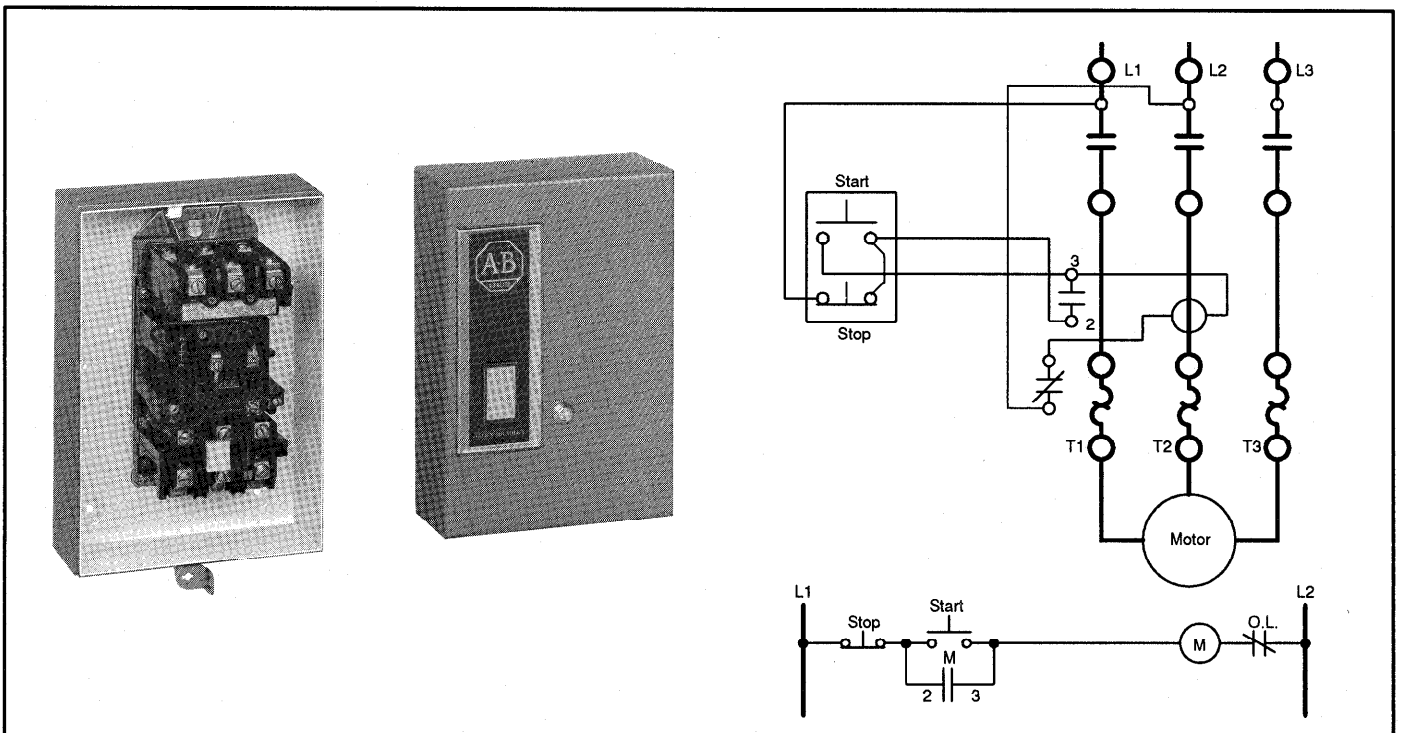
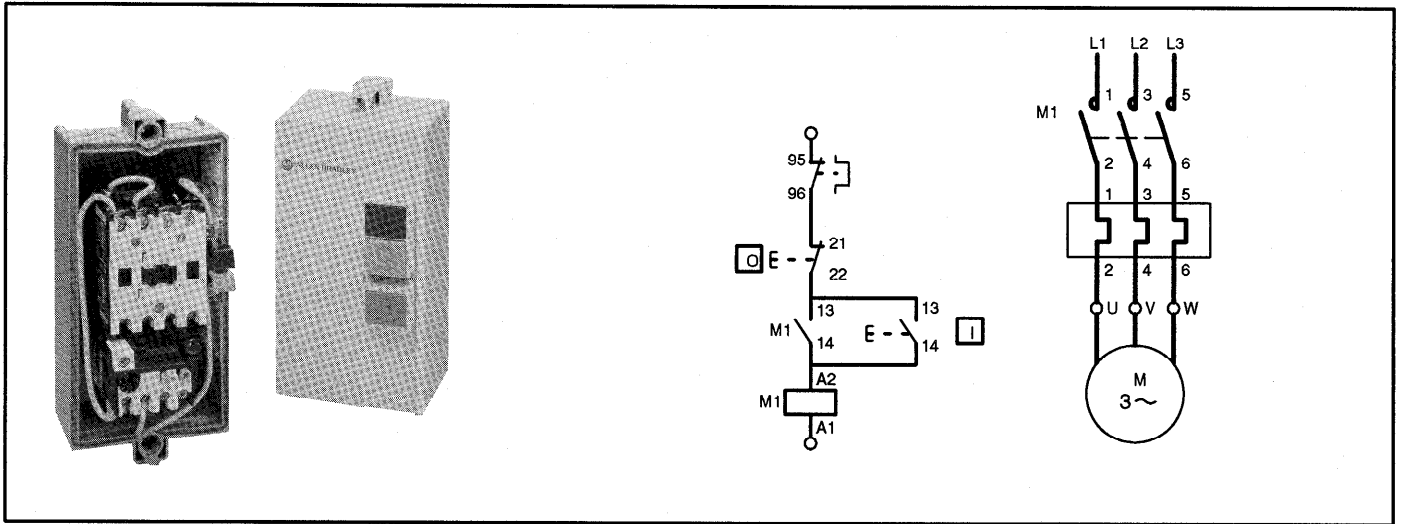


