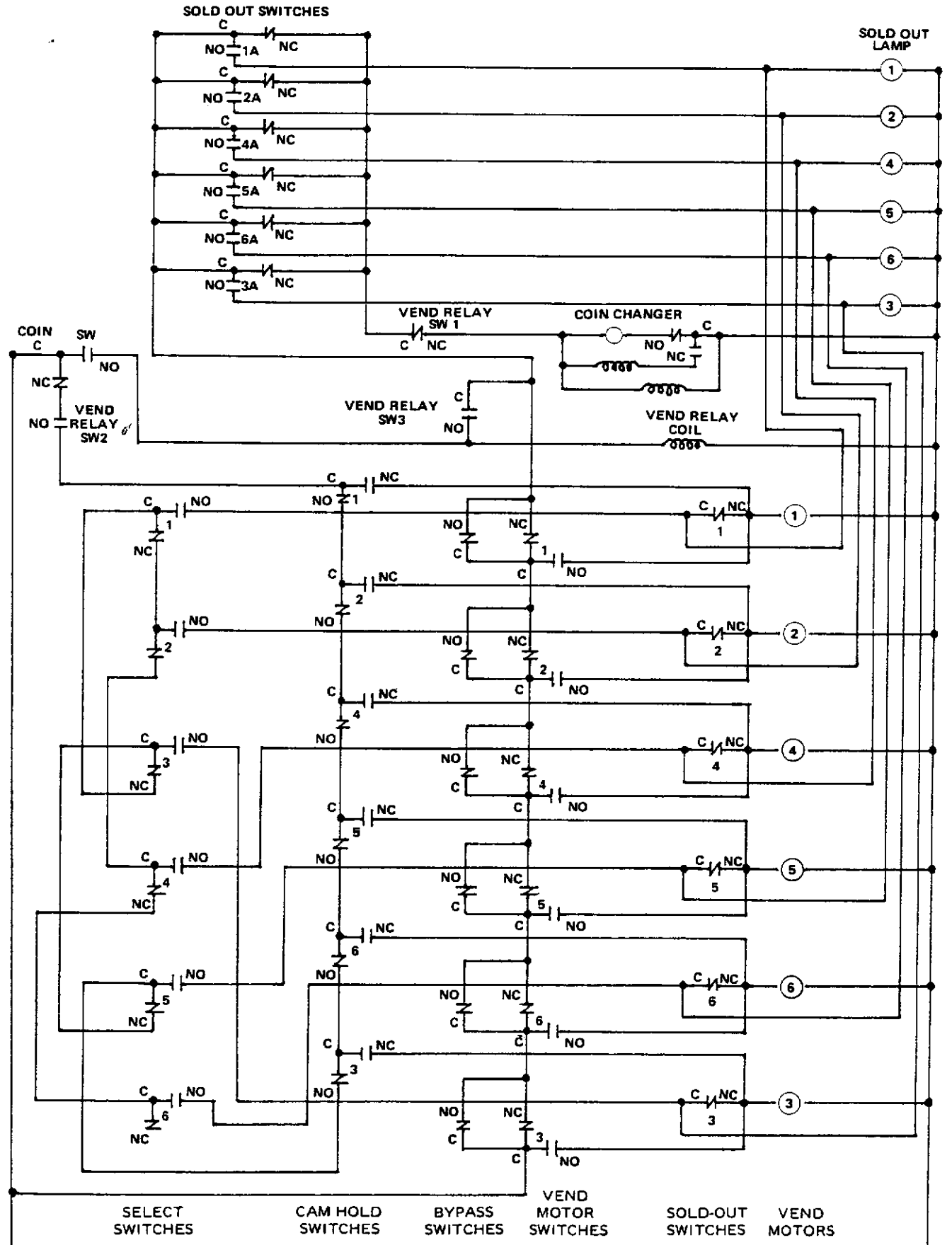


ACROSS THE LINE WIRING DIAGRAM

8 COLUMN ADAPTABLES, 1 RELAY, LOCKOUT

ALL SWITCHES SHOWN IN POSITION WHEN VENDER IS READY TO ACCEPT COINS

D7220.05



ACROSS THE LINE WIRING DIAGRAM

6 COLUMN DUAL ADAPTIBLES, 1 RELAY, LOCKOUT

ALL SWITCHES SHOWN IN POSITION WHEN VENDOR IS READY TO ACCEPT COINS

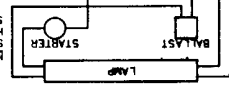
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L2

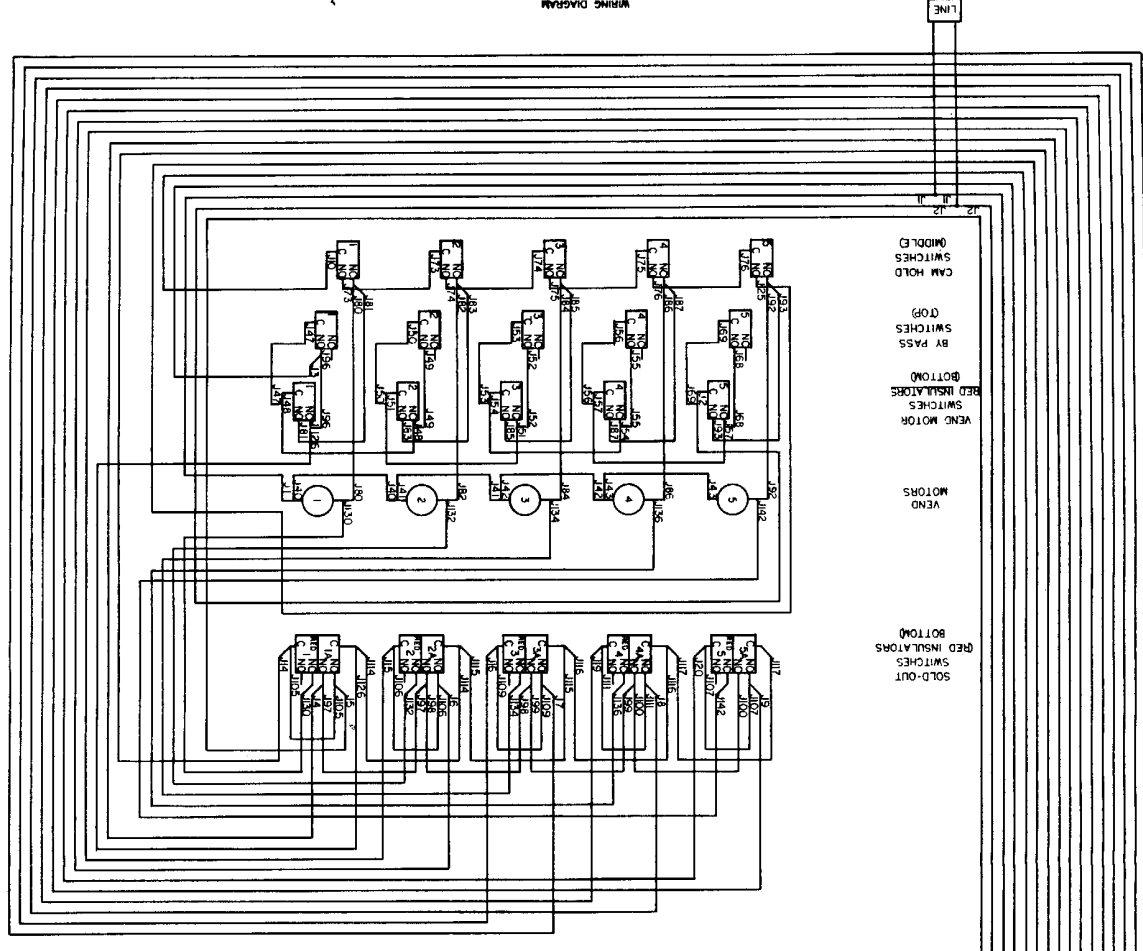
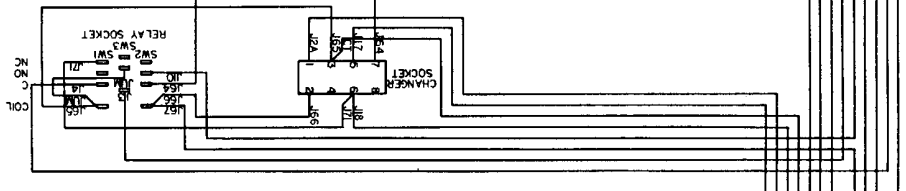
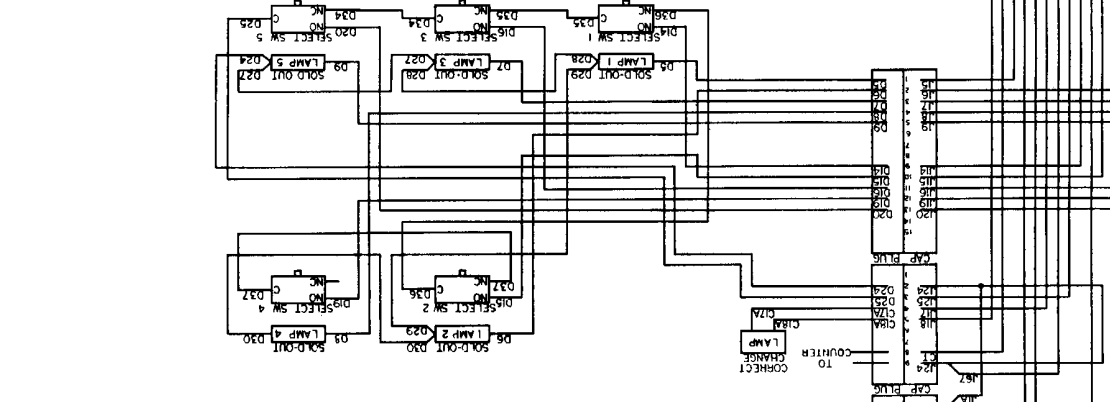
D7300.05

NOTE:
SOME MODELS
HAVE 2 ILLUM.
SIGN ASSYS.
PATENT NOTICE
THIS DEVICE IS MANUFACTURED UNDER ONE OR
MORE OF THE FOLLOWING U.S. PATENTS:
4,026,400
3,463,255
3,463,256
4,026,401
4,026,402
3,990,027
3,990,028
3,145,274
3,145,275
3,270,817
3,702,184
4,284,000
4,284,001
4,284,002
4,284,003

NOTE:
SOME MODELS
HAVE 2 ILLUM.
SIGN ASSYS.



