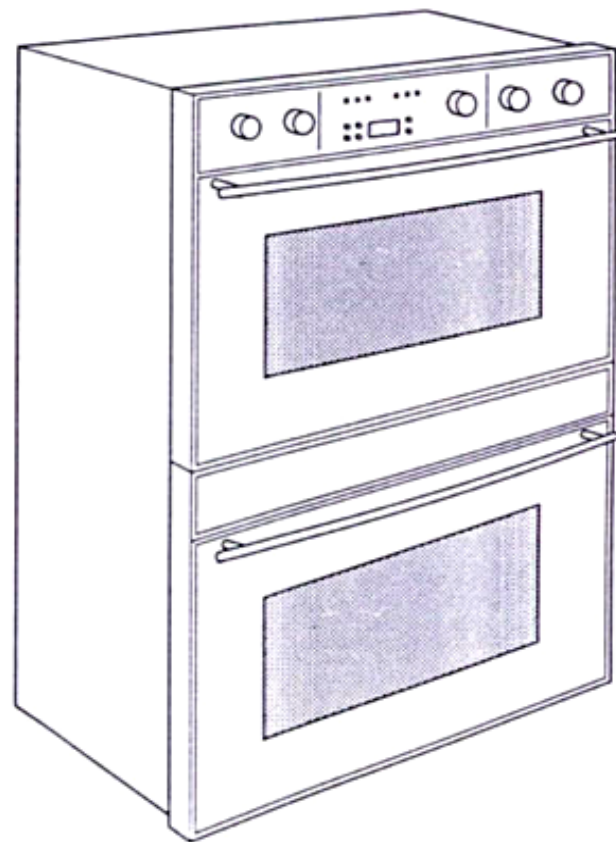
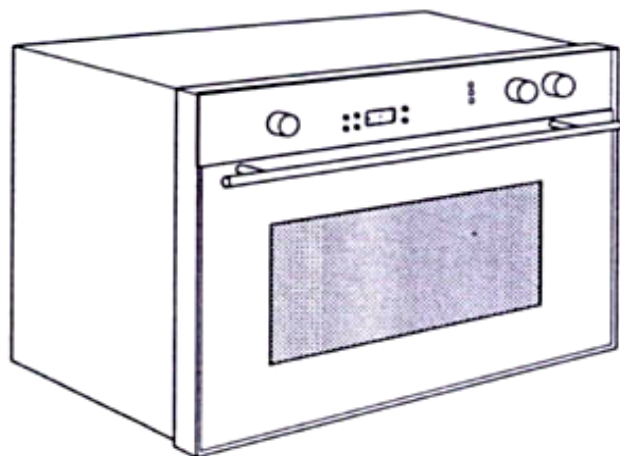


BOSCH HBL & HBN 600 SERIES OVENS



HBL/HBN Series Training Program

- ⌘ **Features and Operation**
- ⌘ **Model Numbers**
- ⌘ **Warranty**
- ⌘ **Component Description and Access**
- ⌘ **How the Oven Works**
- ⌘ **Service Tips**

Features.....

- ⌘ **Easy-to clean glass front panel with child-safe push away controls**
- ⌘ **Genuine European Convection**
- ⌘ **Two speed convection fan**
- ⌘ **Extra-large broiler element with 12 rods**
- ⌘ **Open or closed door broiling option**
- ⌘ **Hidden bake element for easy cleaning**
- ⌘ **Halogen oven lights**

Features....

- ⌘ Ovens available in 27” and 30” sizes
- ⌘ Self-cleaning with motorized door lock
- ⌘ Dual-rated, 120/208-240volts
- ⌘ Electronic timer
- ⌘ Full length steel door handle
- ⌘ Two speed cooling fan, for quiet operation
- ⌘ Heat indicator light

Features....

 **Internal ventilation system**

Cooking modes

 **Bake**

 **Broil**

 **Convection bake**

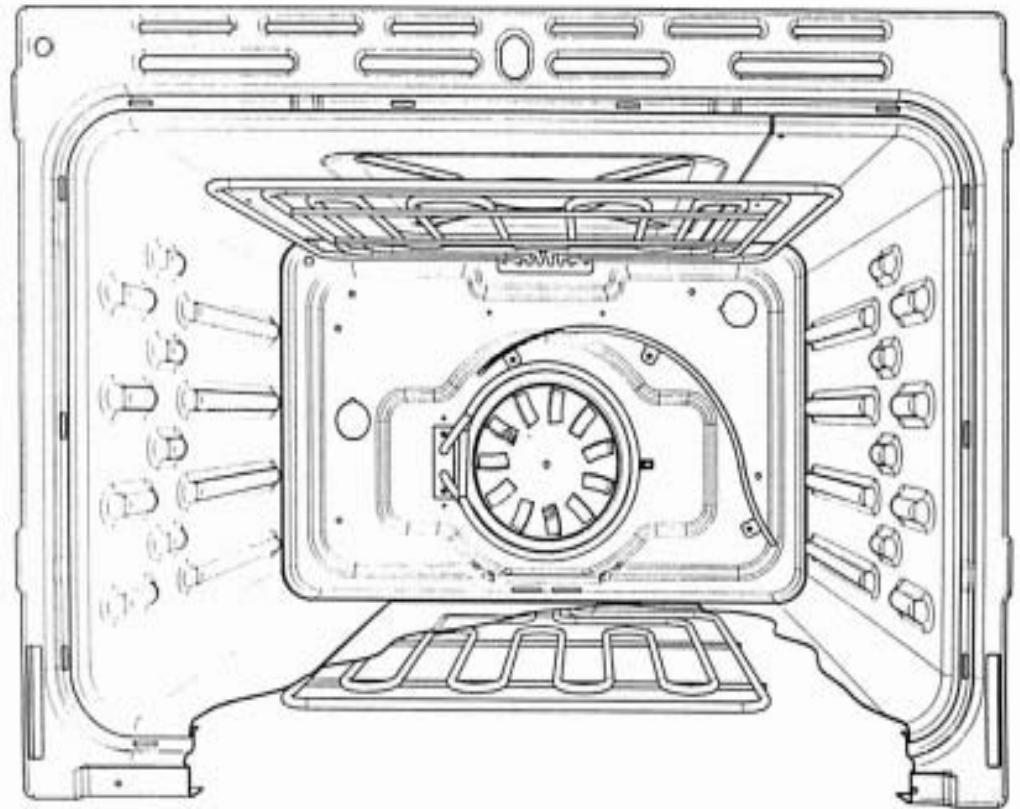
 **Convection roast**

 **Convection broil**

 **Thaw/Dehydration**

Features & Operation.... Heating Elements

Interior of oven cavity showing the heating elements. **Note** the **bake element** is concealed beneath the floor of the oven cavity. **The bake element** consists of a 1400W internal element and a 600W external element. **The broil element** consists of three elements, a 1750W broil element, a 1400W external element and a 750W internal element. **The convection element** is a 2500W ring element.



Heating elements BSH/series 600
- convection system -

Features and Operation....

Cooking Function Settings

In the broil mode the 1750W broil element & 1400W external upper element come on together, with the elements in parallel. Drawing 13.1 amps.

In bake both the 1400W & 600W sections of the bake element come on in parallel, drawing 8.33amps, in addition the broil element comes on in series with the external upper element, drawing 3.29amps

In convection the 2500W ring element comes on drawing 10.42amps, together with convection fan.

Convection roast is the same as bake, but with the convection fan running.

Convection broil is the same as broil, but with the convection fan running.

Thaw. On thaw no elements are on, however there is heat from the lights and the convection fan runs.



Broil - Used for broiling. When set on Broil the two top elements operate whenever heating.

May be used with door open or closed.



Bake (Roast) - This mode is used for baking, roasting and heating of casseroles, etc. When set on Bake the top element and the bottom element operate whenever heating.

Note: Lower element shown for clarity only. Lower element actually is located below floor of cavity

Convection Ovens have following additional cooking functions



Convection Bake - The most versatile mode for baking and heating a variety of dishes. Also recommended for preparing large quantities of food on several racks.

When set on Convection the rear circular bake element operates whenever heating. Fan operates.



Convection Roast - Use for roasting. When set on Convection Roast the top element and the bottom element operate whenever heating. Fan operates.



Convection Broil - Use of fish and broiling thick cuts of meat. The door must be closed when Convection Broiling. When set on Convection Broil both top elements operate whenever heating. Fan operates.



Thaw - Use for defrosting. When set on Thaw no elements operate, only the fan is on.

Note: Lower element shown for clarity only. Lower element actually is located below floor of cavity

Model Numbers

Single Oven Models

⌘ HBL632A UC, HBL635A UC, HBL636A UC,

⌘ HBL642A UC, HBN642A UC, HBL645A UC,

⌘ HBN645A UC, HBL646A UC, HBN646A UC

Double Oven Models

⌘ HBL652A UC, HBN652A UC, HBL655A UC,

⌘ HBN655A UC, HBL656A UC, HBN656A UC,

⌘ HBL662A UC, HBN662A UC, HBL665A UC,

⌘ HBN665A UC, HBL666A UC, HBN666A UC

Model Numbers

Example....HBL666A UC

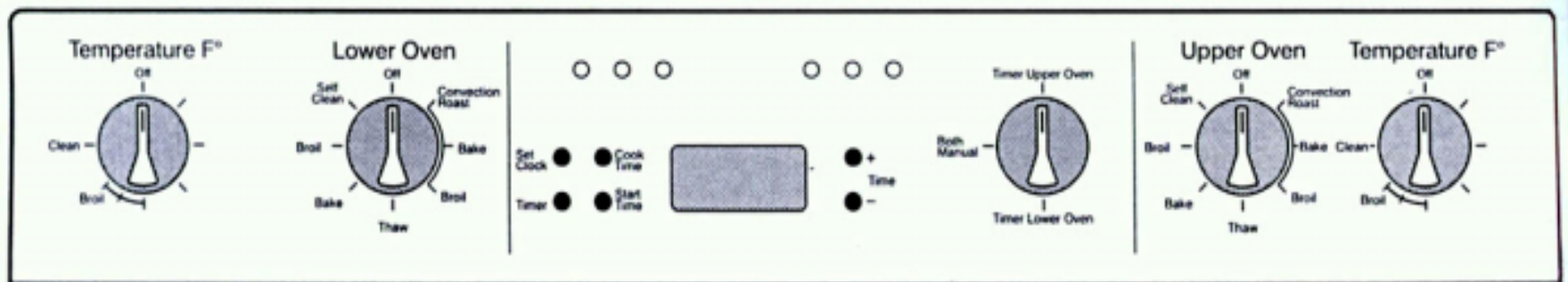
- ⌘ HBL=30" Wall Oven, HBN=27" Wall Oven
- ⌘ 66=Double Oven both Convection
- ⌘ 65=Double Oven Upper Convection Only
- ⌘ 64=Single Oven with Convection
- ⌘ 63=Single Oven without Convection
- ⌘ 6=Color Black
- ⌘ 5=Color Stainless Steel
- ⌘ 2=Color White

Warranty

- ⌘ One full year from date of installation or occupancy, covering both parts & labor
- ⌘ Extended warranty covering part only, for a further four years on the following parts:
Heating Elements, Controls and electrical devices(excluding light bulbs) plus porcelain oven cavity and door liner against rust through

Component Description & Access....Control panel Assembly

The control panel consists of a glass panel attached to a frame, held by a screw at each side. The two parts are supplied separately, with the following components attached to the control panel frame: Timer selector, upper and lower thermostats, upper and lower selector switches, electronic clock and indicator lights: The control panel is removed by taking out two screws on each side of the frame.



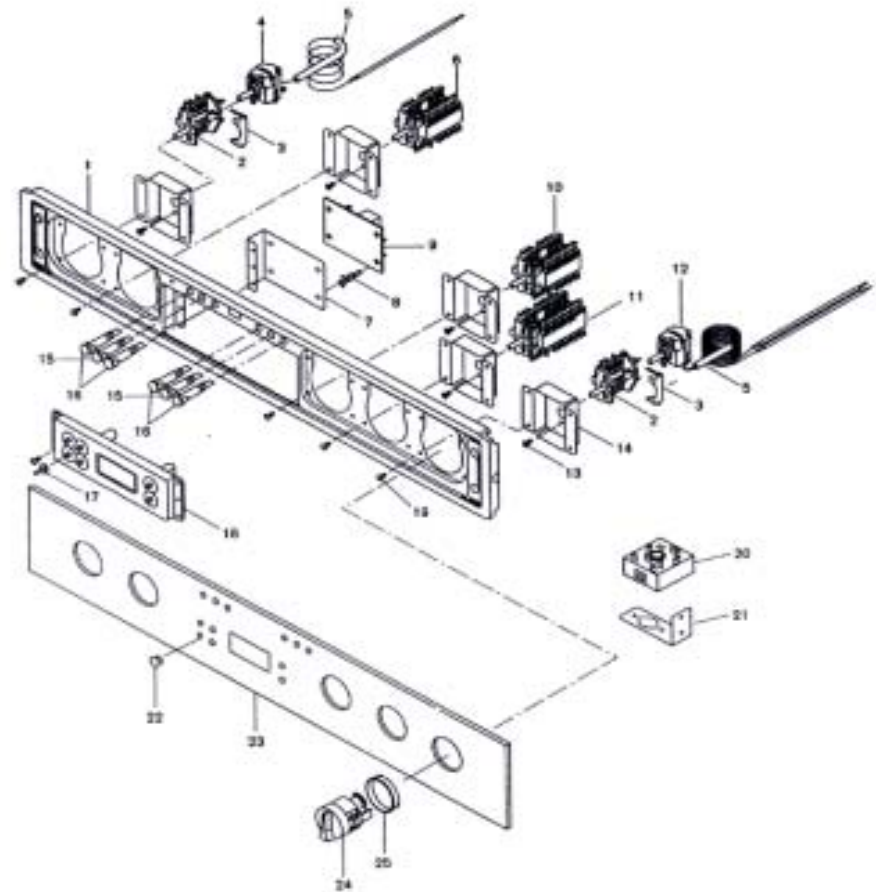
Component Description & Access....Control Panel Frame

The Electronic clock is attached to the frame with three screws, two of them also hold the relay board frame onto the edge of the clock. Each selector and thermostat is attached to a bracket with two screws, the brackets in turn are attached to the frame with four screws each. Indicator lights are a push fit into the holes in the frame with a ribbed edge.

