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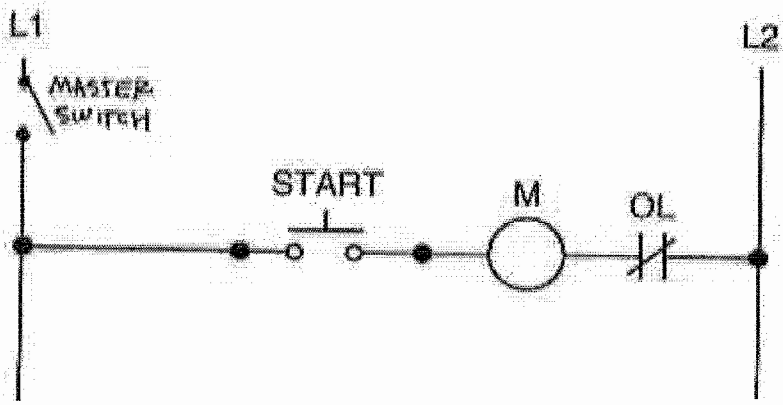
Relay Logic Quizzes + Diagrams

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David U. Larson
Master Electrician

Relay Circuit Questions - Job #1

1. If the master switch is closed, what action will energize the relay coil?
2. If the master switch is open, what action will energize the relay coil?
3. If the master switch is closed and the "ON" pushbutton is closed, what will happen?
4. If the master switch is closed and the "ON" pushbutton is open, what will happen?
5. If the master switch is closed and the "ON" pushbutton is closed, in this case the coil does not energize. What might be the cause?
6. If the potential voltage difference between L1 and L2 is 120 volts, what is the proper coil voltage for this relay circuit?
7. With no wiring changes, what action will result in the coil going to a run condition?
8. Can this relay circuit be described as a JOG type?
9. When 120 volt power is first applied to this relay circuit, what will happen?
10. What are the actions needed to cause the relay coil in this relay circuit to energize?



Relay Circuit Questions - Job #2

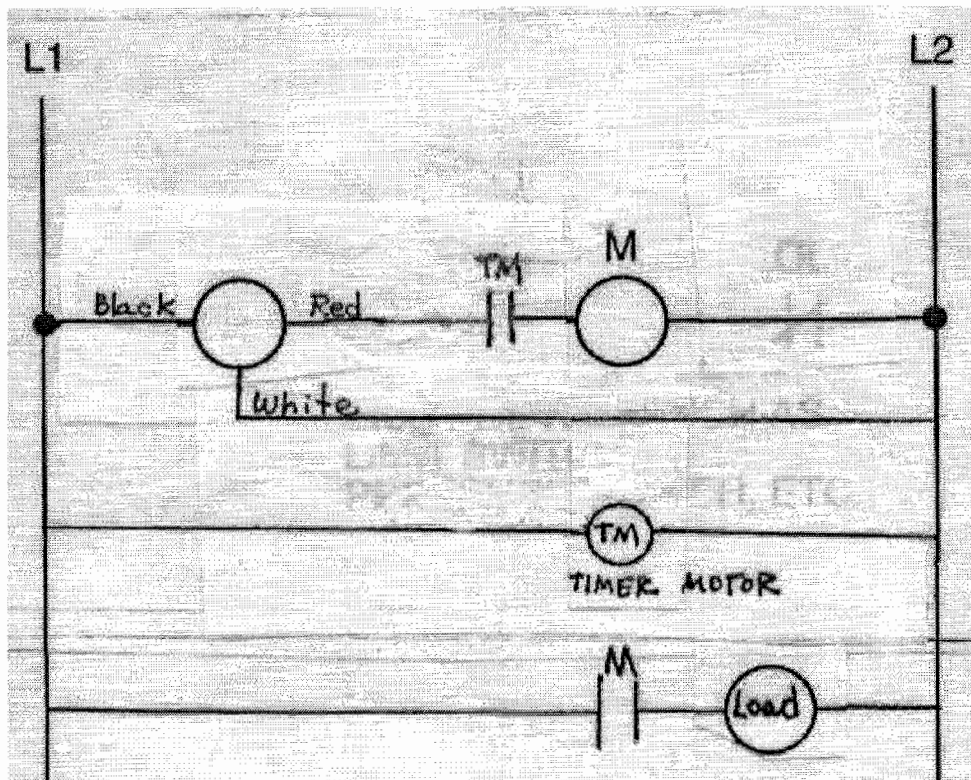
1. Why must power be supplied to the photo cell at all times?
2. Why must power be supplied to the timer motor at all times?
3. What is the advantage of adding a magnetic relay to this circuit rather than let the photo cell and timer carry the load?
4. How must the time clock settings be adjusted to result in this relay coil going on at sunset and off at 12 midnight?
5. If the magnetic coil relay is to remain energized during all darkness hours, what function will a timer perform?
6. What settings on the time clock would allow the magnetic relay coil to energize at midnight and deenergize at 6AM?
7. Is a photo cell necessary for the situation described in question #6?
8. If the photo cell is rated for 1500 watts, and the contacts on the magnetic relay are rated at 30 amps, what continuous load can be controlled with this relay circuit if the supply voltage is 120 volts?
9. If the magnetic coil is rated at 120 volts, what must be the voltage rating for the clock motor?
10. After a power outage, what maintenance action is needed for this relay circuit to return to proper time?



