

# Comparison of NEMA and IEC schematic diagrams

## 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 vary as well. 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 following tables describe the device and show the symbol by area of usage.


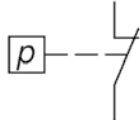

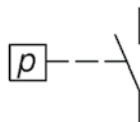

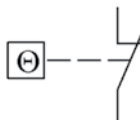

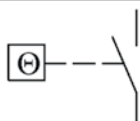
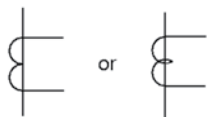
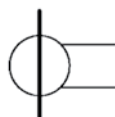
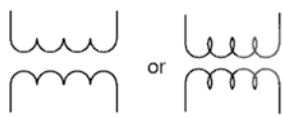
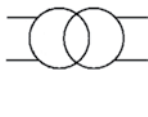


*Powering Business Worldwide*

Description	NEMA®	IEC	
Capacitor			
Circuit breaker	Magnetic only		
Thermal-magnetic			
Coil			
Basic contacts	Normally closed		
Normally open			
Time delay contacts	Normally closed, time closed		
Normally closed, time open			
Normally open, time closed			
Normally open, time open			
Disconnect switch	Non-fused		
Fused			
Fuse			

Description		NEMA®	IEC
Earth (ground)			
Induction motor	Single-phase		
	Three-phase		
Indicating lights	Standard		
	Push-to-test		
Meters			
Overload relays	Thermal element		
	Magnetic element		
Pushbuttons	Illuminated		
	Momentary (N.C.)		
	Momentary (N.O.)		
	Mushroom head (N.C.)		
	Mushroom head (N.O.)		
Resistor			

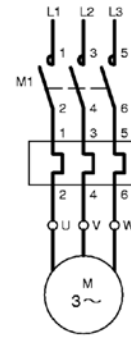
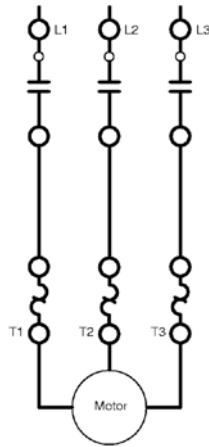
Description		NEMA®	IEC															
Switches	Float (N.C.)																	
	Float (N.O.)																	
	Flow (N.C.)																	
	Flow (N.O.)																	
	Foot (N.C.)																	
	Foot (N.O.)																	
	Limit (N.C.)																	
	Limit (N.O.)																	
Selector switch	Two-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																	
	Three-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		NEMA®	IEC
Switches	Pressure (N.C.)		
	Pressure (N.O.)		
	Temperature (N.C.)		
	Temperature (N.O.)		
Transformer	Current		
	Voltage		

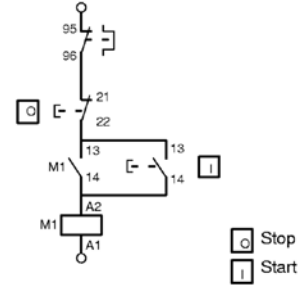
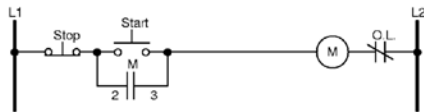
**Description** **NEMA®** **IEC**

**Common Schematic Diagrams: Across the Line Non-Reversing Starters with Start-Stop Pushbuttons**

Power circuit

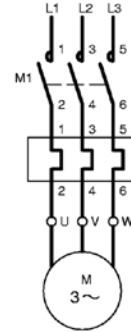
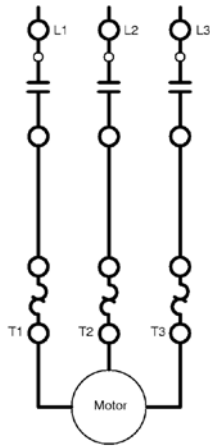


Control circuit

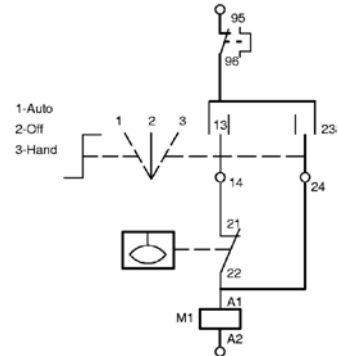
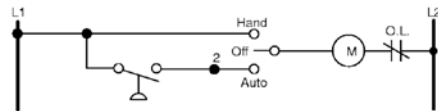