BOSCH

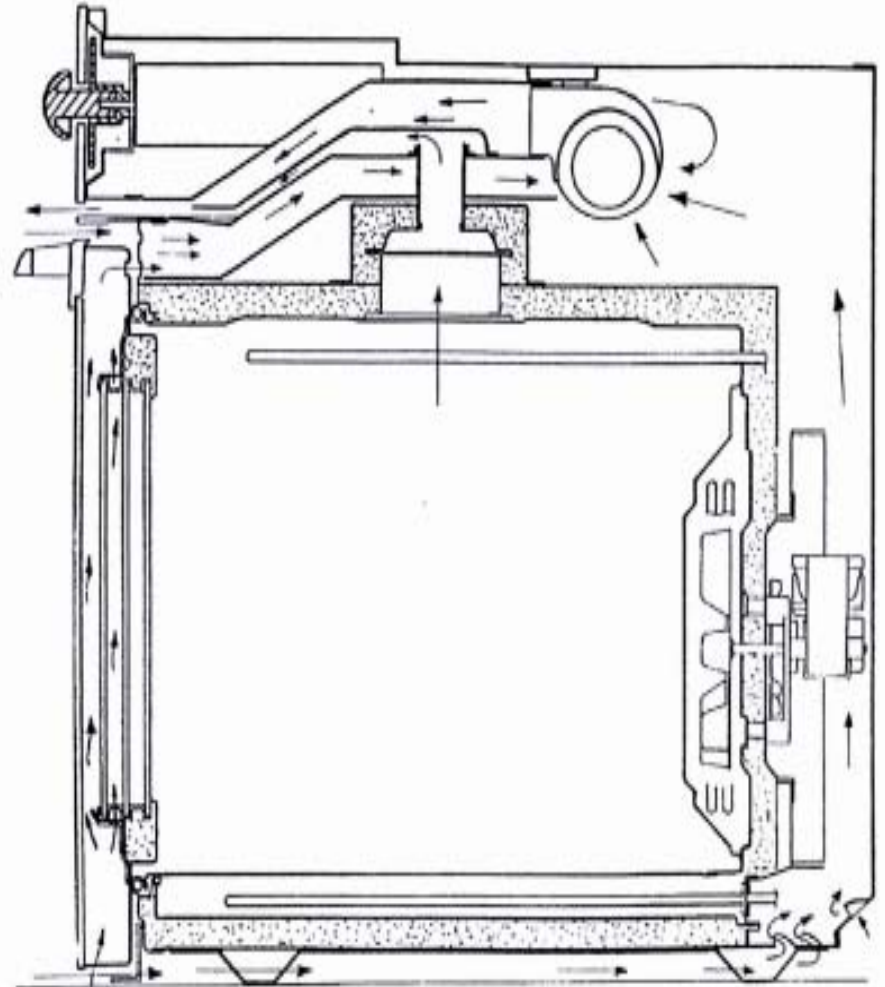
HBL 656

FASCIA PANEL



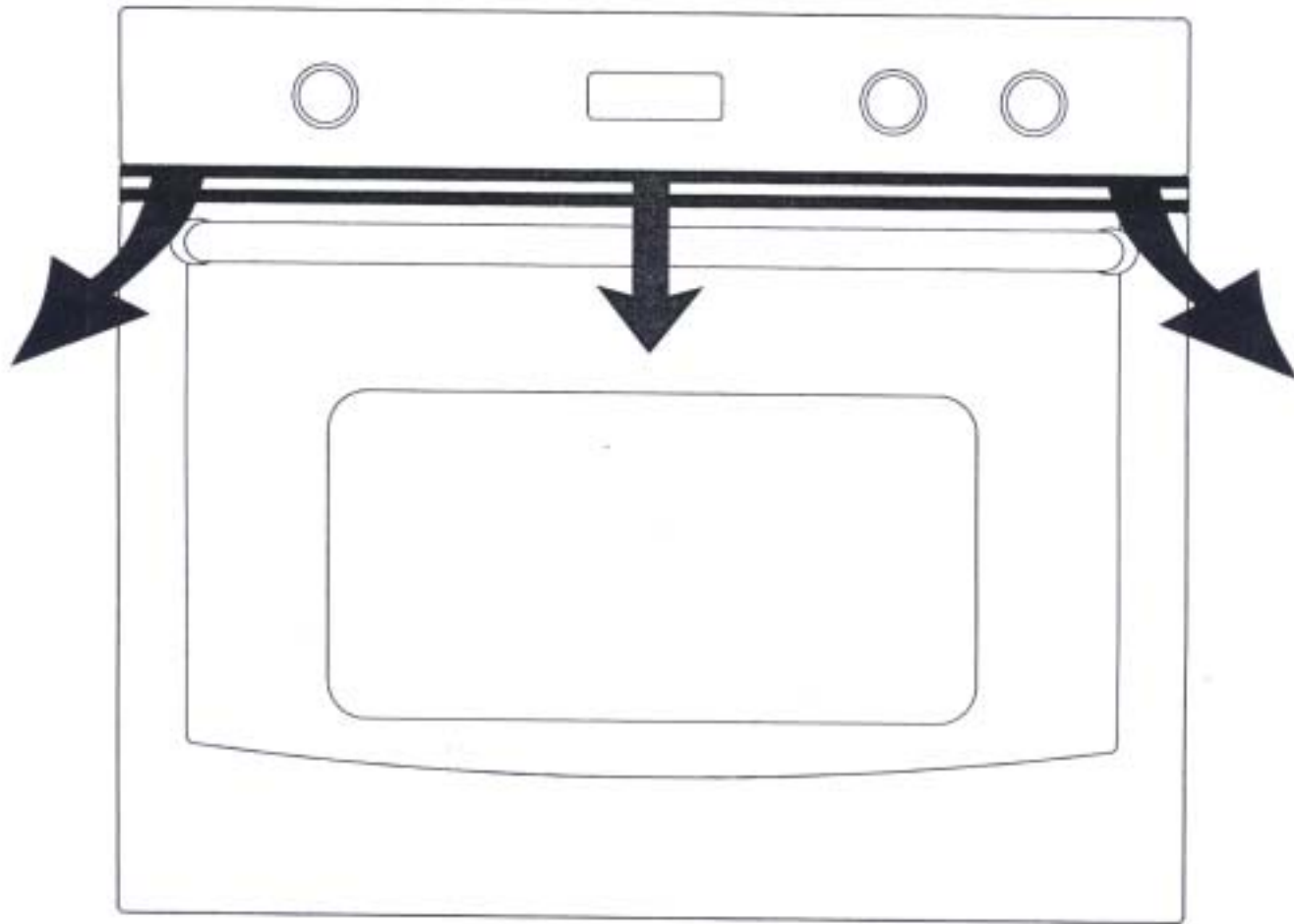
Component Description & Access....Cooling Fan

Each oven has a two speed cooling fan, when a cooking mode is selected the fan will run at half speed to cool the control panel, and keep the outer door cool. If the oven is turned off and the cooling fan thermostat senses a plenum temperature in excess of 140 degrees, then the fan will continue to run until the temperature cools down. When self clean is selected, the fan runs on high speed.



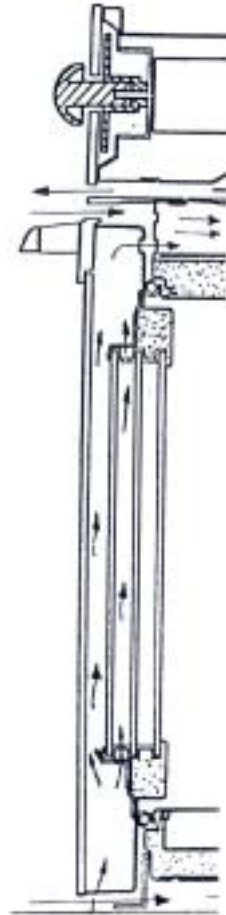
Component Description & Access...

Cooling System...Exhaust



Component Description & Access...

PATENTED COOL TOUCH DOOR



How the oven works....Selector Switch...HBL/HBN 63 single oven no Convection

		PR23-VRF	LU	PR12-PRP	PR11-PRF	PR24-VR	F1-FF	F1-FP	BPI-BPU	PR21-L	CR-RGC	CR-RGD	PR3-RGA	PR3-RGB	PR3-C	PR3-RSI	PR3-RSE
SW1	POS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		1a	2a	3a	4a	5a	6a	7a	8a	9a	10a-11a	12a	13a	14a	-	16a	
OFF																	
BAKE		X	X		X		X			X				X		X	X
BROIL		X	X		X		X			X	X		X				
SELF CLEAN		X	X	X		X		X	X			X	X		X		X

2CH/426 MSW

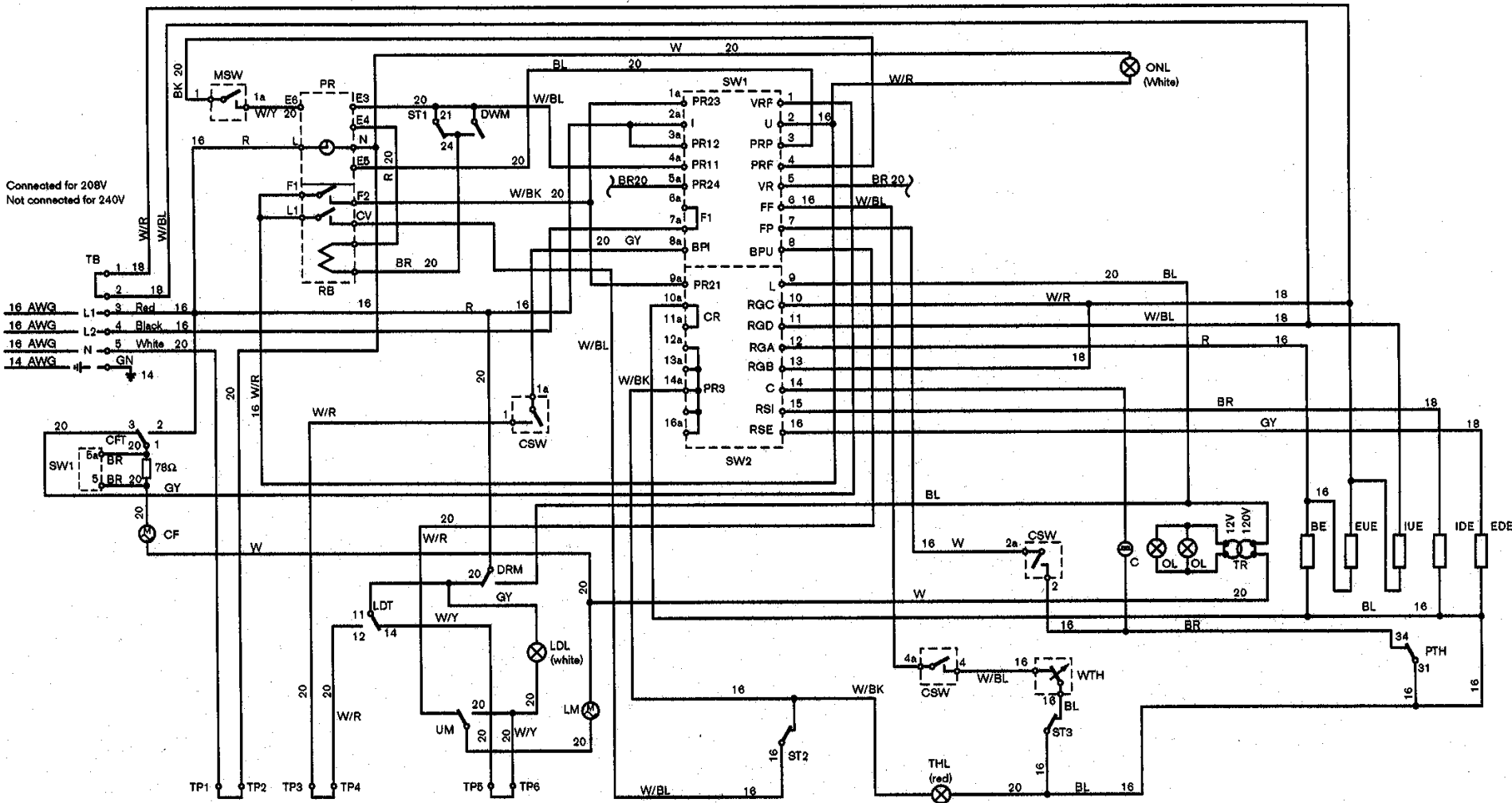
POS.	1	
	1a	
TIMER		
MANUAL	X	

4CH/259 CSW

POS.	1	2		4
	1a	2a		4a
O (OFF)				
>0+500°F				X
SELF CLEAN	X	X		

How the oven works....Schematic

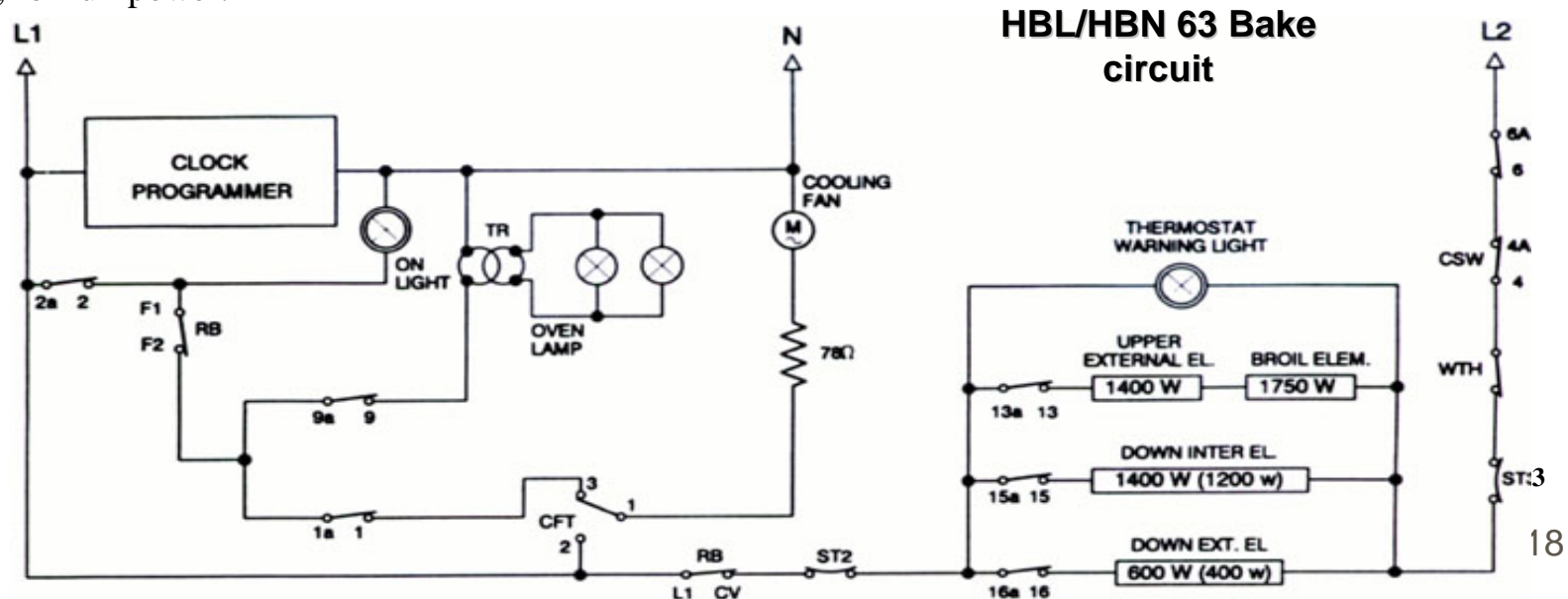
HBL/HBN 63 single oven no convection



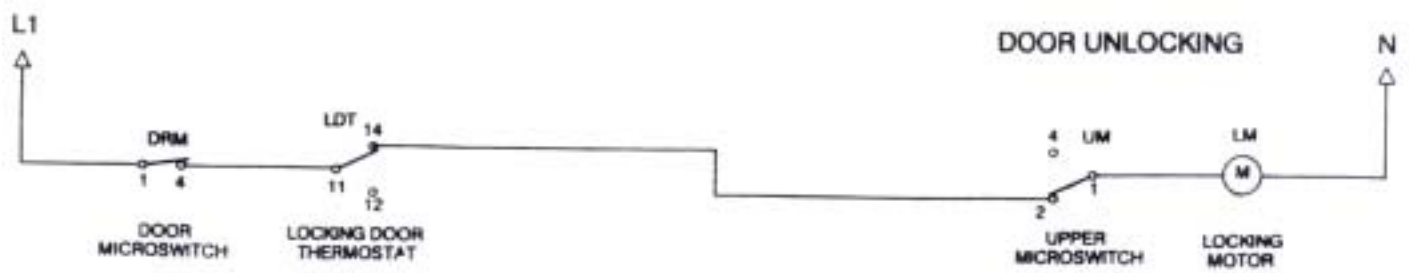
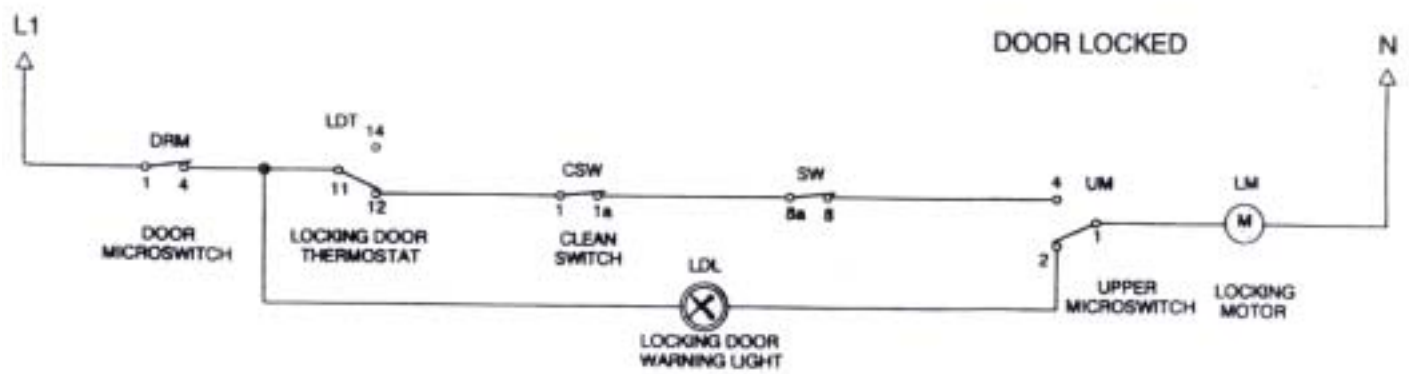
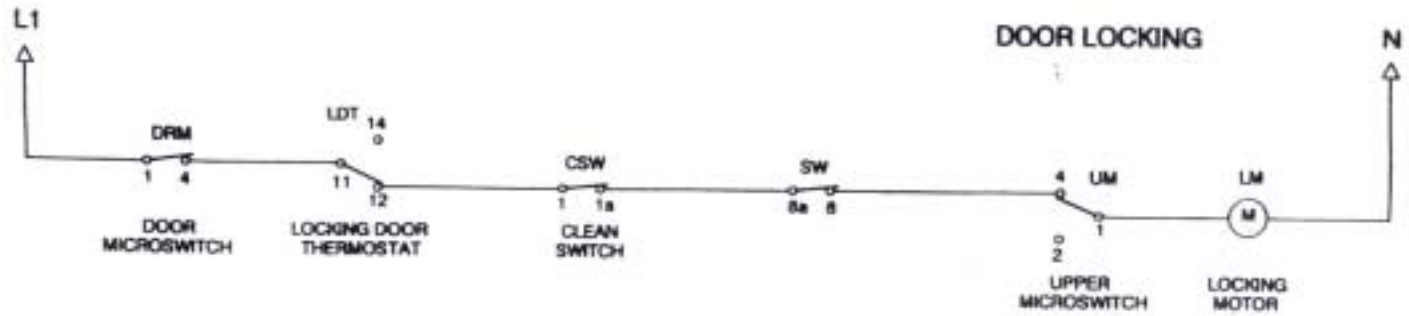
How the oven works....

