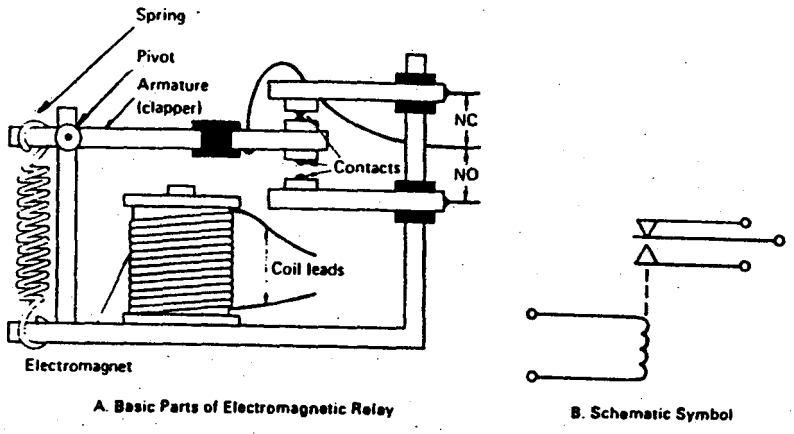
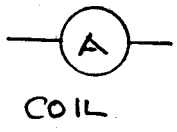
ELECTROMAGNETIC RELAYS