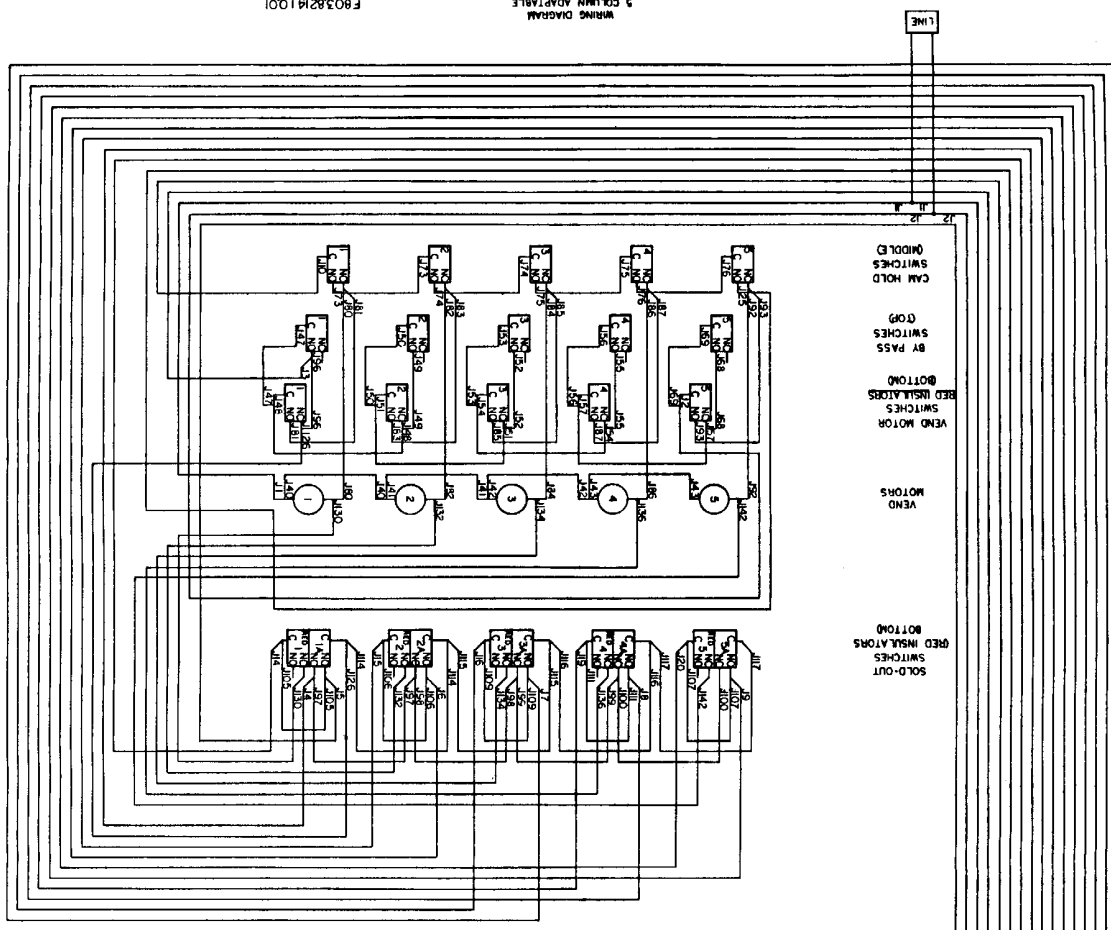
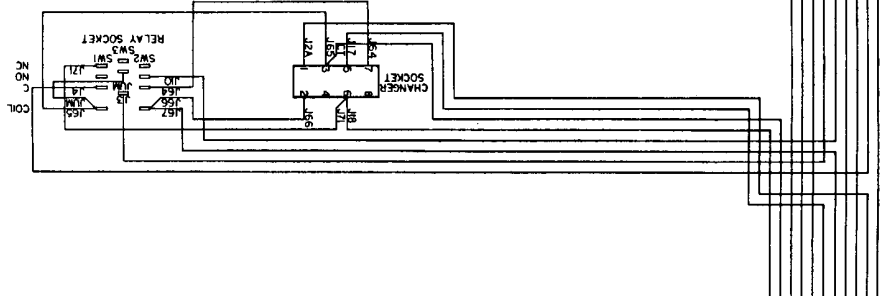
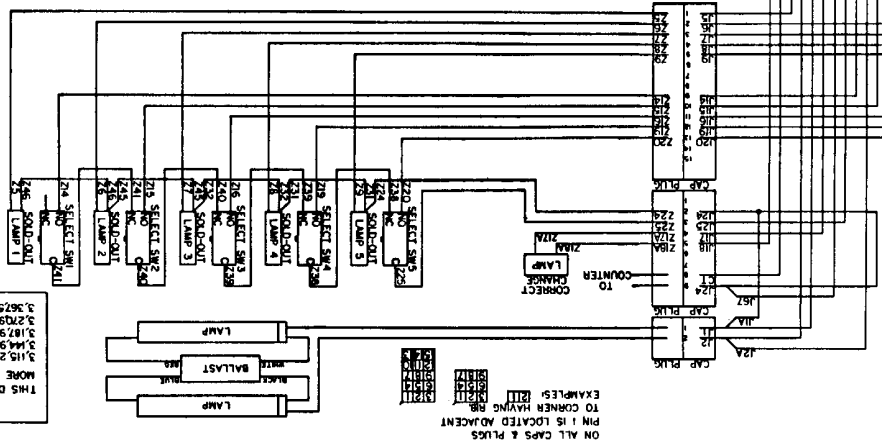
ON ALL CAPS & PLUGS
PIN 1 IS LOCATED ADJACENT
TO CORNER HAVING RB.
EXAMPLES:



WIRING DIAGRAM
5 COLUMN ADAPTIBLE
F80381254001
REV 2/15/60

WIRING DIAGRAM
5 COLUMN ADAPTIBLE
F80381254001

PATENT NOTICE
 MORE OF THE FOLLOWING U.S. PATENTS
 4,019,650
 3,463,355
 3,449,965
 3,604,589
 3,800,937
 4,044,877
 3,270,917
 3,562,536
 4,509,658
 4,264,000
 4,290,138



F80382(4) 001
 MAGNUM
 5 COLUMN ADAPTIBLE
 WRING DIAGRAM

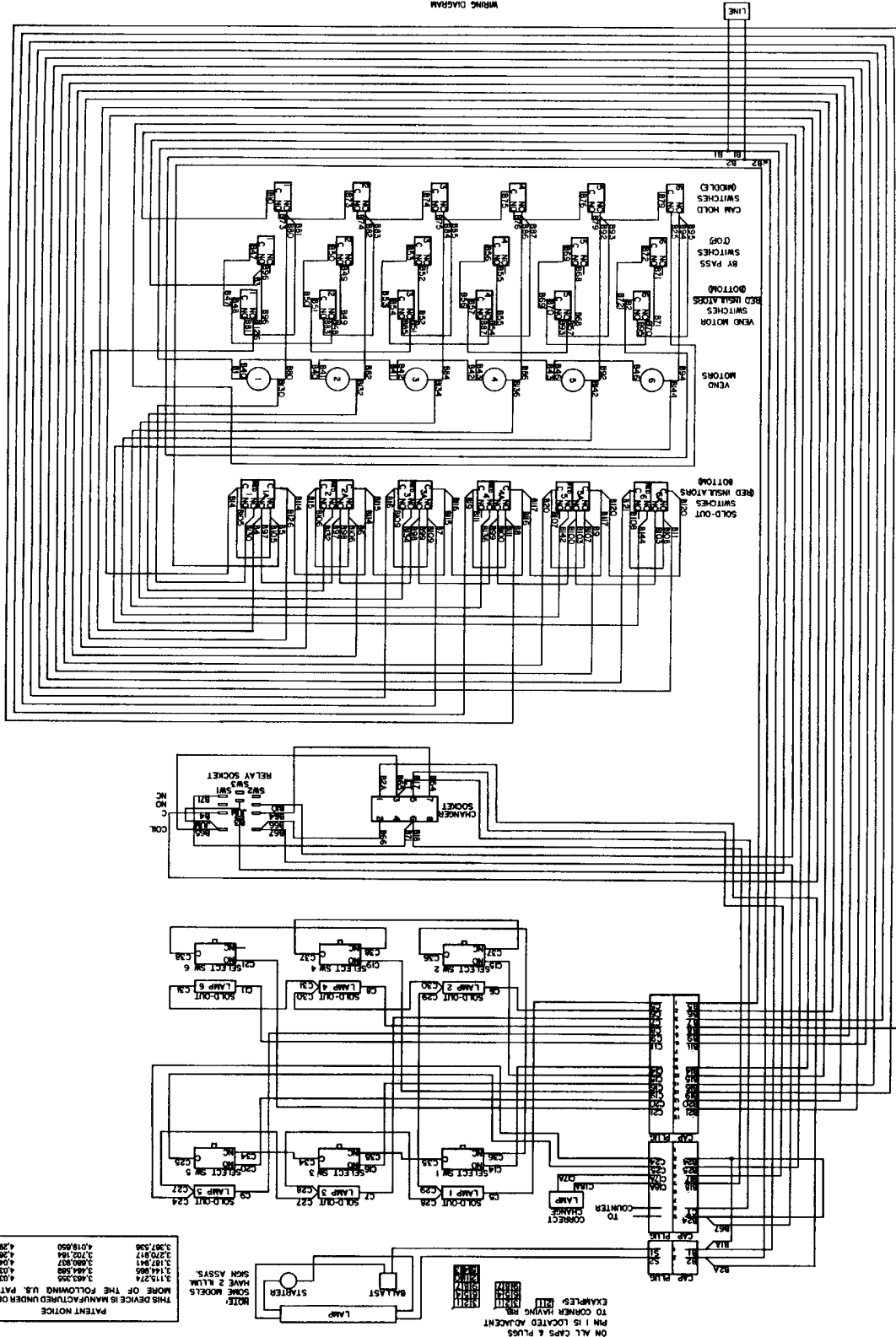
F80382(4) 001
 WRING DIAGRAM
 5 COLUMN ADAPTIBLE
 MAGNUM

ON ALL CAPS & PLUGS
 PIN 1 IS LOCATED ADJACENT
 TO CORNER HAVING BR.
 EXAMPLES: [Diagram showing pin 1 location]