# A Global Reference Guide for Reading Schematic Diagrams

## Product Data




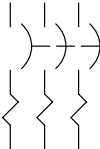
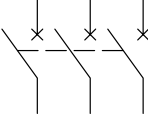
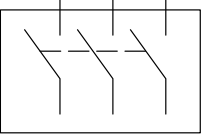
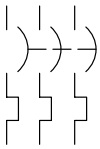
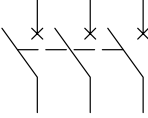
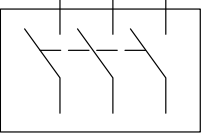





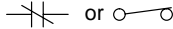


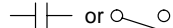


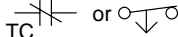

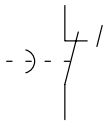
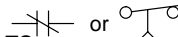

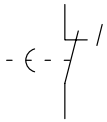
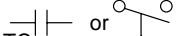
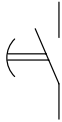

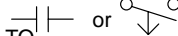
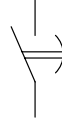
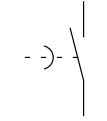
**General.** With the increasing emphasis on globalization, many industries are now looking to all parts of the world to produce, market and sell their products. Electrical manufacturers are no exception. Since the electrical standards adopted by various nations may vary, the markings and symbols used to describe electrical control products can also vary. Whether it is a complex control system on a machine tool or a simple across-the-line motor starter, the need to recognize and understand these symbols becomes more important. It is possible that products from all parts of the world are being used in any one facility.