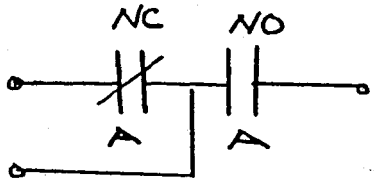
A. Basic Parts of Electromagnetic Relay

B. Schematic Symbol

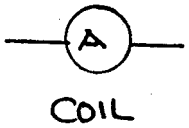
POWER SYMBOL - SINGLE-POLE DOUBLE-THROW



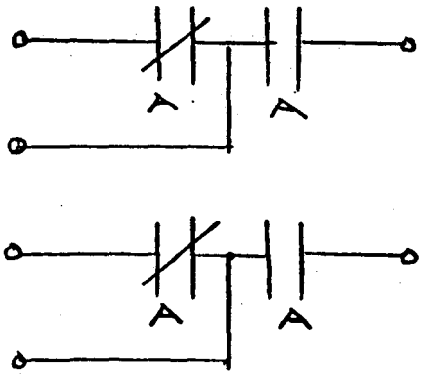
COIL

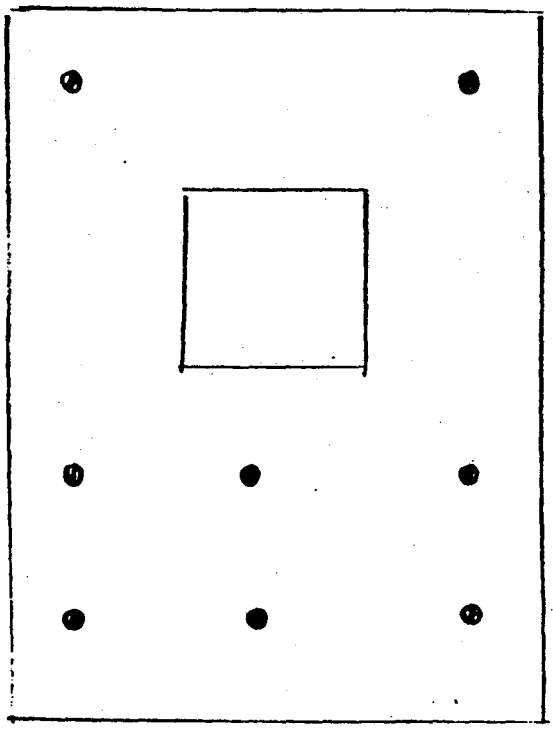


DOUBLE-POLE DOUBLE-THROW



COIL

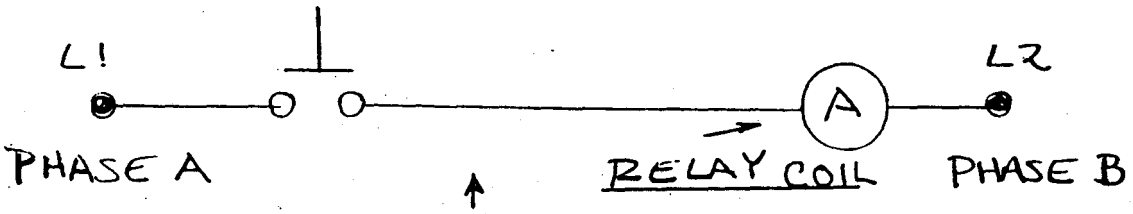




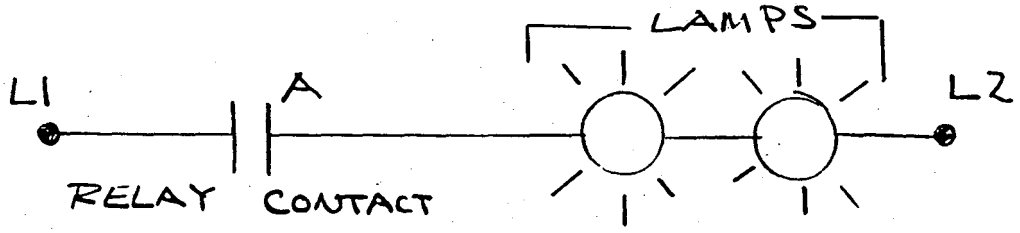
RELAY USED IN EXERCISE OWL.
SKETCH-IN THE COIL & CONTACTS.

RELAY COIL VOLTAGE IS _____.

EXERCISE ONE CIRCUIT #1

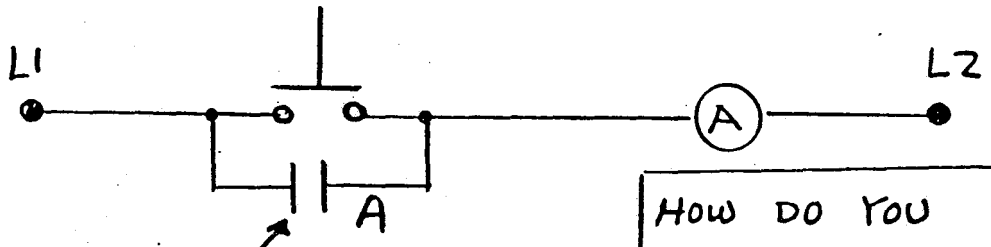


CONTROL CIRCUIT



POWER CIRCUIT

CIRCUIT # 2



CONTROL CIRCUIT

HOW DO YOU BREAK THE SEAL?

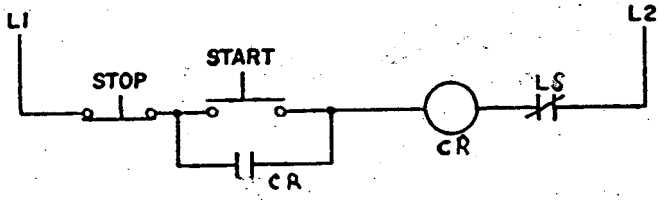
MODIFY CIRCUIT USING A PUSH BUTTON TO BREAK THE "SEAL"

NOTE: THE POWER CIRCUT IS THE SAME AS THAT GIVEN IN CIRCUIT 1.

* WIRING DIAGRAMS *

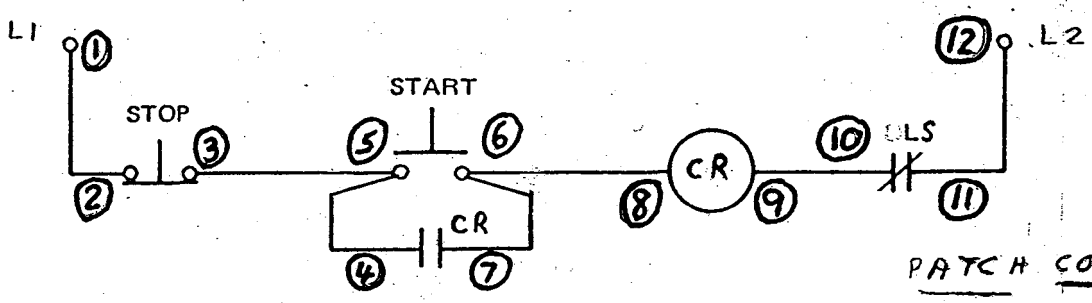
"WIRELESS", "LINELESS" OR "TABULAR CONNECTION DIAGRAMS"