Relay Circuit Diagram - Job #2

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Here is the ladder diagram which is to be used for this assignment.
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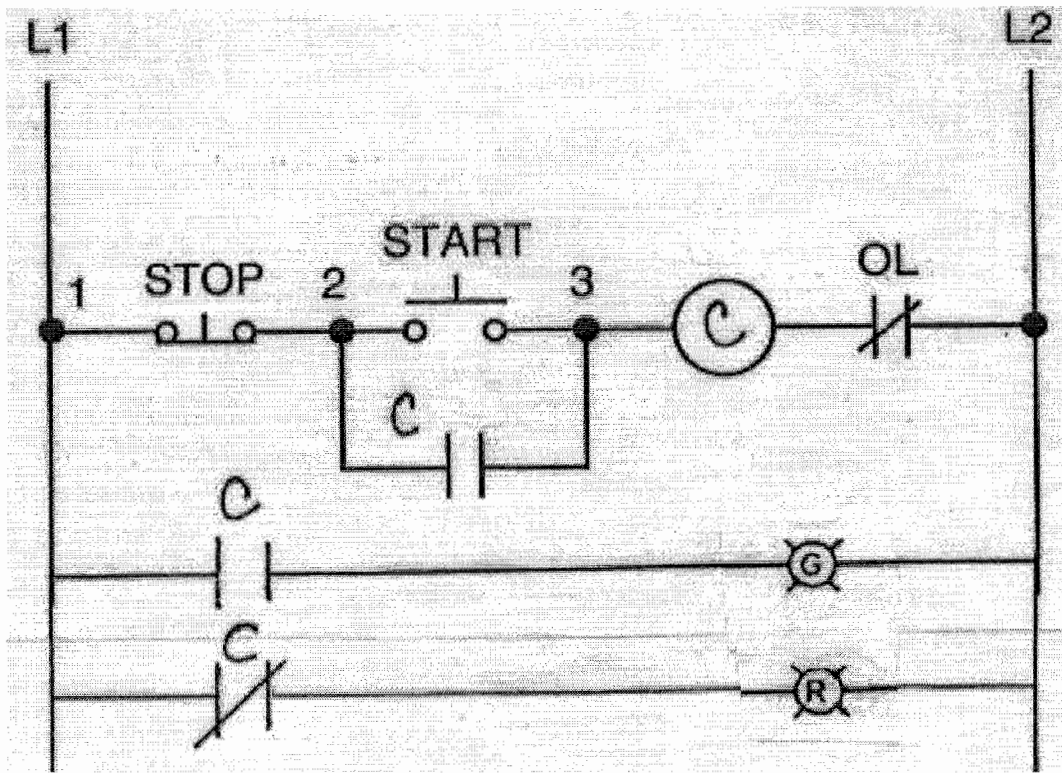
Click [HERE](#) to hear the audio lecture for this assignment. If you can not print this page, then minimize the media player/real audio screen so you can see the screen as you listen to the lecture.

