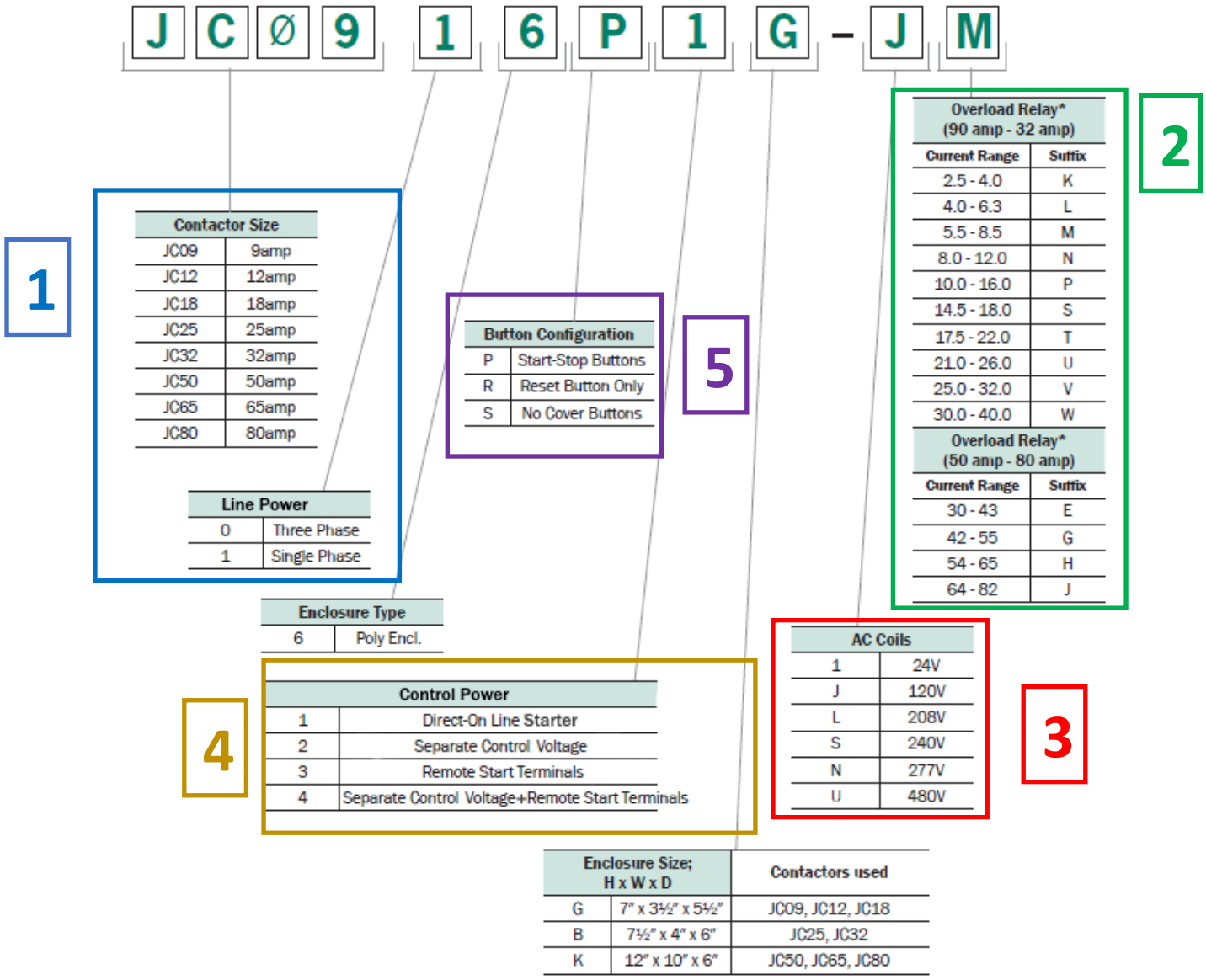
Springer Controls manufactures a complete line of IEC enclosed AC motor starters up to 60 horsepower (HP) or 80Amp (A).

This is a detailed guide in selecting the right motor starter for your application. Let's start with a quick brush up on the components of a motor starter. Assembled motor starters consist of a contactor, overload relay mounted in a NEMA 4X rated polycarbonate enclosure.

Contactor Overload Motor Starter

You may refer to our detailed guide on selecting a contactor if you want to read up on contactors first. Or if you would like an overview on contactors and overloads and how they work you may refer to our guide on the basics of motor starters. For the purposes of pre-assembled starters, we're only considering non-reversing contactors, and utilization categories AC-3 and AC-4.

To get started, it may be useful to explain how the part numbers for AC starters are built:



In the above example, the description for part number JC0916P1G-JM is:

Enclosed Motor Starter, 9A Contactor, 1ph, direct-online voltage, 4X poly, Start/Stop buttons, 120VAC coil, O/L 5.5-8.5A

In order to select the proper motor starter for your requirements:

1) Refer to your motor or equipment nameplate to verify the Full Load Amperage (FLA) at the line power voltage you intend to provide.
    a. Be sure to confirm whether the line power is 1phase or 3phase power to the motor
    b. Choose a starter rated for current (Amps) higher than the FLA of your motor at the line power voltage you intend to use.
2) Choose the overload by selecting a current range that contains the FLA of the motor from step 1
3) Choose the control power used to close the contactor.

Once you have done this it should narrow down the starters to those with components suitable for your motor, voltage and wiring. Then, select your starter configuration based on the following criteria according to your preference:

4) Control power
    a. If the line power will be used as the control power as well, wired directly to the contactor, this is referred to as a "**direct-online starter**".
    b. If the control voltage is not the same as the line voltage we refer to this as "**separate control voltage**"
    c. If the starter needs to be activated from an external switch, we add terminals to accept the control power input from that switch. We refer to this as "**remote start terminals**". It is assumed, in this arrangement that the line voltage and control voltage are the same
    d. If you would like remote start terminals and will be using different voltage for line power and control power, we refer to this as "**separate control voltage + remote start terminals".**
5) Buttons on enclosure cover
    a. Start/Stop buttons give you Green/Red manual buttons for starting and stopping the motor on the cover of the enclosure
    b. Reset button only gives you a Blue reset button on the enclosure cover to reset the overload relay if it is tripped. The reset button also functions as a local stop button.
    c. No cover buttons. (With this option, there is a reset button on the overload itself. However this is inside the enclosure and requires the enclosure be opened to access it. As a result, the wiring diagram for this option is the same as the reset button only option, the difference is the location of the reset button)

Wiring diagrams for the various configurations are below. If you are unsure, please feel free to contact us. We are happy to explain further or talk about custom options if you don't see what you're looking for.

Figure 1: Parts JCXX06P1X-XX - 3phase Starter with Start/Stop button, direct-online wiring diagram

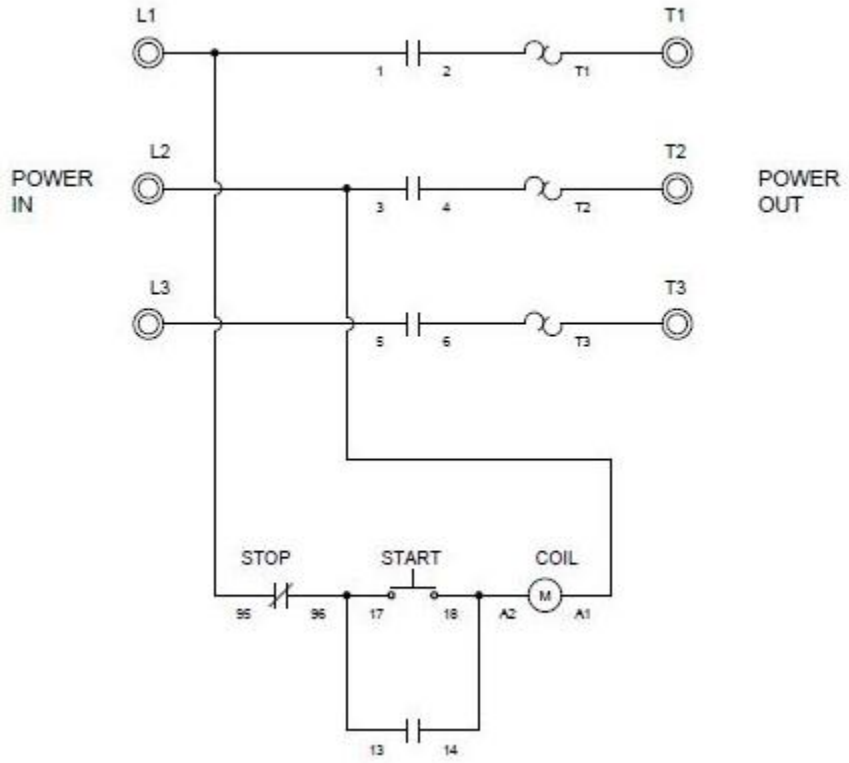


Figure 2: Parts JCXX16P1X-XX - 1phase starter with Start/Stop button, direct-online wiring diagram

