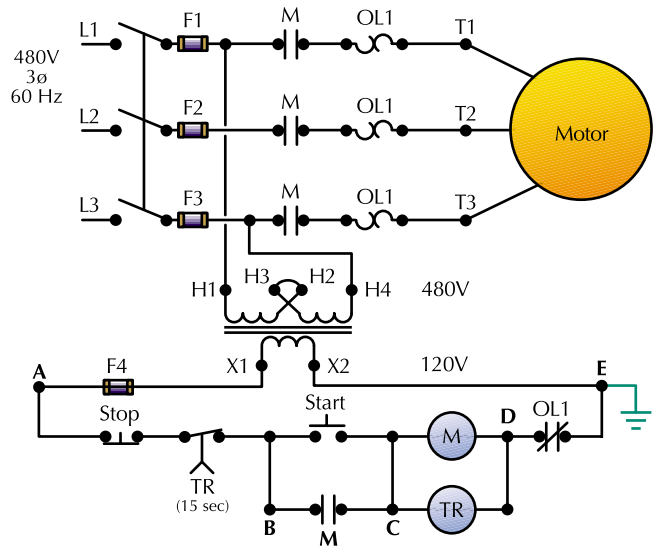


Test Your Motor Control IQ

Sequence-of-operation quiz for an "auto-stop" circuit.

By Larry Baran, Motor IQ Columnist

Pressing the start button initiates a timed cycle where the motor runs for a fixed time period and then stops. You must press the start button again to begin another period. This type of control element is often found in industrial processes that are used to evacuate dangerous fumes at machine start-up. The motor would be driving a fan that draws in fresh air while pushing out volatile vapors. Match the best description from column B for each step in the operating sequence in column A. IMPORTANT: Assume a 15-sec time delay for coil TR. The TR contact is a normally closed, timed opening type (NCTO). It opens after a timed delay and closes instantly when TR shuts off.



Column A

1. Disconnect is closed; press the start and stop buttons at the same time.
2. Disconnect is closed; motor has not run yet; press and release the start button.
3. Disconnect is closed; motor is running at full speed; press and release the stop button.
4. Disconnect is closed; motor is running at full speed; press and release the start button.
5. Disconnect is closed; motor is running at full speed; an overload occurs; the OL contact opens.

Column B

- A. M coil is energized.
- B. All M contacts open.
- C. All M contacts close.
- D. M coil is de-energized.
- E. Motor starts and accelerates to full speed.
- F. All devices are off.
- G. Motor coasts to a stop.
- H. M and TR coils are energized. The timing period begins.
- I. TR contact closes.
- J. TR contact opens.
- K. Transformer loses power.

- L. TR coil is de-energized.
- M. TR contact stays open for 15 sec.
- N. All contacts open.
- O. Motor runs for 15 sec.
- P. M and TR coils are de-energized.
- Q. Nothing changes.

- Answers:**
1. F
 2. H, C, E, O, J, P, B, I, G
 3. P, B, G
 4. Q
 5. P, B, G

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