The purpose of this document is to provide a simple cross-reference of common schematic/wiring diagram symbols used throughout various parts of the world. The graphical symbols were taken from the following standards:

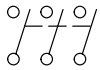
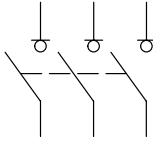
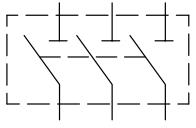
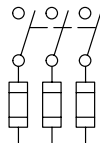
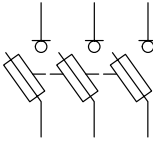
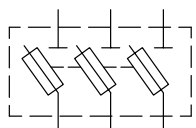






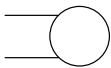
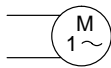
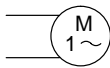
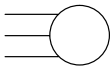
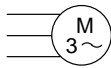
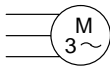
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|---------------------|---------------------|
| BS 3939.            | EEMAC E14-3.        |
| CENELEC EN 50 013.  | IEC 617-1 to 617-8. |
| DIN 40700 to 40717. | NEMA ICS 1.         |

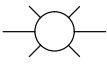


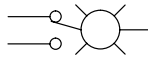
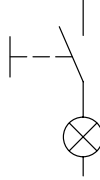



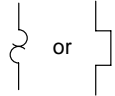


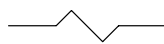


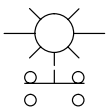

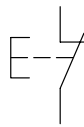

The following tables describe the device and show the symbol by area of usage.

Description		US / Canadian	International / British	German
Capacitor				
Circuit Breaker	Magnetic Only			
	Thermal-magnetic			
Coil				

Description		US / Canadian	International / British	German
<b>Basic Contacts</b>	Normally Closed			
	Normally Open			
<b>Time Delay Contacts</b>	N.C., Timed Closed			
	N.C., Timed Open			
	N.O., Timed Closed			
	N.O., Timed Open			

**Product Data**  
 A Global Reference Guide for  
 Reading Schematic Diagrams


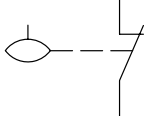
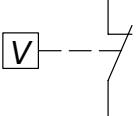

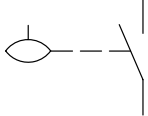
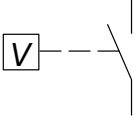

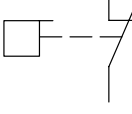
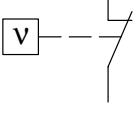

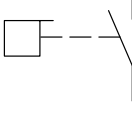
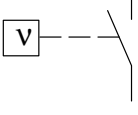

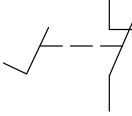
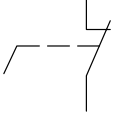

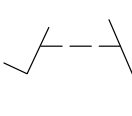
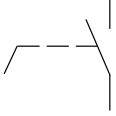



Description		US / Canadian	International / British	German
Disconnect Switch	Non-Fused			
	Fused			
Fuse				
Ground				
Induction Motor	Single Phase			
	Three Phase			

Description		US / Canadian	International / British	German
Lights, Indicating	Standard	 Insert color code inside symbol	 Insert color code next to symbol	 Insert color code next to symbol
	Push-To-Test	 Insert color code inside symbol		 Insert color code next to symbol
Meters		 Insert function code inside symbol	 Insert function code inside symbol	 Insert function code inside symbol
Overload Relay	Thermal Element	 or	 	 
	Magnetic Element	 	 	 
Push Button	Illuminated	 		
	Momentary (N.C.)	 	 	 





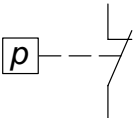
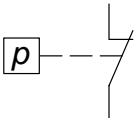

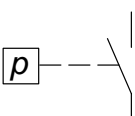
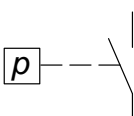

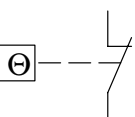
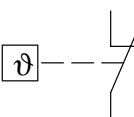

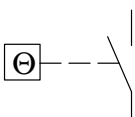
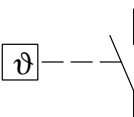
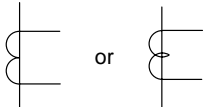
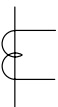
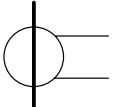
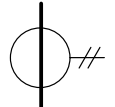
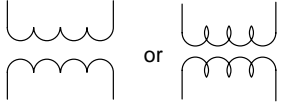
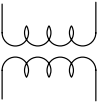
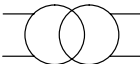
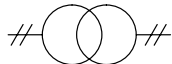
**Product Data**