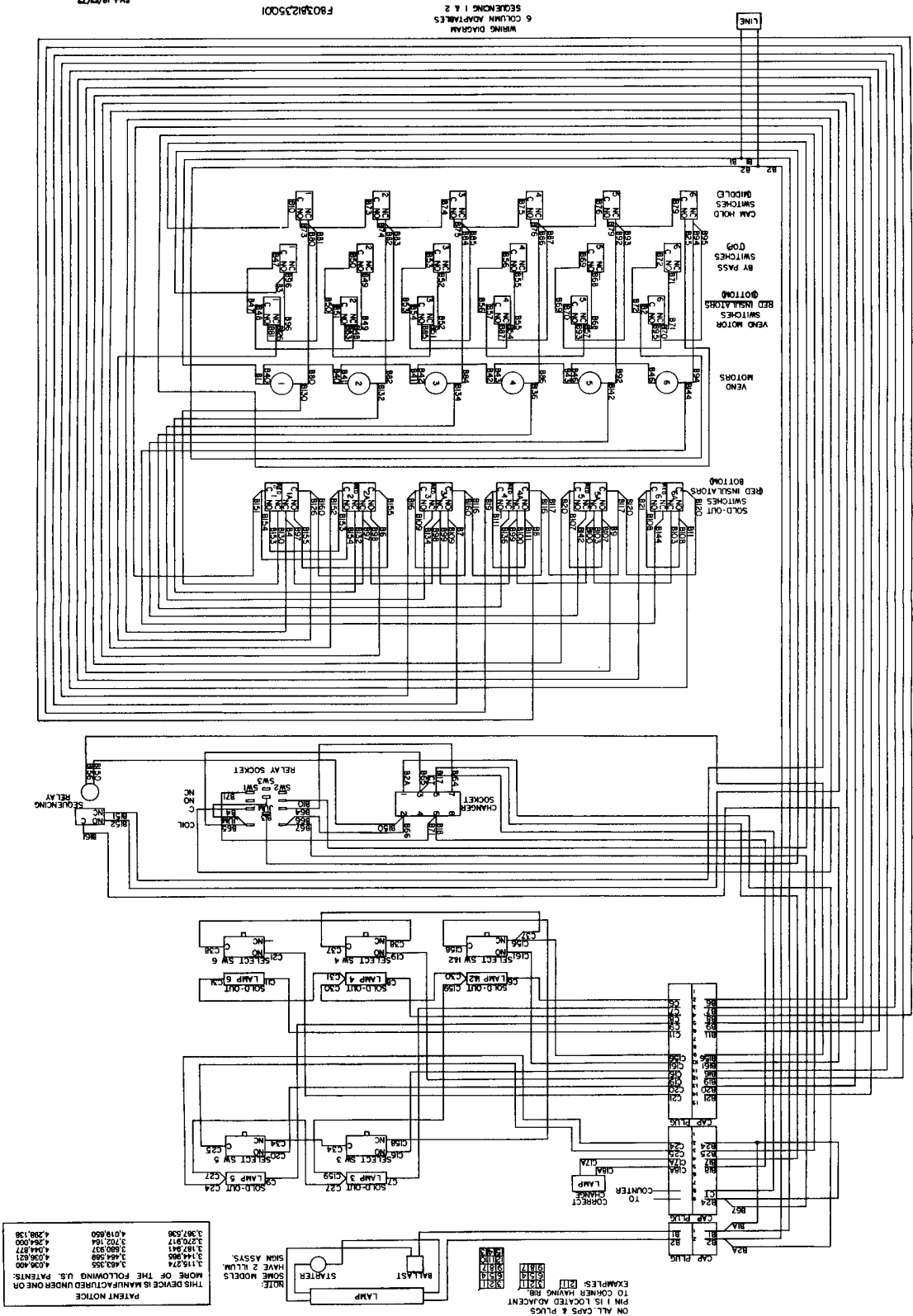
10/10/54

F8038234001

6 COLUMN ADAPTIBLES
WIRING DIAGRAM



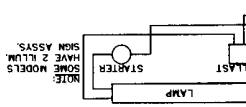
WIRING DIAGRAM
6 COLUMN ADAPTIBLES
F8038234001



PATENT NOTICE

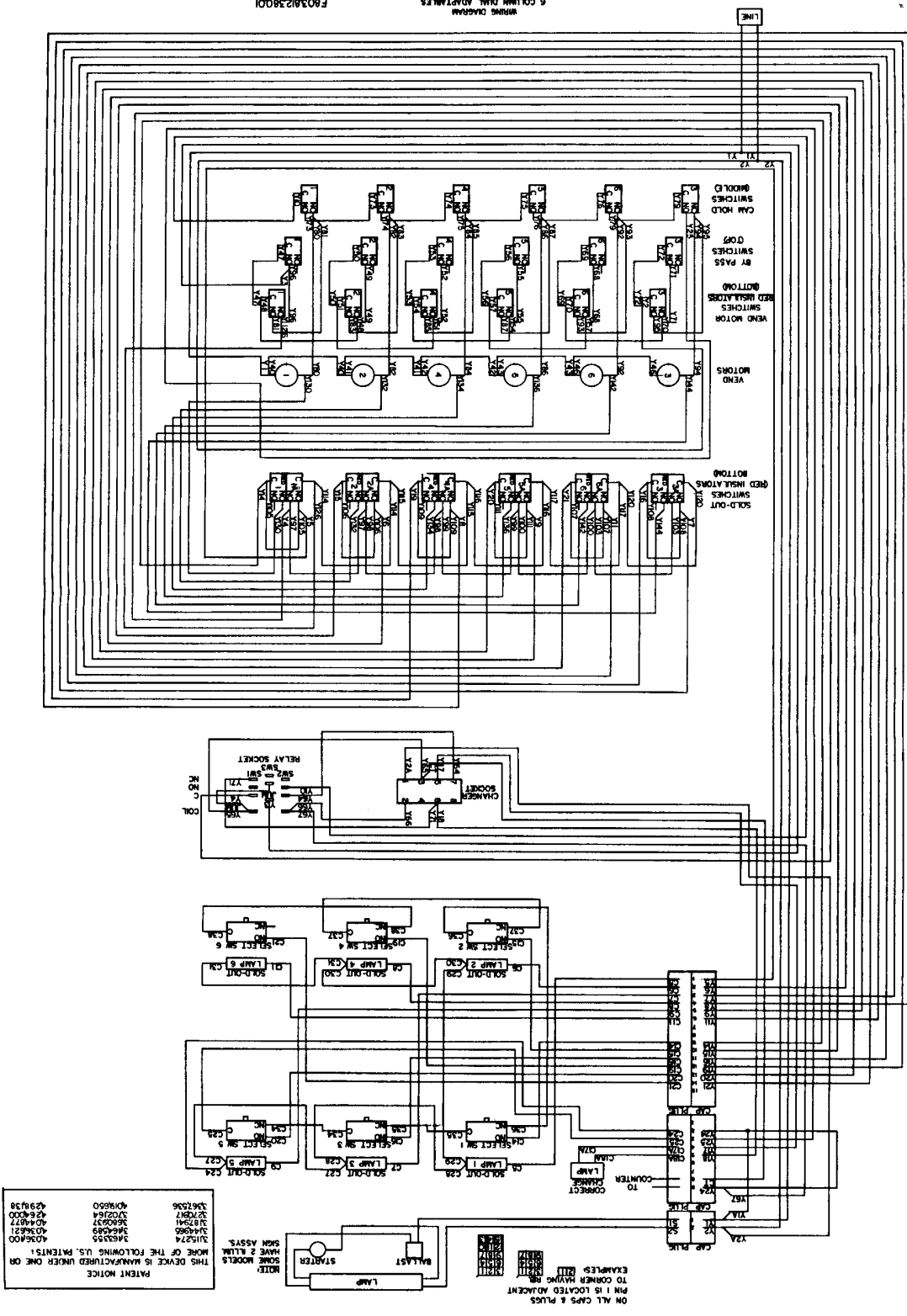
THIS DEVICE IS MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:

4,036,400	3,483,955
4,038,821	3,484,588
4,044,877	3,489,937
3,720,817	3,727,184
3,387,536	4,018,650



ON ALL CAPS & PLUGS
 PIN 1 IS LOCATED ADJACENT
 TO CORNER HAVING RB.

EXAMPLES: [Diagram showing examples of pin configurations]

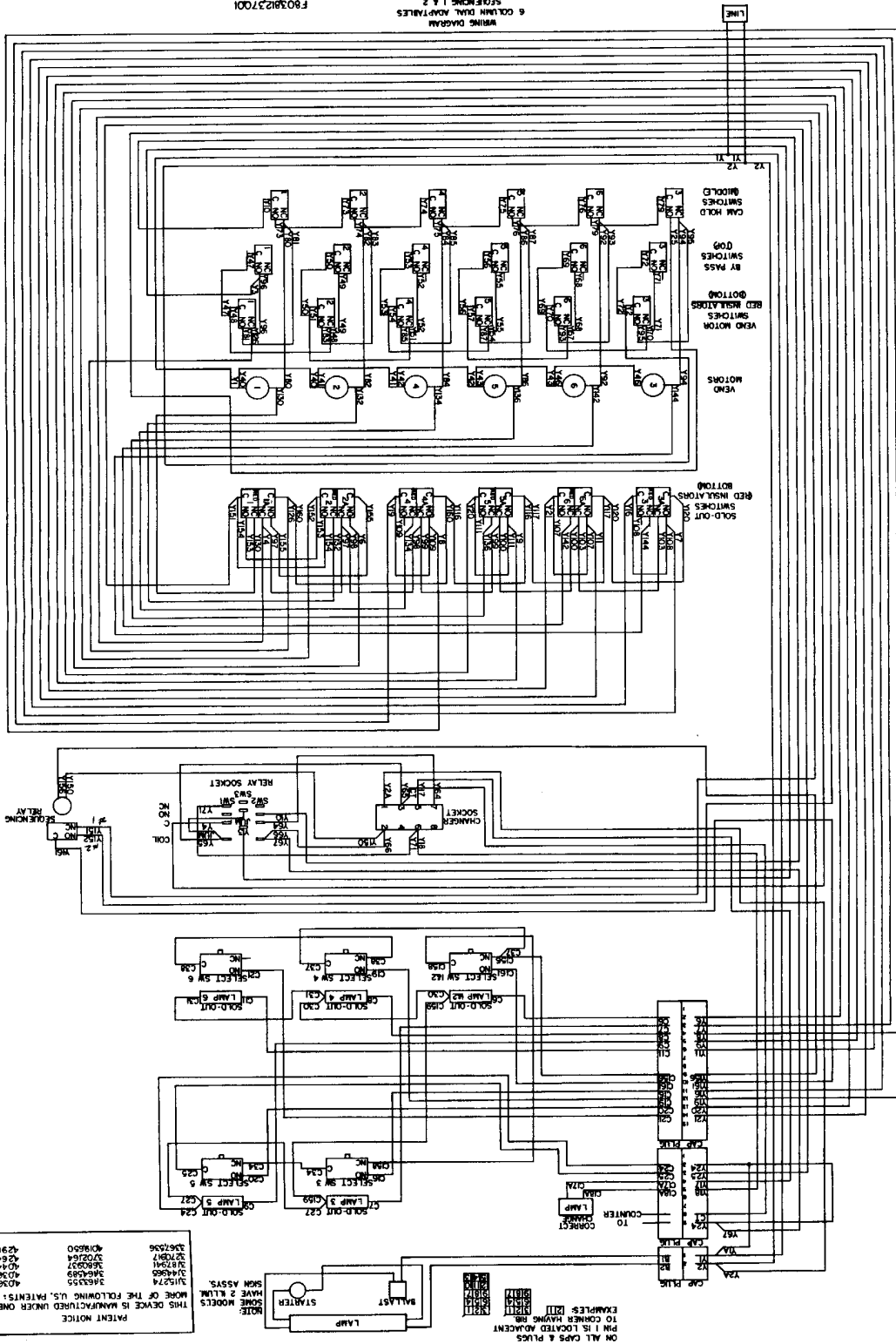


NOTE:
SOME MODELS
HAVE 2 ALUM.
SMM ASSY.