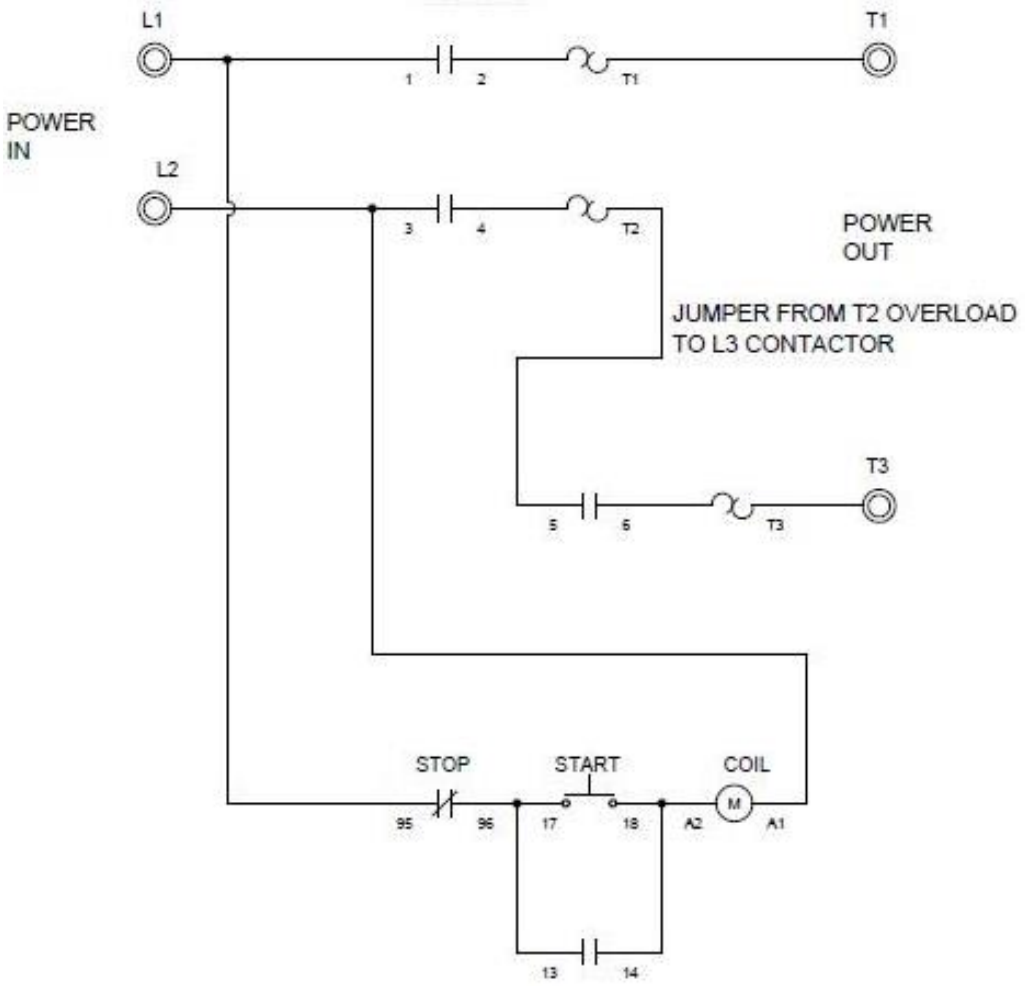


Figure 3: Parts JCXX06P2X-XX – 3phase starter with Start/Stop button, separate control power wiring diagram

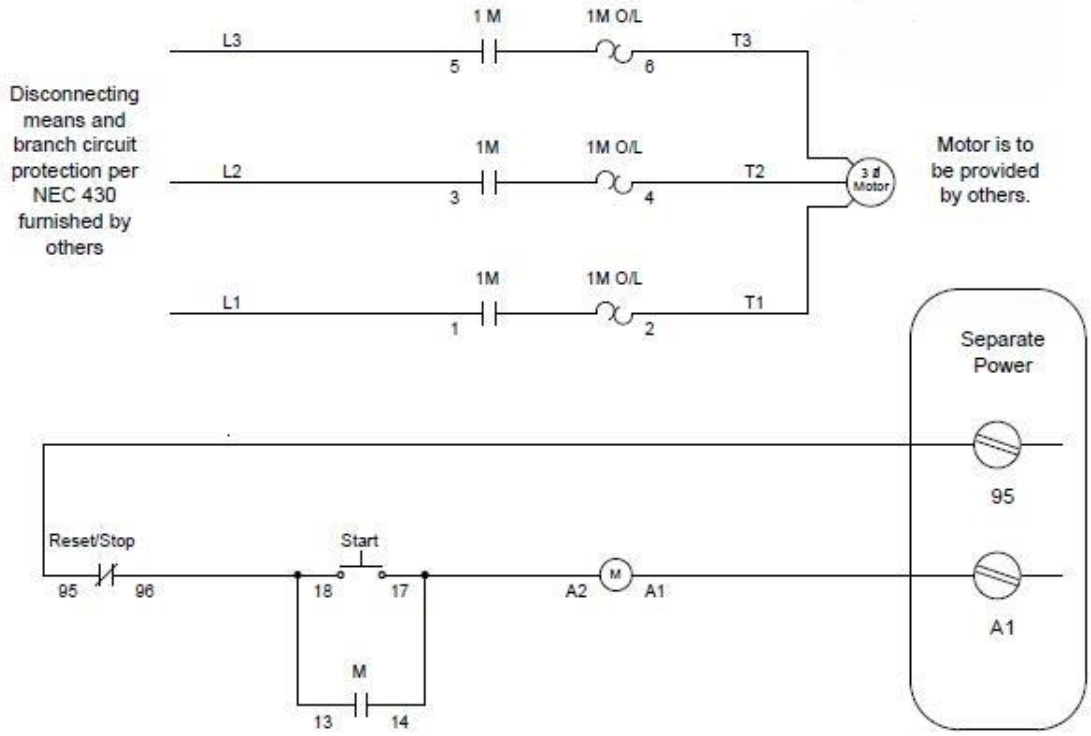


Figure 4: Parts JCXX16P2X-XX - 1phase starter with Start/Stop button, separate control power wiring diagram

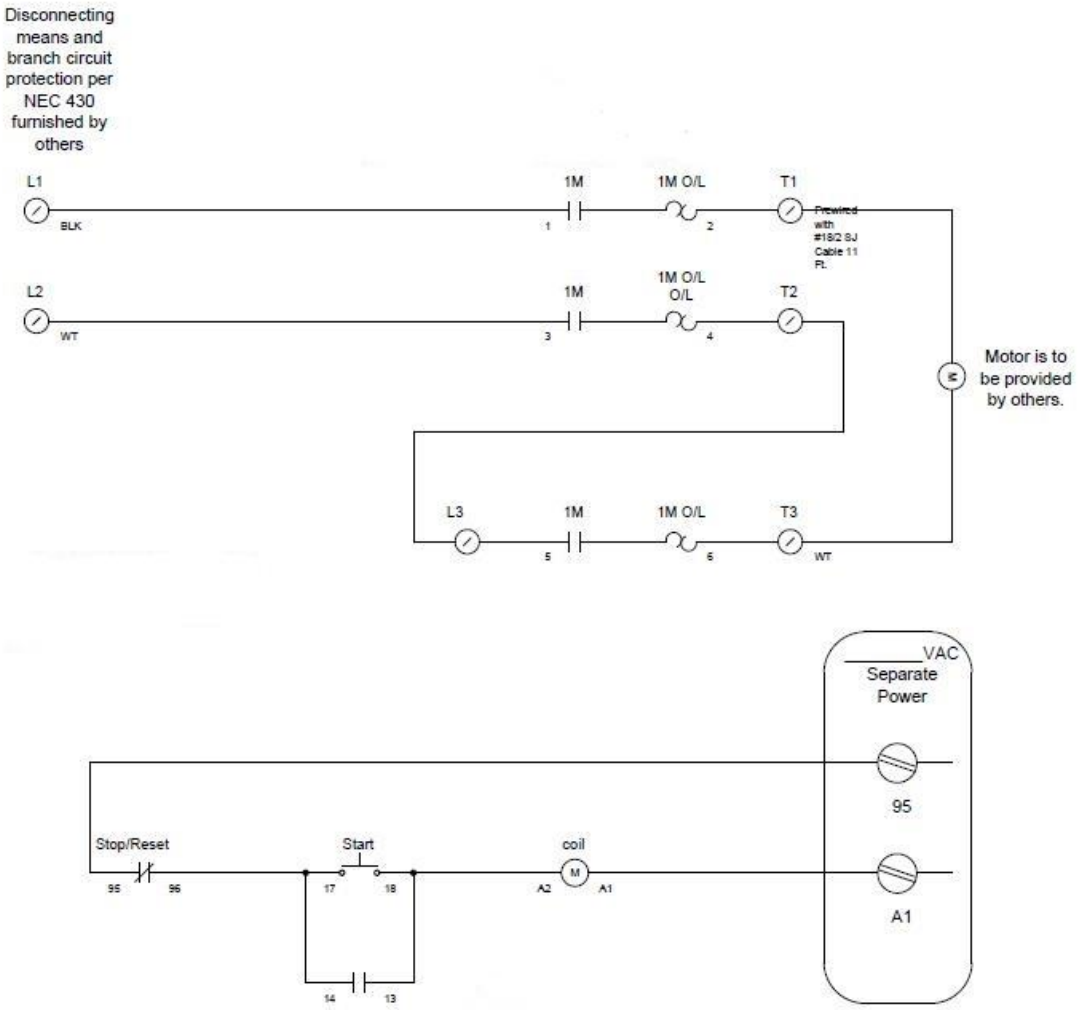


Figure 5: Parts JCXX06P3X-XX - 3phase starter with Start/Stop buttons, remote start terminals wiring diagram

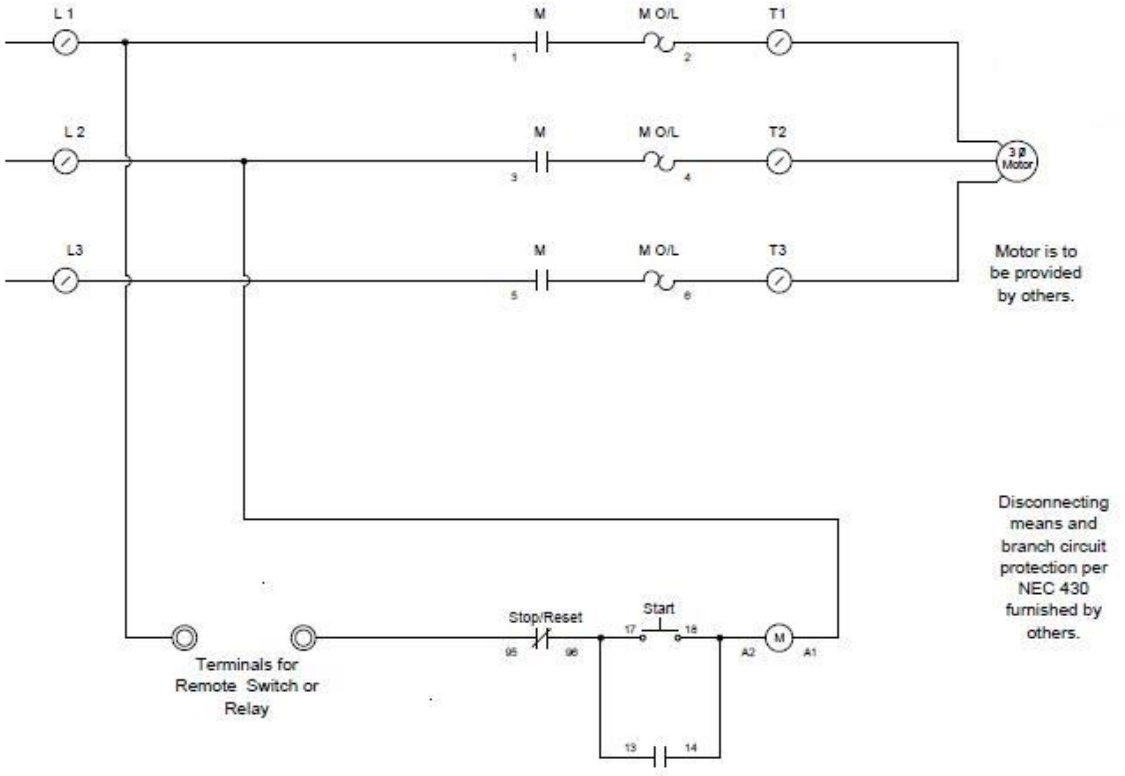


Figure 6: Parts JCXX16P3X-XX - 1phase starter with Start/Stop button, remote start terminals wiring diagram