Click [HERE](#) to see a photograph of the components connected up for this job. Do not attempt to use this picture for connection points. You must use the ladder diagram to be accurate. This picture simply gives you an idea of what your work will look like as you complete the exercise. Use your back button to return to this page.

Click [HERE](#) to go back to the assignment page for this diagram.

Relay Circuit Questions - Job #3

1. When power is properly applied, what will happen in this circuit as drawn?
2. When the "START" pushbutton is pressed, what is the order of actions that will result?
3. When will the "G" red pilot light be on?
4. When will the "R" red pilot light be on?
5. Can the "R" and "G" pilot lights both ever be off at the same time when proper voltage is applied to L1 and L2?
6. What is the electrical function of the "C" contacts which are wired parallel to the start pushbutton?
7. Where are the "C" normally open contacts physically located?
8. Where are the "C" normally closed contacts physically located?
9. If the "C" coil is energized, and the start button is no longer pressed, what will happen to the "C" relay coil?
10. If the "C" coil is energized and power is removed from the circuit by a power failure, what will happen to the "C" relay coil when power is restored?





Relay Circuit Questions - Job #4

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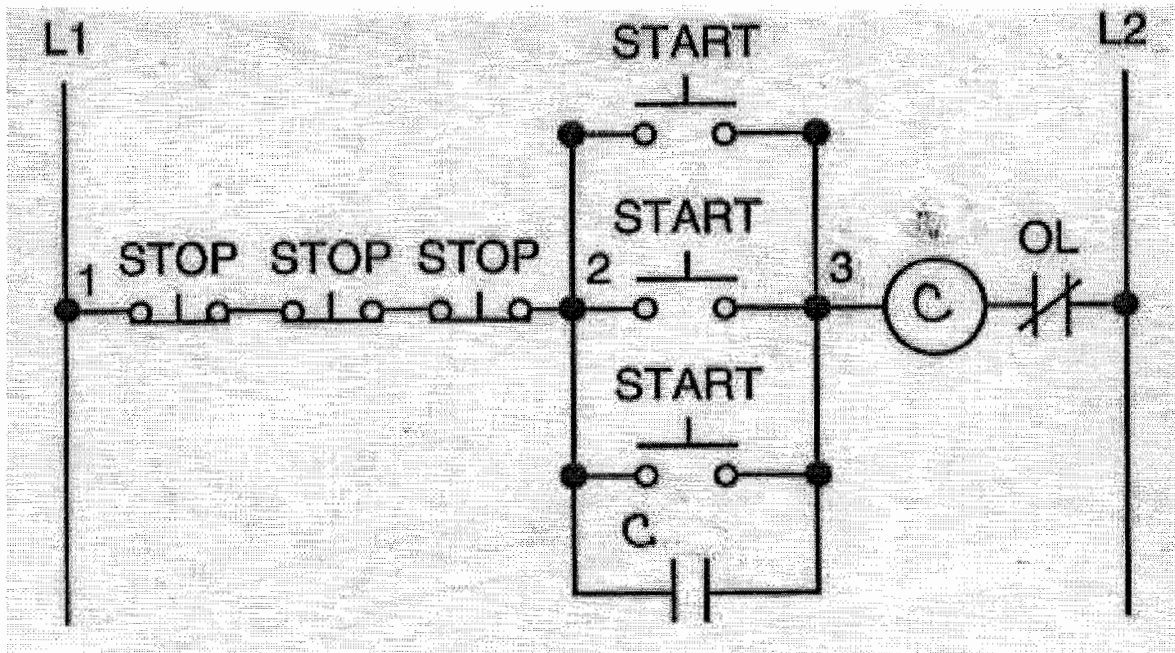
Here are questions about this relay circuit. You may consult the assignment text, diagram, picture, and lecture. You may also use a dictionary, theory book, and code book as you feel necessary. This is intended as a learning experience.