Bake Cycle & Broil Cycle HBL/HBN 63

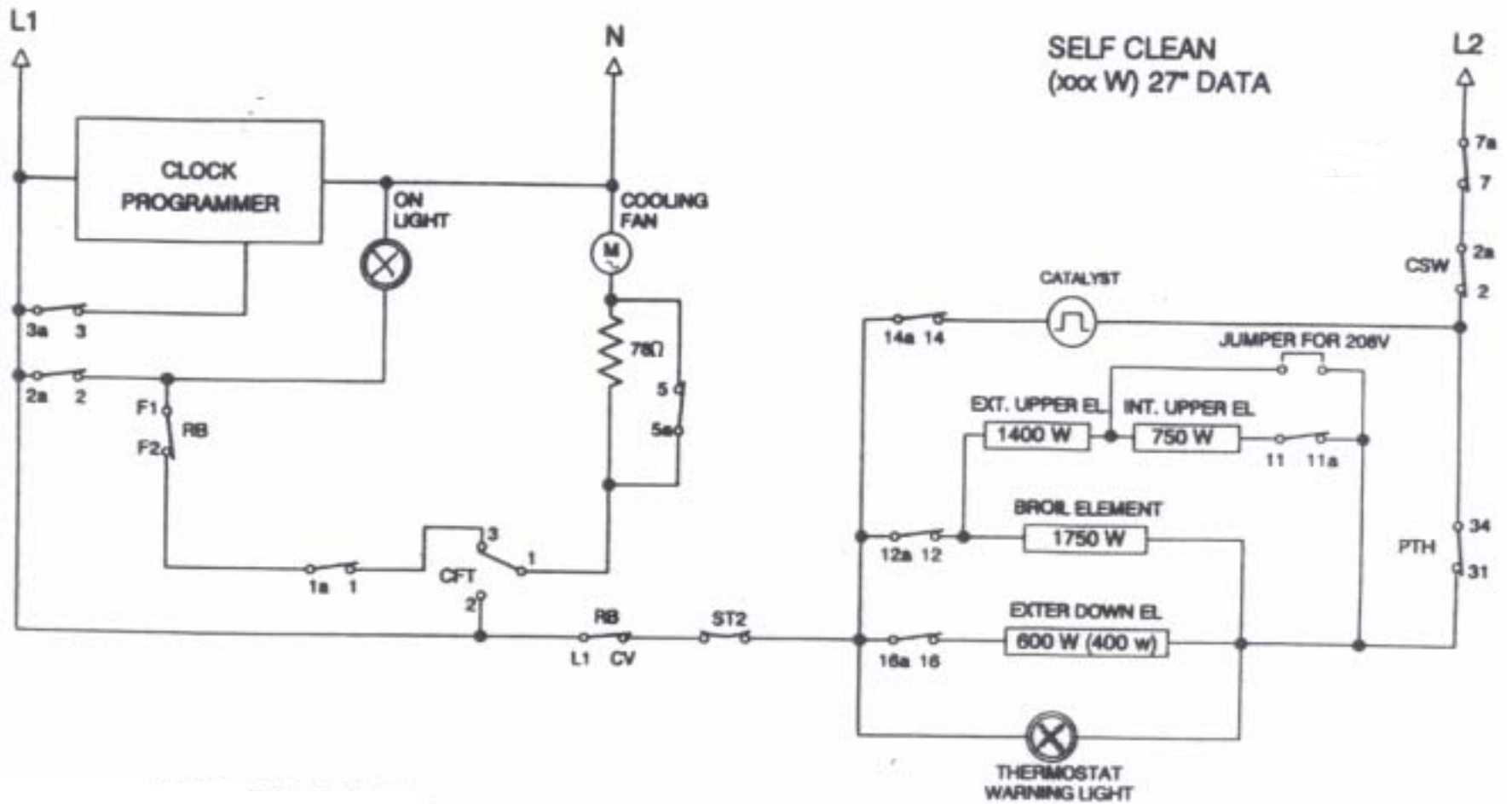
When the selector switch is turned to bake the following contacts close: 1-1a, 2-2a, 4-4a, 6-6a, 9-9a, 13-13a, 15-15a and 16-16a. L1 goes through the #2 contact and turns on the on light. Power continues through F1-F2 which is a relay mounted on a board attached to the back of the clock., it continues through contact 9 and powers the halogen light transformer, turning on the interior lights. It passes through 1-1a, normally closed cooling fan thermostat 1-3 through the 78ohm resistor and runs the cooling fan at half speed. Power passes through relay L1-CV through safety thermostat 2 to the elements. Through contacts 13, 15 and 16, L1 reaches one side of the internal and external bake elements which are in parallel as well as the broil element and upper external element, which are in series. L2 power goes through contacts 6 and 4 through the cycling contacts of the thermostat, through safety thermostat 3 and to the other side of the elements. This gives the elements L1 and L2 and therefore 240volts to heat. The heat indicator light is now on and will remain on together with the elements, until the thermostat cycles opening up the L2 line. The broil circuit is the same except there are no bake elements on, and the upper elements are now in parallel, for full power.



How the Oven works...Self Clean Door locking circuits



How the Oven works....Self Clean circuit



How the oven works...Selector

Switch...HBL/HBN 64 single oven with convection

HBL/HBN 64

20CH/17MZ

		PR11-PRF	PR12-PRP	F-FF	F-FV	F-FF	PR23-VRF	PR24-VR	PR21-L	BP-BFU	PR22-MV	CR-RGC	CR-RGD	PR3-RGD	PR3-RGB	PR3-C	PR3-RV	PR3-RSI	PR3-RSE	LU	
	SW1	POS. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		1a	2a	3a	-	5a	6a	7a	8a	9a	10a	11a	12a	13a	-	15a	16a	-	18a	19a	20a
OFF		0																			X
CONV. ROAST		1	X			X	X		X		X			X				X	X	X	
CONV. BAKE		2	X		X	X	X		X		X						X			X	
CONV. BROIL		3	X			X	X		X		X	X	X								X
THAW		4	X				X		X		X										X
BAKE		5	X			X	X		X					X				X	X	X	
BROIL		6	X			X	X		X		X	X									X
SELF CLEAN		7		X	X		X	X		X	X		X	X		X			X	X	

SW2

WIRE COLOR CODE.					
R	Red	22	GN	Green	55
W	White	99	W/BL	White/Blue	69
BK	Black	00	W/BK	White/Black	09
BL	Blue	66	W/R	White/Red	29
BR	Brown	11	W/Y	White/Yellow	49
GY	Gray	90			

NOTE: THE NUMBERS 14-16-18-20 INDICATE THE WIRE SIZE (AWG)