A Global Reference Guide for  
Reading Schematic Diagrams

Description		US / Canadian	International / British	German														
Push Button	Momentary (N.O.)																	
	Mushroom Head (N.C.)																	
	Mushroom Head (N.O.)																	
Resistor																		
Selector Switch	2 Position	<table border="1"> <thead> <tr> <th rowspan="2">Letter Sym</th> <th colspan="2">Position</th> </tr> <tr> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>A</td> <td></td> <td>X</td> </tr> <tr> <td>B</td> <td>X</td> <td></td> </tr> </tbody> </table>	Letter Sym	Position		1	2	A		X	B	X						
	Letter Sym	Position																
1		2																
A		X																
B	X																	
3 Position	<table border="1"> <thead> <tr> <th rowspan="2">Letter Sym</th> <th colspan="3">Position</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>B</td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>	Letter Sym	Position			1	2	3	A	X			B			X		
Letter Sym	Position																	
	1	2	3															
A	X																	
B			X															

Description		US / Canadian	International / British	German
Switches	Float (N.C.)			
	Float (N.O.)			
	Flow (N.C.)			
	Flow (N.O.)			
	Foot (N.C.)			
	Foot (N.O.)			
	Limit (N.C.)			

**Product Data**  
 A Global Reference Guide for  
 Reading Schematic Diagrams

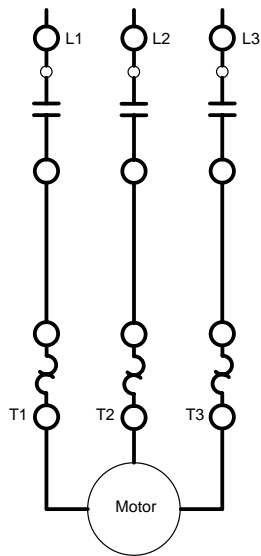
Description		US / Canadian	International / British	German
Switches	Limit (N.O.)			
	Pressure (N.C.)			
	Pressure (N.O.)			
	Temperature (N.C.)			
	Temperature (N.O.)			
Transformer	Current	 or 		
	Voltage	 or 		

**Common Schematic Diagrams**

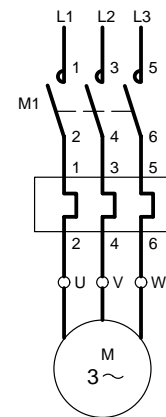
**Across-the-Line Non-Reversing Starters with Start- Stop Push Buttons**

**Power Circuit**

**NEMA**

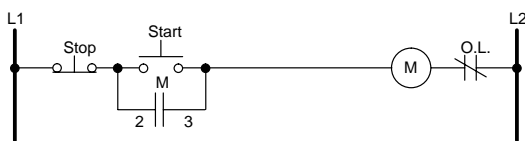


**IEC**

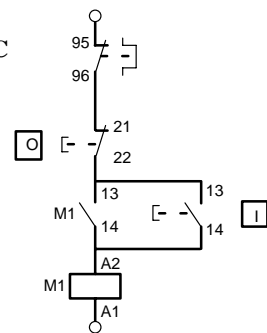


**Control Circuit**

**NEMA**



**IEC**

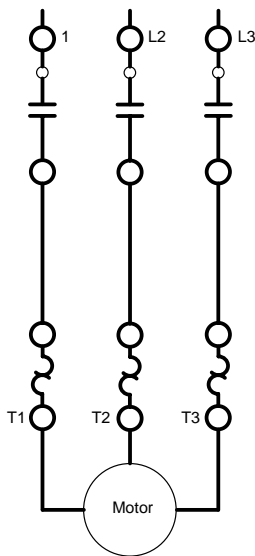


-  Stop
-  Start

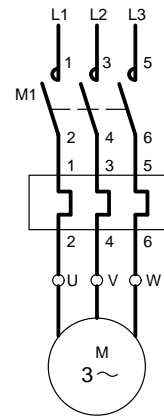
## Common Schematic Diagrams **Across-the-Line Non-Reversing Starters with Hand-Off-Auto Selector Switch**