Questions

1. How are the stop buttons wired in this diagram?
2. How are the start buttons wired in this diagram?
3. If the stop buttons are separated by a great distance, how many operators are needed to stop the "C" coil?
4. If the start buttons are separated by a great distance, how many operators are needed to start the "C" coil?
5. How should stop buttons be wired if all three must be pressed to stop the "C" coil? (not this diagram)
6. How should start buttons be wired if all three must be pressed to start the "C" coil? (not this diagram)
7. If the "C" coil is open, what will the voltage reading be on the coil when the start button is pressed?
8. If no buttons are pressed, what will the voltage reading be on the coil when proper voltage is applied to L1 and L2?
9. If the coil is energized, what will the voltage reading be on the coil if proper voltage is applied to L1 and L2?
10. If a voltage reading is taken across a N.O. start pushbutton when L1 L2 is 120 volts, what will it read?

Click [HERE](#) to go to the answers page for this diagram.

When satisfied that you have a complete understanding of this diagram, click [HERE](#) to go on to the next one.





Relay Circuit Diagram - Job #4

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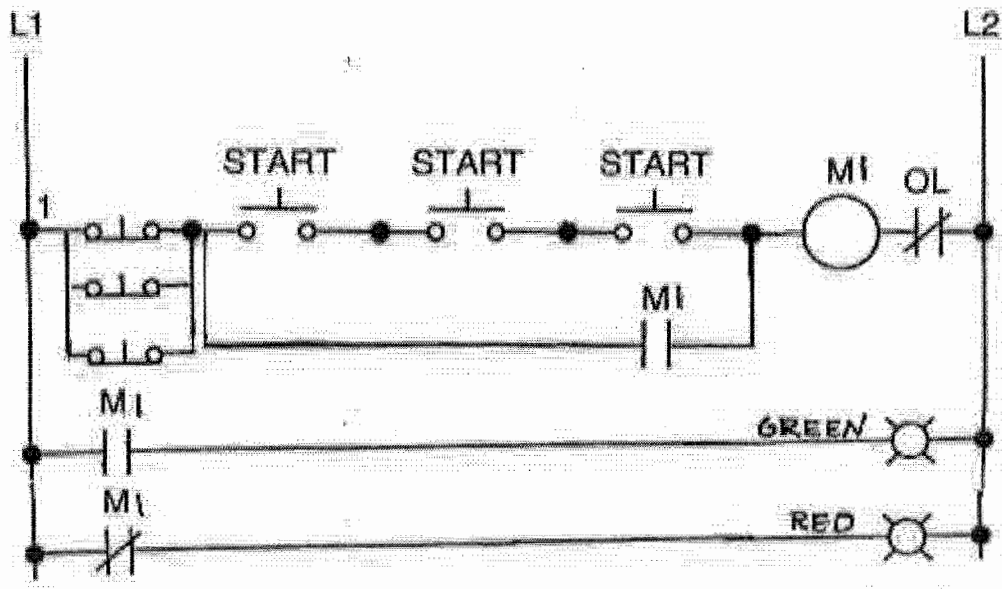
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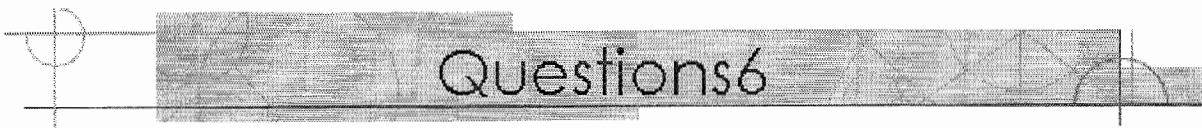
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Click [HERE](#) to go back to the assignment page for this diagram.