PATENT NOTICE
THIS DEVICE IS MANUFACTURED UNDER ONE OR
MORE OF THE FOLLOWING U.S. PATENTS:

4036400	3463955
4036221	3463965
404977	3463977
426400	3472817
429438	3467536

ON ALL COPS & PLUS5
PIN 15 LOCKED IN PLACE
TO CORNER HAVING NR
EXAMPLES: Z11
Z12
Z13
Z14
Z15
Z16
Z17
Z18
Z19
Z20



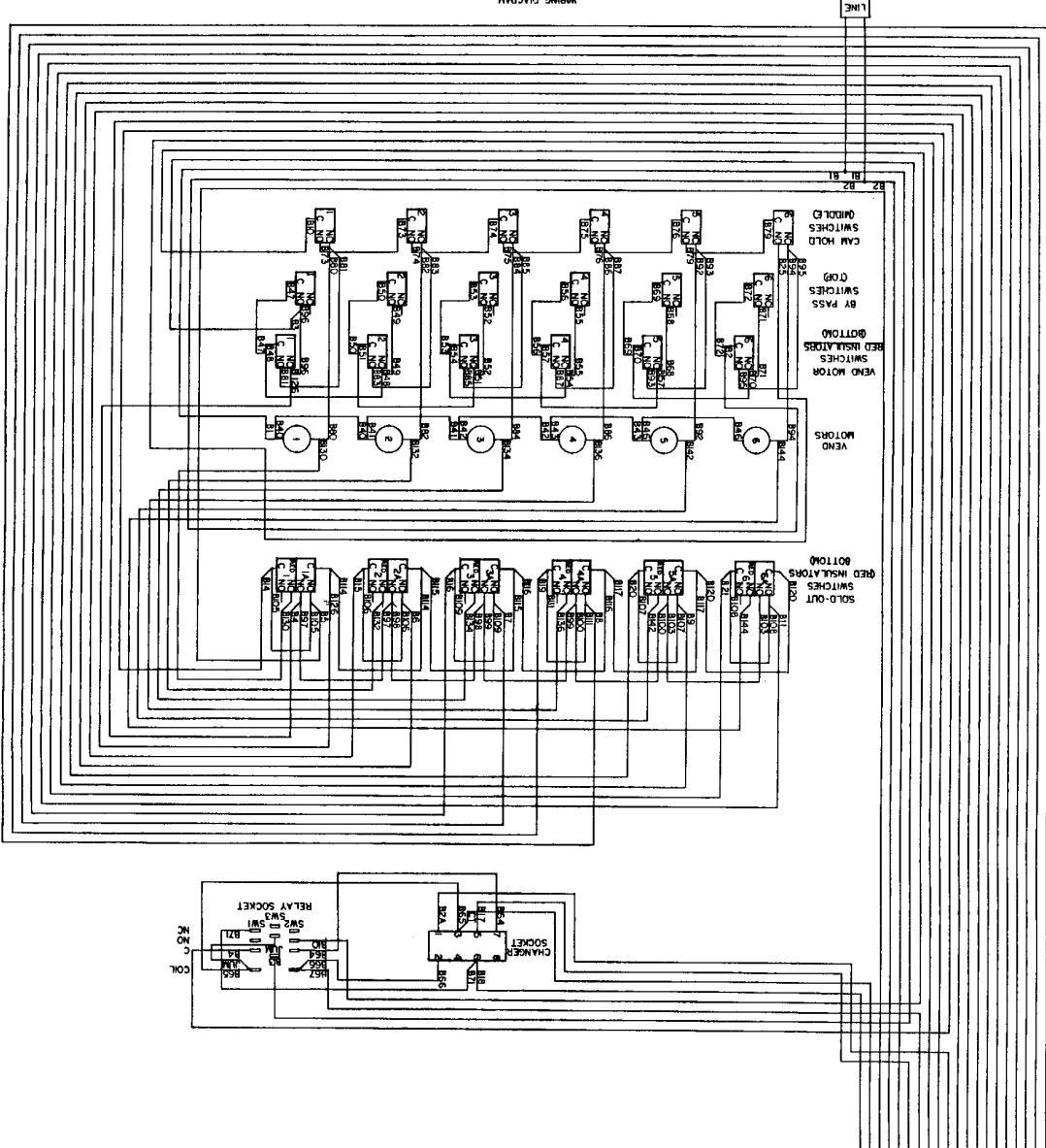
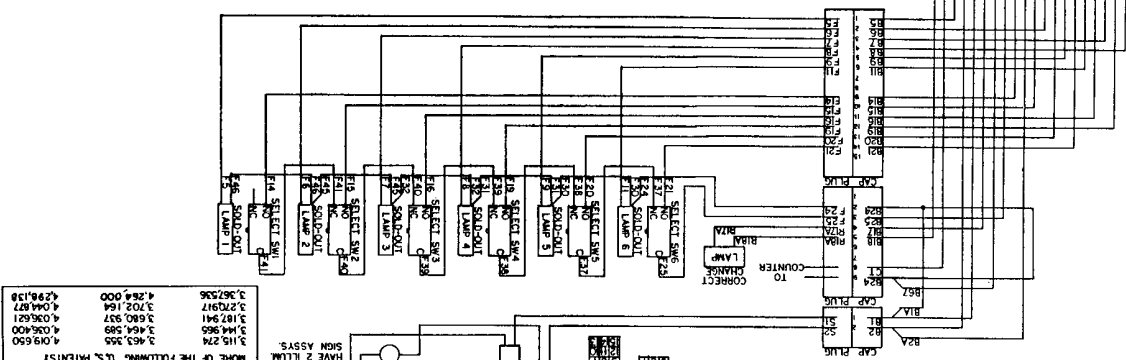
WIRING DIAGRAM
6 COLUMN DUAL ADAPTIBLES
SEQUENCING 1 & 2
F8038237001

ON ALL CAPS & PLUGS
 TO CORNER HAVING RIB
 EXAMPLES: [Diagram showing corner examples]
 BALLAST
 STAGGER
 LAMP

NOTE:
 SOME MODELS
 HAVE 2 ILLUM.
 SIGN ASSYS.

PATENT NOTICE
 THIS DEVICE IS MANUFACTURED UNDER ONE OR
 MORE OF THE FOLLOWING U.S. PATENTS:

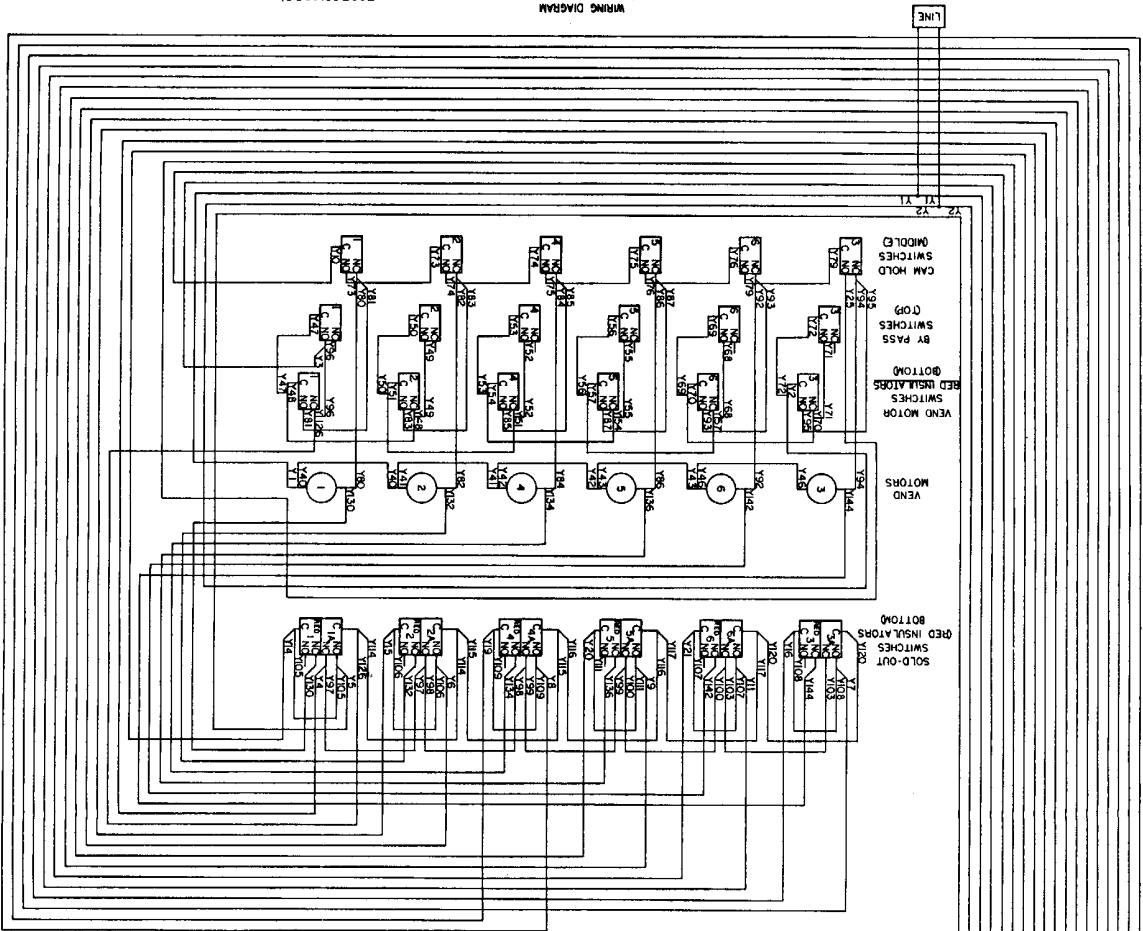
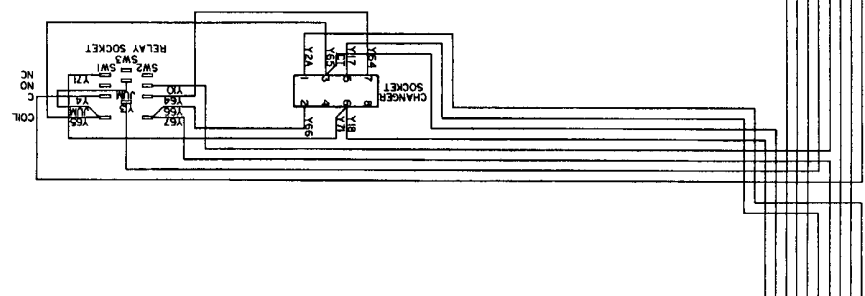
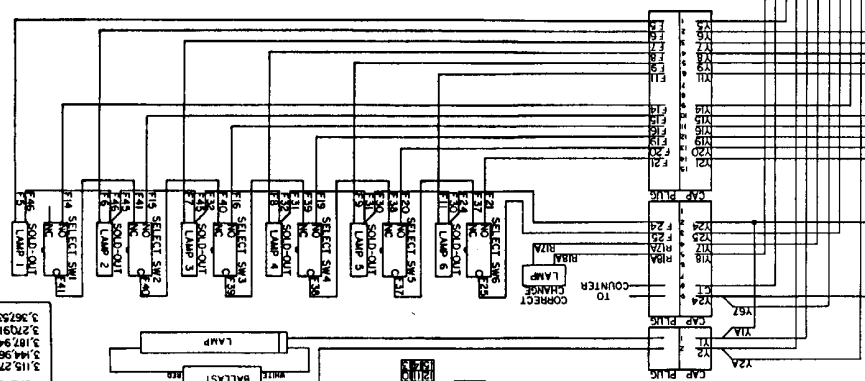
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- 3,463,355
- 4,026,400
- 3,464,589
- 4,026,631
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- 3,362,536