EXAMPLE: STANDARD CONTROL CKT.

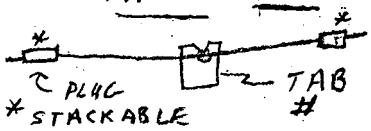


LS = LIMIT SWITCH

REDRAW CKT, LABEL "WIRELESS" CONNECTION ID's IN ○



PATCH CORD:



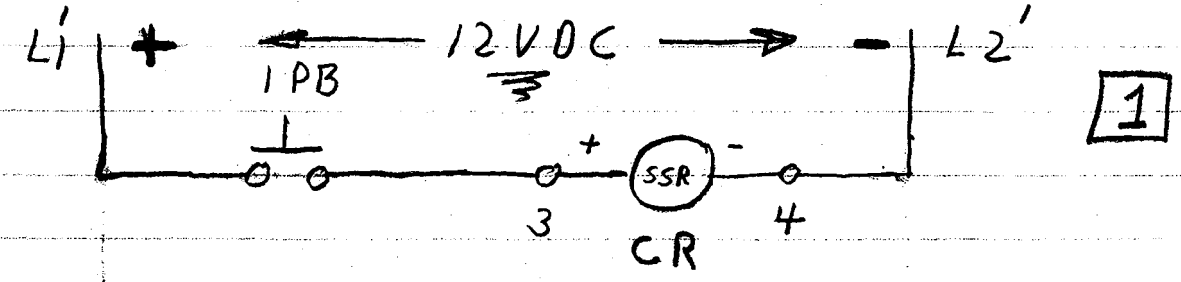
SET UP WIRELESS TABLE

FROM	TO	WIRE I/D	TAB#
1	2	RED	—
3	5	BLUE	—
4	5	YEL	—
6	8	RED	1
7	6	RED	2
9	10	BLUE	1
11	12	BLACK	—

USE A UNIQUE TAB# TO DISTINGUISH WIRES OF THE SAME COLOR

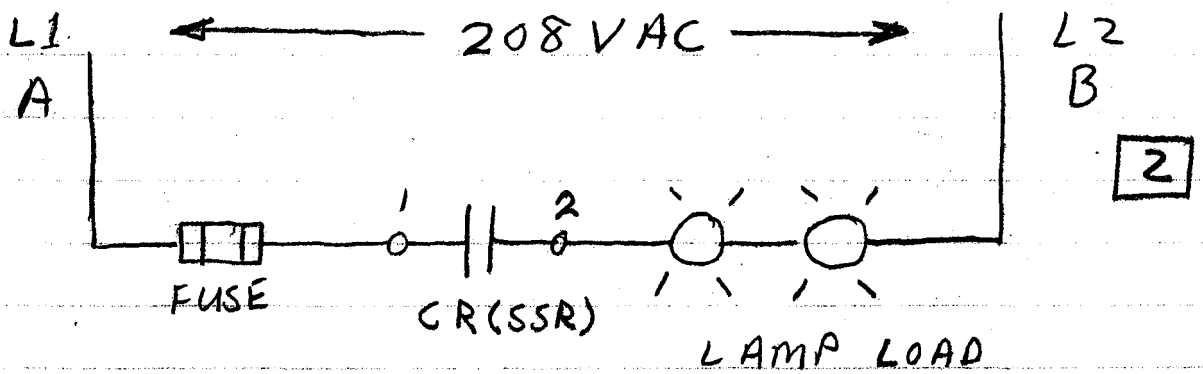
SOLID STATE RELAY [SSR]

1. INPUT LADDER DIAGRAM:



NOTE ⇒ ! TWO DIFFERENT POWER SOURCES ARE USE !