2CH/426 MSW

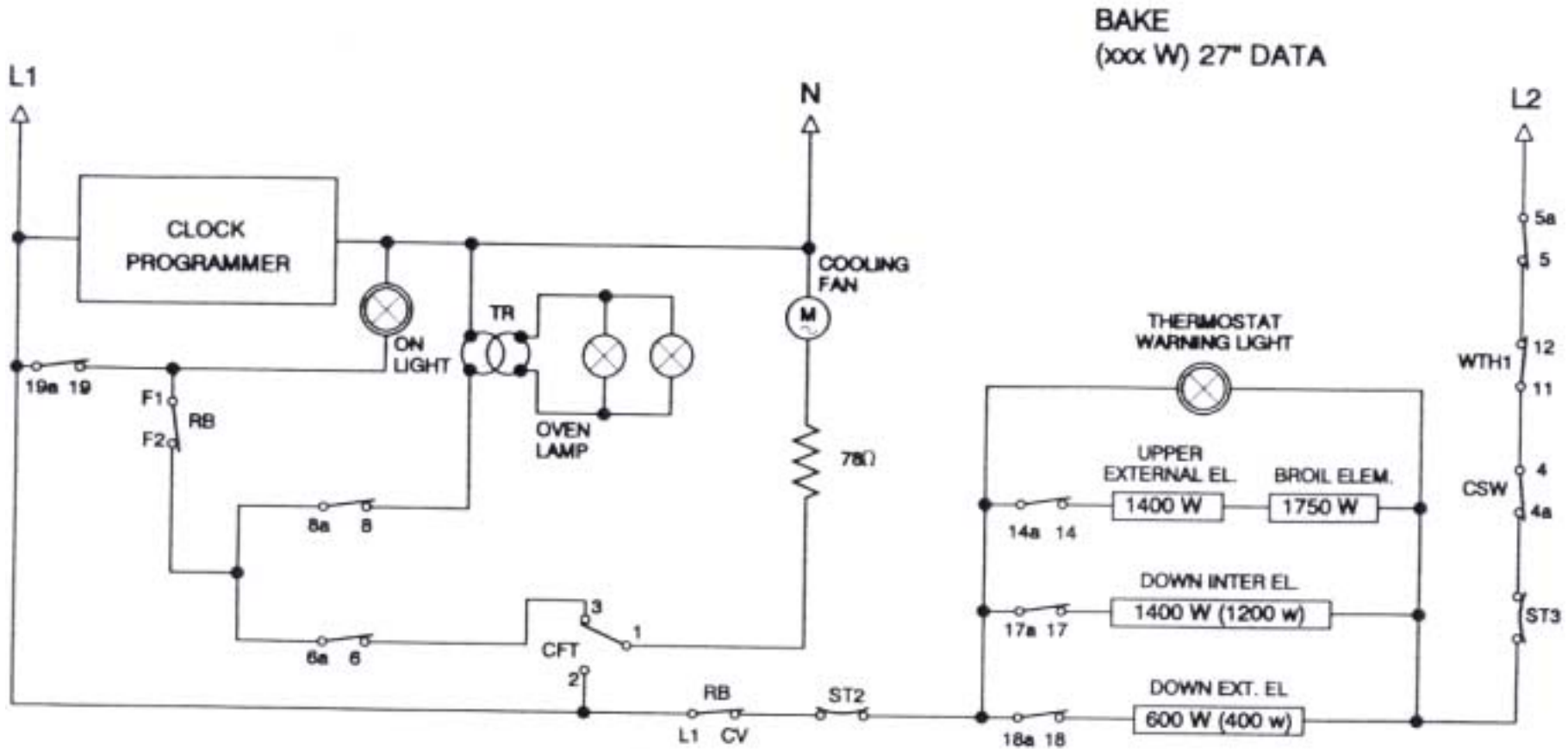
POS.	1	2
TIMER		
MANUAL	X	

4CH/259 CSW

POS.	1	2	4
O (OFF)			
> 0+500°F			X
SELF CLEAN	X	X	

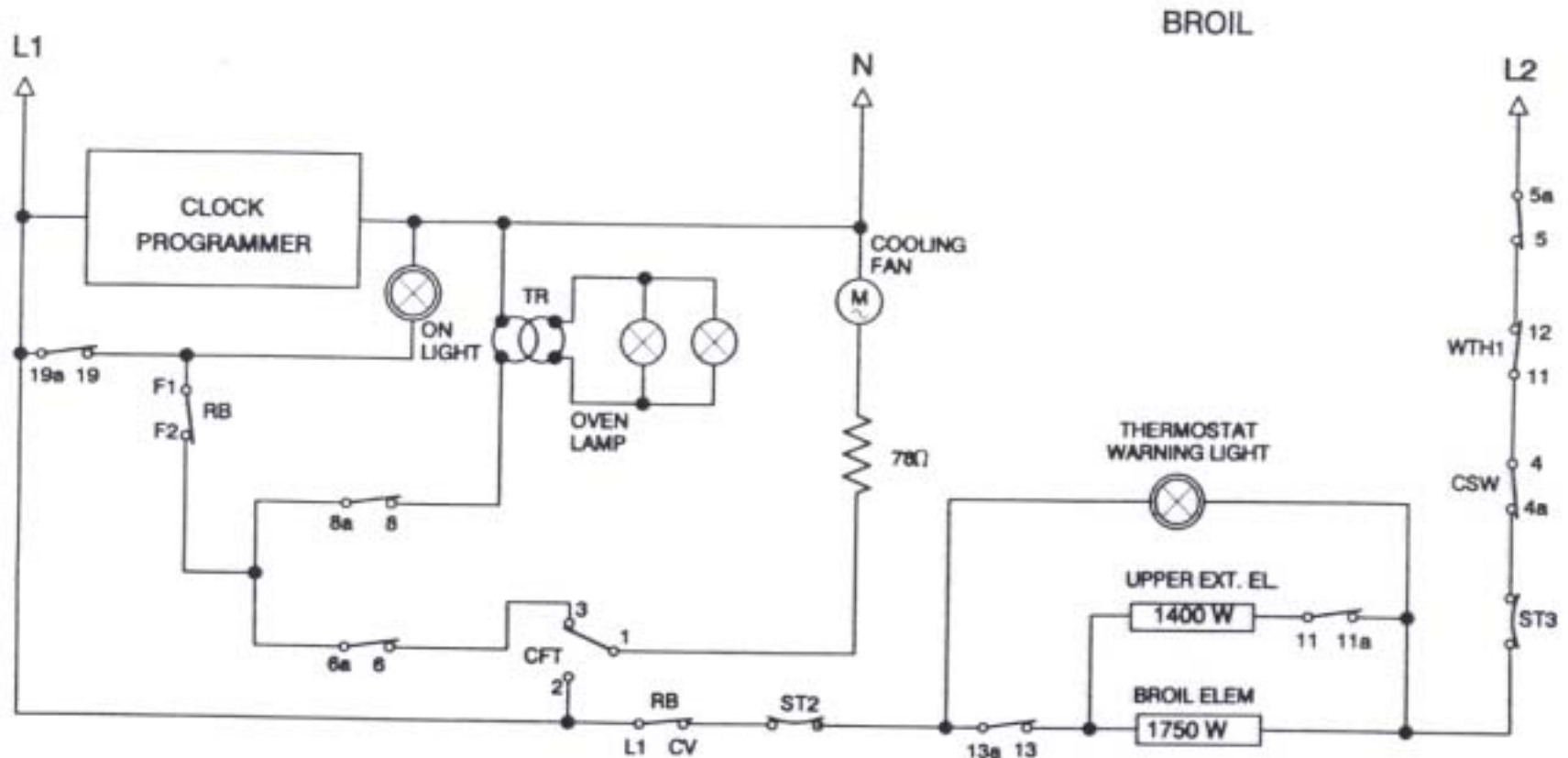
How the oven works...Bake circuit

HBL/HBN 64



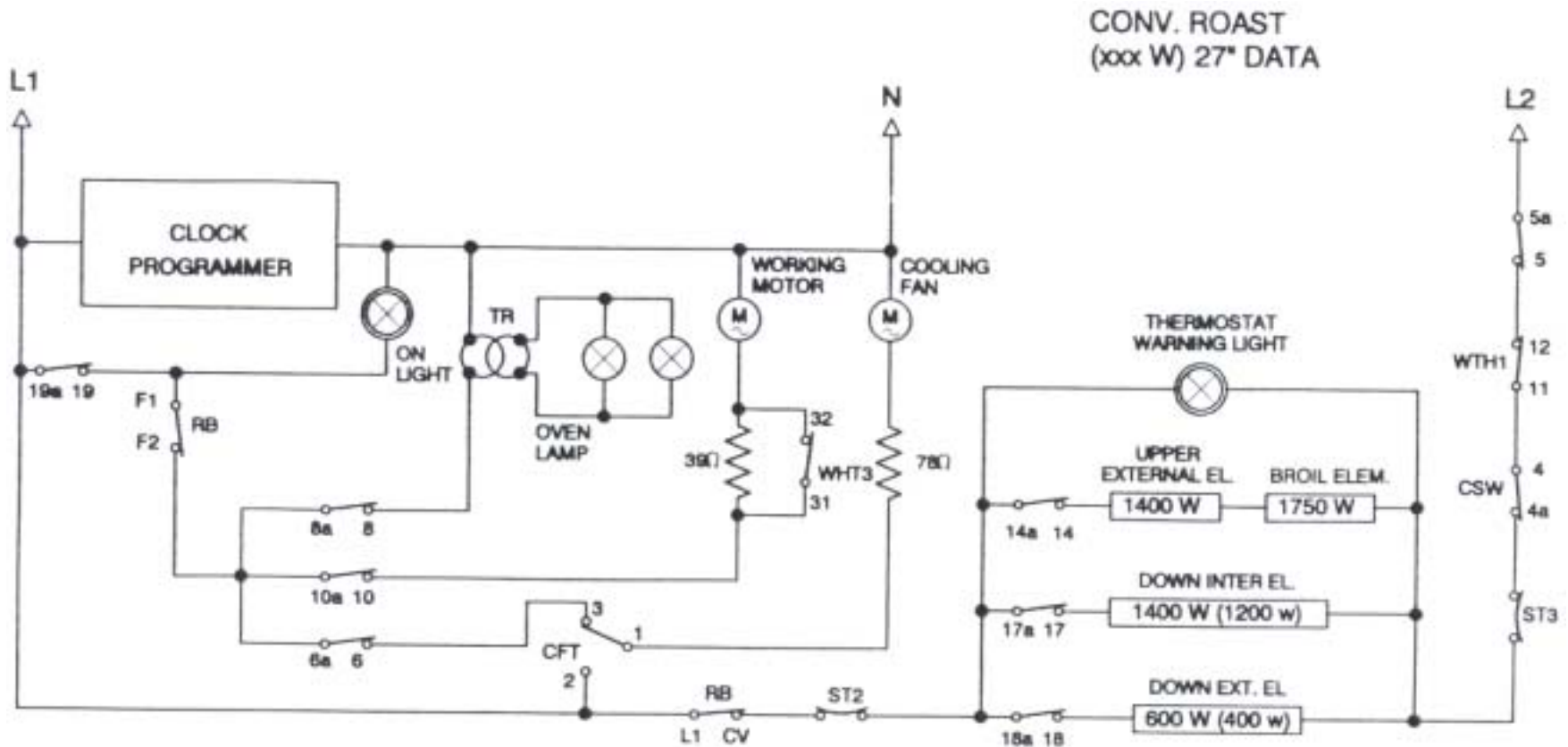
How the oven works...Broil circuit

HBL/HBN 64

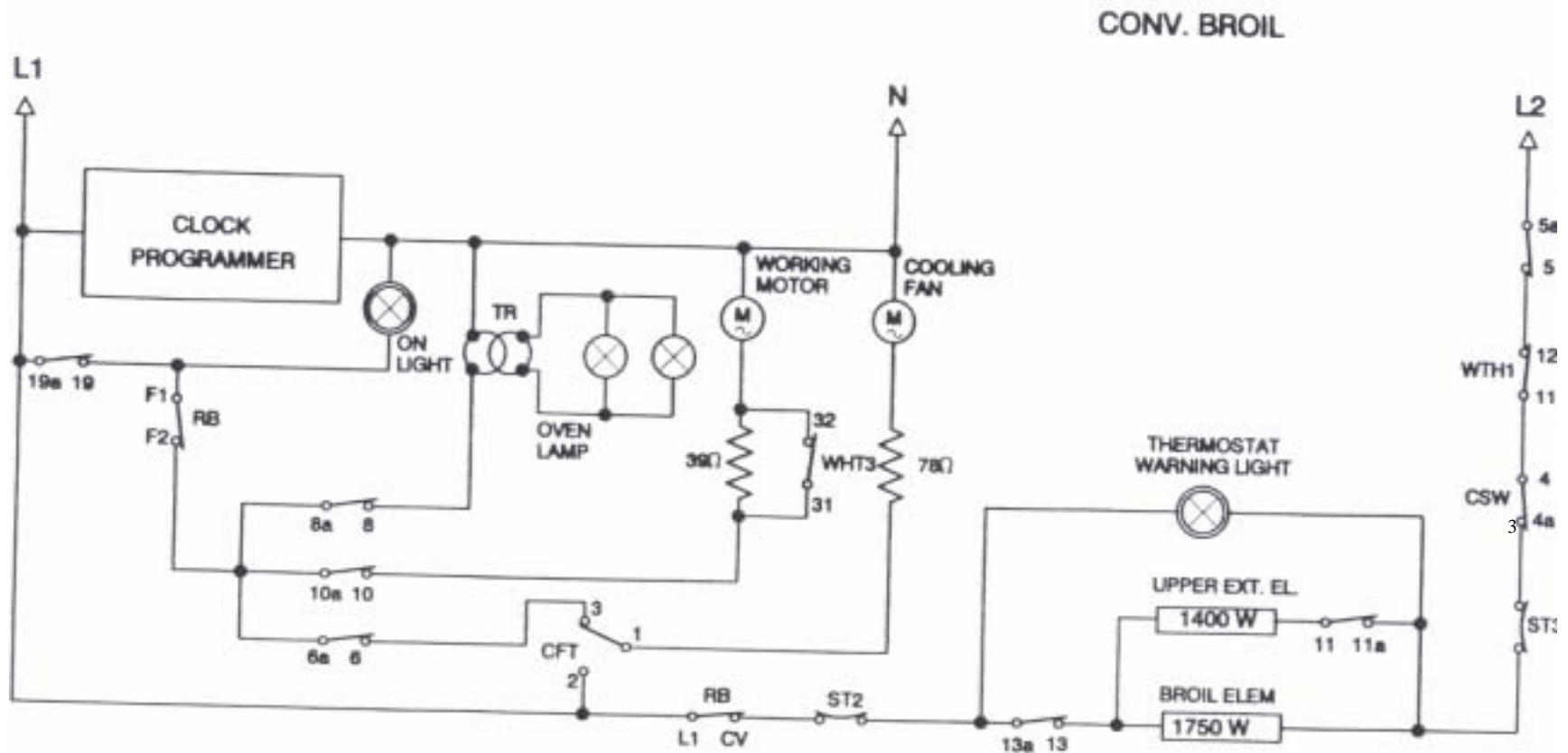


How the oven works...Convection

Roast circuit...HBL/HBN 64



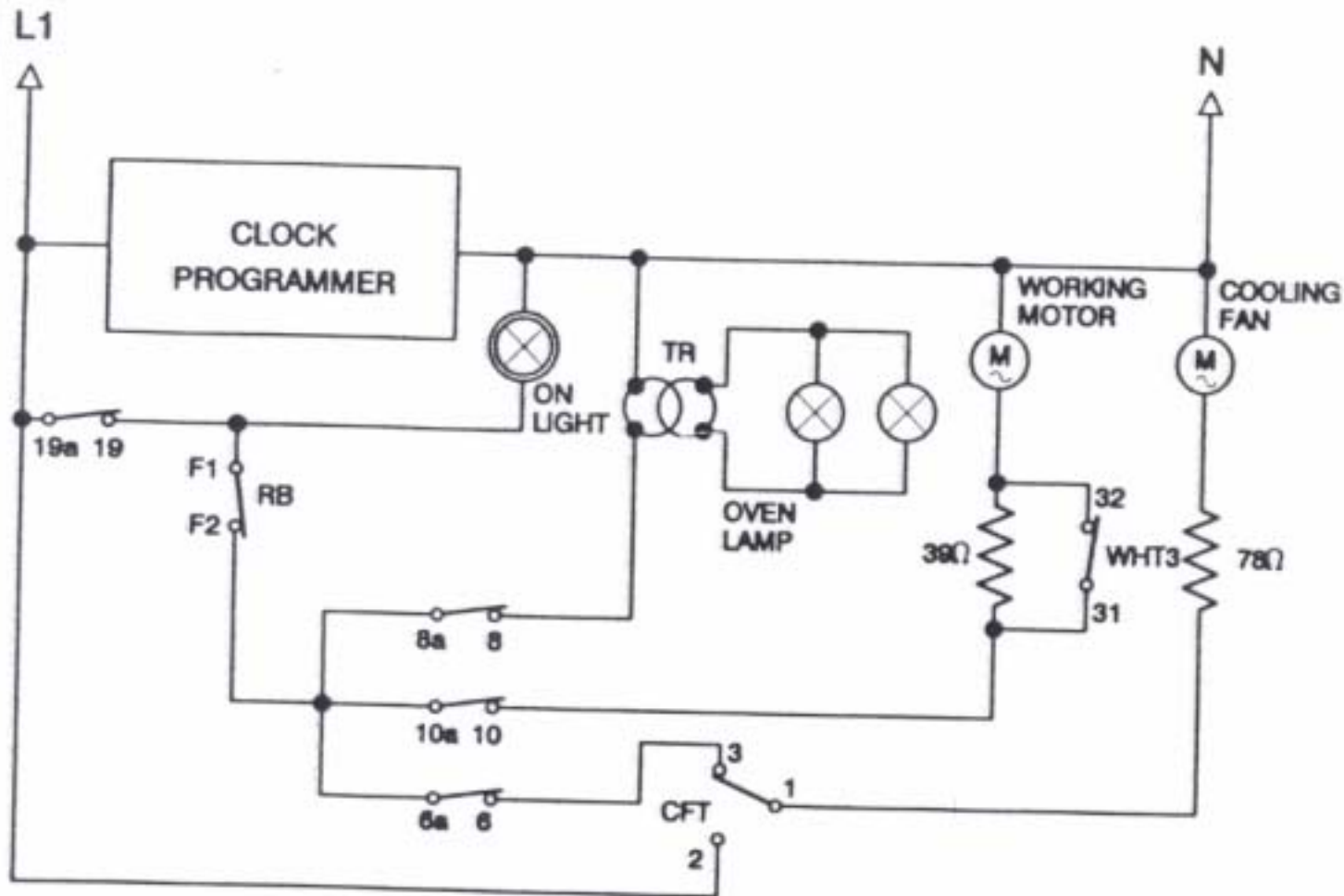
How the oven works...Convection Broil Circuit...HBL/HBN 64



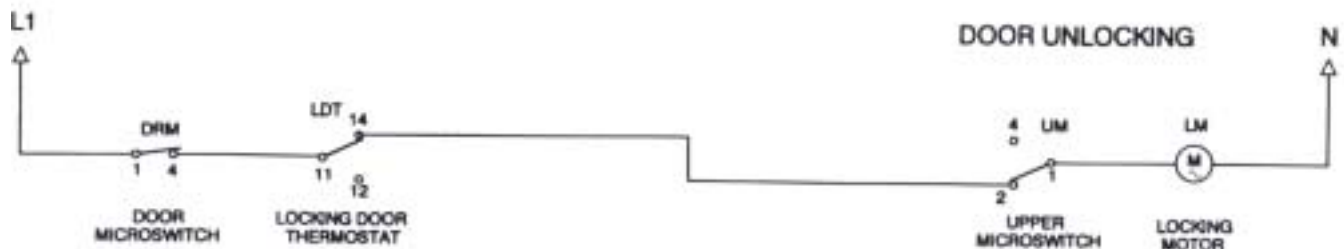
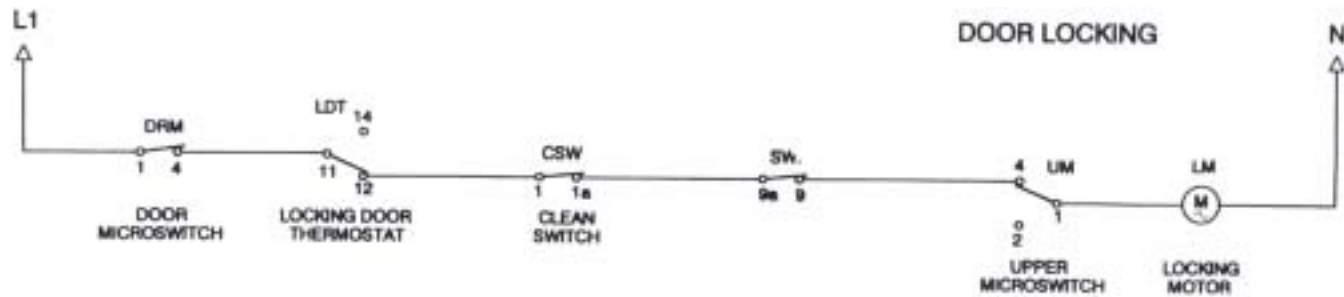
How the oven works....Thaw circuit

HBL/HBN 64

THAW

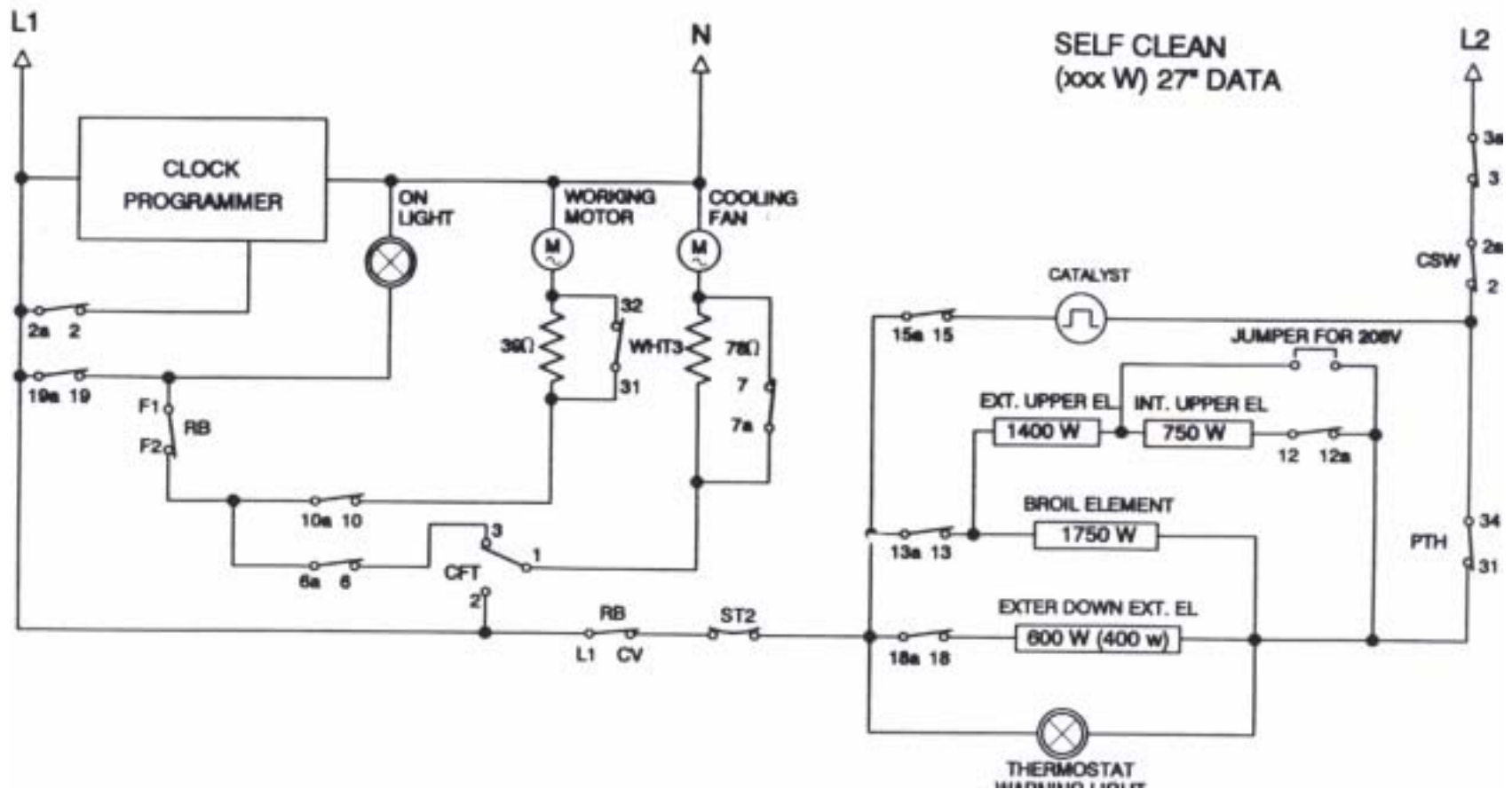


How the oven works...Door locking circuit...HBL/HBN 64



How the oven works...self-clean circuit

HBL/HBN 64



How the oven works...Selector Switch...

HBL/HBN 65 Double Oven Convection in upper oven only

SW1	POS.	PR11-PRF		PR12-PRP		FL-FF		PR23-VRF		PR24-VR		PR21-L		BP-BPU		PR22-MV		CR-RGC		CR-RGD		PR3-RGA		PR3-RGB		PR3-C		PR3-RV		PR3-RSI		PRE-RSE		JU	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20														
OFF	0																																	X	
CONV. ROAST	1	X				X	X		X	X					X							X	X	X											
CONV. BAKE	2	X			X	X	X		X	X							X																X		
CONV. BROIL	3	X				X	X		X	X					X	X						X											X		
THAW	4	X					X	X		X	X											X											X		
BAKE	5	X				X	X		X	X												X					X	X	X				X		
BROIL	6	X				X	X		X	X			X	X								X											X		
SELF CLEAN	7		X	X			X	X		X	X		X	X		X	X					X					X	X					X		

SW2 TSW	POS.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16	
		1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a																
16CH/112	0																																
DOWN OVEN	L	X	X	X																X	X	X										X	
MANUAL	O				X	X													X		X	X											
UP OVEN	R				X	X	X	X	X																				X			X	

SW2	POS.	PR23-VRF		JU		PR12-PRP		PR11-PRF		PR24-VR		FL-FF		BP-BPU		PR21-L		CR-RGC		CR-RGD		PR3-RGA		PR3-RGB		PR3-C		PR3-RV		PR3-RSI		PR3-RSE	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20												
OFF	0																																
BAKE	1	X	X							X						X																	X
BROIL	2	X	X			X				X					X	X						X	X										X
SELF CLEAN	3	X	X	X		X				X	X			X	X							X	X				X	X					X

WIRE COLOR CODE			
R	Red	22	GN Green 55
W	White	99	W/BL White/Blue 89
BK	Black	00	W/BK White/Black 09
BL	Blue	86	W/R White/Red 29
BR	Brown	11	W/Y White/Yellow 49
GY	Gray	90	