Relay Circuit Questions - Job #5

- 1. How are the stop buttons wired relative to one another?**
- 2. How are the start buttons wired relative to one another?**
- 3. If the stop buttons are 10 feet apart, how many operators are needed to stop?**
- 4. If the start buttons are 10 feet apart, how many operators are needed to start?**
- 5. Is this an example of two wire or three wire control?**
- 6. What is the function of the M1 N.O. contacts in this diagram?**
- 7. Is this an example of dependent or independent operation?**
- 8. When will the red light be on?**
- 9. When will the green light be on?**
- 10. Can this diagram of apparatus operate as a jog?**





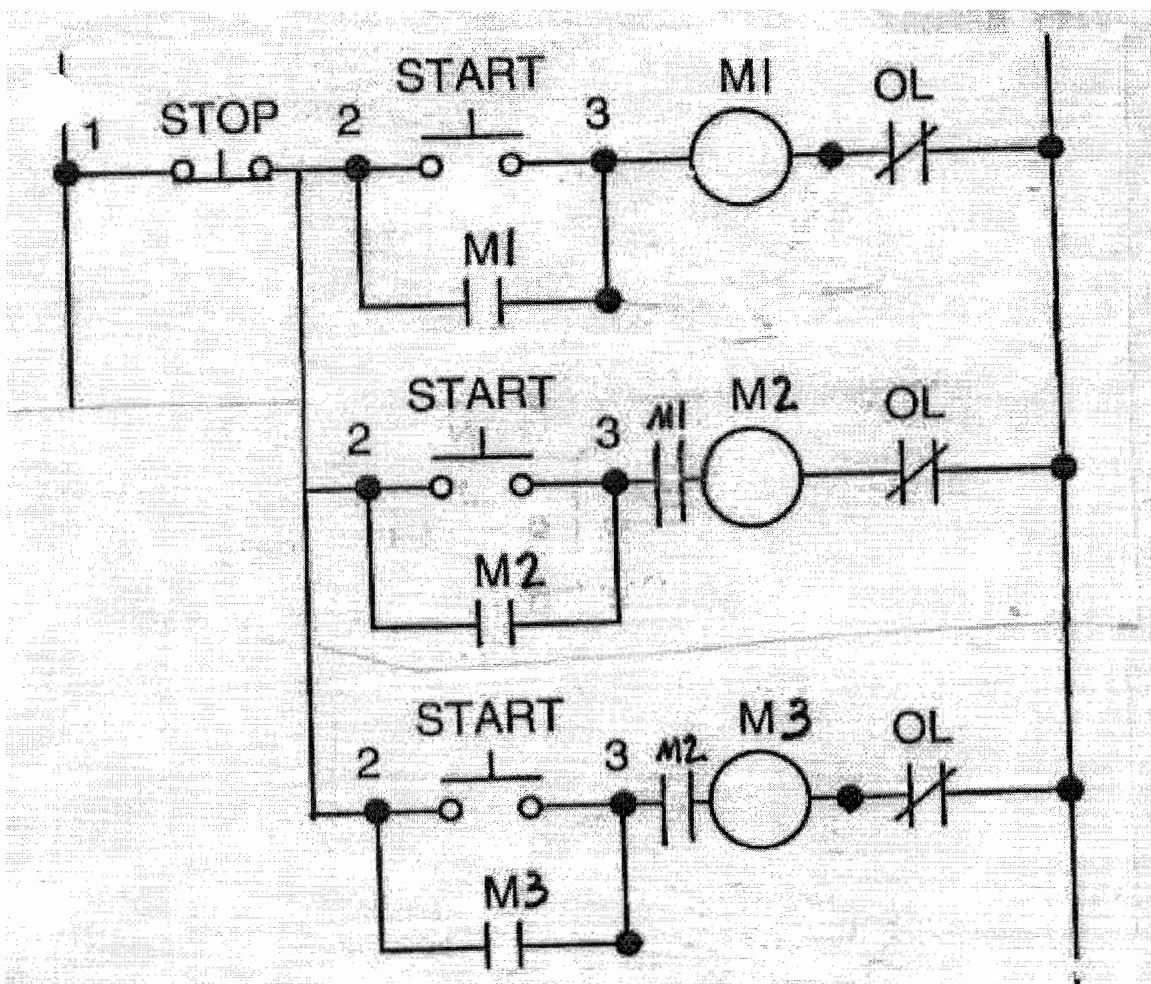
Relay Circuit Questions - Job #6

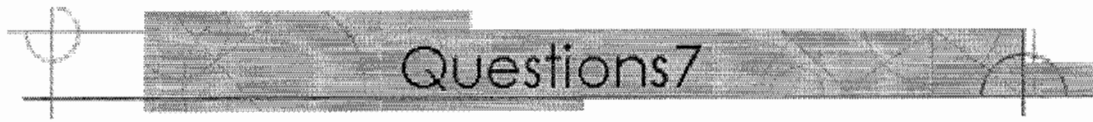
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Questions