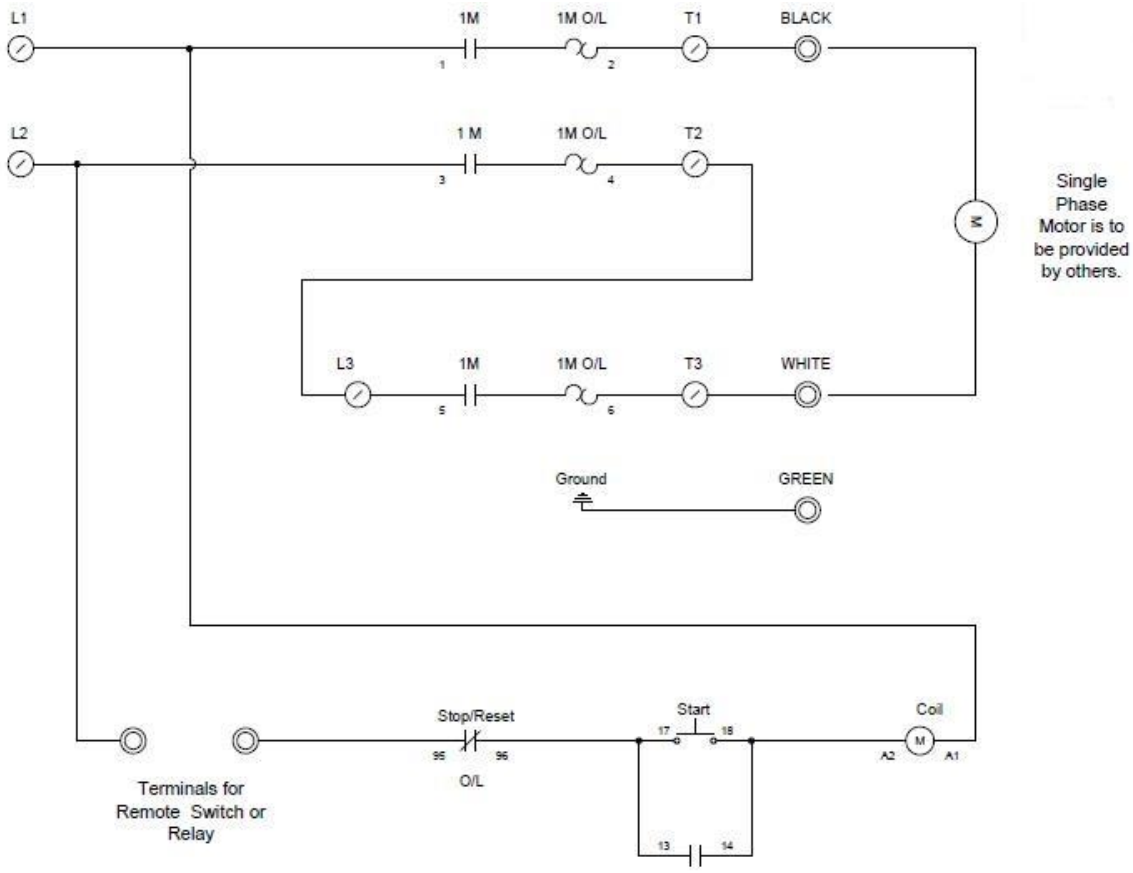


Figure 7: Parts JCXX06P4X-XX - 3phase starter with Start/Stop button, separate control power + remote start terminals wiring diagram

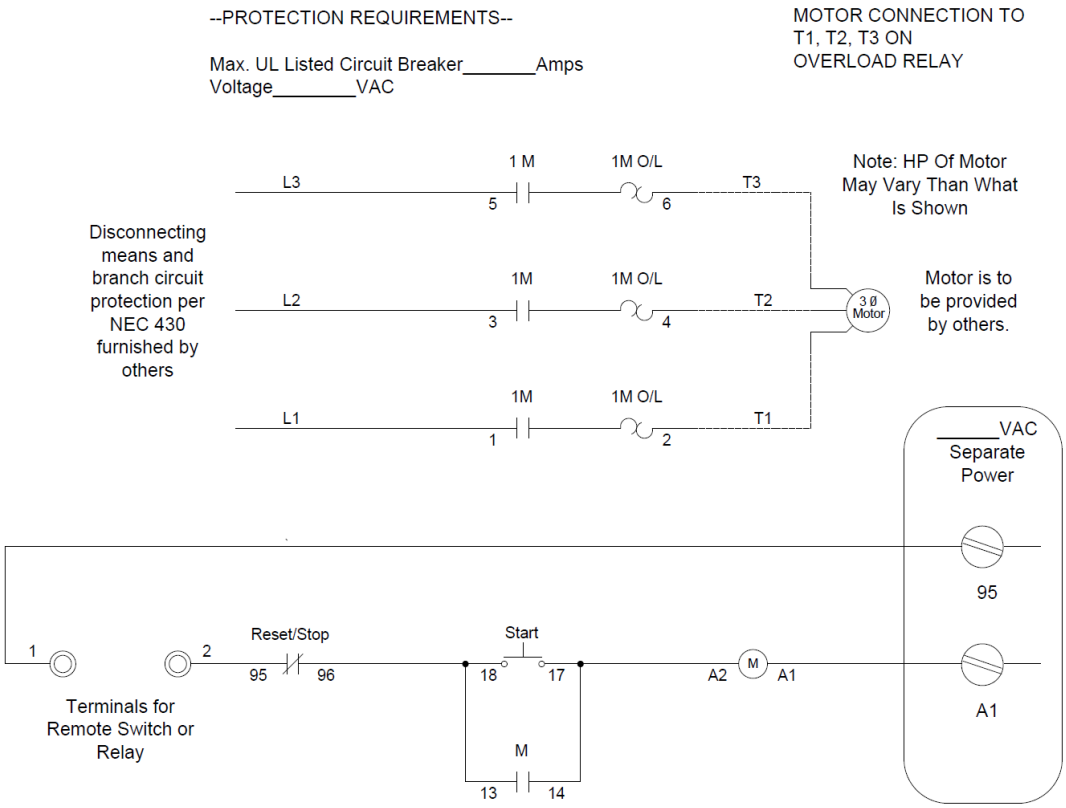


Figure 8: Parts JCXX16P4X-XX - 1phase starter with Start/Stop buttons, separate control power+remote start terminals wiring diagram

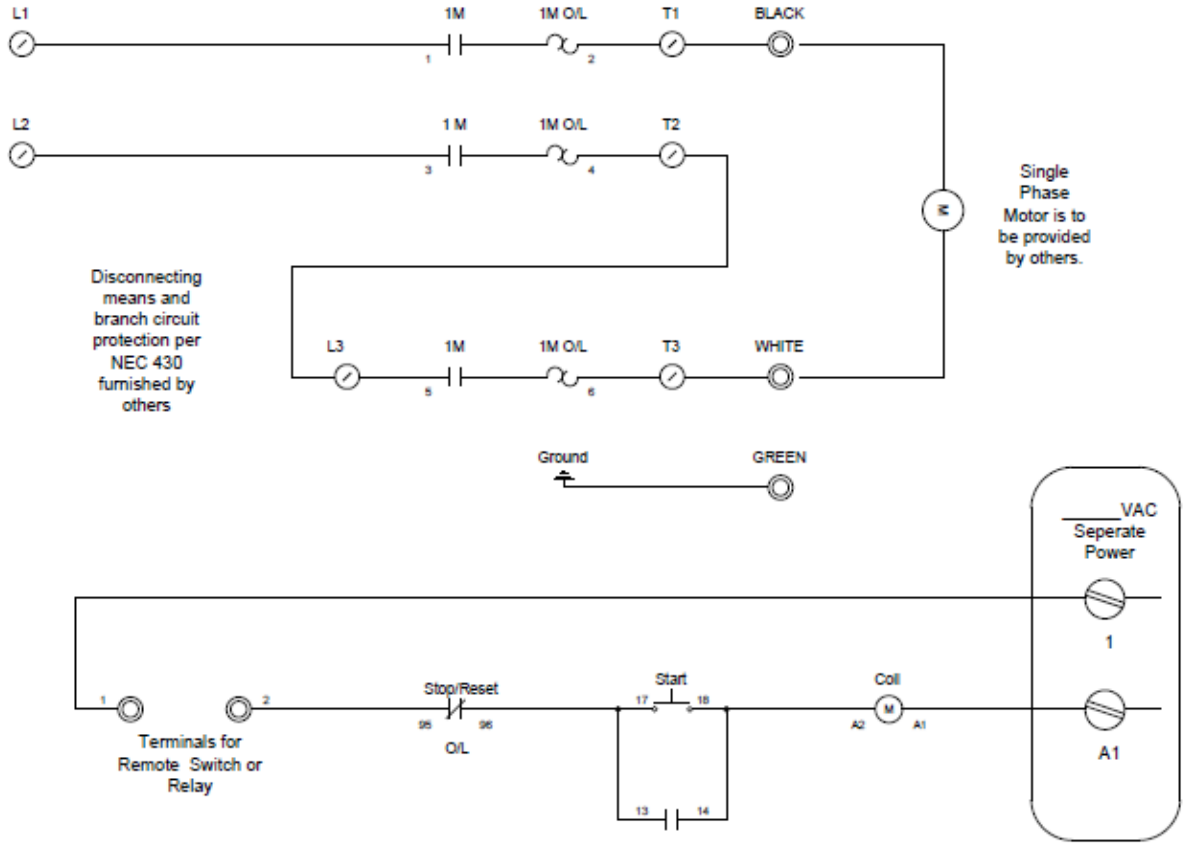


Figure 9: Parts JCXX06R1X-XX – 3phase starter with Reset button, direct-online wiring diagram