WIRING DIAGRAM
 6 COLUMN ADAPTIBLES
 F803819, 9001

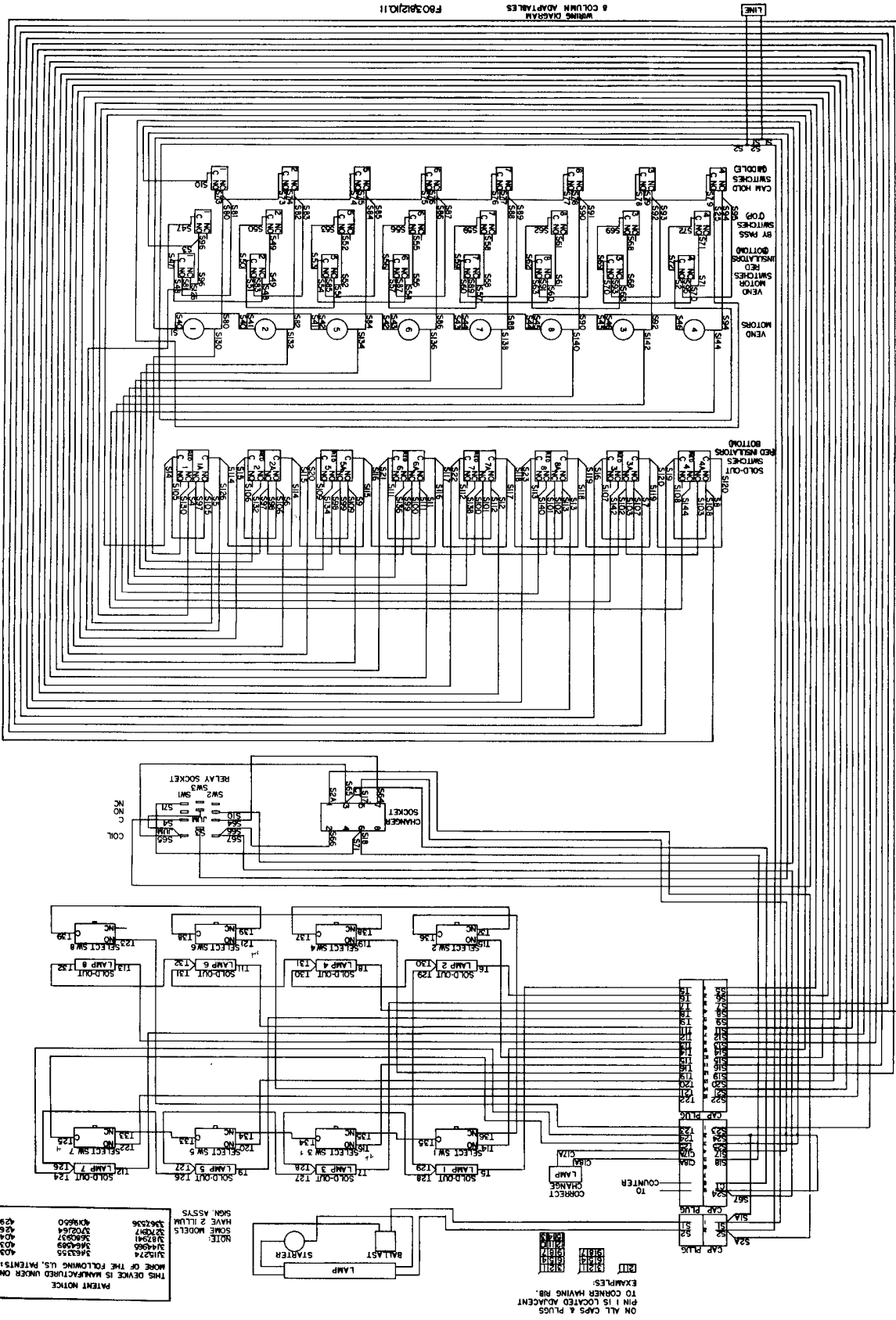
WIRING DIAGRAM
 6 COLUMN ADAPTIBLES
 MAGNUM
 F803819, 9001

PATENT NOTICE
 THIS DEVICE IS MANUFACTURED UNDER ONE OR
 MORE OF THE FOLLOWING U.S. PATENTS:
 3,115,274 3,463,355 4,019,650
 3,144,965 3,464,589 4,026,400
 3,180,941 3,500,937 4,036,821
 3,270,917 3,702,164 4,044,877
 3,267,536 4,264,000 4,291,138



WIRING DIAGRAM
 6 COLUMN DUAL ADAPTABLE
 MAGNUM
 F80382105001

WIRING DIAGRAM
 6 COLUMN DUAL ADAPTABLE
 MAGNUM
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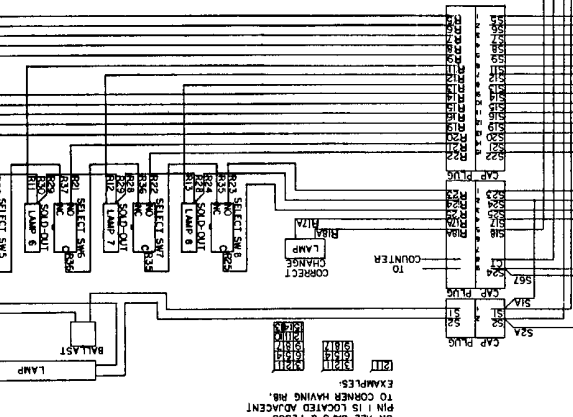
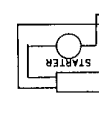


WIRING DIAGRAM
8 COLUMN ADAPTIBLES

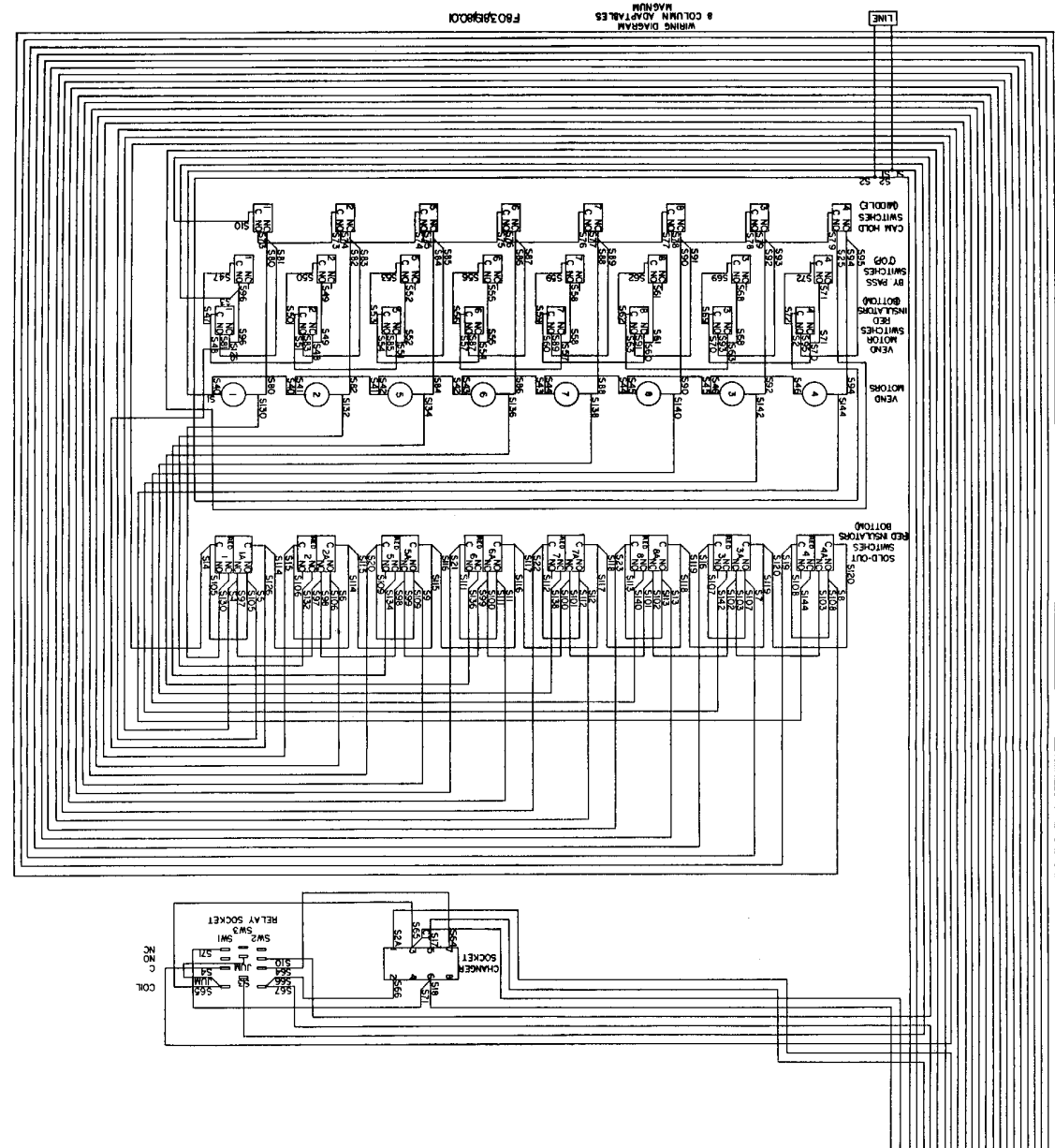
WIRING DIAGRAM
8 COLUMN ADAPTIBLES

PATENT NOTICE
 THIS DEVICE IS MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:
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 3,185,274
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NOTE:
 SOME MODELS
 HAVE 2 TILTS
 SKN ASSTS

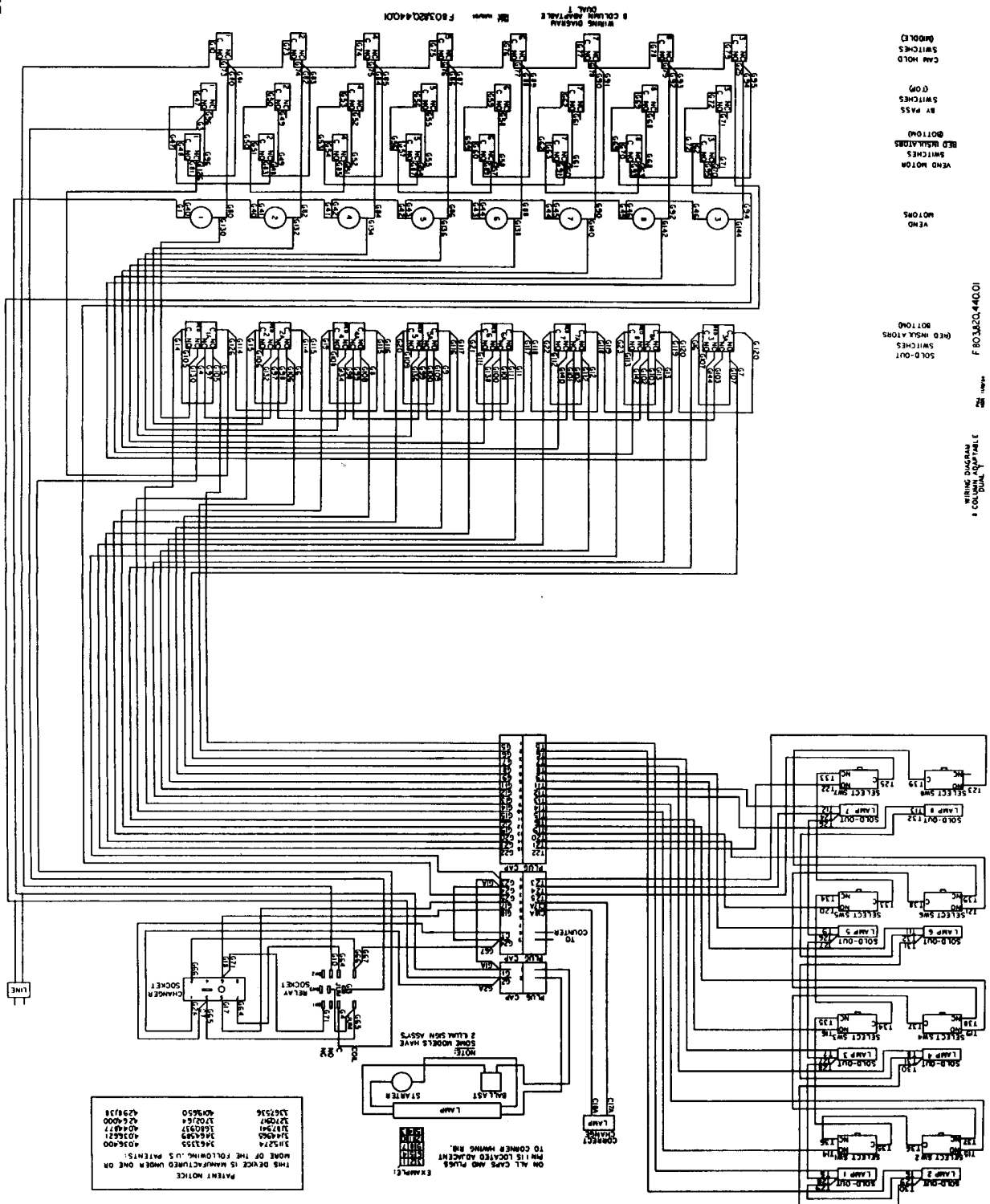


ON ALL CAPS & PLUGS
 PIN 1 IS LOCATED ADJACENT
 TO CORNER HAVING RB.
 EXAMPLES:



WIRING DIAGRAM
 8 COLUMN ADAPTIBLES
 MAGNUM

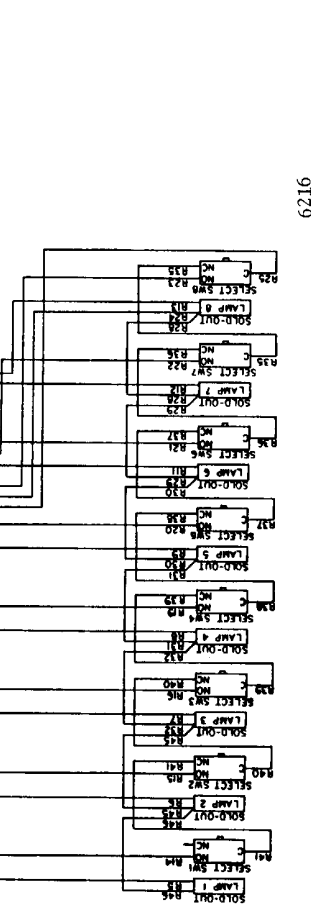
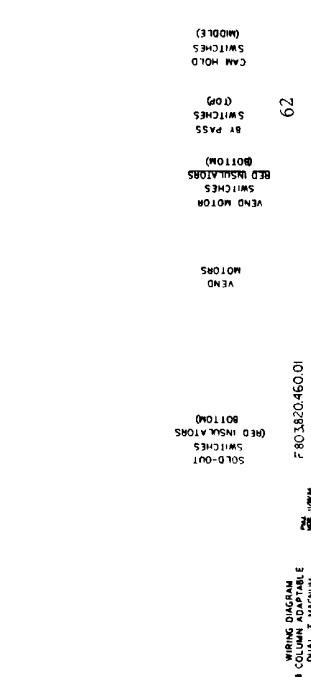
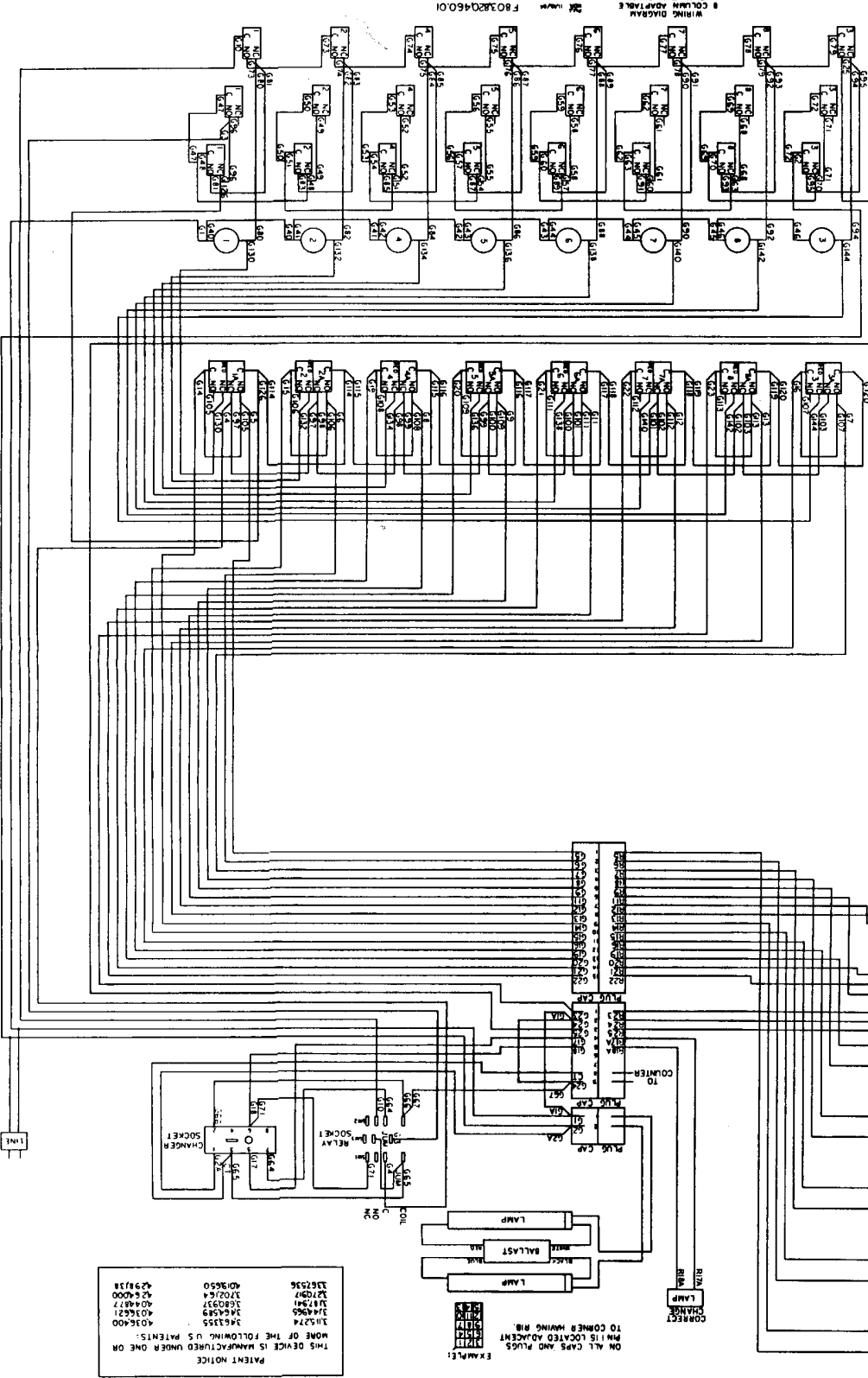
WIRING DIAGRAM
 8 COLUMN ADAPTIBLES MAGNUM



PATENT NOTICE
 THIS DEVICE IS MANUFACTURED UNDER ONE OR
 MORE OF THE FOLLOWING U.S. PATENTS:
 4035400
 4035621
 4035622
 4035623
 4035624
 4035625
 4035626
 4035627
 4035628
 4035629
 4298738

EXAMPLES:
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 2. 112
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 80. 190
 81. 191
 82. 192
 83. 193
 84. 194
 85. 195
 86. 196
 87. 197
 88. 198
 89. 199
 90. 200
 91. 201
 92. 202
 93. 203
 94. 204
 95. 205
 96. 206
 97. 207
 98. 208
 99. 209
 100. 210

WIRING DIAGRAM
 F 803320-44001
 2



PATENT NOTICE
 THIS DEVICE IS MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:
 3115274
 3148566
 3173941
 3180937
 3184589
 4036621
 4035400
 3183355
 4036500
 4036500
 4238138
 3362936

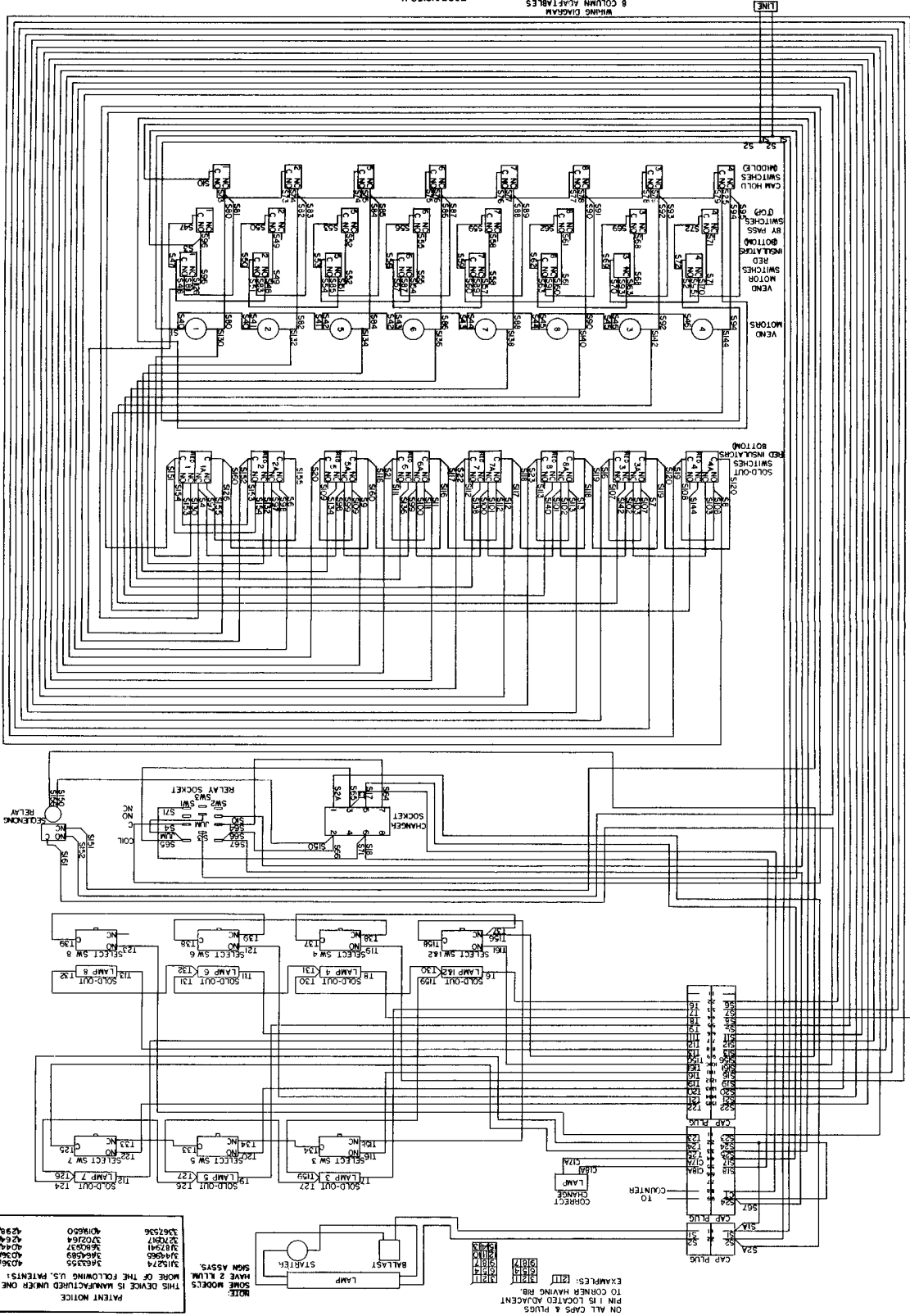
ON ALL CAPS AND PLUGS
 PIN IS LOCKED ADJACENT
 TO CORNER SHOWN. RIB
 CHANGES

EXAMPLES:
 [Diagram showing pin configurations]