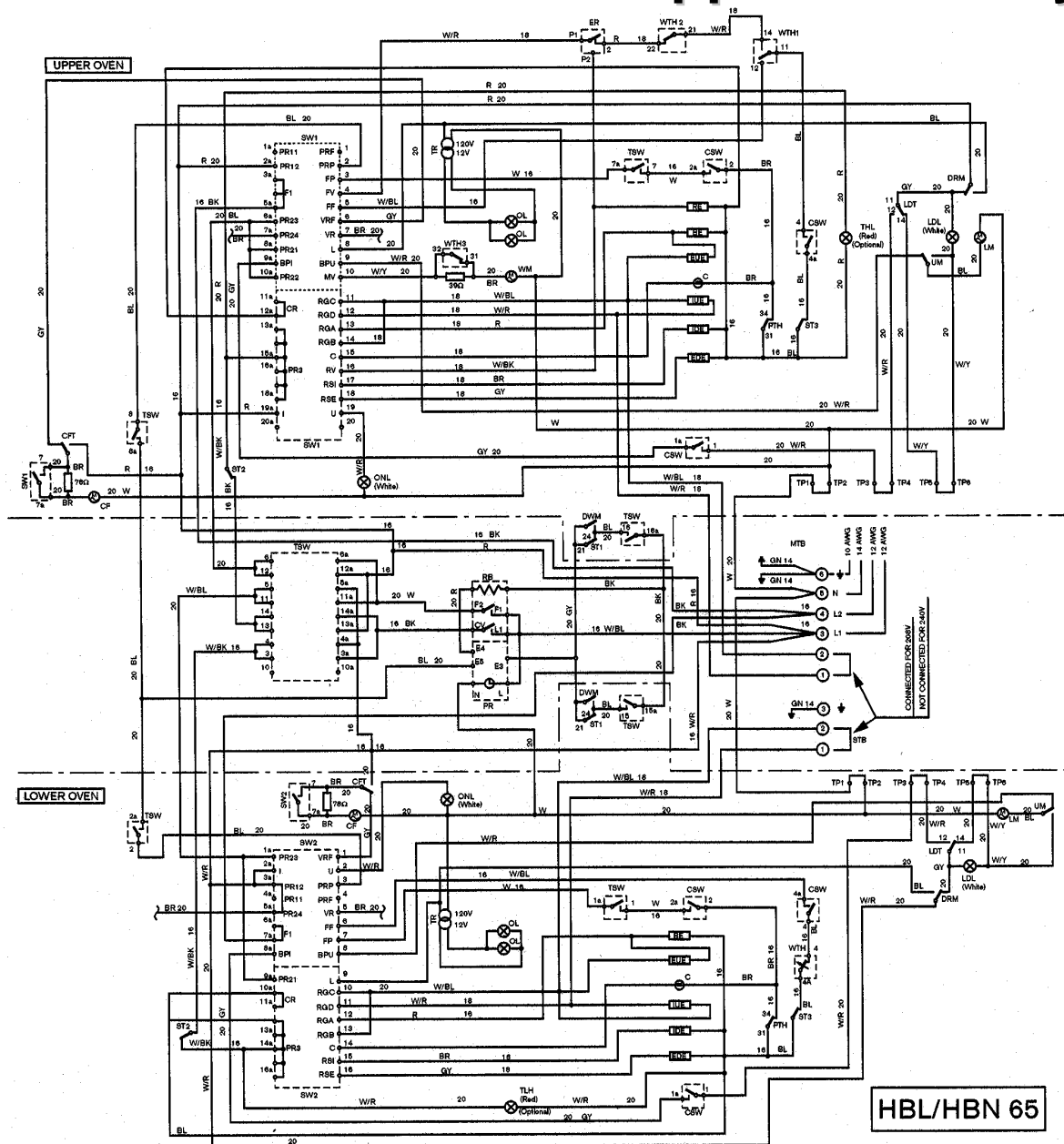
CSW
4CH/259

POS.	1		2		4	
	1a	2a	1a	2a	1a	2a
O (OFF)						
> 0+500°F						X
SELF CLEAN	X	X				

NOTE: THE NUMBERS 14-16-18-20 INDICATE THE WIRE SIZE

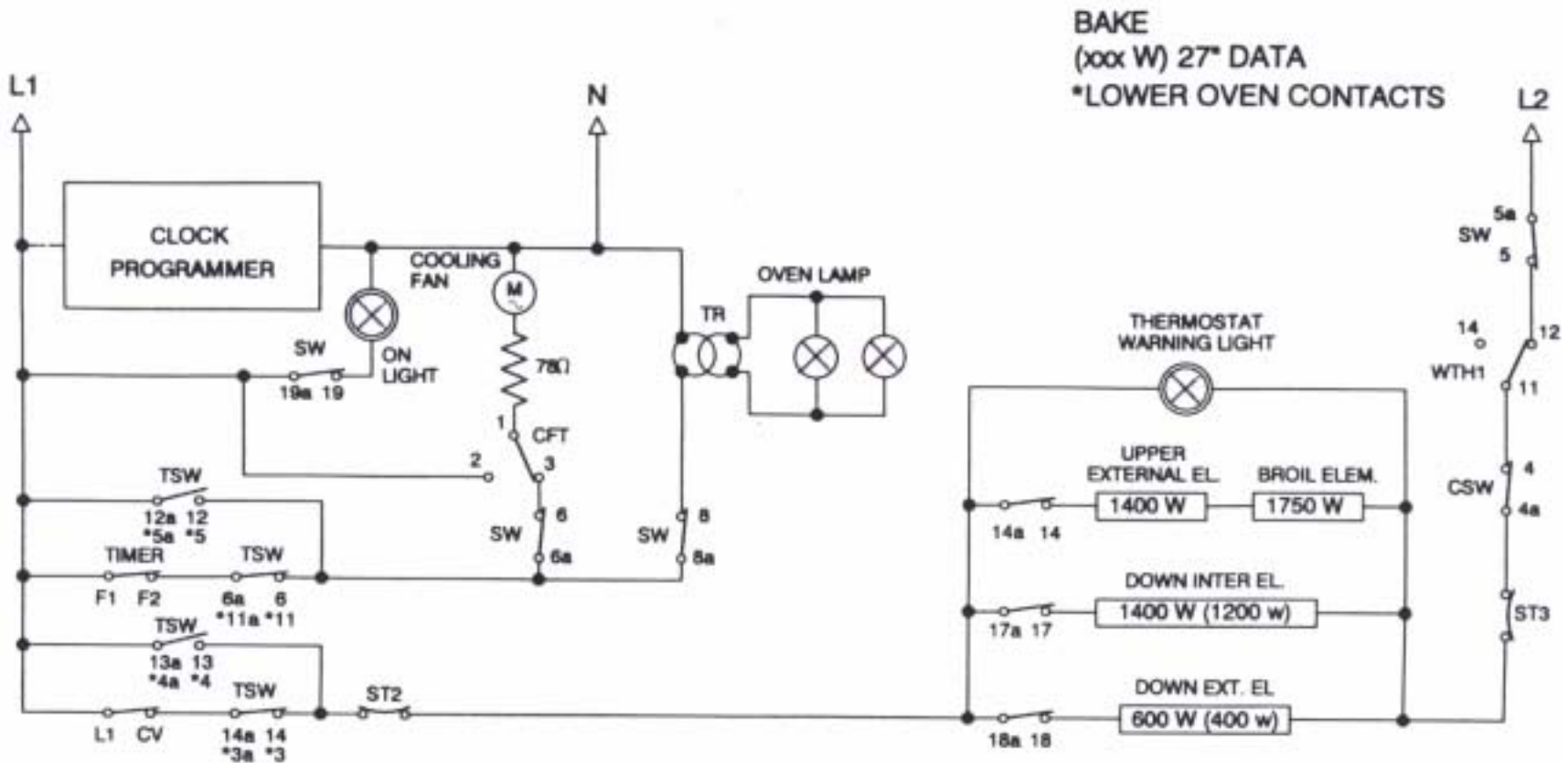
- BE : Broil element, 1750W, 1750W
- C : Catalyst
- CF : Cooling fan
- CFT : Cooling fan thermoet
- CSW : Clean switch
- DRM : Door microswitch
- DWM : Down microswitch
- EDE : External down element, 400W, 600W
- ER : Energy regulator
- EUE : External up element, 1400W, 1400W
- IDE : Internal down element, 1200W, 1400W
- IUE : Internal up element, 348W(111V), 348W(111V)
- LDL : Locking door warning light
- LDT : Locking door thermostat
- LM : Locking motor
- MTB : Main terminal block
- ONL : On/Off warning light
- OL : Oven lamp, 12V-20W
- PTH : Pyrolytic thermoet
- PR : Programmer
- RB : Relay board
- RE : Ring element, 2500W, 2500W
- ST : Safety thermostat, 68000, 77000
- STB : Service terminal block
- SW : Switch-commutator
- TP : Test point
- THL : Thermostat warning light
- TSW : Timer switch commutator
- TR : Transformer, 120V-12V, 40W
- UM : Up microswitch
- WM : Working motor
- WTH : Working thermostat

How the oven works...Schematic HBL/HBN 65 Double Oven Convection in upper oven only



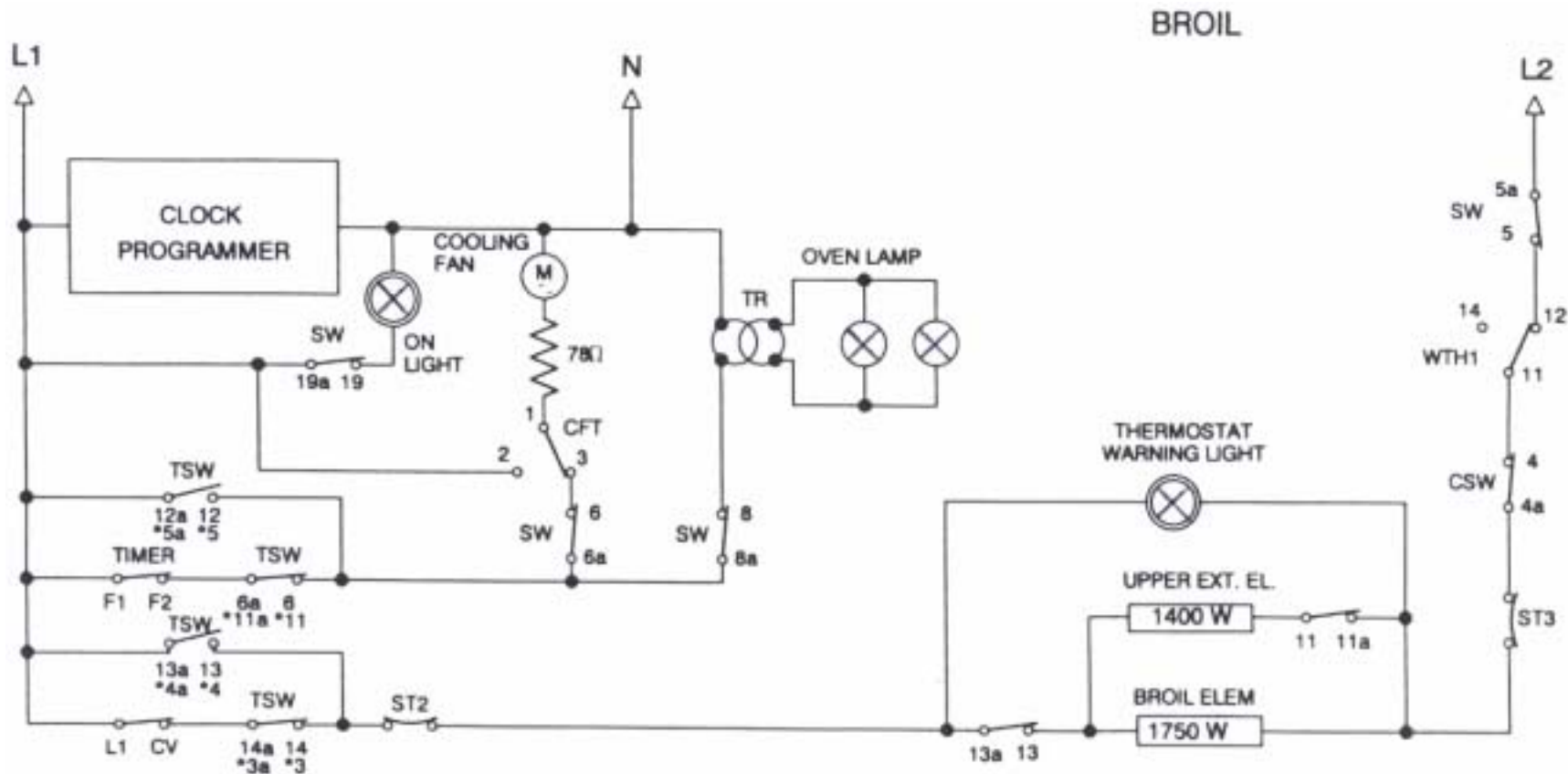
How the oven works...Bake Circuit

HBL/HBN 65



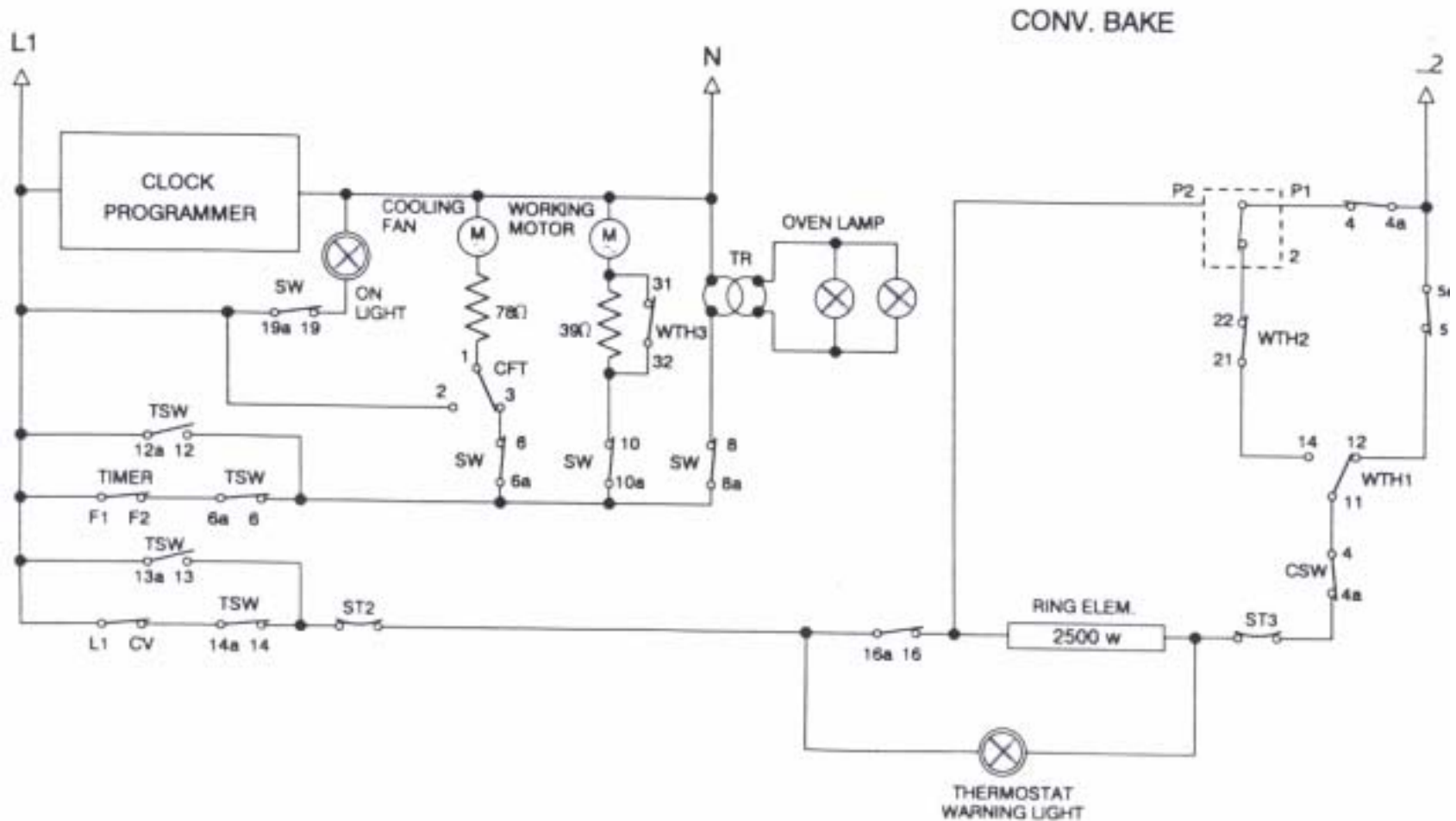
Switch contacts marked with an * refer to the lower oven

How the oven works...Broil Circuit...HBL/HBN 65



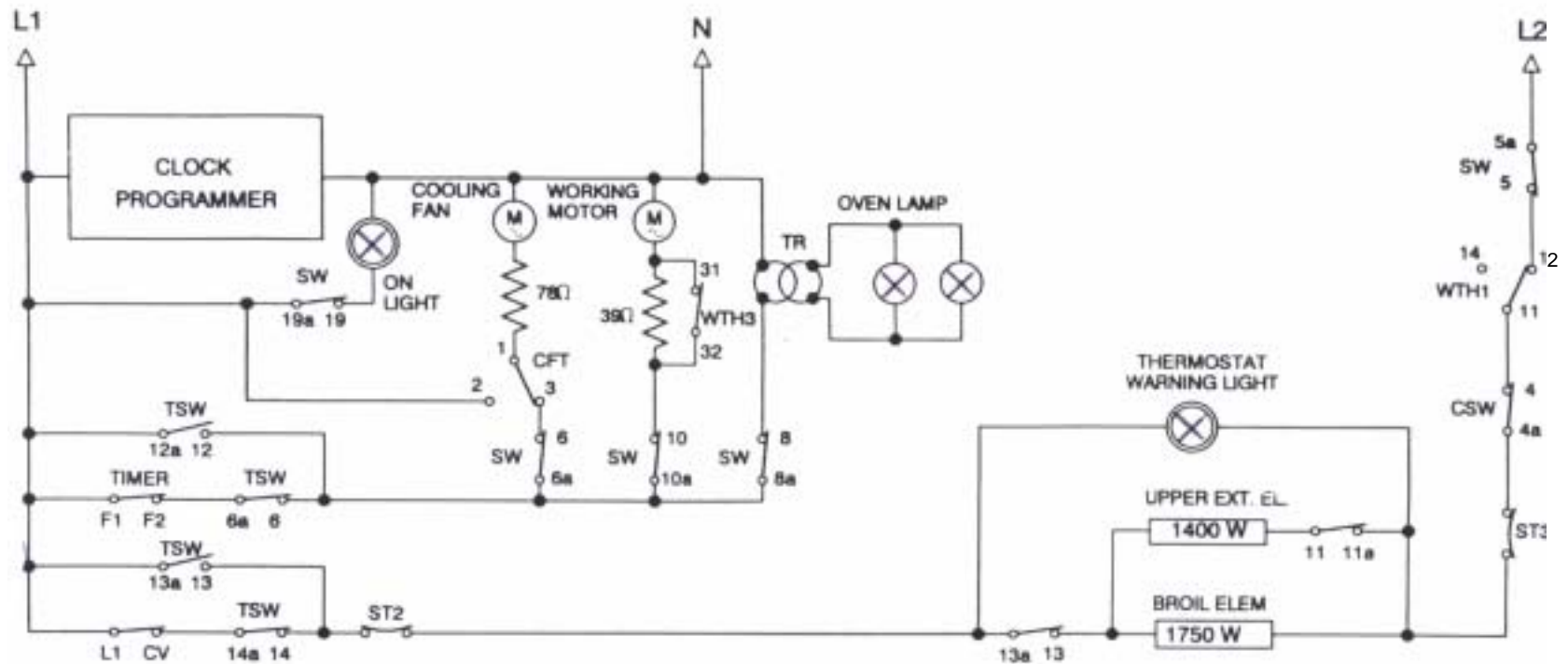
Switch contacts marked with an * refer to lower oven