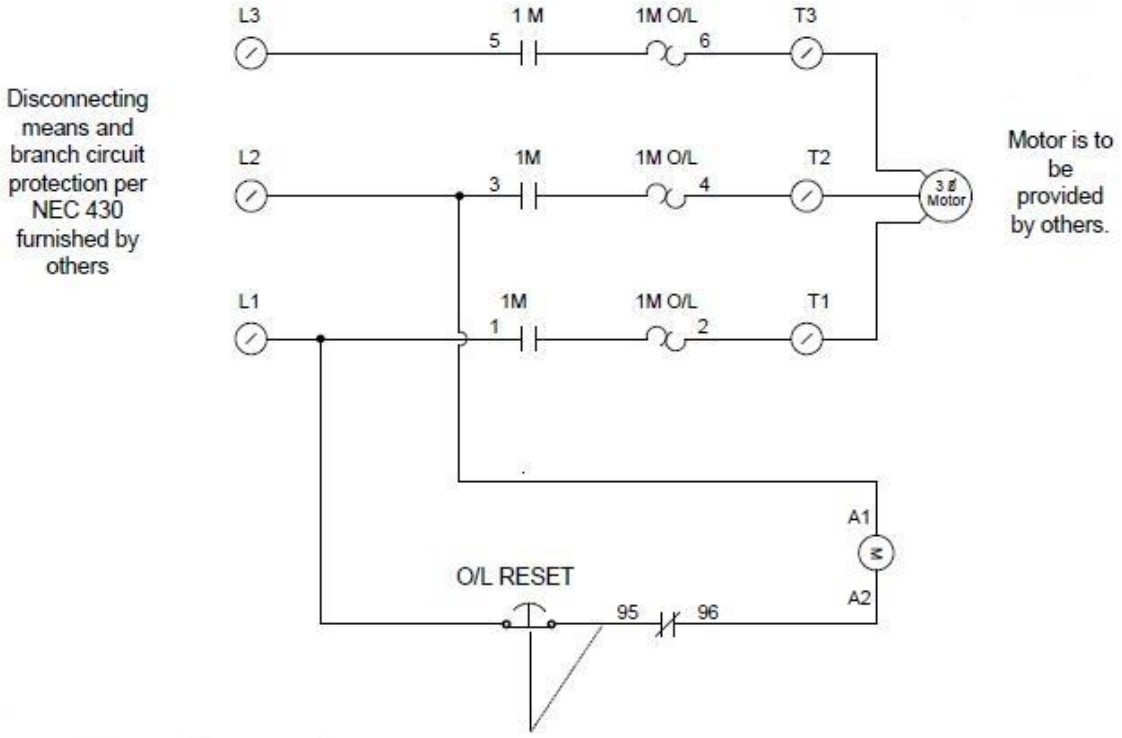


Figure 10: Parts JCXX16R1X-XX- 1phase starter with Reset button, direct-online wiring diagram

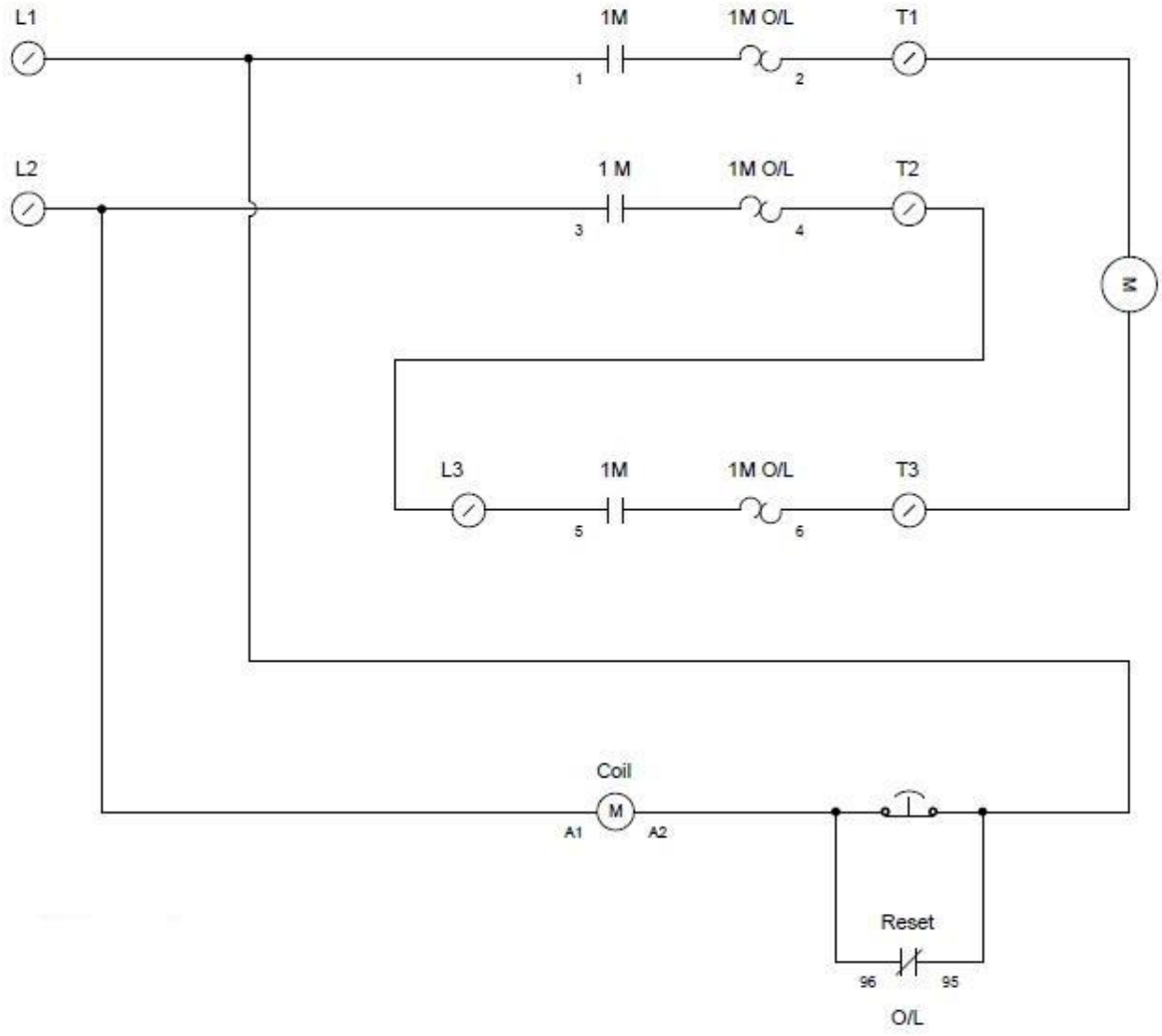


Figure 11: Parts JCXX06R2X-XX - 3phase starter with Reset button, separate control power wiring diagram

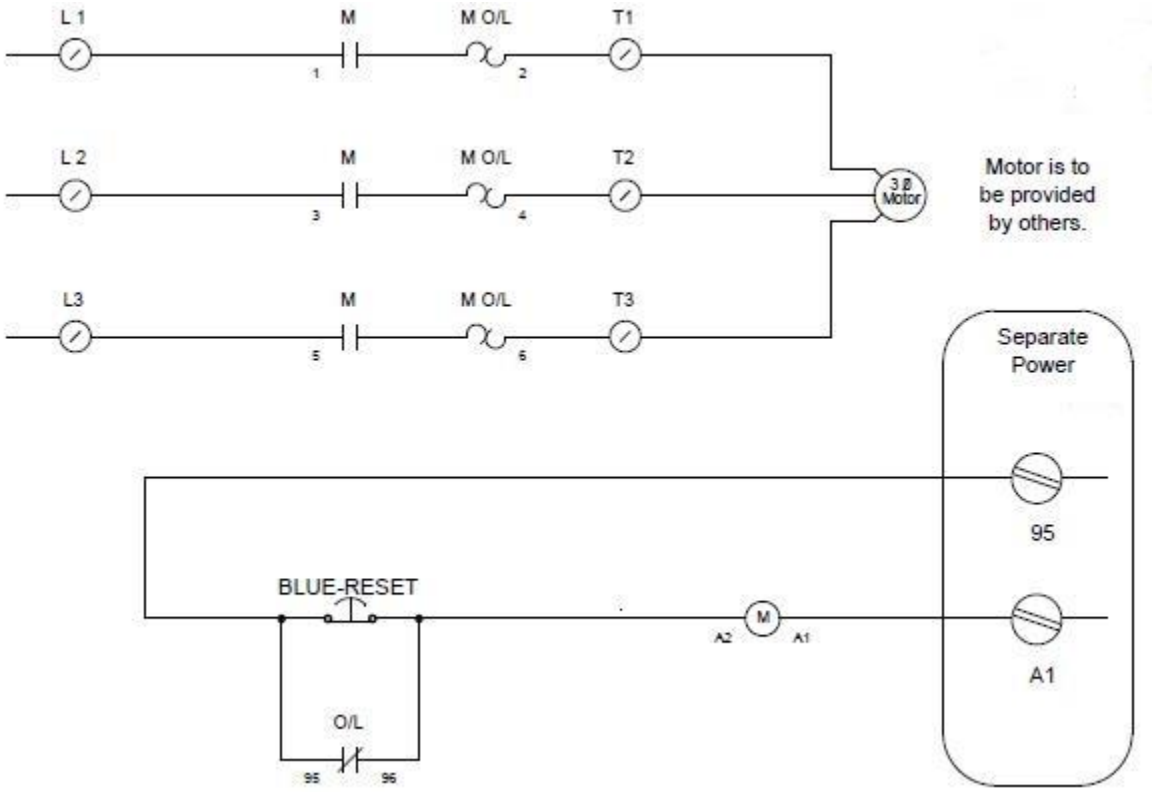


Figure 12: Parts JCXX16R2X-XX - 1phase starter, reset button, separate control power wiring diagram