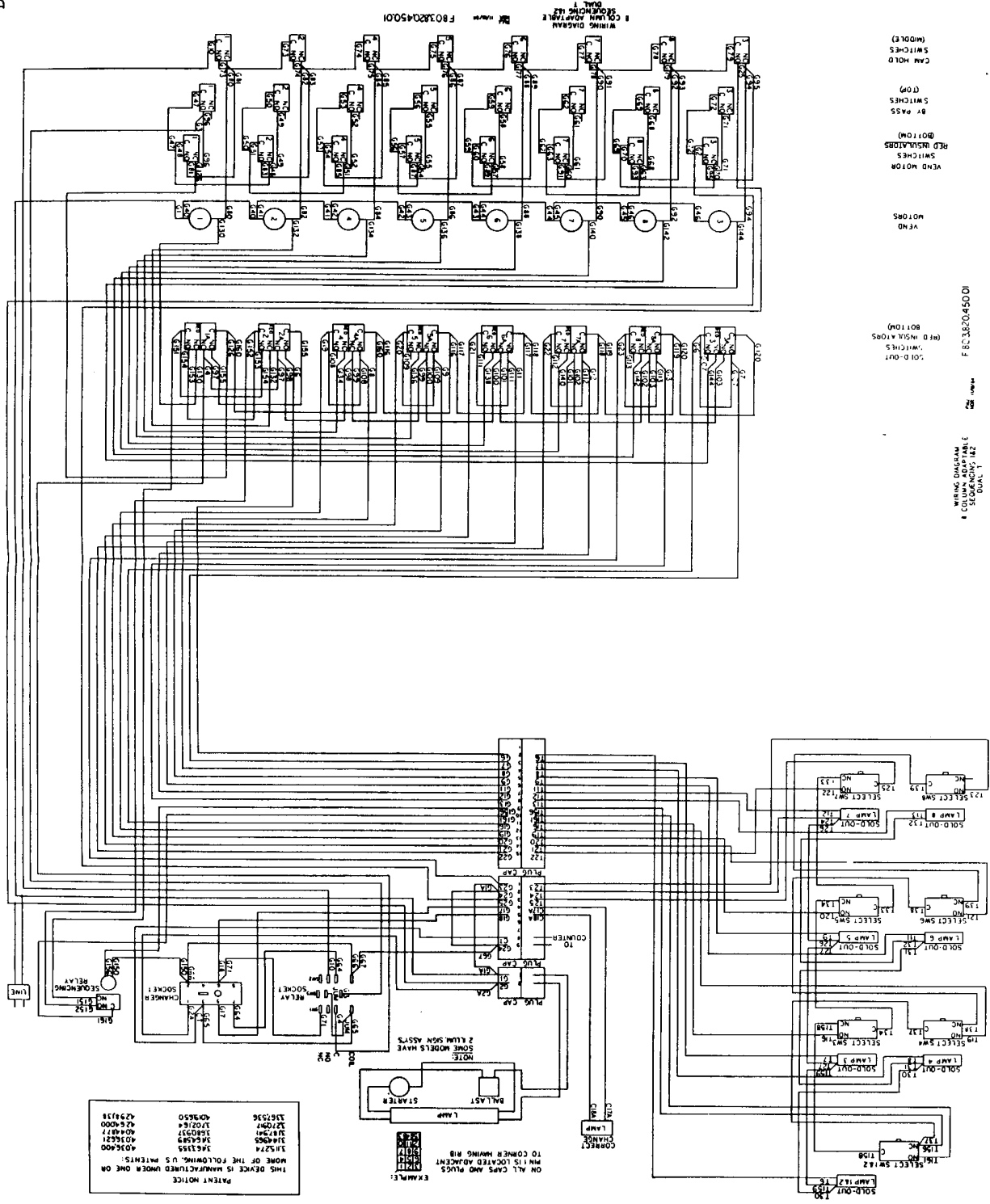
WIRING DIAGRAM
 8 COLUMN ADAPTAR
 DUAL T MAGNUM
 F 8033820460 01

WIRING DIAGRAM
 8 COLUMN ADAPTAR
 DUAL T MAGNUM
 F 8033820460 01

NOTE:
SOME MODELS
HAVE 2 LAMP
SIGNALS
THIS DEVICE IS MANUFACTURED UNDER ONE OR
MORE OF THE FOLLOWING U.S. PATENTS:
3483555
3484889
3486271
4048277
3865237
3873241
3712817
3702614
4264000
4096520
4291738



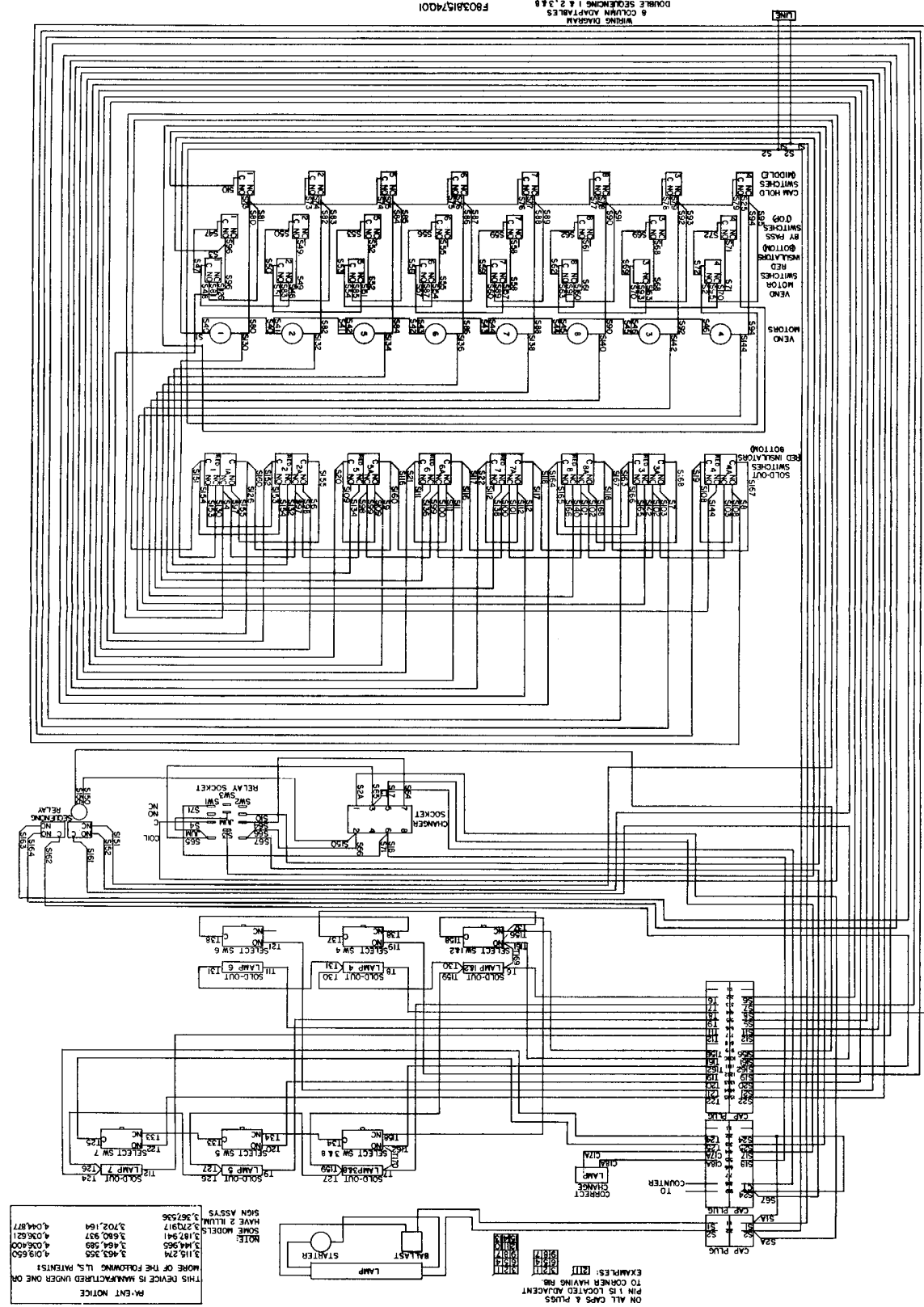
WIRING DIAGRAM
8 COLUMN ADAPT TABLES
SEQUENCES 1 & 2



PATENT NOTICE

THIS DEVICE IS MARKED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:

3167536	4096550	4299138
3270914	4240000	
3482951	4048871	
3148955	3162621	
3182941	3162621	
3152744	3161195	
3165289	4095400	



PART NOTICE

THIS DEVICE IS MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:

3,115,274	3,463,355	4,019,650
3,140,550	3,462,988	4,008,400
3,162,941	3,680,937	4,004,871
3,270,917	3,702,164	4,044,877
3,267,556		

SOME MODELS HAVE 2 LAMP SIGN ASSYS

ON ALL COPS & PLUGS PIN 1 IS LOCATED ADJACENT TO CORNER HAVING RB

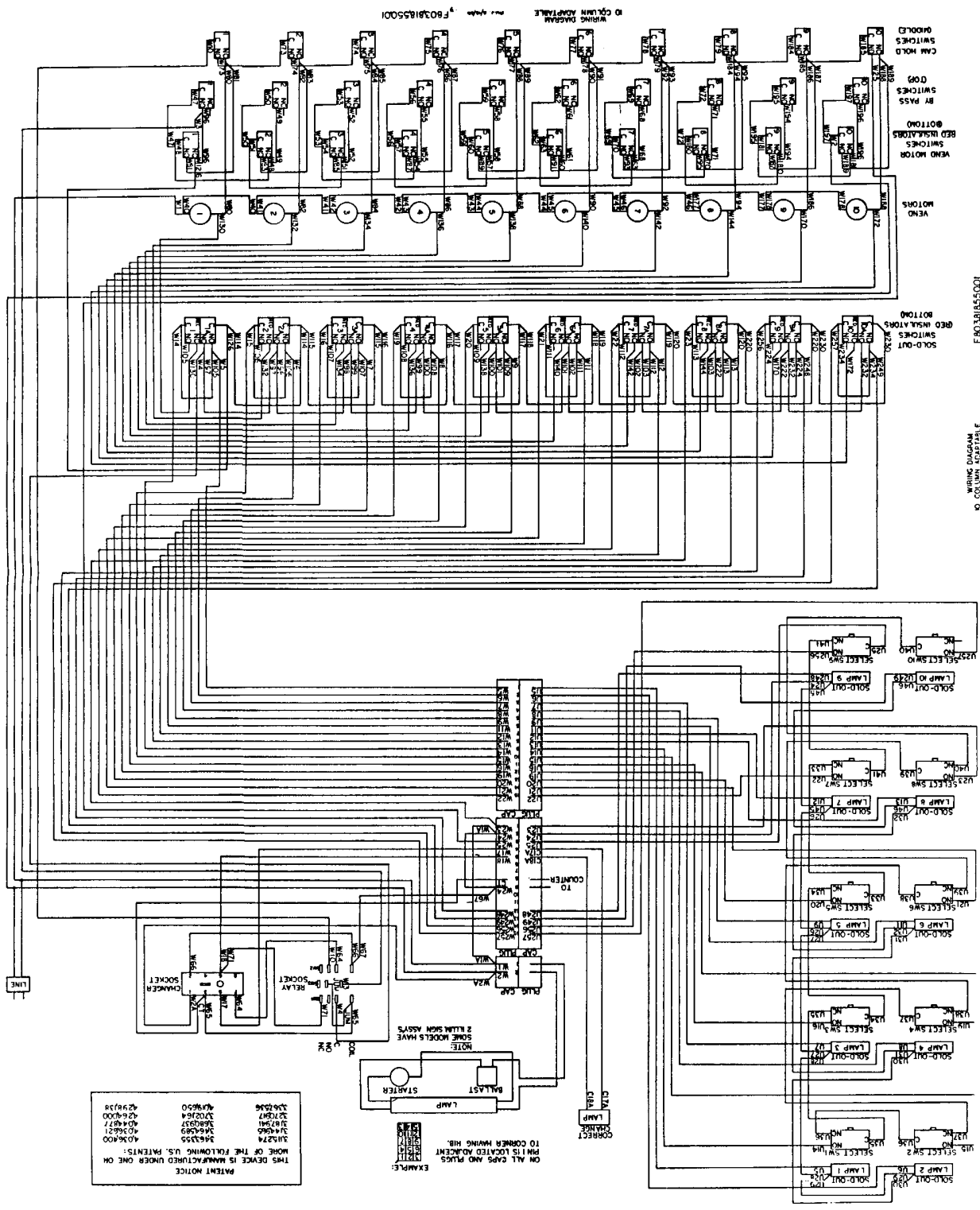
EXAMPLES: [Diagram showing pin connections]