2. OUTPUT LADDER DIAGRAM:



- HAVE EACH GROUP MEMBER CHECK EACH LADDER DIAGRAM. NOTE: #1 LADDER DIAGRAM OPERATES AT 12 VOLTS DIRECT CURRENT (DC). #2 LADDER DIAGRAM OPERATES AT 208 VOLTS ALTERNATING CURRENT (AC).
- UPON INSTRUCTOR APPROVAL; ACTIVATE CKT.

REMOTE CONTROL SYSTEMS (LATCH-UNLATCH COILS)

To control several outlets in a building from each of several different locations, low-voltage operated relays can be installed to turn the 115-volt outlets on or off. The wiring installation for this low-voltage system is less expensive because there is no need to run 115-volt cables to the switches. Low-cost, easily installed #18 or #20 wire is used.

At each controlled outlet, one 24-volt relay is mounted on the outlet box. The relay contains two coils. A momentary current in the *on* coil closes the 115-volt contacts. These contacts remain closed until a momentary current in the *off* coil opens them, Figure *1*.

The relay coils are operated from a 24-volt transformer by normally open momentary contact switches. Several of these switches may be connected in parallel to control

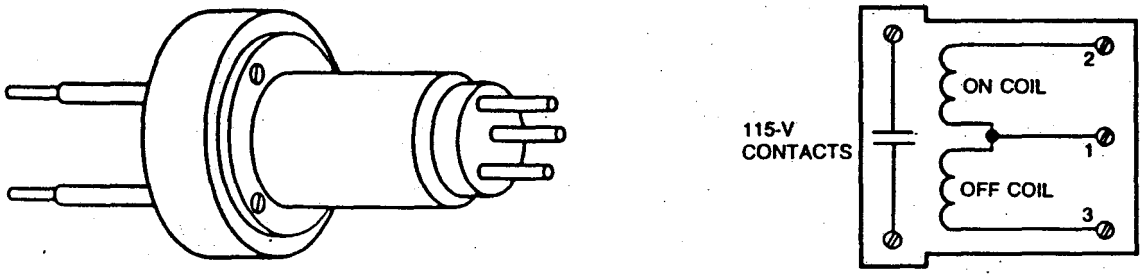


FIGURE 1 Relay connections

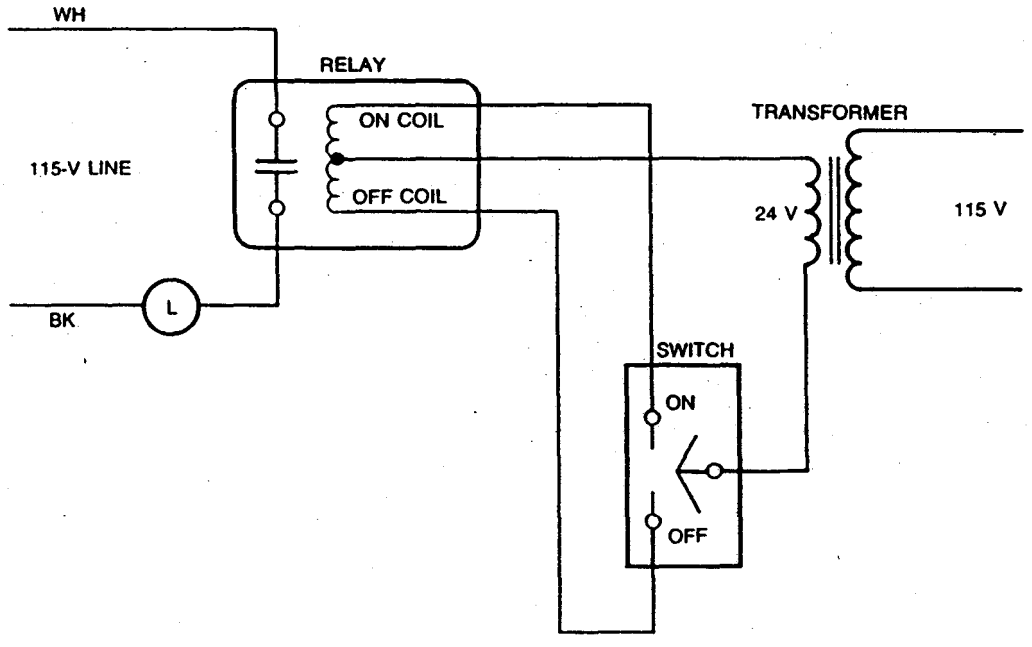
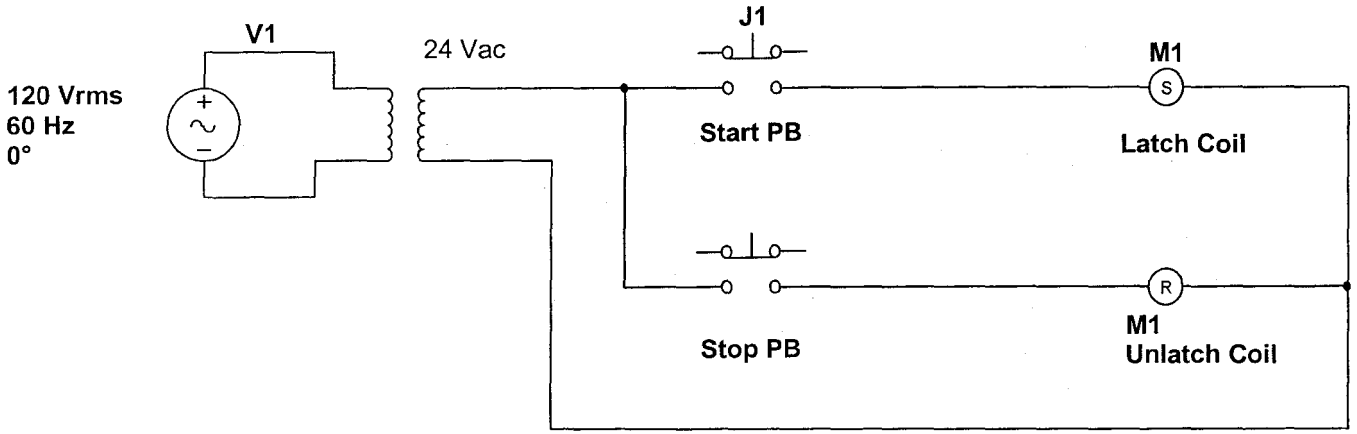


FIGURE 2. One light controlled from one switch point

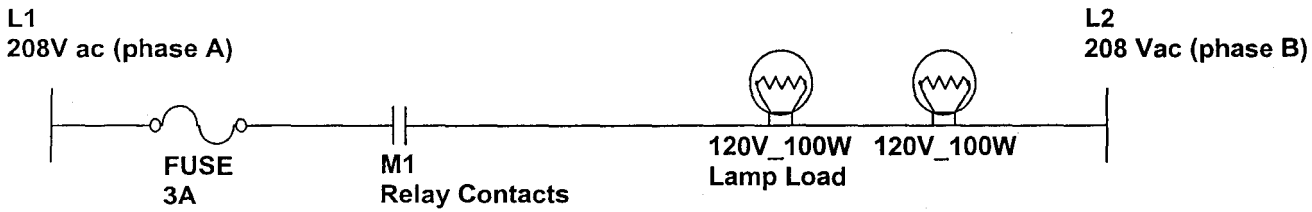
one relay. The connection of such a switch in the low-voltage circuit is shown in Figure 2.

Low-voltage systems can be expanded to include a variety of automatic lighting controls, timers, and security systems. In some cases the addition of a rectifier in series with the 24-volt transformer output is recommended. The relay coils then operate on half-wave rectified AC.