### Power Circuit

**NEMA**

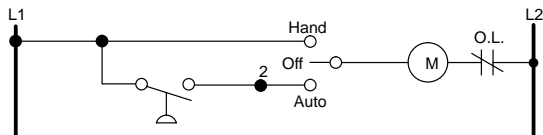


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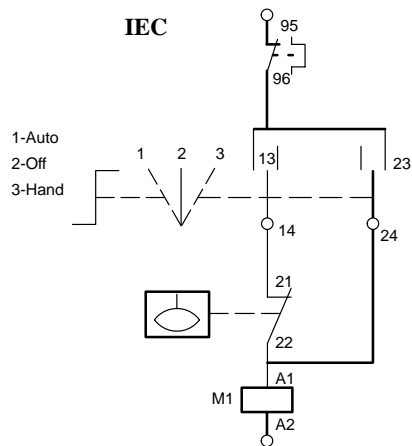


### Control Circuit

**NEMA**



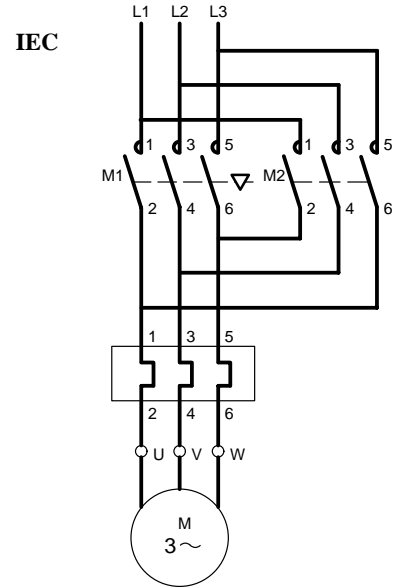
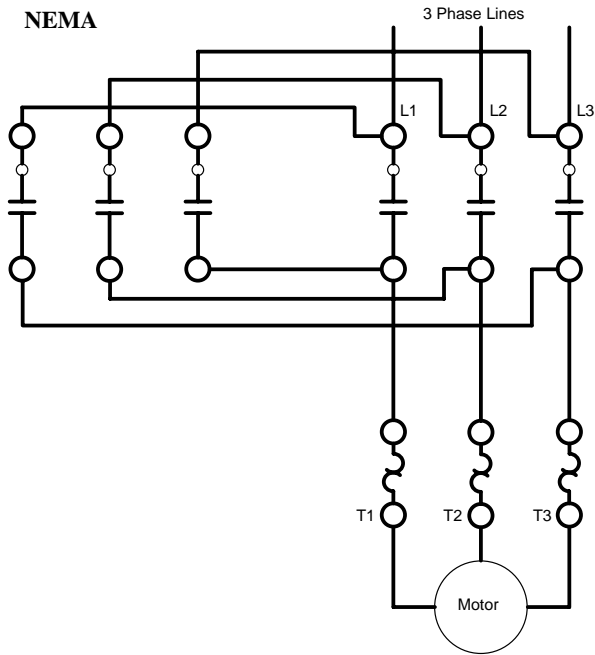
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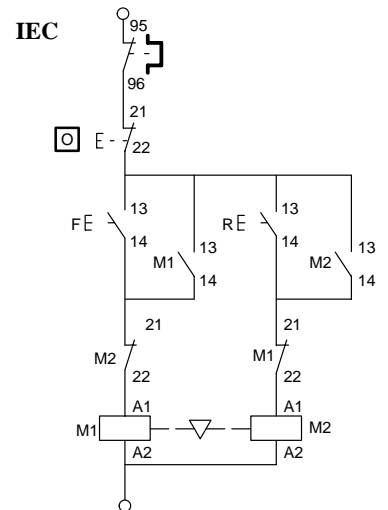
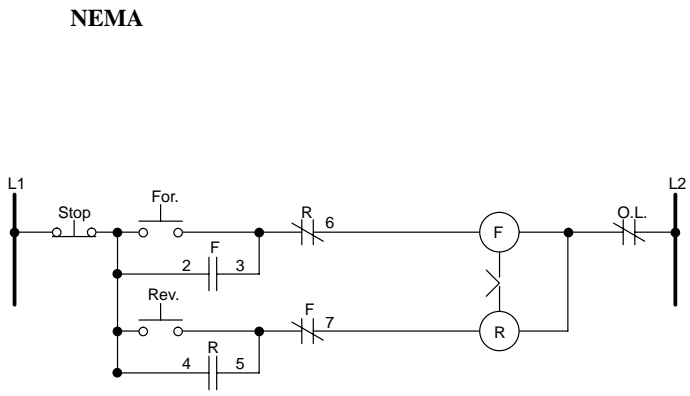
**Common Schematic Diagrams**