1. Is this diagram an example of dependent or independent operation?
2. When power is first applied to L1 L2 can M1 be energized?
3. When power is first applied to L1L2 can M2 be energized?
4. When power is first applied to L1L2 can M3 be energized?
5. When can M2 be energized?
6. When can M3 be energized?
7. How are overloads wired in this diagram?
8. If M2 is energized, must M3 then be energized?
9. Is M2 independent of M3?
10. Is M1 independent of M2 and M3?





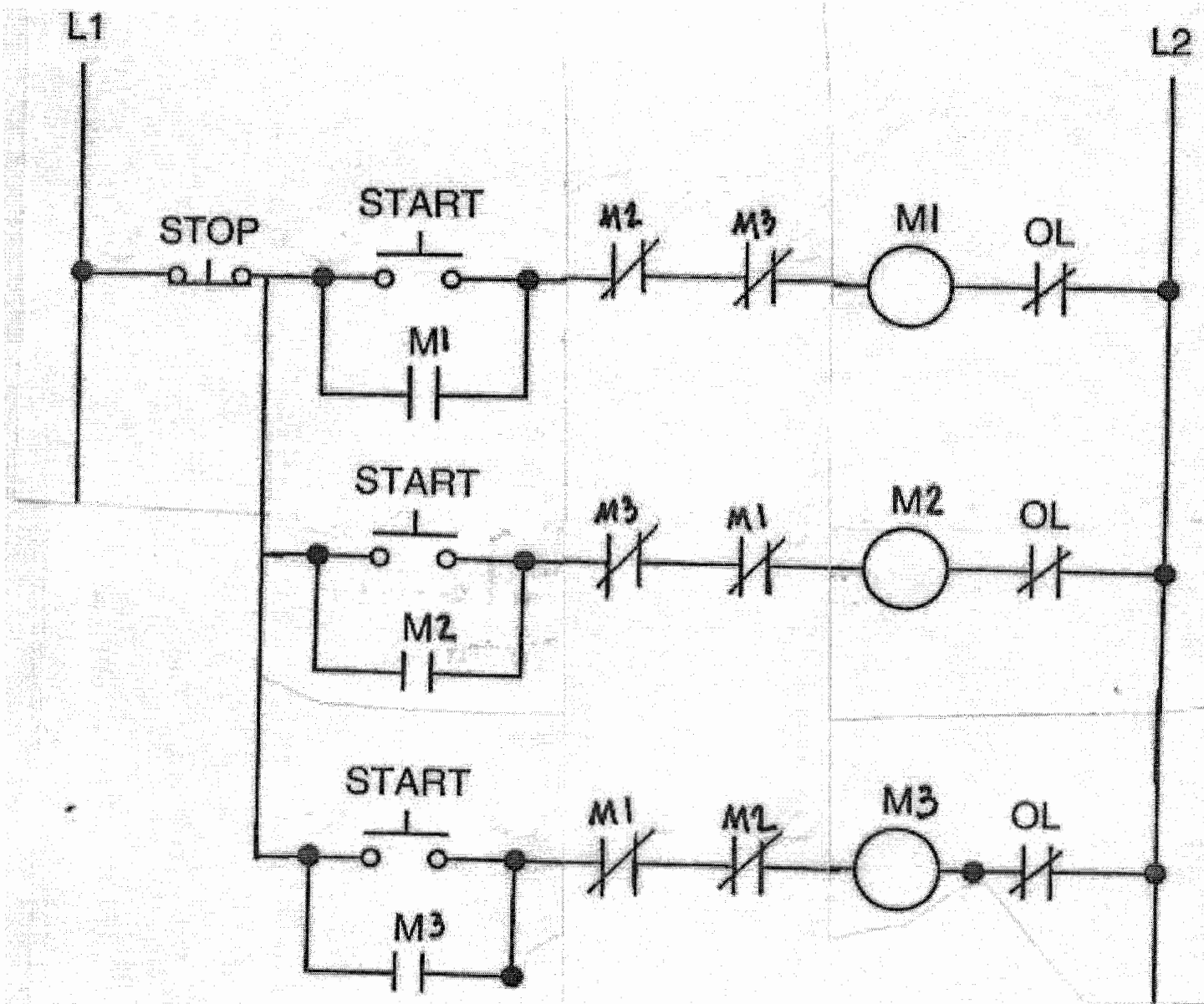
Relay Circuit Questions - Job #7

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Questions

1. Is this diagram an example of dependent or independent operation?
2. Can all three motors run at the same time?
3. When can M1 run?
4. When can M2 run?
5. When can M3 run?
6. If M1 is running, how can M2 be started?
7. If M2 is running, how can M3 be started?
8. If M3 is running, how can M1 be started?
9. If M2 motor overloads open, what can be done to start M1?