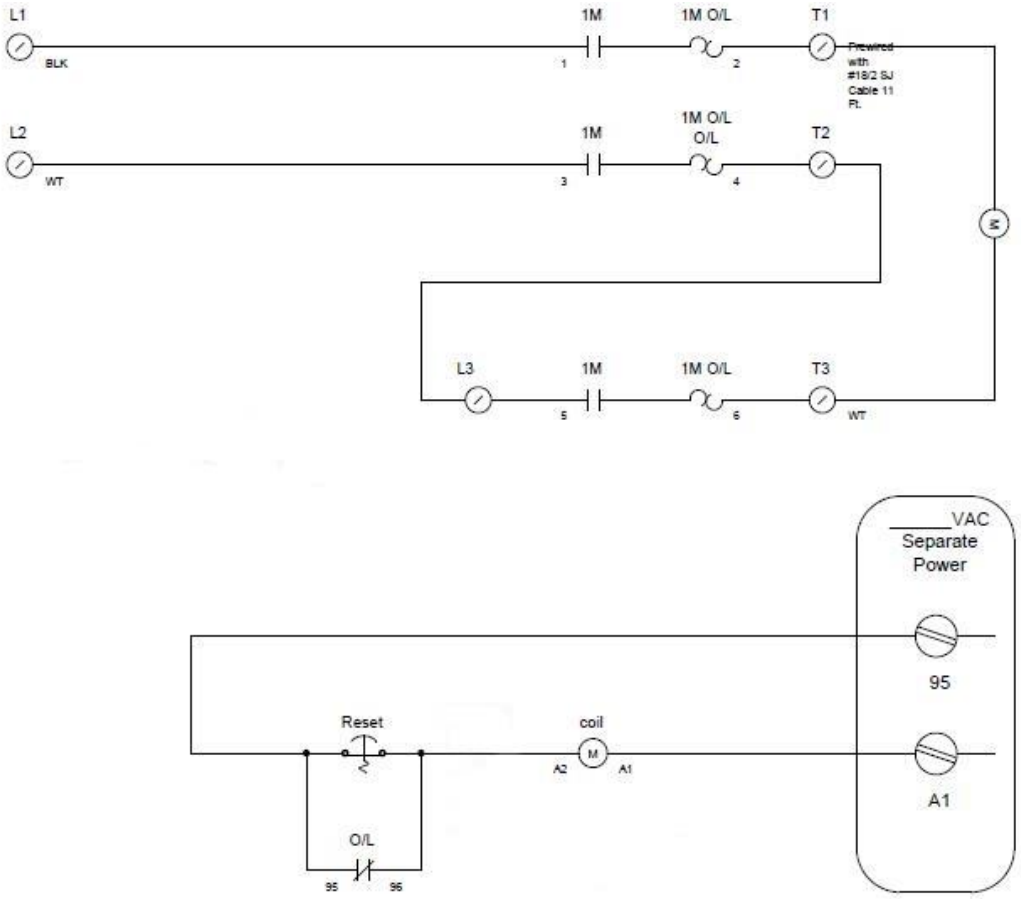


Figure 13: Parts JCXX06R3X-XX - 3phase starter with Reset button, remote start terminals wiring diagram

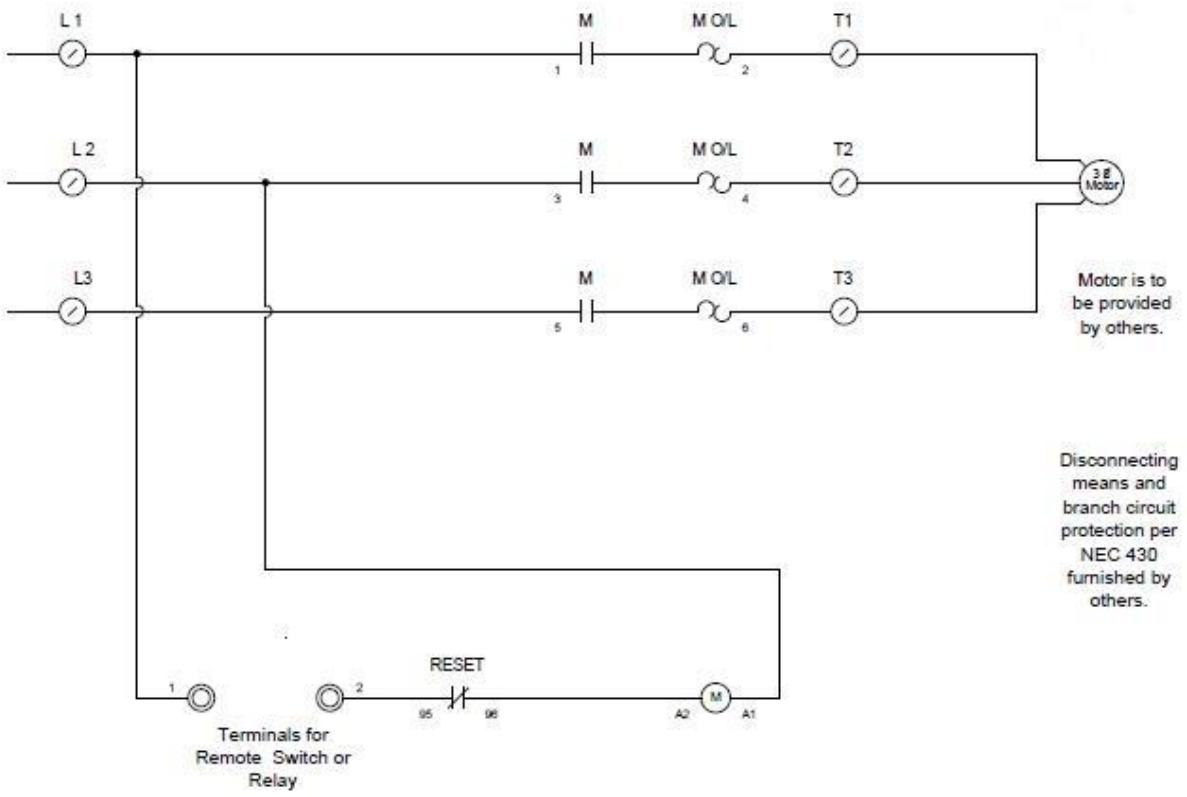


Figure 14: Parts JCXX16R3X-XX - 1phase starter with Reset button, remote start terminals wiring diagram

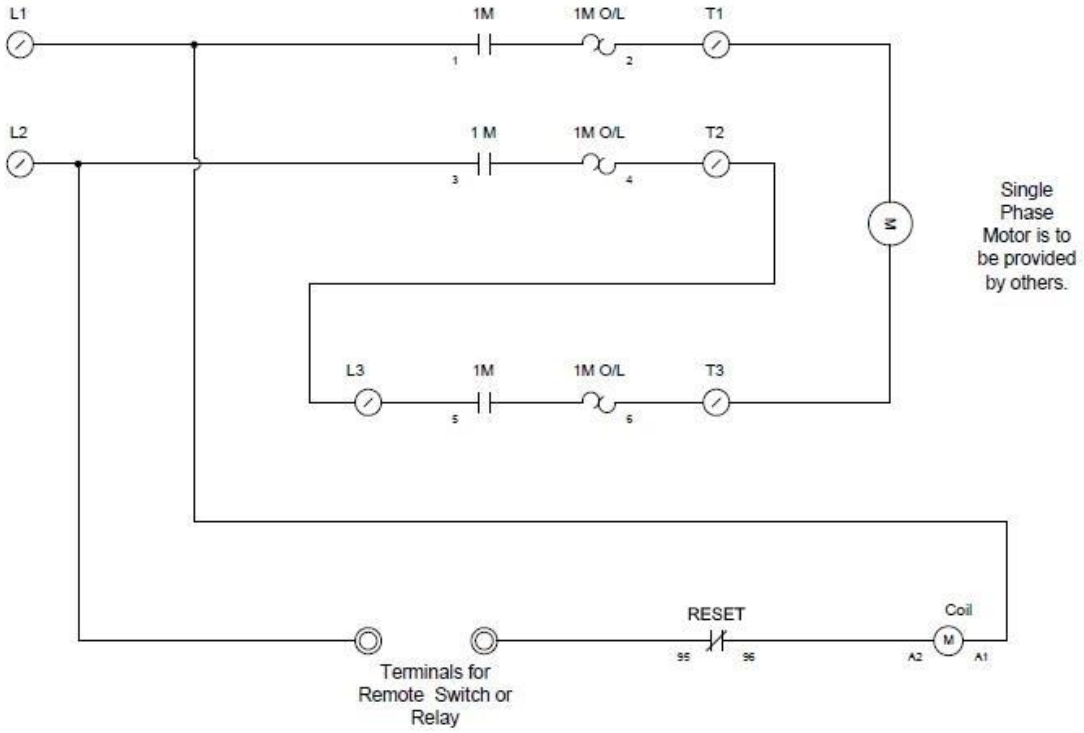


Figure 15: Parts JCXX06R4X-XX - 3phase starter, Reset button, separate control voltage+remote start terminals wiring diagram

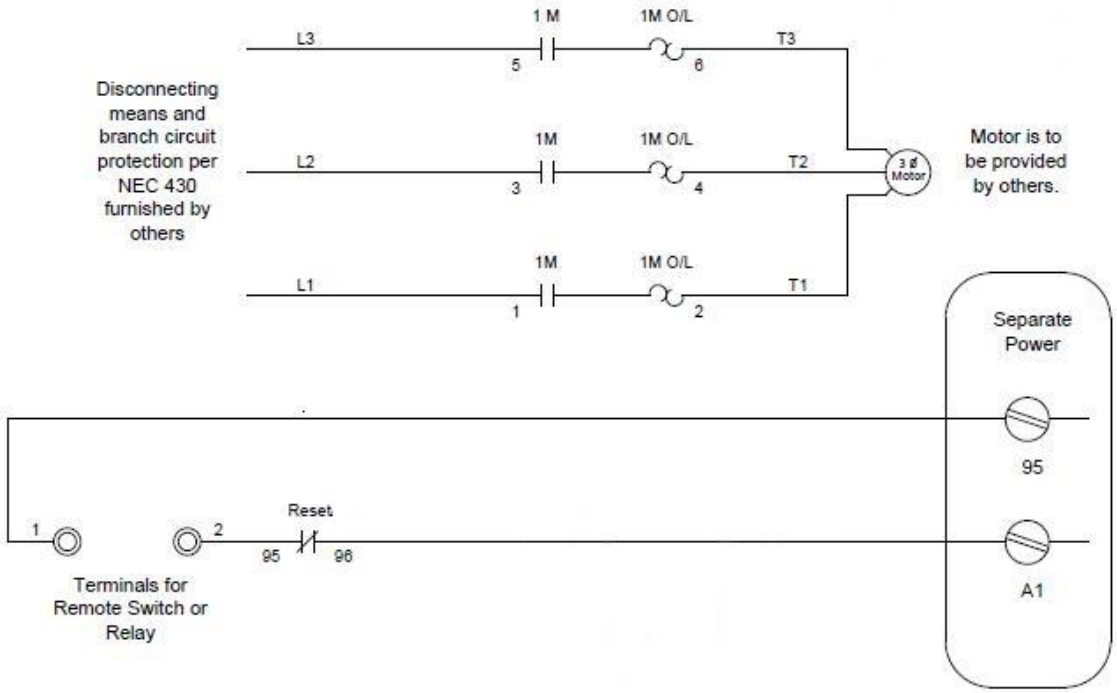


Figure 16: Parts JCXX16R4X-XX - 1phase starter, Reset button, separate control voltage+remote start terminals wiring diagram