**Across-the-Line Reversing Starters**

**Power Circuit**



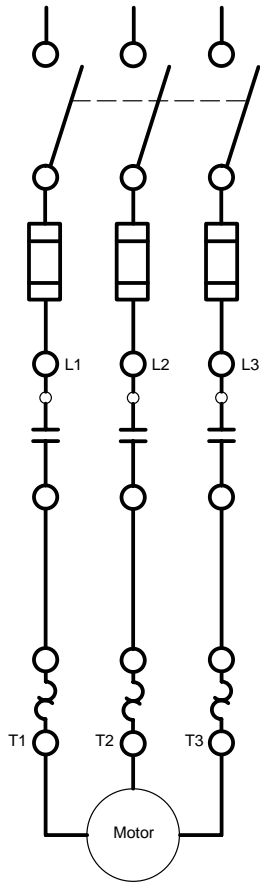
**Control Circuit**



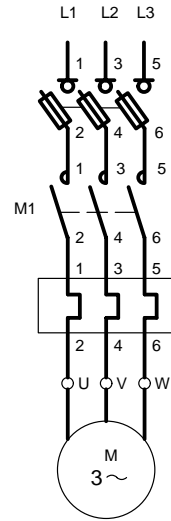
## Common Schematic Diagrams Combination Starter with Fused Disconnect Switch

### Power Circuit

NEMA

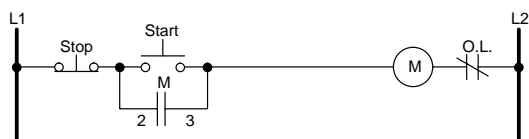


IEC

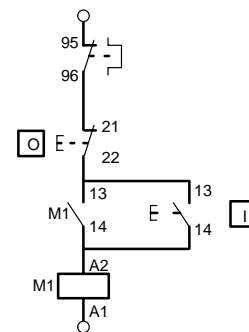


### Control Circuit

NEMA



IEC



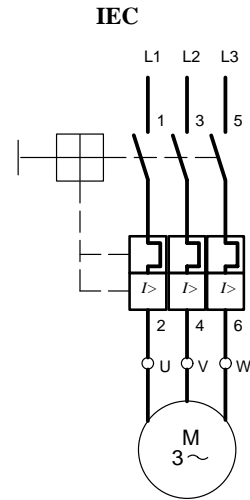
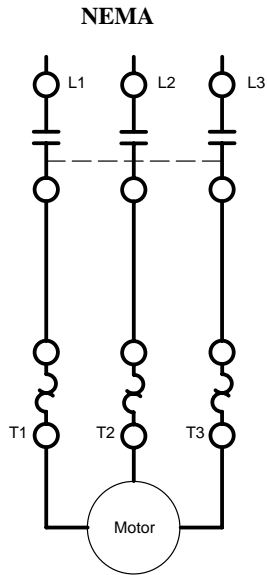
- 0 Stop
- 1 Start

## Common Schematic Diagrams

### Manual Starter

1

#### Power Circuit





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