Control Circuit



Power Circuit



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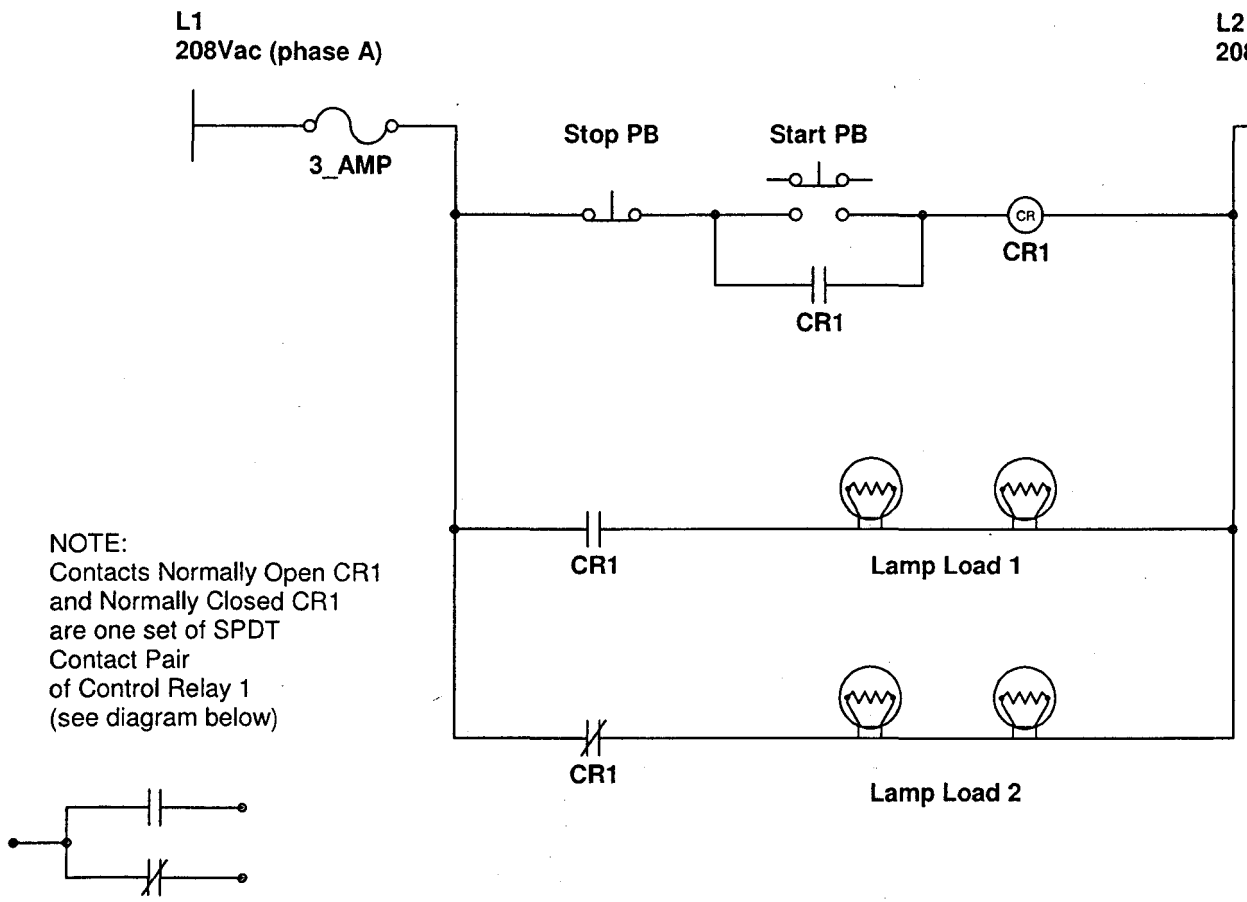
Size: A	Document No: 0001 — Rev: 1.0
Date: 2008-01-28	Sheet 1 of 1



NOTE:
ONLY 3 Connections to L2
1. Right side of "CR1"
2. Right side of Lamp 1
3. Right side of Lamp 2

NOTE:
Contacts Normally Open CR1
and Normally Closed CR1
are one set of SPDT
Contact Pair
of Control Relay 1
(see diagram below)