How the oven works...Convection Bake circuit...HBL/HBN 65



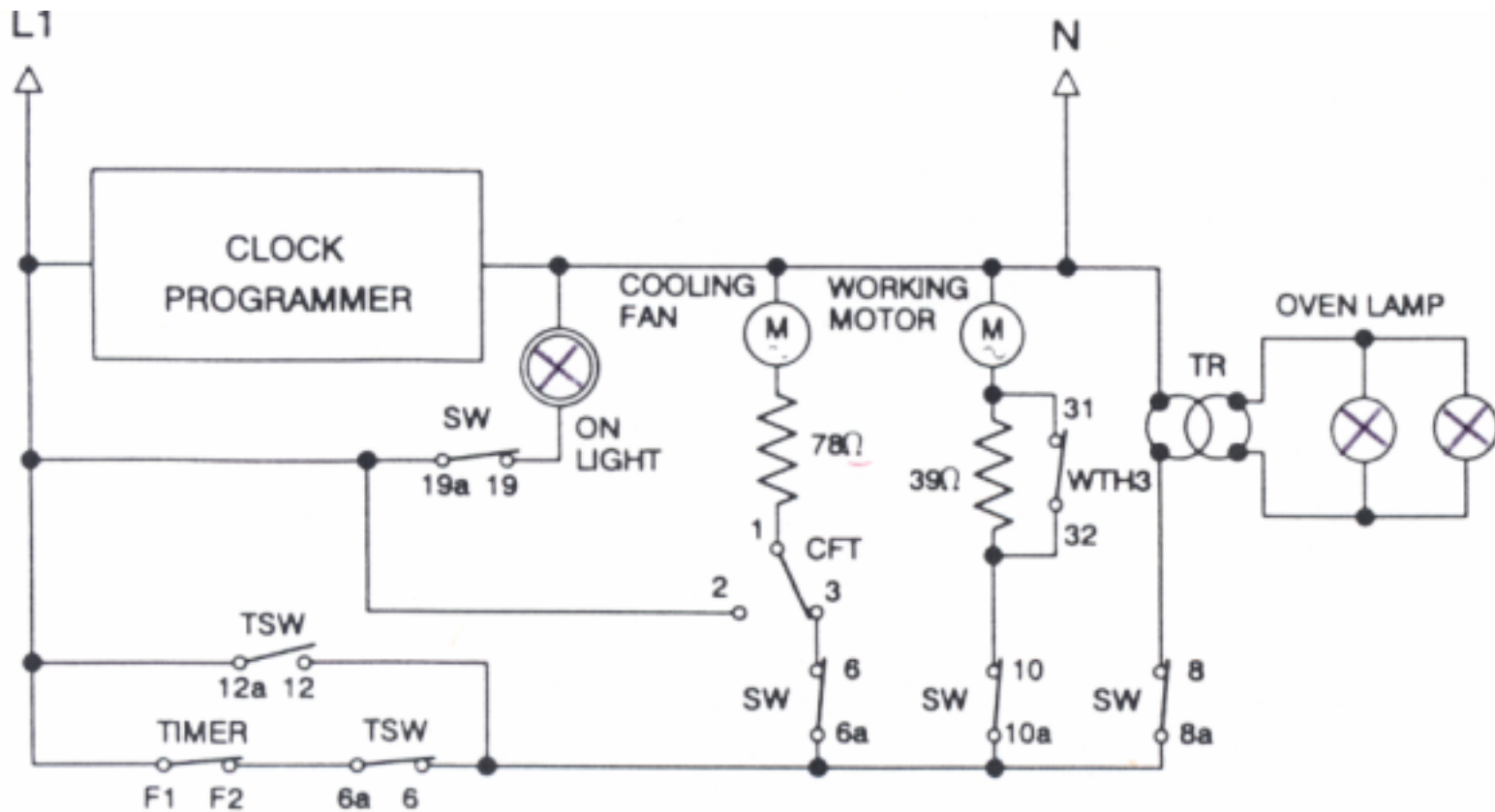
How the oven works...Convection

Broil...HBL/HBN 65

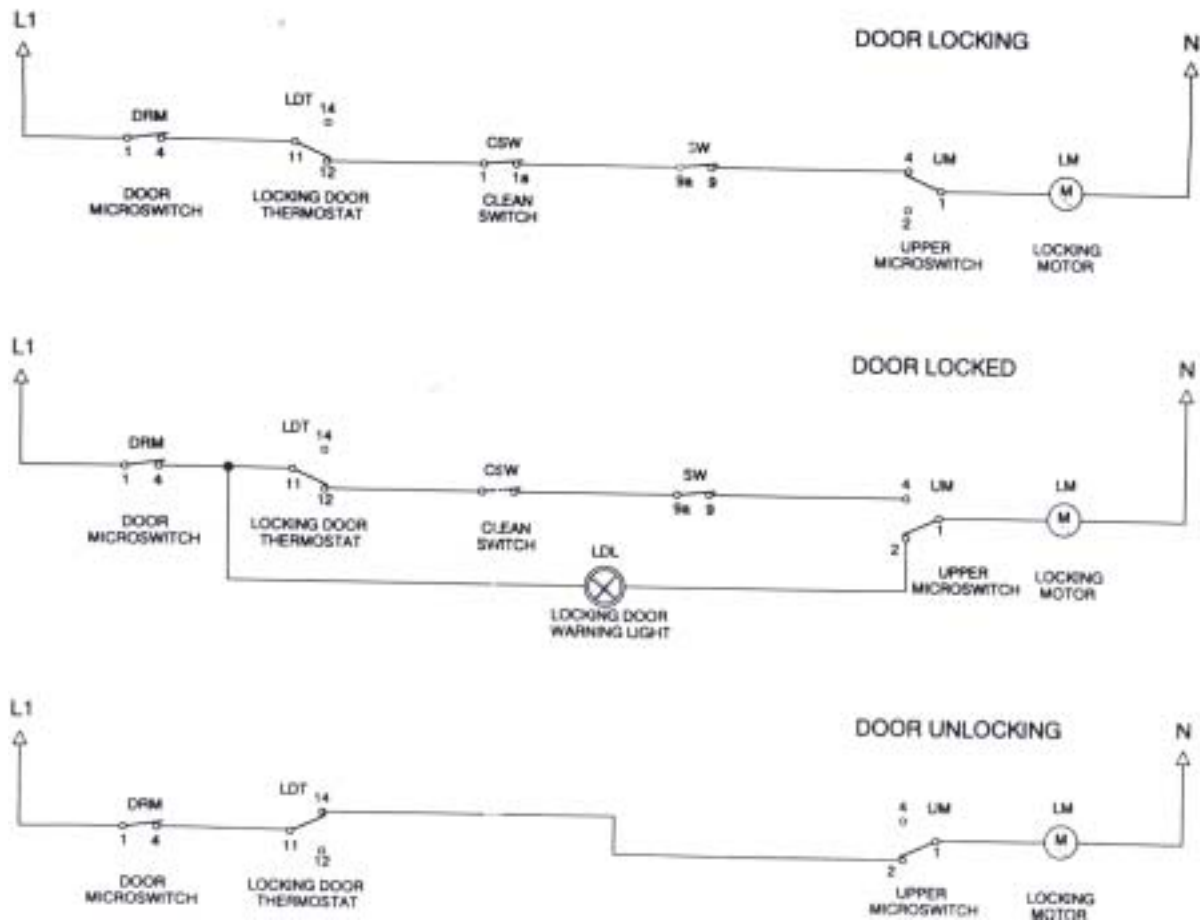


How the oven works...Thaw Circuit

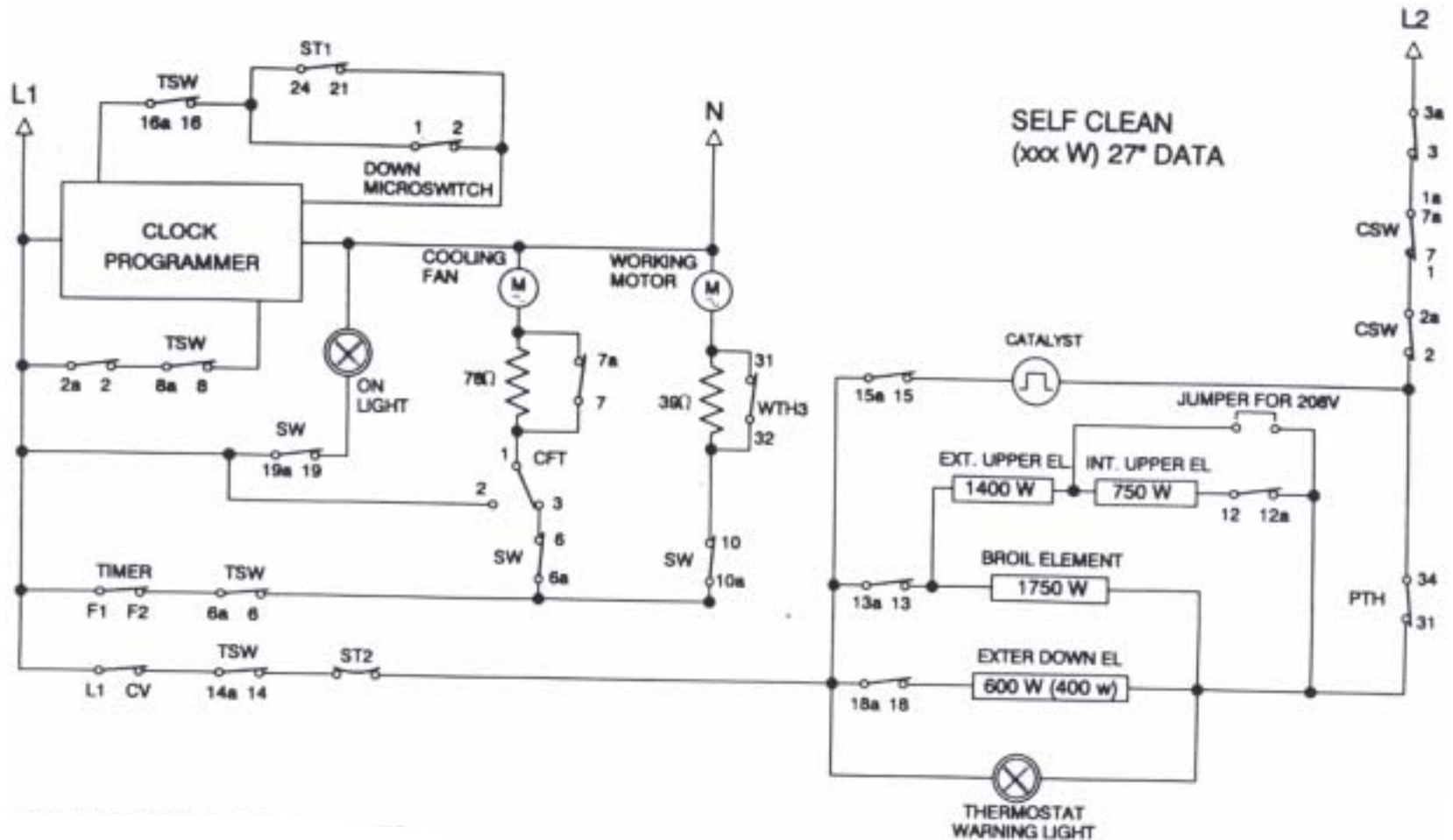
HBL/HBN 65



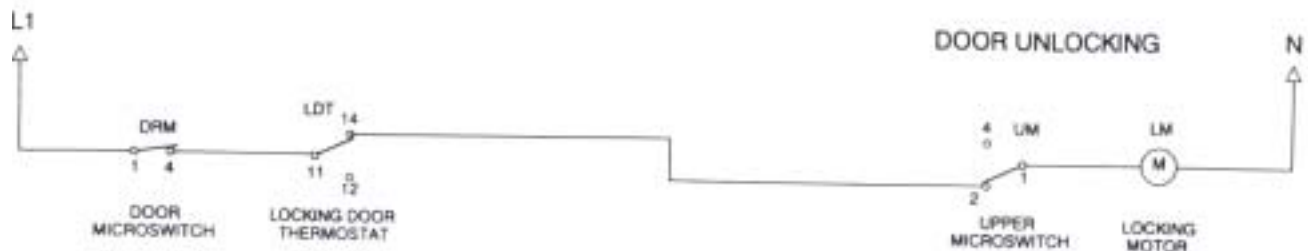
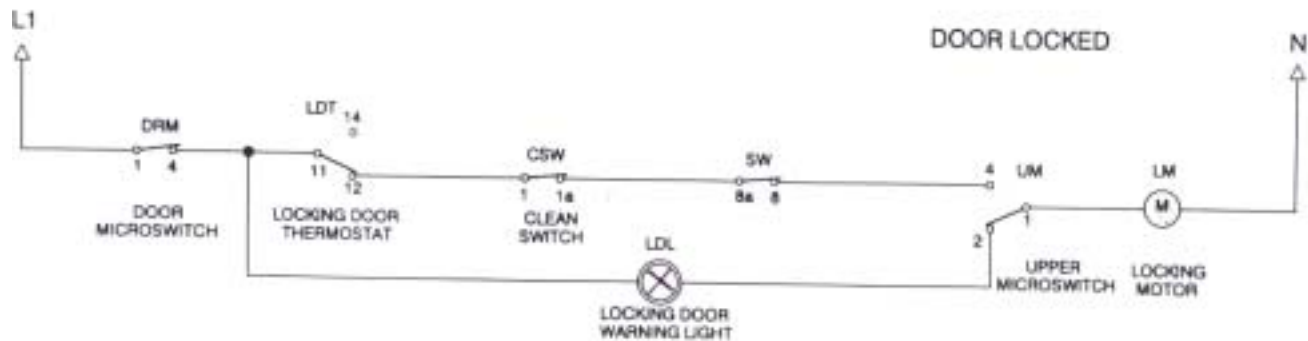
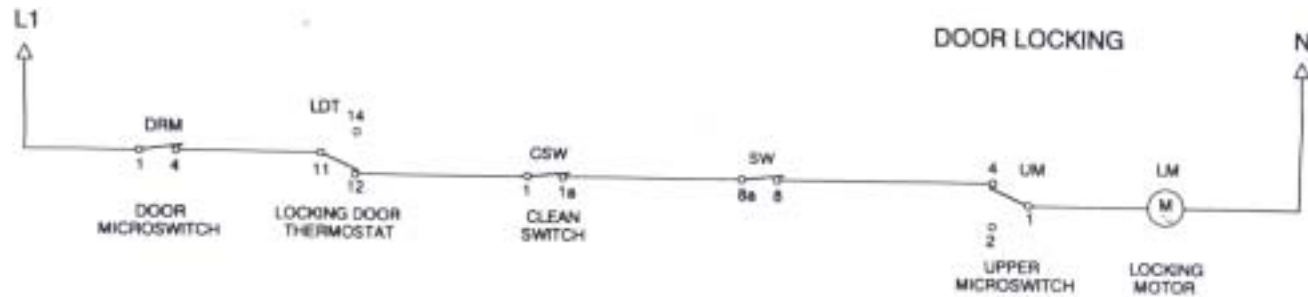
How the oven works...Door Locking Circuit Upper Oven...HBL/HBN 65



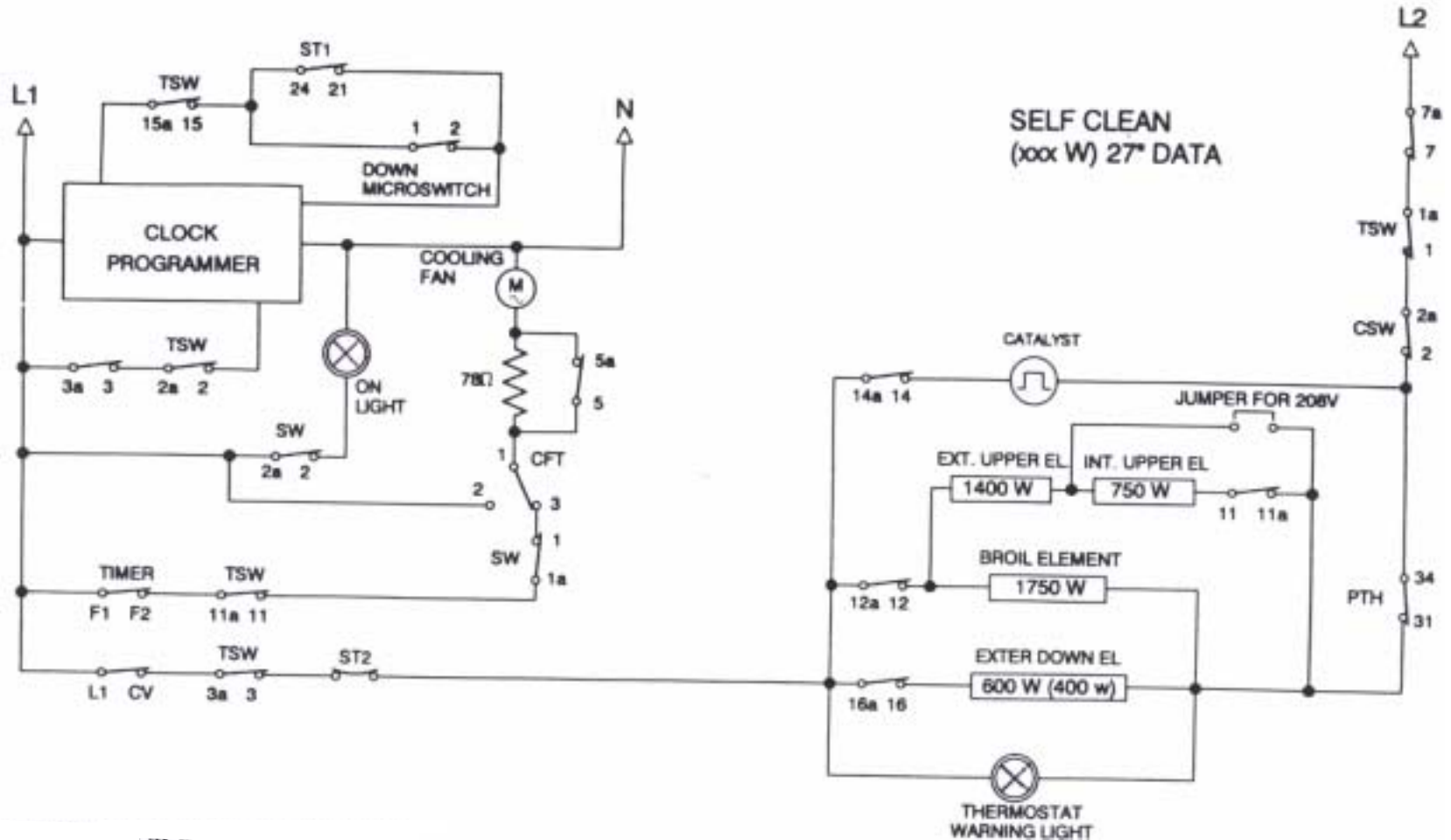
How the oven works...Self Clean Circuit Upper Oven...HBL/HBN 65



How the oven works...Door Locking circuit Lower Oven...HBL/HBN 65



How the oven works...Self Clean Circuit Lower Oven...HBL/HBN 65



How the oven works...Selector Switch

HBL/HBN 66...double oven both convection

SW1	POS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SW2
		1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a	17a	18a	19a	20a	
OFF	0																					X
CONV. ROAST	1	X				X	X		X		X				X			X	X	X		
CONV. BAKE	2	X			X	X	X		X		X					X				X		
CONV. BROIL	3	X				X	X		X	X	X		X								X	
THAW	4	X					X	X	X	X											X	
BAKE	5	X				X	X		X						X			X	X	X		
BROIL	6	X				X	X		X		X	X									X	
SELF CLEAN	7		X	X			X	X		X	X		X	X	X					X	X	