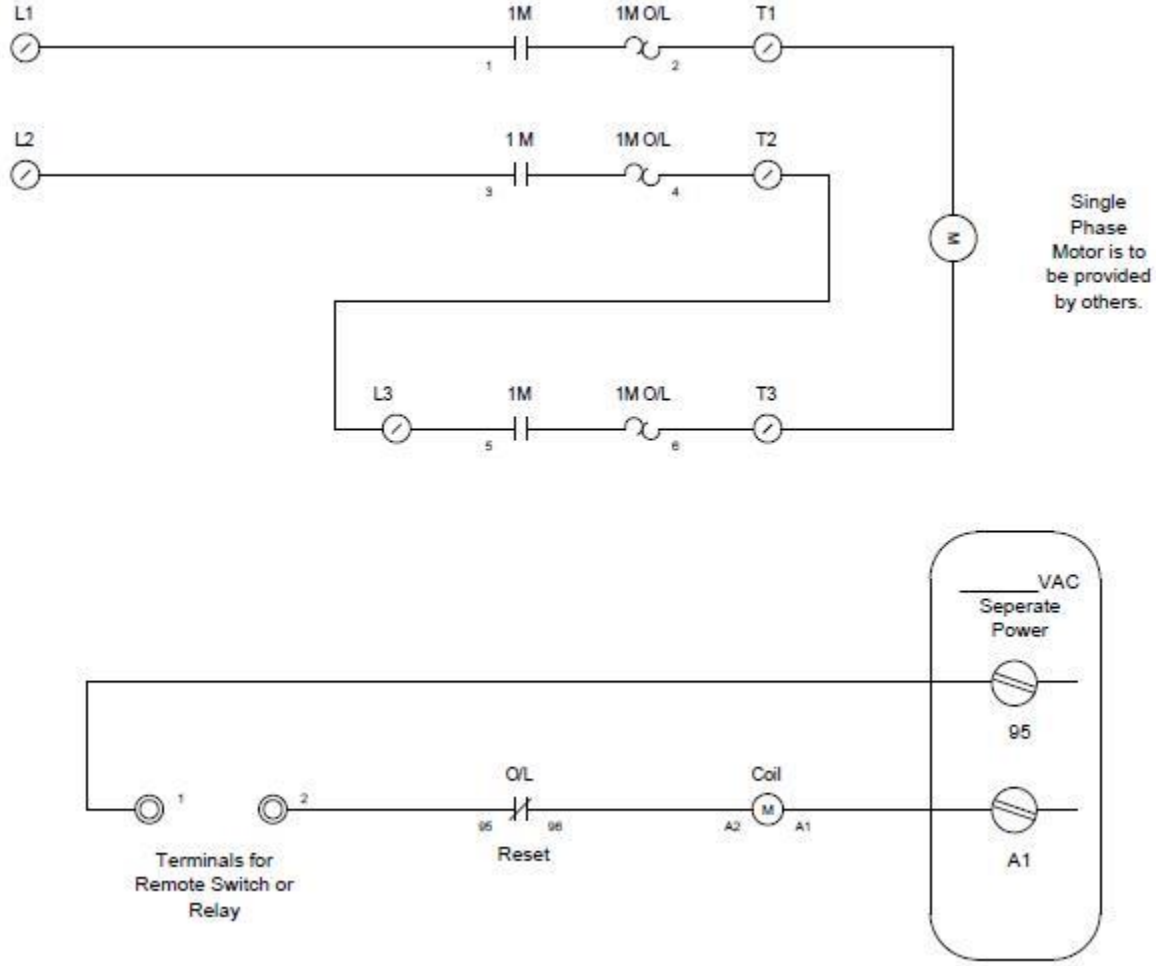


Figure 17: Parts JCXX06S1X-XX – 3phase starter with No cover buttons, direct-online wiring diagram (reset button inside)

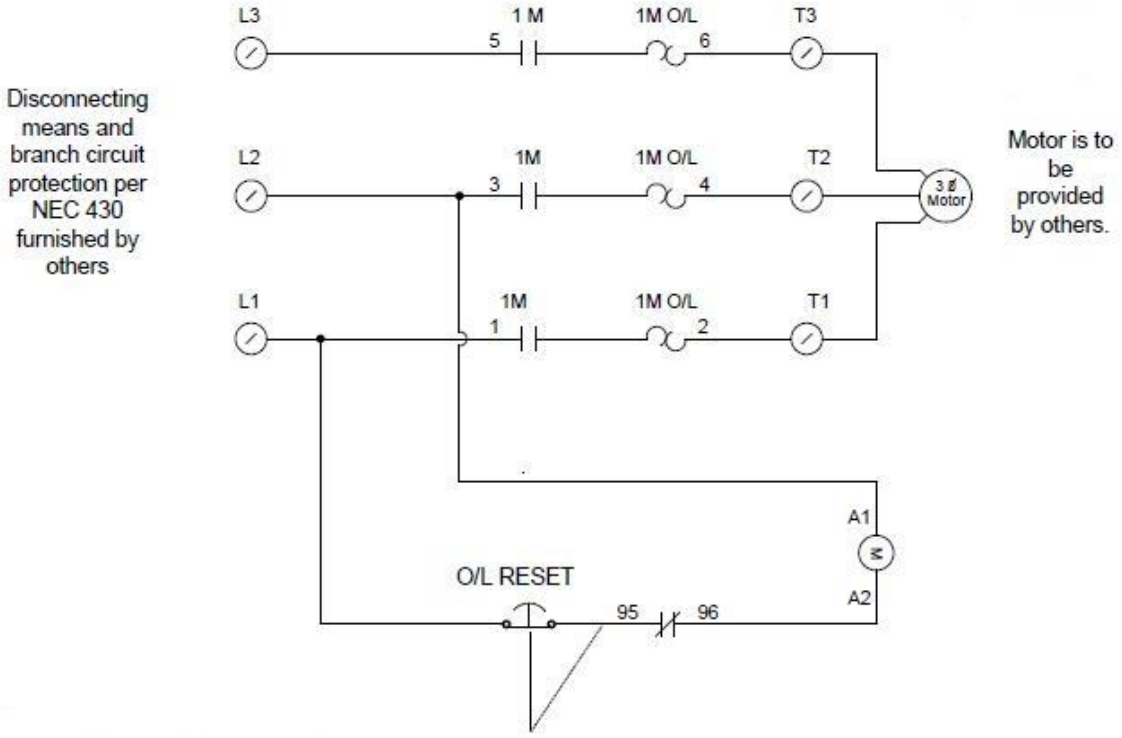


Figure 18: Parts JCXX16S1X-XX- 1phase starter with No cover buttons, direct-online wiring diagram (reset inside)

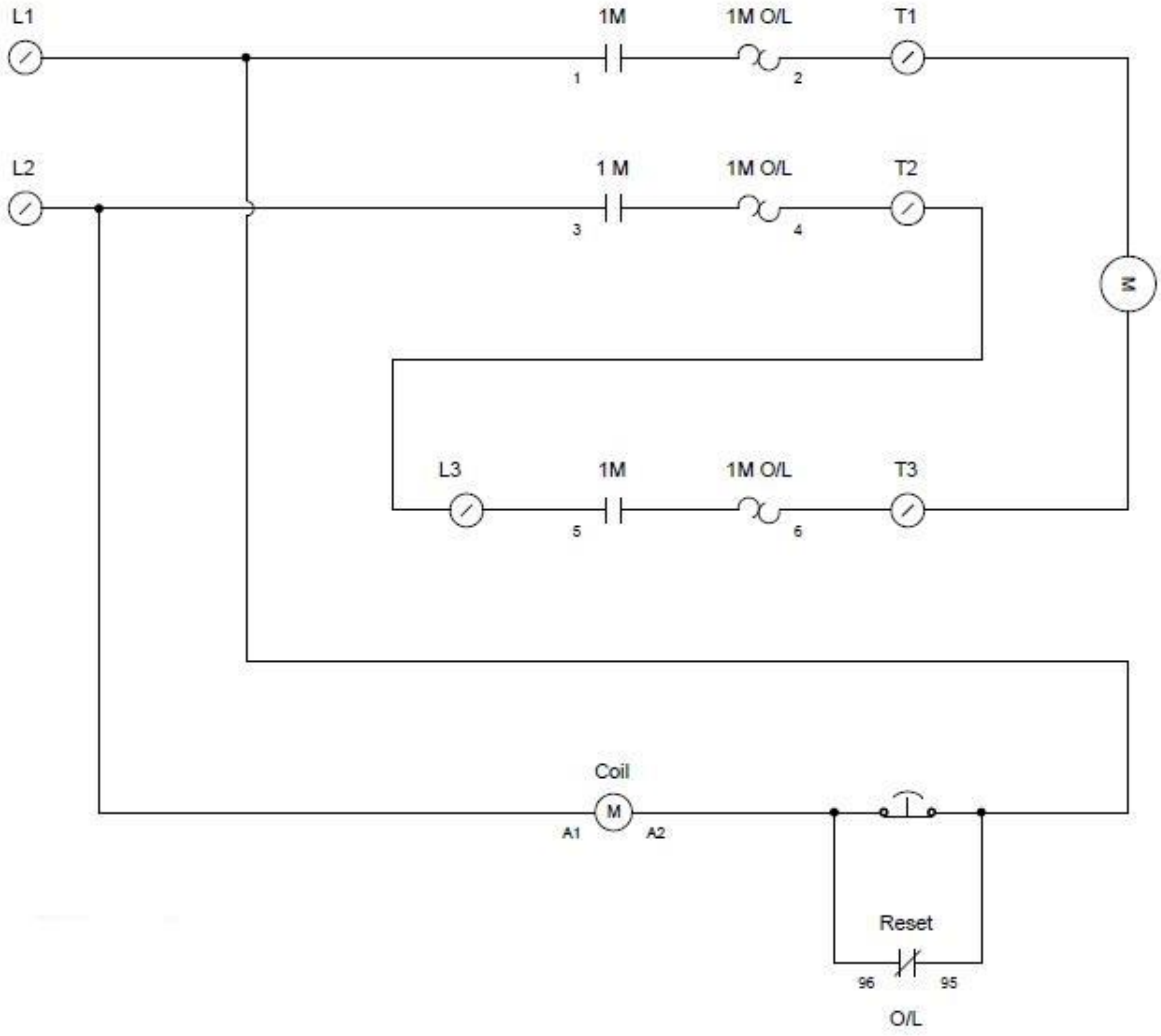


Figure 19: Parts JCXX06S2X-XX - 3phase starter, no cover buttons, separate control power wiring diagram (Reset inside)