TO CORNER HAVING RB

CHANGE LAMP TO COUNTER

WIRING DIAGRAM
8 COLUMN ADAPTIBLES
DOUBLE SEQUENCING 1 & 2, 3 & 8
F80391574001

WIRING DIAGRAM
8 COLUMN ADAPTIBLES
DOUBLE SEQUENCING 1 & 2, 3 & 8
F8039157400:



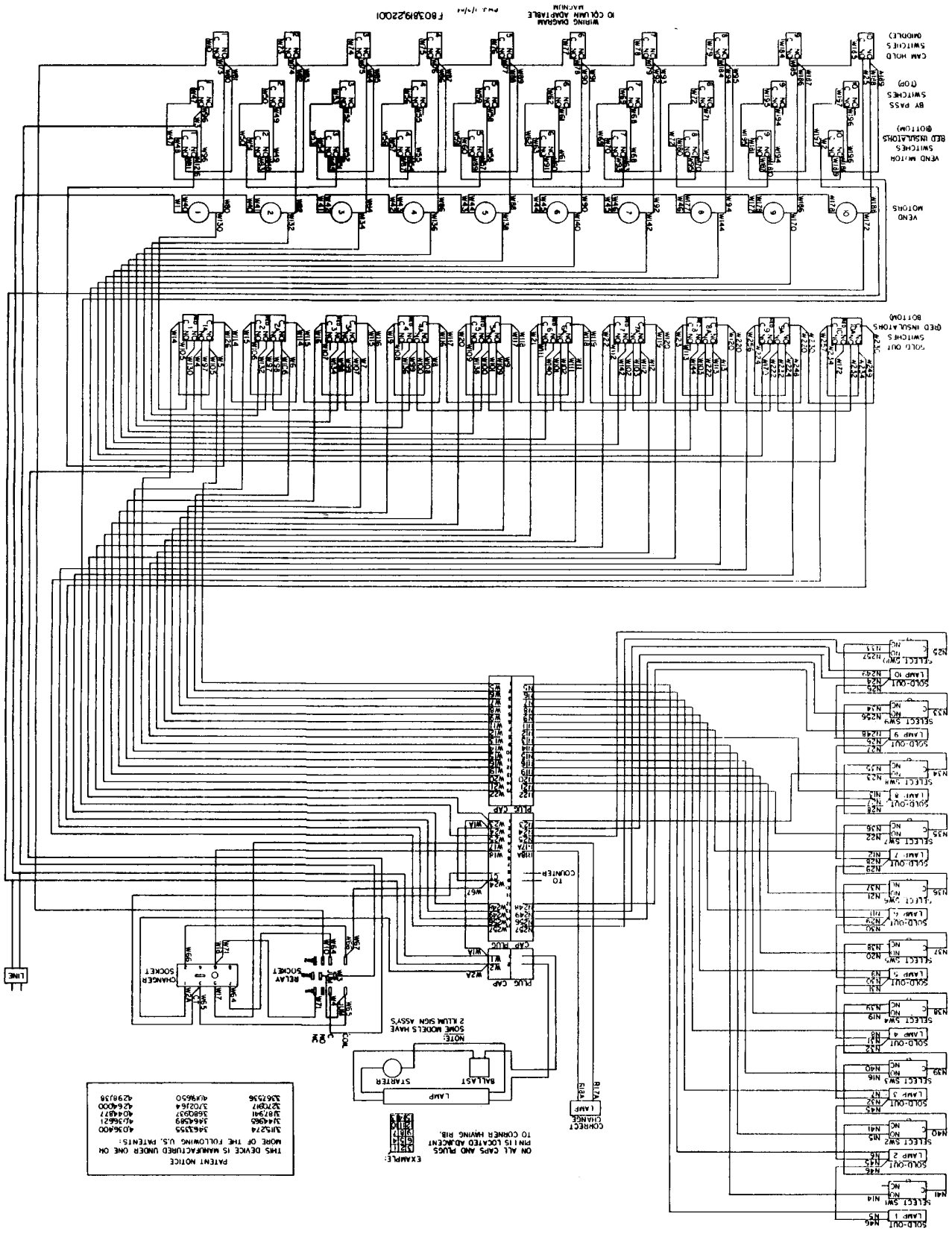
WIRING DIAGRAM
ID COLUMN ADAPTABLE
F-60381855001

PATENT NOTICE
THIS DEVICE IS MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:
4035400
4036671
4044977
3889937
3787941
3712877
3702874
4294900
4396256

EXAMPLE:
ON ALL CAPS AND PLUGS
PINS LOCATED ADJACENT
TO CORNER MARKING NIB.
WIRE

NOTE:
SOME MODELS HAVE
2 BLANK SIGN ASSYS

WIRE
CORRECT
LAMP
CIRCUIT



ON ALL CAPS AND PLUGS
 PIN 1 IS LOCATED ADJACENT
 TO CORNER HAVING BIZ.
 EXAMPLE:

NOTE:
 SOME MODELS HAVE
 2 KLIM SIGN ASSYS.

RELAY SOCKET
 CHANGER SOCKET

W1A W1B W1C W1D W1E W1F W1G W1H W1I W1J
 W2A W2B W2C W2D W2E W2F W2G W2H W2I W2J

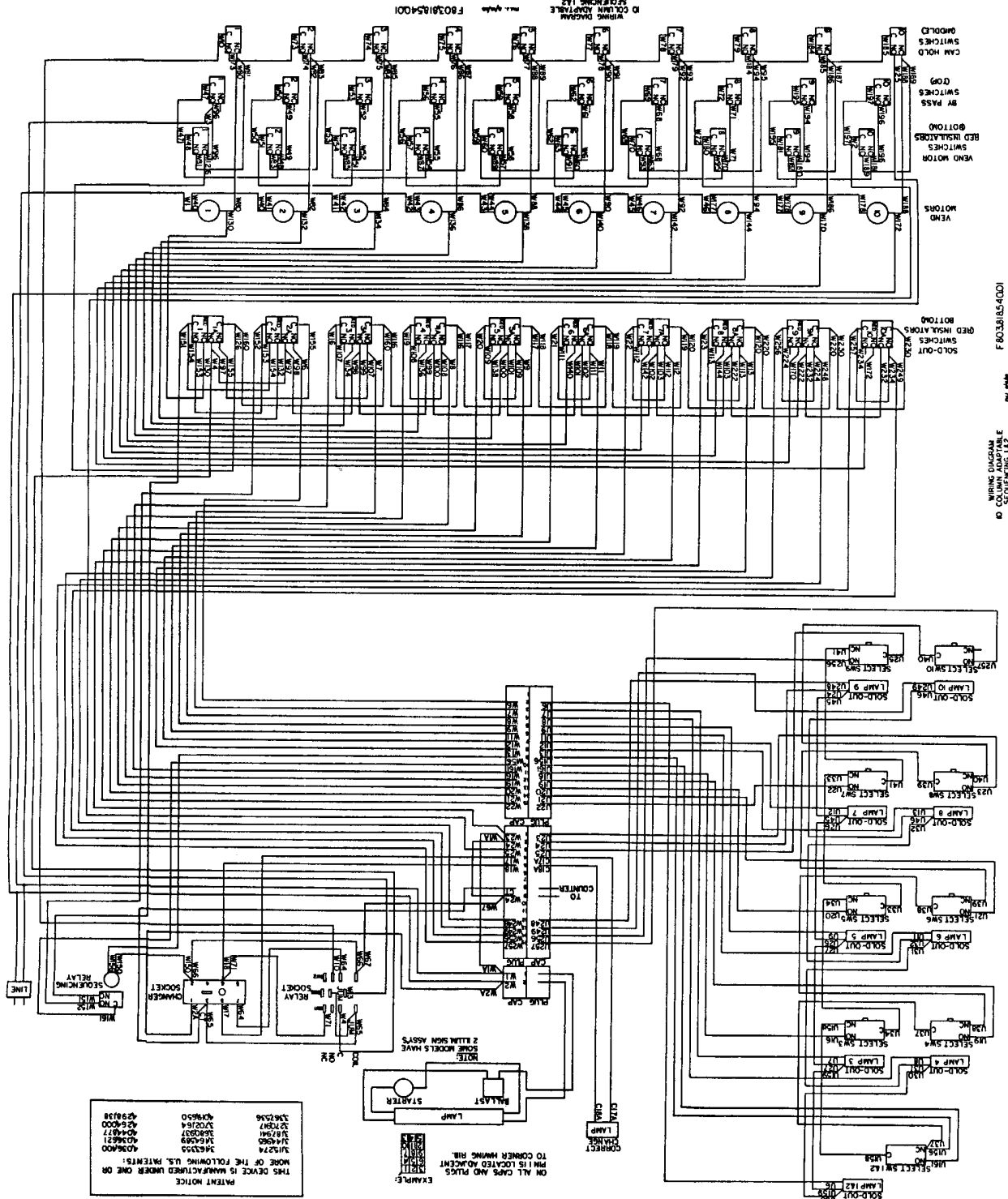
W1A W1B W1C W1D W1E W1F W1G W1H W1I W1J
 W2A W2B W2C W2D W2E W2F W2G W2H W2I W2J

W1A W1B W1C W1D W1E W1F W1G W1H W1I W1J
 W2A W2B W2C W2D W2E W2F W2G W2H W2I W2J

W1A W1B W1C W1D W1E W1F W1G W1H W1I W1J
 W2A W2B W2C W2D W2E W2F W2G W2H W2I W2J

W1A W1B W1C W1D W1E W1F W1G W1H W1I W1J
 W2A W2B W2C W2D W2E W2F W2G W2H W2I W2J

W1A W1B W1C W1D W1E W1F W1G W1H W1I W1J
 W2A W2B W2C W2D W2E W2F W2G W2H W2I W2J



PATEM NOTICE
 THIS DEVICE IS MANUFACTURED UNDER ONE OR
 MORE OF THE FOLLOWING U.S. PATENTS:
 4028400
 4048871
 4048872
 3482937
 3482938
 3482939
 3482940
 3482941
 3482942
 3482943
 3482944
 3482945
 3482946
 3482947
 3482948
 3482949
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 3482987
 3482988
 3482989
 3482990
 3482991
 3482992
 3482993
 3482994
 3482995
 3482996
 3482997
 3482998
 3482999
 4028401

NOTE
 SOME MODELS HAVE
 2 LAMP SIGN ASSYS

EXAMPLE:
 ON ALL CANS AND PLUGS
 #11 IS LOCKED ADJACENT
 TO CORNER MARKING #11.