HBL/HBN 66

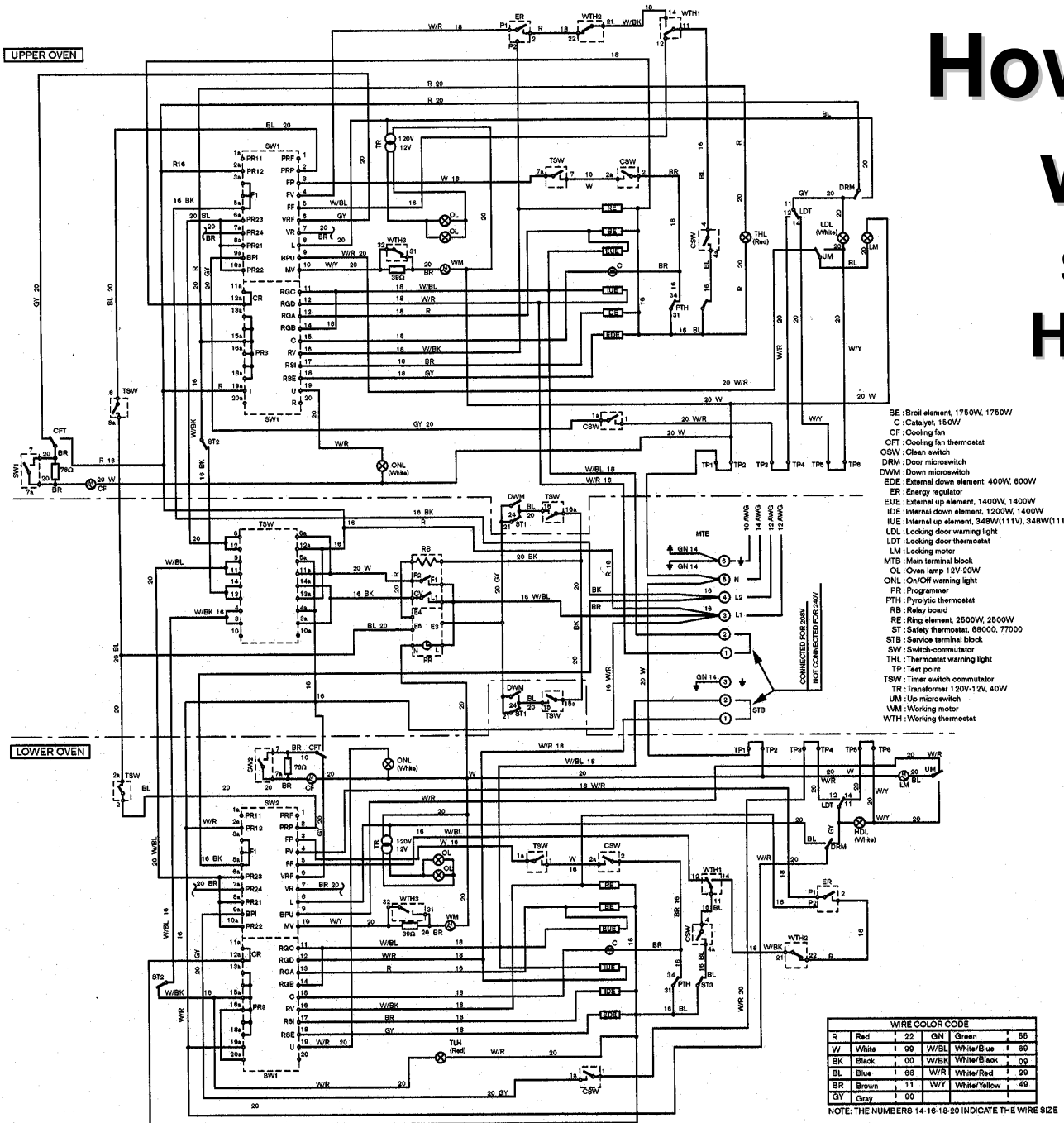
TSW	POS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a
DOWN OVEN	L	X	X	X								X	X	X		X	
MANUAL	O				X	X					X		X	X			
UP OVEN	R				X	X	X	X	X							X	X

**Selector Switch Positions for
Upper & Lower Oven**

4CH/259	POS.	1	2	4
CSW	(OFF)	1a	2a	4a
	> 0+500°F			X
	SELF CLEAN	X	X	

How the oven works... schematic HBL/HBN 66

Double Oven both convection



- BE: Broil element, 1750W, 1750W
- C: Catalyst, 150W
- CF: Cooling fan
- CFT: Cooling fan thermostat
- CSW: Clean switch
- DRM: Door microswitch
- DWM: Down microswitch
- EDE: External down element, 400W, 600W
- ER: Energy regulator
- EUE: External up element, 1400W, 1400W
- IUE: Internal up element, 1200W, 1400W
- IUE: Internal up element, 348W(111V), 348W(111V)
- LDL: Locking door warning light
- LDT: Locking door thermostat
- LM: Locking motor
- MTB: Main terminal block
- OL: Oven lamp 12V/20W
- ONL: On/Off warning light
- PR: Programmer
- PTH: Pyrolytic thermostat
- RB: Relay board
- RE: Ring element, 2500W, 2500W
- ST: Safety thermostat, 8800Ω, 7700Ω
- STB: Service terminal block
- SW: Switch-commutator
- THL: Thermostat warning light
- TP: Test point
- TSW: Timer switch commutator
- TR: Transformer 120V-12V, 40W
- UM: Up microswitch
- WM: Working motor
- WTH: Working thermostat

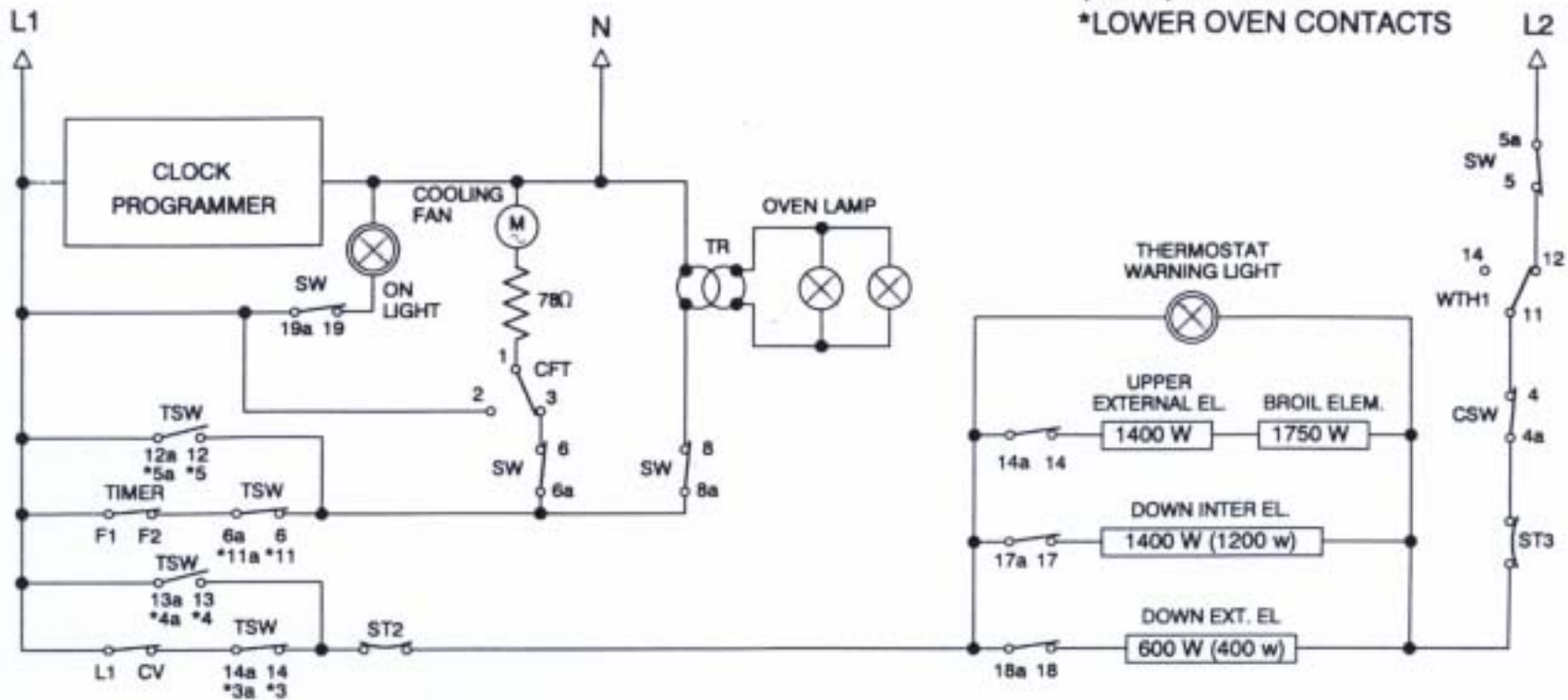
WIRE COLOR CODE			
R	Red	22	GN Green
W	White	99	W/BL White/Blue
BK	Black	00	W/BK White/Black
BL	Blue	08	W/R White/Red
BR	Brown	11	W/Y White/Yellow
GY	Gray	90	

NOTE: THE NUMBERS 14-16-18-20 INDICATE THE WIRE SIZE

How the oven works...Bake Circuit

HBL/HBN 66

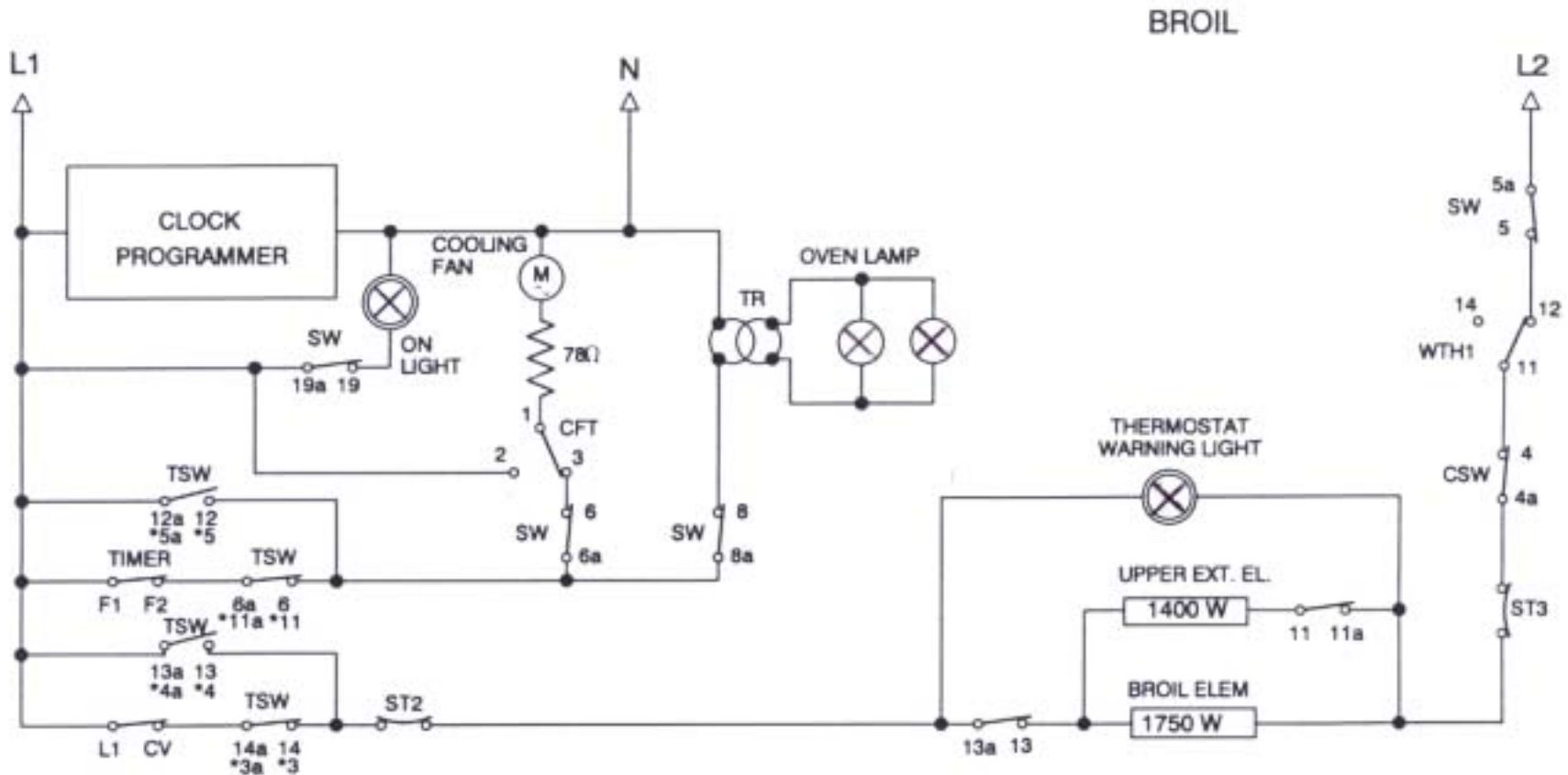
BAKE
(xxx W) 27" DATA
*LOWER OVEN CONTACTS



Switch positions marked with an * refer to Lower Oven

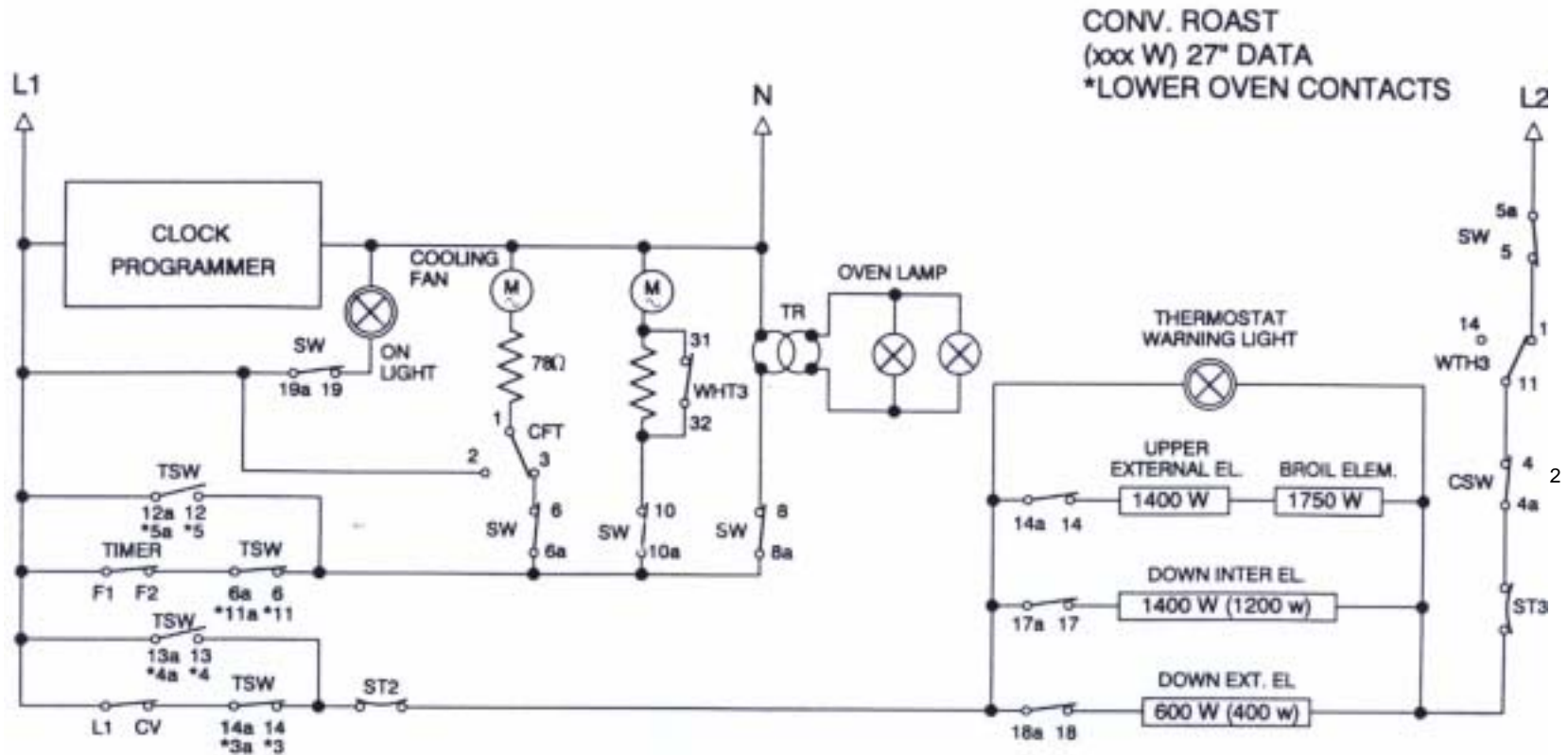
How the oven works...Broil Circuit

HBL/HBN 66



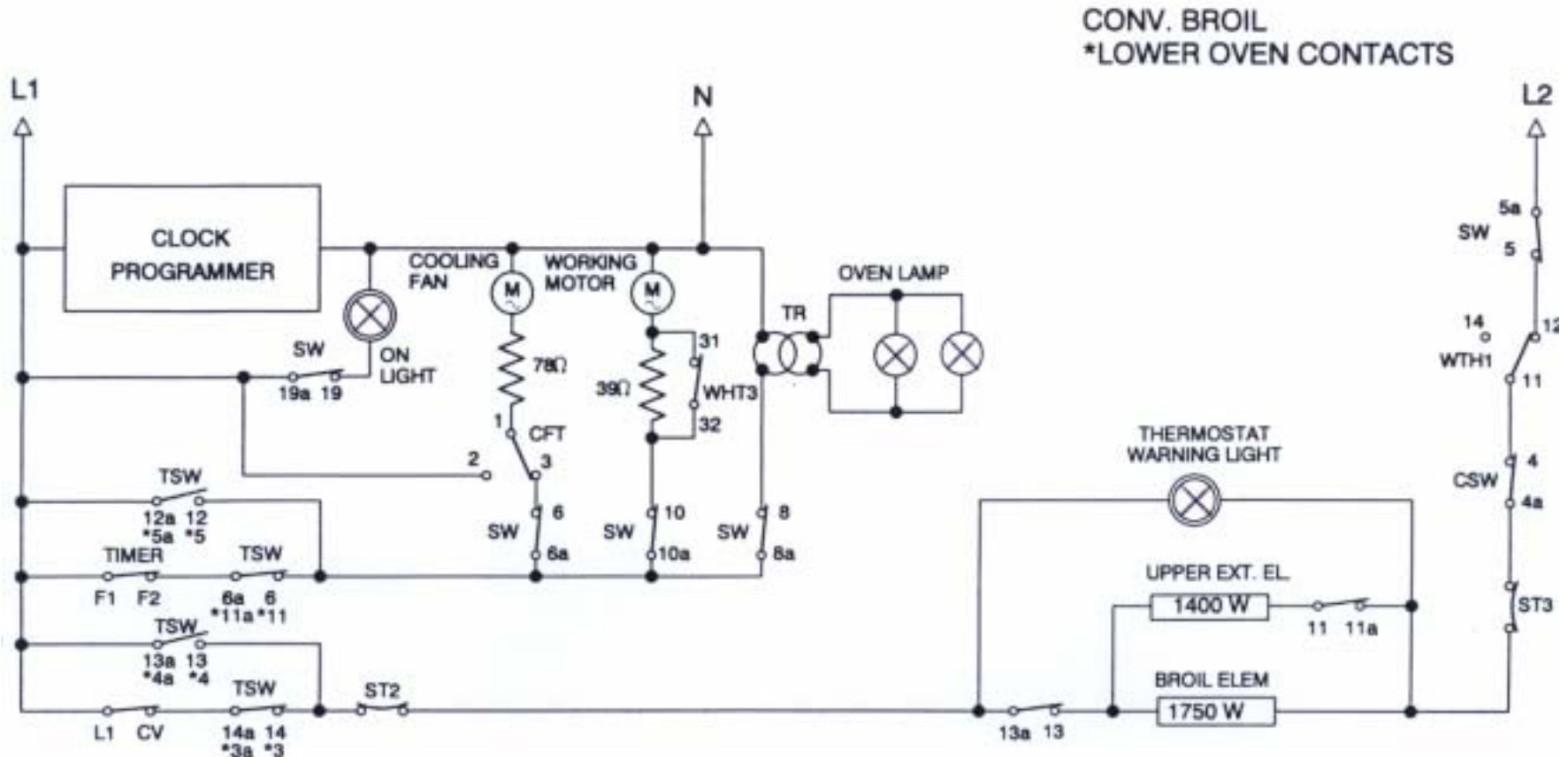
Switch positions marked with an * refer to Lower Oven