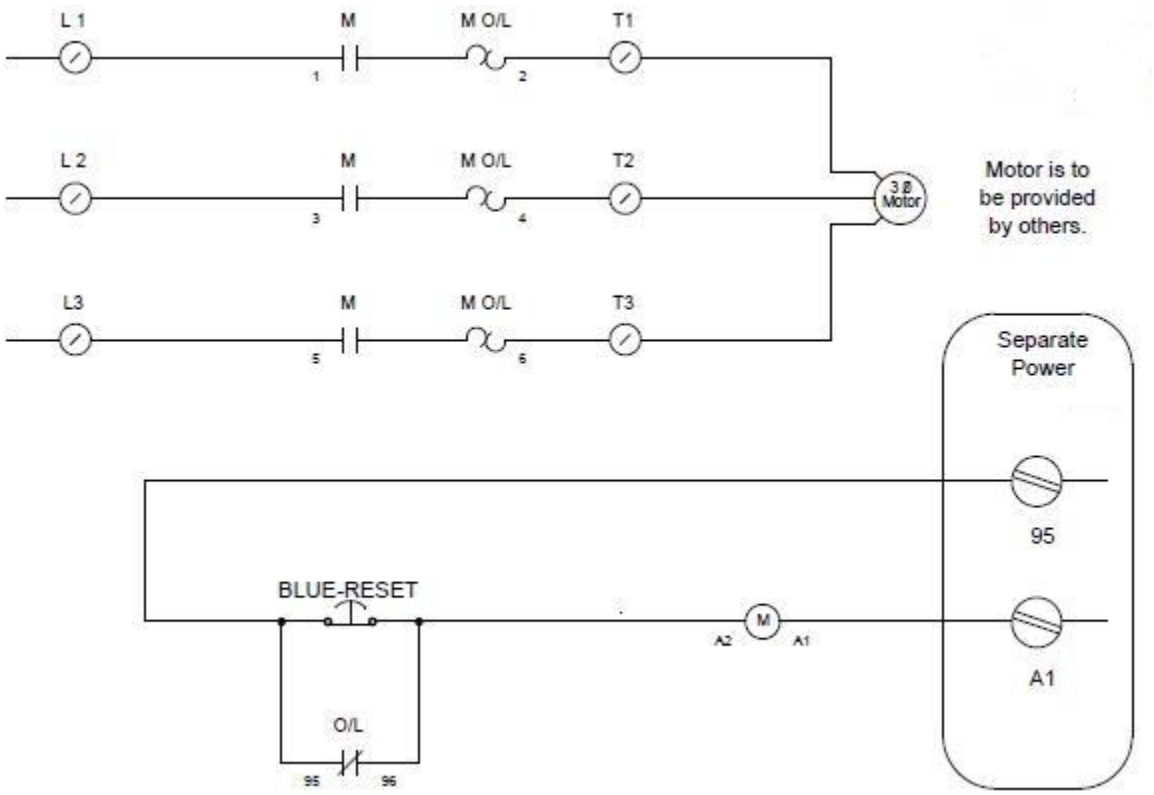


Figure 20: Parts JCXX16S2X-XX - 1phase starter, no cover buttons, separate control power wiring diagram (reset inside)

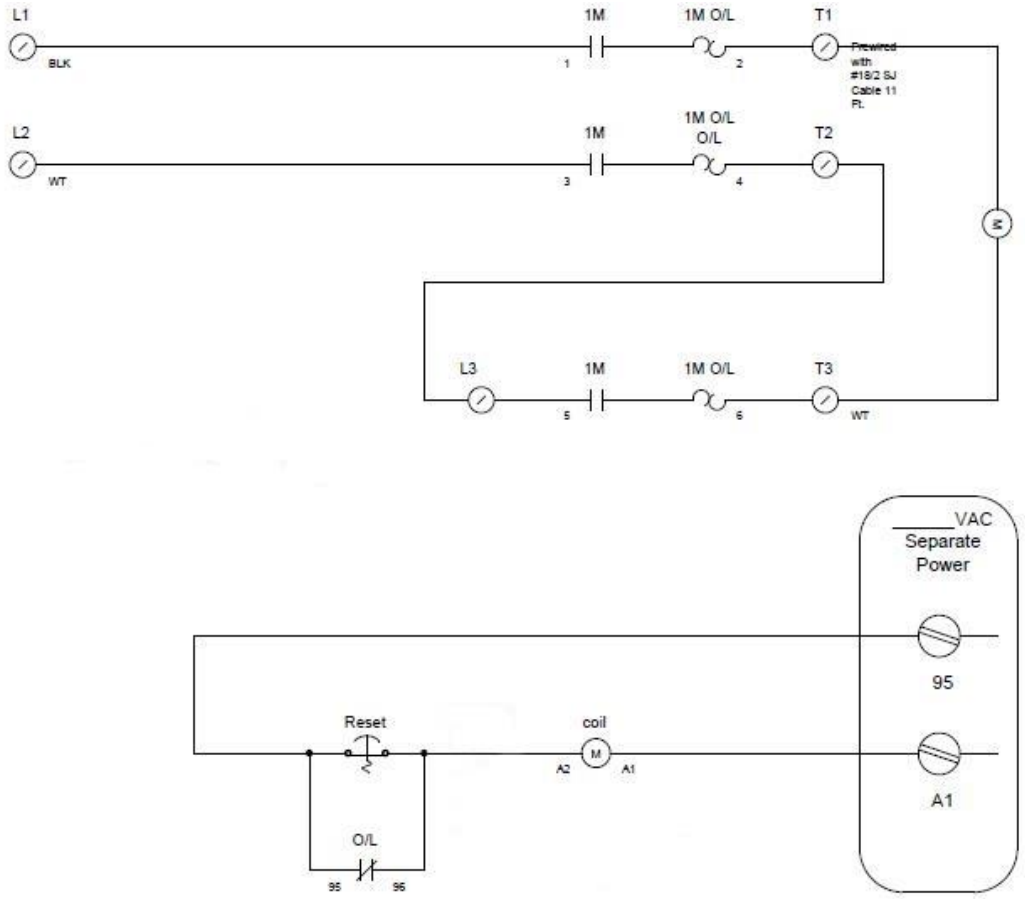


Figure 21: Parts JCXX06S3X-XX - 3phase starter, no cover buttons, remote start terminals wiring diagram (reset inside)

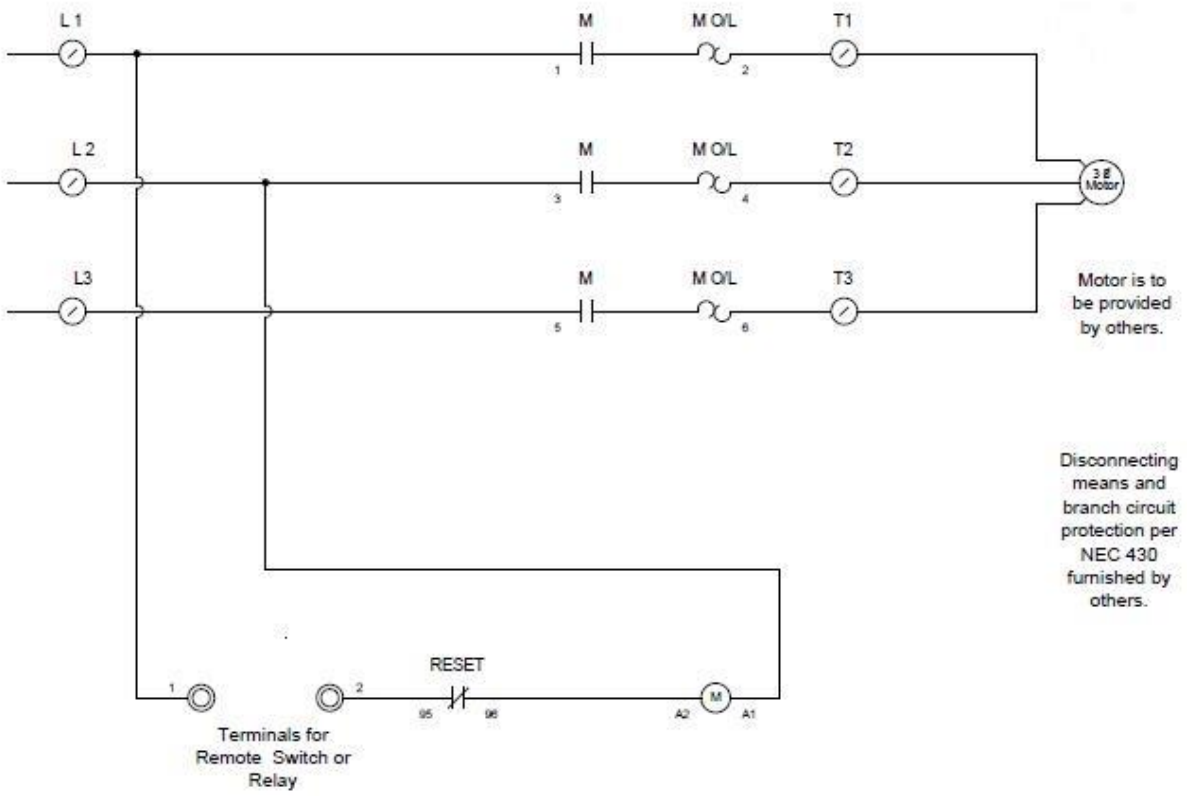


Figure 22: Parts JCXX16S3X-XX - 1phase starter, no cover buttons, remote start terminals wiring diagram (reset inside)