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Date: 2008-01-28		Sheet 1 of 1	

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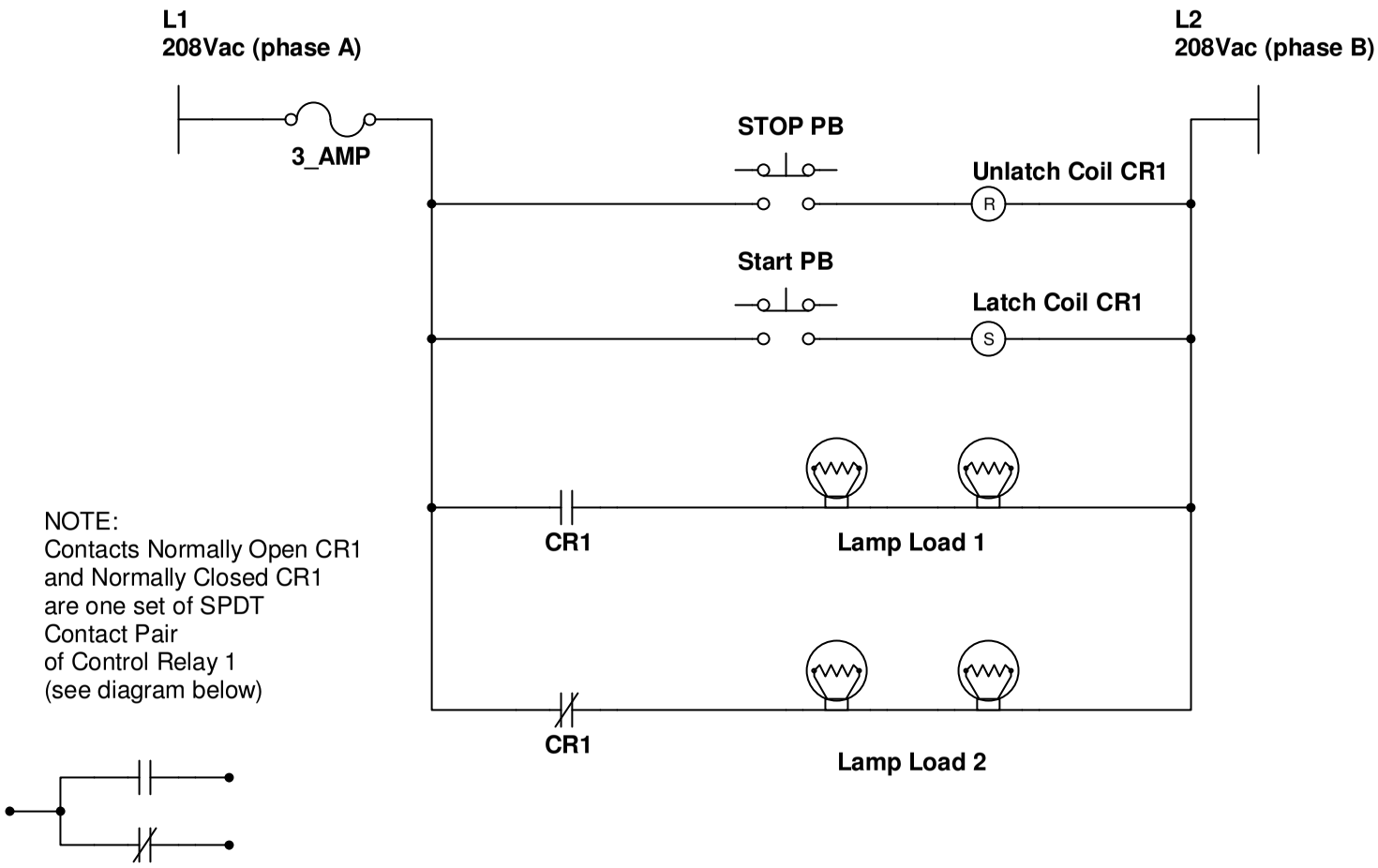

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