How the oven works...Convection Roast...HBL/HBN 66



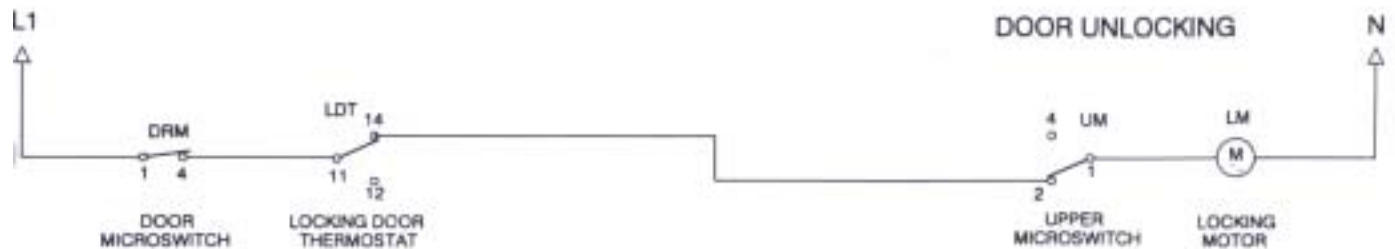
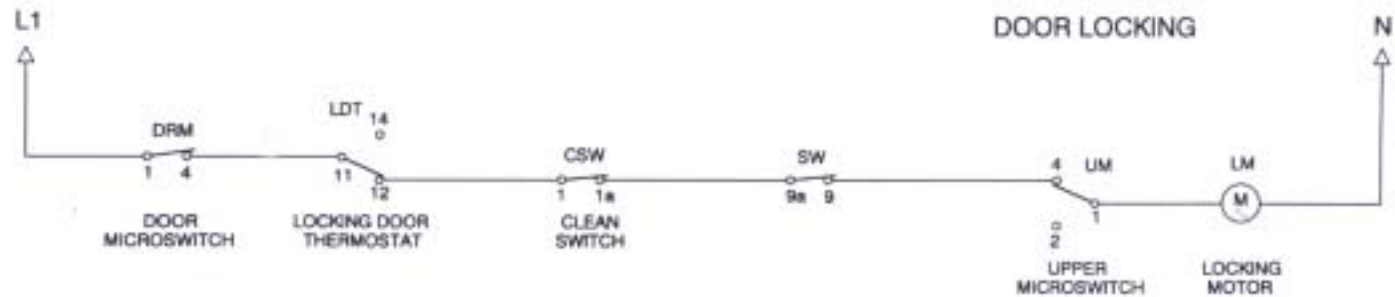
Contacts marked with an * refer to Lower Oven

How the oven works...Convection Broil Circuit...HBL/HBN 66

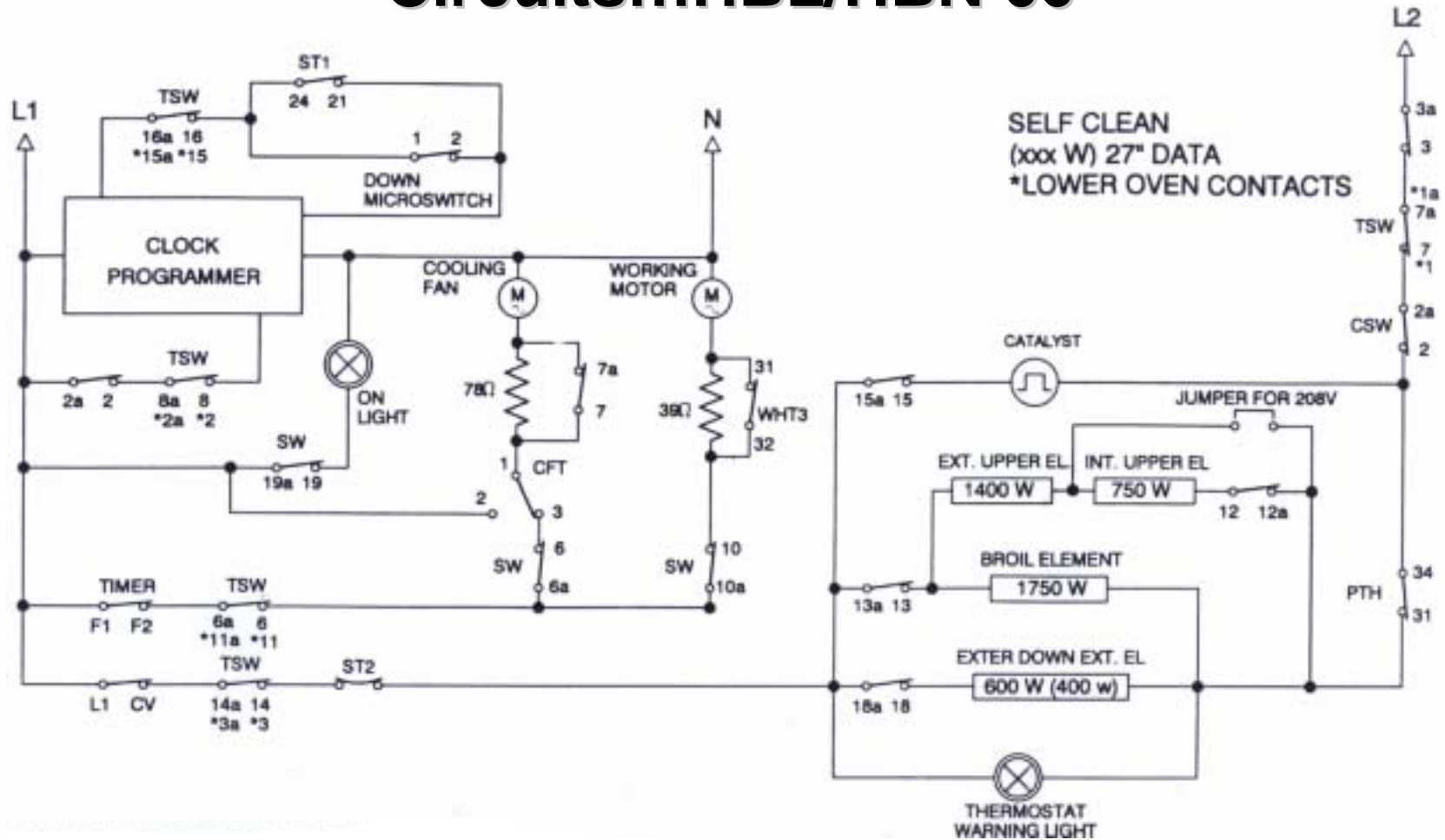


Contacts marked with an * refer to Lower Oven

How the oven works...Door Locking Circuits...HBL/HBN 66

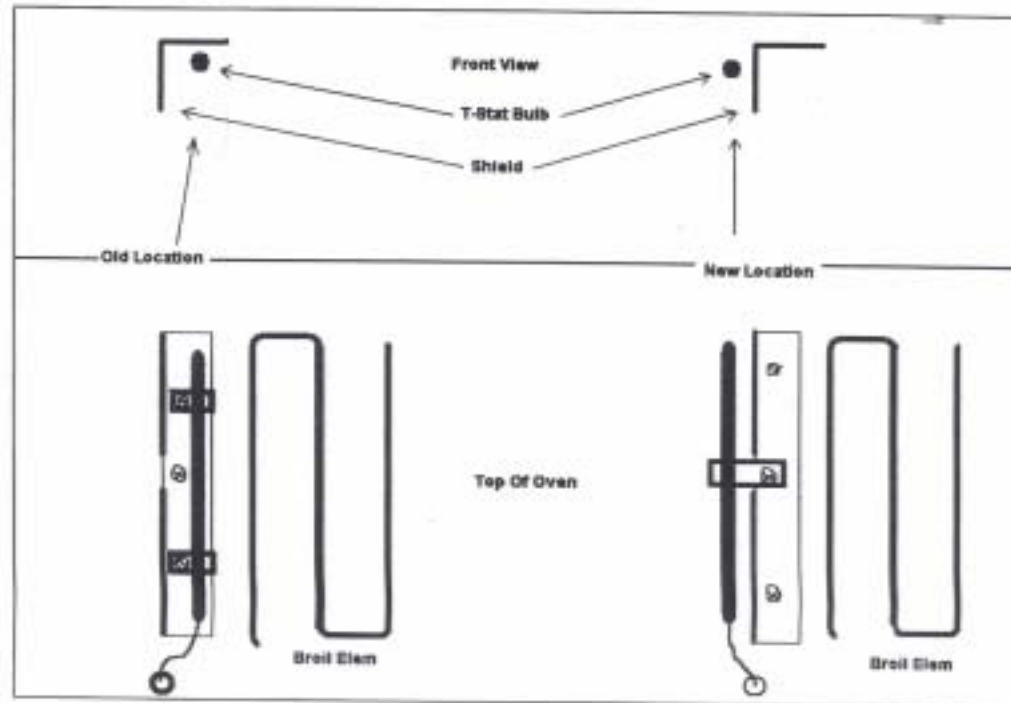


How the oven works...Self Clean Circuits...HBL/HBN 66



Switch contacts marked with an * refer to Lower Oven

Service Tips...Short cycling of thermostat



Problem: Thermostat bulb is picking up radiant heat from the broil element during bake and is causing the thermostat to short cycle, which in turn causes the oven to lose temperature.

Fix: Relocate the thermostat to the other side of the shield.

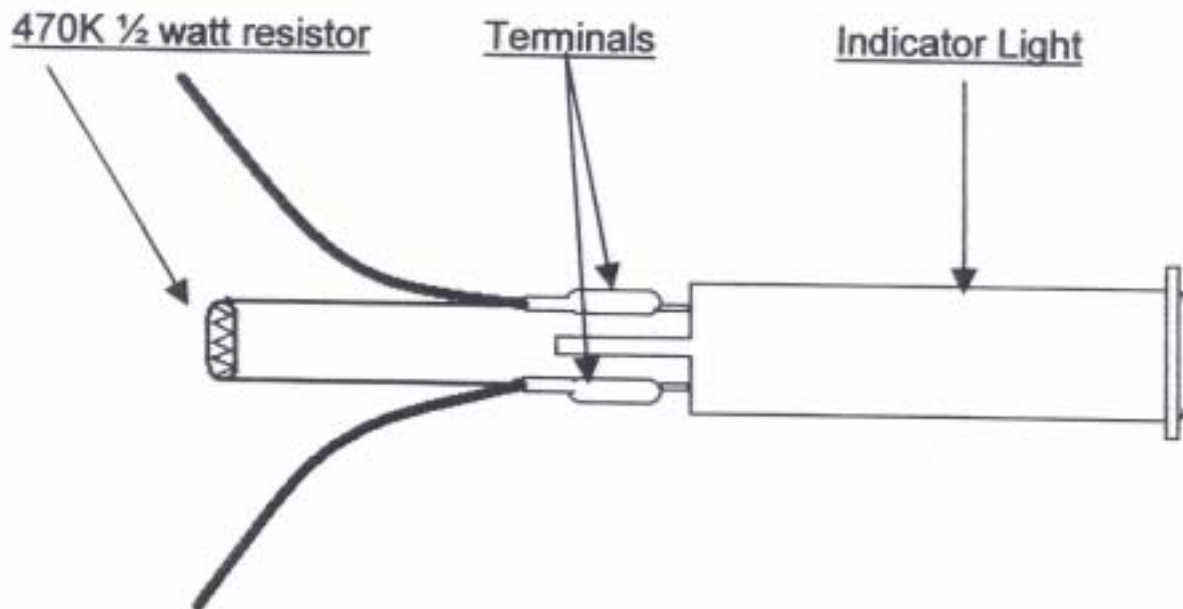
Remove the 2 clamps that hold the T-stat bulb and reinstall screws in the shield. Remove the center screw from the shield and install 1 of the previously removed bulb clamps through the notch in the shield then reinstall screw.

Effect: By placing the bulb on the out side of the shield it will be protected from the radiant heat of the broil element.

Service Tips...Indicator light stays on

The light staying on is due to some trace feedback voltage that normally occurs in our oven circuitry. The bulb that is used requires very little energy to excite the gases and in some cases the amount of trace voltage feeding back through the system is just enough to light this bulb.

It is possible to remedy this situation by adding a 470K $\frac{1}{2}$ watt resistor across the 2 terminals that hook up to the light. This will allow the trace energy to bleed off around the light rather than through it while also allowing the light to work properly during normal oven operation.



Service Tips...Oven thermostat calibration

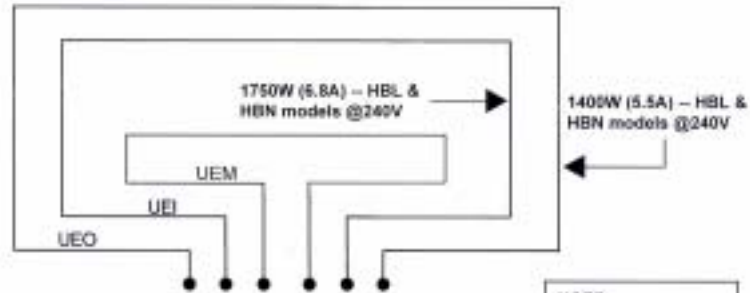
1. Shut off breaker.
2. Remove oven from the wall.
3. Remove the top panel.
4. Remove the clip that holds the thermostat to the variable temperature control.
5. Pull the thermostat from the variable temperature control.
6. Hold the thermostat with the shaft facing you and place a mark on the collar at the base of the shaft and on the thermostat. This mark represents 12 o'clock, place another mark at 9 o'clock, then at 10 and 11 o'clock to increase temperature.
7. To decrease temperature, place a mark at 12, 1, 2, and 3 o'clock.
8. Place your ***Bosch oven calibration tool or a pair of needle nose pliers*** into the cut outs on the collar at the base of the shaft.
 - A: ***Turn counter clock wise to increase temperature.***
 - B: ***Turn clock wise to decrease temperature.***
9. When you turn that collar from the position of 12 to 11 o'clock or 12 to 1 o'clock you will increase or decrease the temperature between 25 and 40 degrees. With this in mind for every minute between 12 and 11 or between 12 and 1 o'clock the adjustment is 5 to 8 degrees. This is a very tight adjustment so use caution.
9. After adjustment check oven temperature.

Service Tips...Elements used in various cooking modes

HEATING ELEMENT DIAGRAM

For: HBL 63/64/65/66- (30") and HBN 64/65/66- (27") ovens

UPPER ELEMENTS (UE)



NOTE:
 O = outer element
 I = inner element
 M = middle element

REAR ELEMENT (RE) (CONVECTION OVEN ONLY)

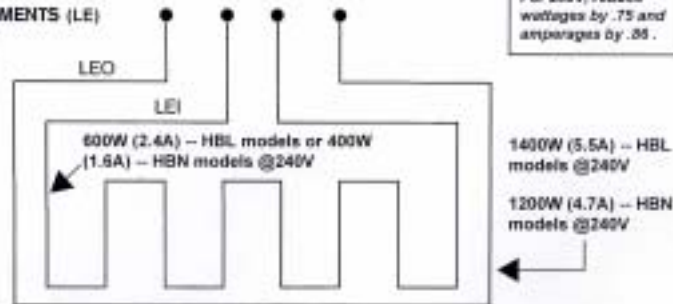


NOTE:
 For 208V, reduce wattages by .75 and amperages by .88.

LOWER ELEMENTS (LE)

NOTE:-

- ◊ Convection roast uses 2778W (HBL) or 2378W (HBN) @240V
- ◊ Convection broil uses 3150W (HBL & HBN) @240V
- ◊ Self-clean uses 3250W (HBL) or 3050W (HBN) @240V



COOKING MODES:
 (i.e., elements used in cooking modes)

CONVECTION
 BAKE: RE
 ROAST: UEI/UEO
 LEI/LEO
 BROIL: UEI/UEO

THERMAL
 BAKE: UEI/UEO
 LEI/LEO
 BROIL: UEI/UEO

SELF CLEAN
 UEI/UEO/UEM
 LEO