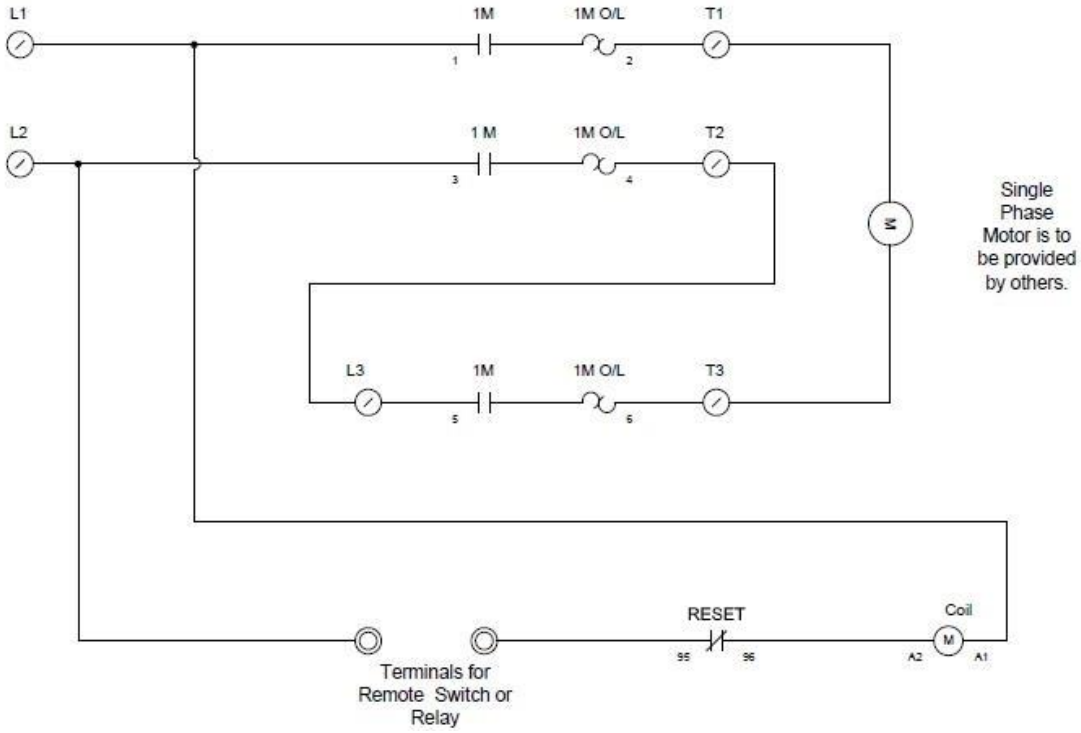
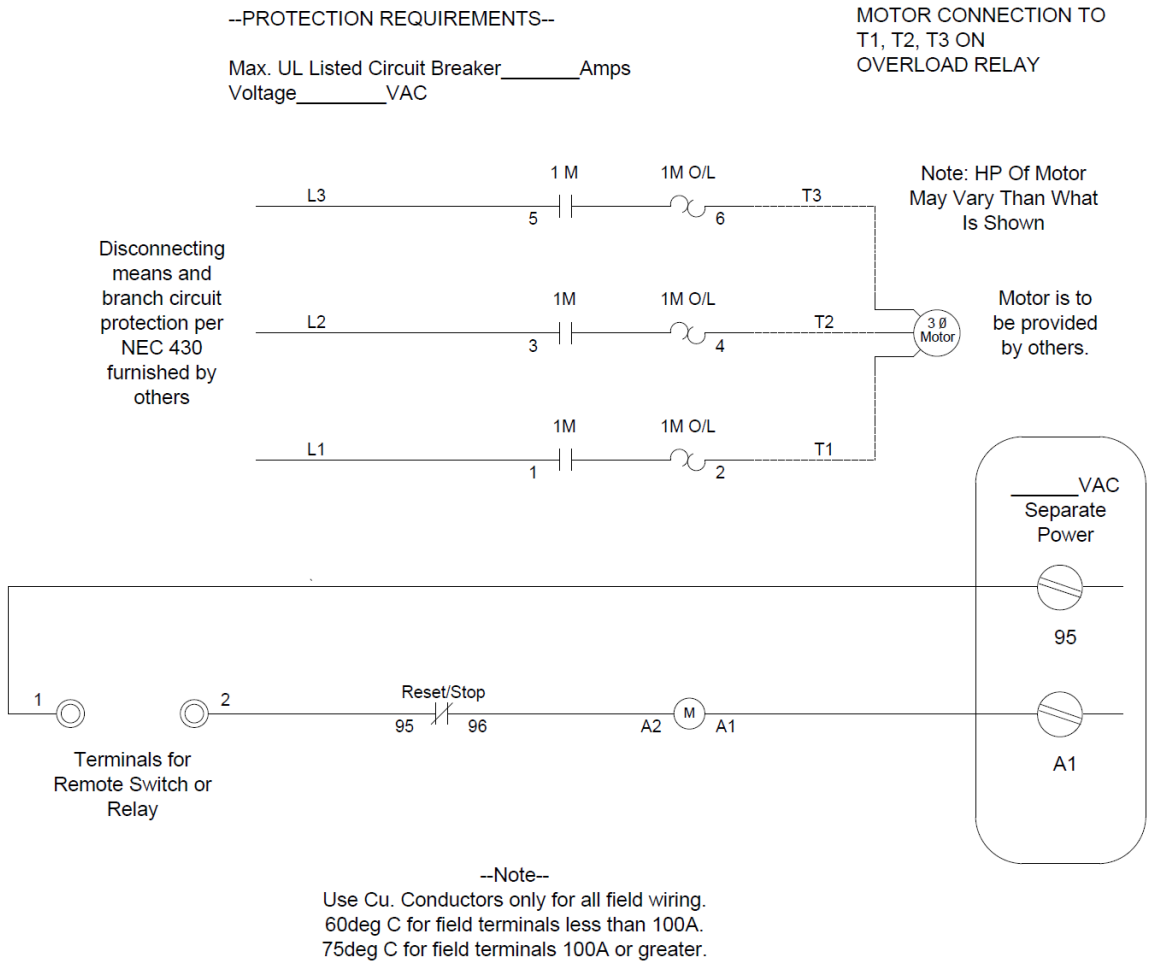
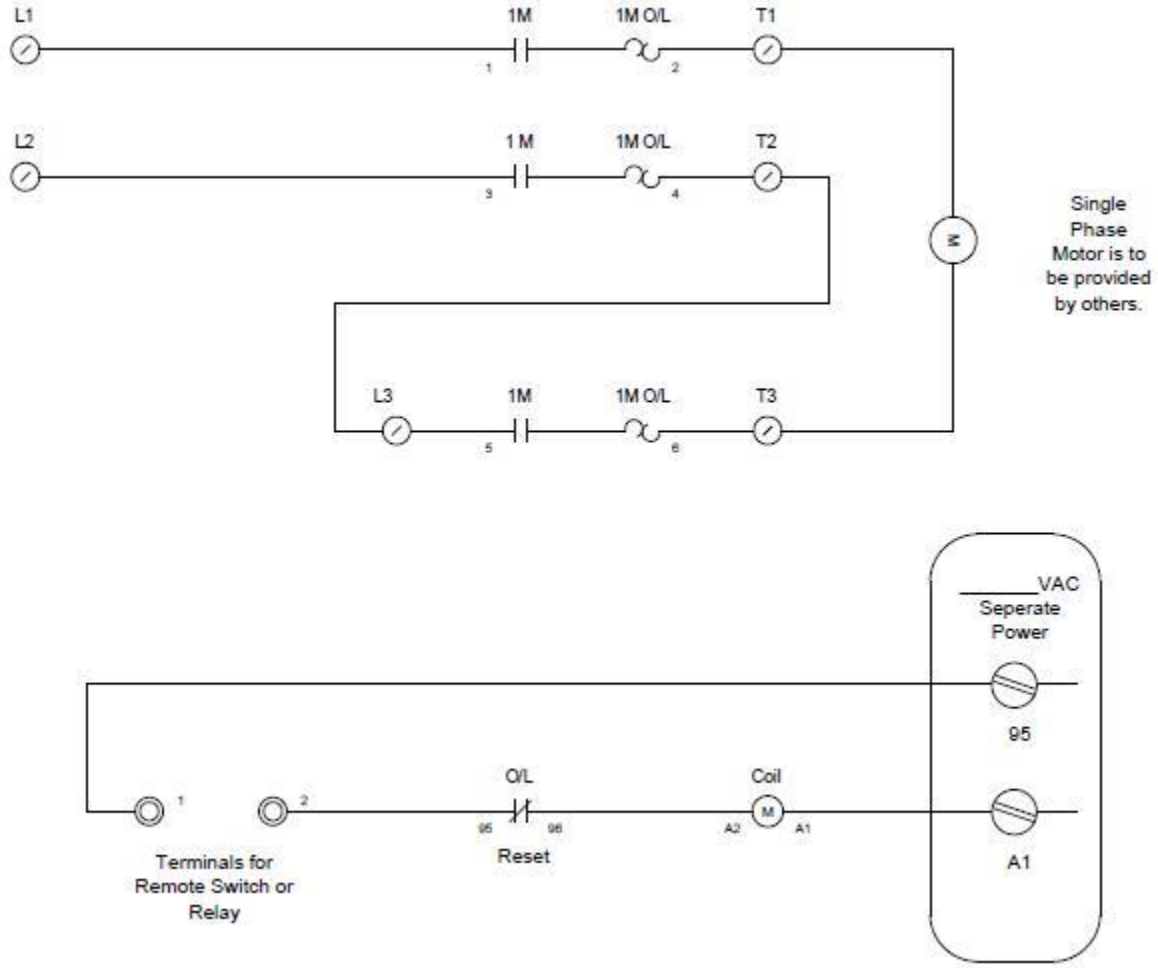


Figure 16: Parts JCXX06S4X-XX - 3phase starter, no cover buttons, separate control voltage+remote start terminals wiring diagram (reset inside)



--Note--
Use Cu. Conductors only for all field wiring.
60deg C for field terminals less than 100A.
75deg C for field terminals 100A or greater.

Figure 16: Parts JCXX16S4X-XX - 1phase starter, no cover buttons, separate control voltage+remote start terminals wiring diagram (reset inside)



This post is just for our standard pre-assembled starters. If you don't see what you're looking for, please ask. Springer Controls has a certified UL508A panel shop to build custom starters and control panels up to 500V. For any custom options like HOA (Hand-Off-Auto) starters, pilot lights, control transformers, or volume purchases, please contact us at 904-225-0575.