10. Can M2 jog?





Relay Circuit Questions - Job #8

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Questions

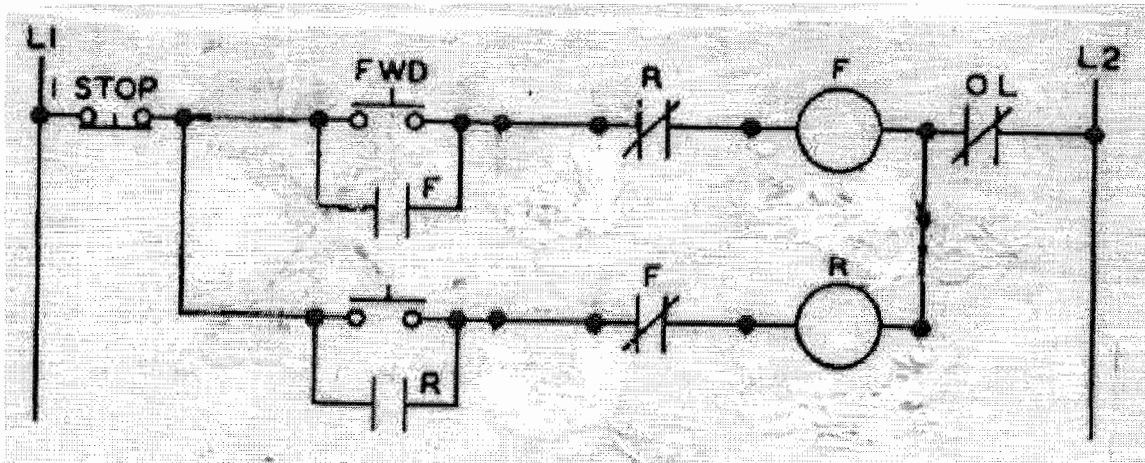
1. Can both relay coils be energized at the same time?
2. What prevents F coil and R coil from being energized simultaneously?
3. When the "F" pushbutton is pressed, will the "F" relay coil be able to run?
4. If the "R" relay coil is energized, what will be the result if the "STOP" pushbutton is pressed?
5. If the "F" coil is energized, what will be the result if the "R" pushbutton is pressed?
6. What action will deenergize the "R" relay coil when it is in the run mode?
7. Where are overloads typically placed in this relay circuit?
8. Draw this relay circuit with the "F" overload and the "R" overload in series. (not this diagram)
9. Draw this relay circuit with independent overload protection.
10. What normal action could cause the "F" coil and "R" coil to energize simultaneously?