**Common Schematic Diagrams: Across the Line Non-Reversing Starters with Hand-Off-Auto Selector Switch**

Power circuit—starter



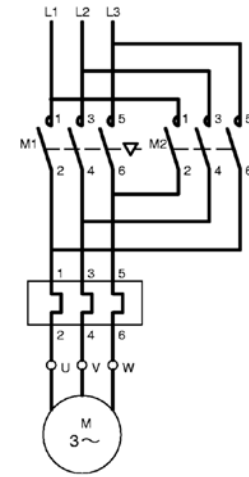
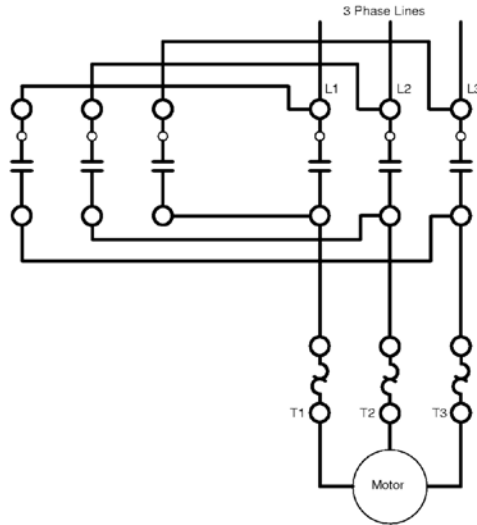
Control circuit—starter



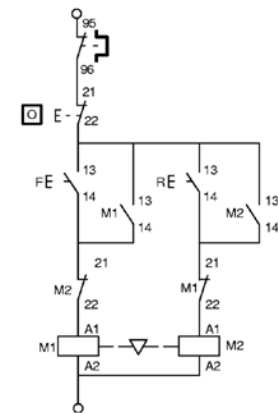
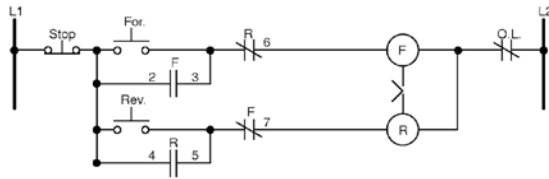
**Description** **NEMA®** **IEC**

**Common Schematic Diagrams: Across the Line Reversing Starters with Forward–Reverse–Stop Pushbuttons**

Power circuit—  
reversing starter

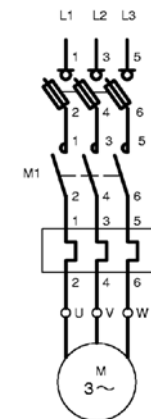
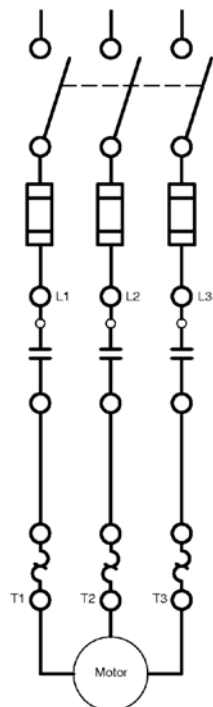


Control circuit—  
reversing starter



**Common Schematic Diagrams: Combination Starter with Fused Disconnect Switch and Start–Stop Pushbuttons**

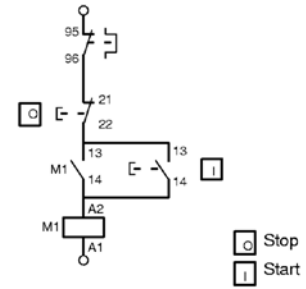
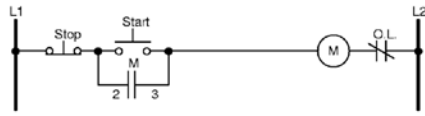
Power circuit



**Description** **NEMA®** **IEC**

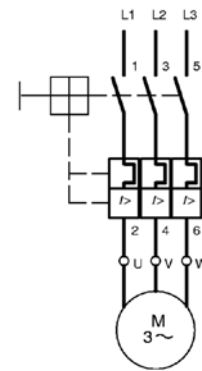
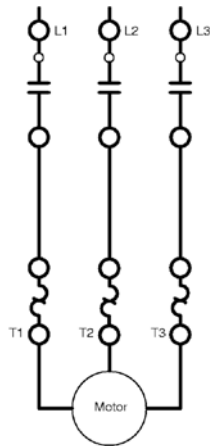
**Common Schematic Diagrams: Combination Starter with Fused Disconnect Switch and Start-Stop Pushbuttons**

Control circuit



**Common Schematic Diagrams: Manual Starter**

Power circuit



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