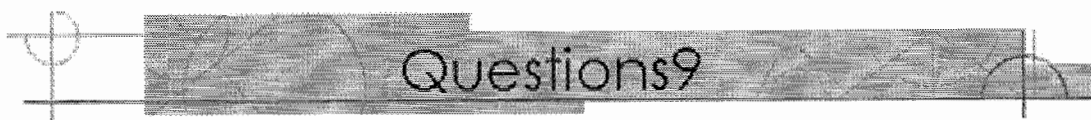


Relay Circuit Diagram - Job #8

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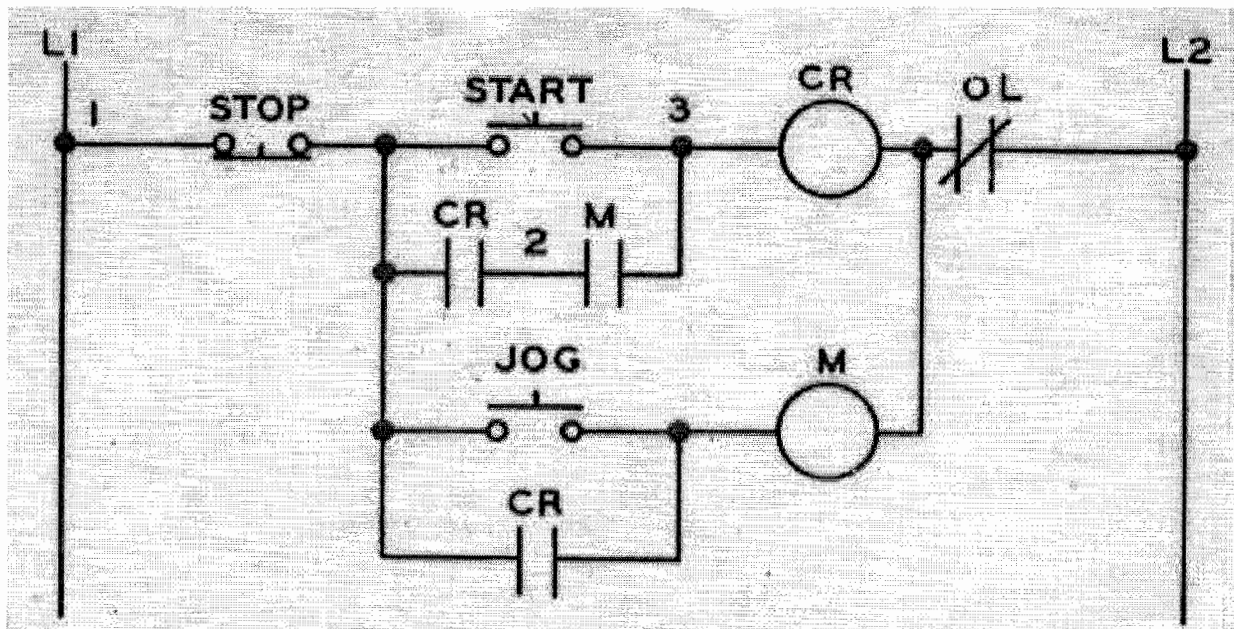
Relay Circuit Questions - Job #9

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Here are questions about this relay circuit. You may consult the assignment text, diagram, picture, and lecture. You may also use a dictionary, theory book, and code book as you feel necessary. This is intended as a learning experience.

Questions

1. What actions are needed to energize the control relay?
2. As drawn, can the control relay remain energized if the stop button is pressed?
3. How and where are the holding contacts connected?
4. Do the control relay no contacts below the start button affect the jog aspect of this circuit?
5. What action (s) will cause the magnetic coil to deenergize when in the run mode?
6. When can the M relay be in the run mode?
7. Can the stop button prevent the jog mode from working?
8. What is the description of the jog pushbutton?
9. What is the description of the start pushbutton?
10. What is the description of the stop pushbutton?



Relay Circuit Questions - Job #10

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Questions

1. What is the electrical circuit description for the two sets of contacts that are wired around the "F" pushbutton?
2. What function does the "F" normally closed CR coil normally closed contact perform?
3. Can this relay circuit be in "F" run mode when the control relay is energized?
4. Can this relay circuit be in "F" jog mode when the control relay is energized?
5. What action is needed to have "R" jog mode?
6. If a set of CR N.C. contacts are wired between L1 and L2, what will be the result when the relay circuit is first energized?
7. What type pushbutton is used in this diagram for the "F" pushbutton?
8. What type pushbutton is used in this diagram for the "R" pushbutton?
9. When power is applied properly, and the selector switch is in the jog mode and the "F" relay coil will not run, what might be the problem?
10. When power is first applied, what will happen without operator action?

