Cross-Reference
MZ081001EN
Effective November 2013

Comparison of NEMA and IEC schematic diagrams

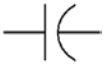
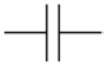
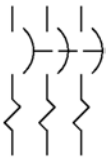
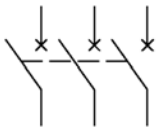
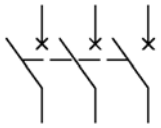
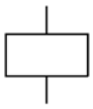
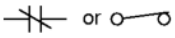
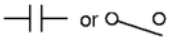
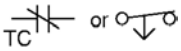
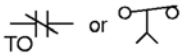
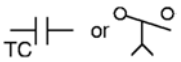
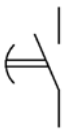
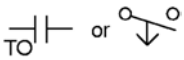
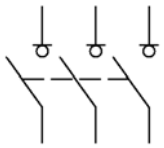
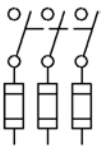
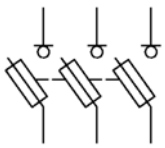
General

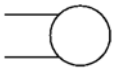
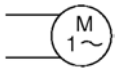
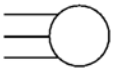
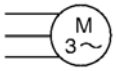
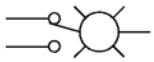
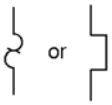
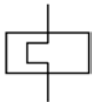
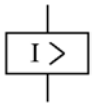
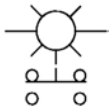
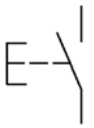
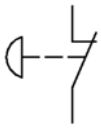
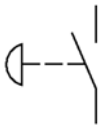
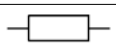
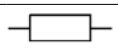
With the increasing emphasis on globalization, many industries are now looking to all parts of the world to produce, market, and sell their products. Electrical manufacturers are no exception. Since the electrical standards adopted by various nations may vary, the markings and symbols used to describe 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.

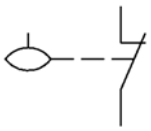
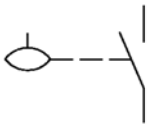
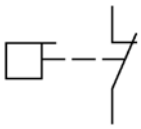
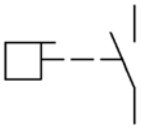
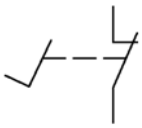
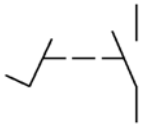
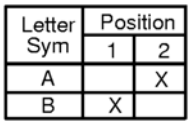
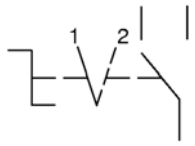
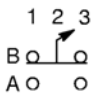
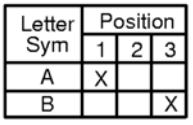
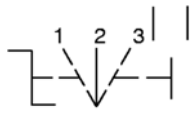
The purpose of this document is to provide a simple cross reference of common schematic/wiring diagram symbols used throughout various parts of the world.

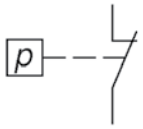
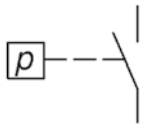
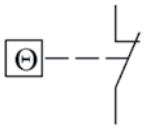
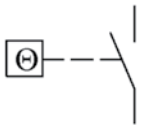
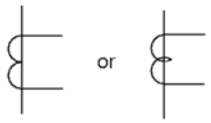
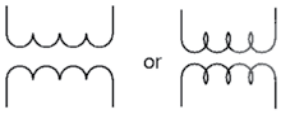
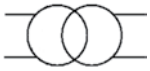
The following tables describe the device and show the symbol by area of usage.

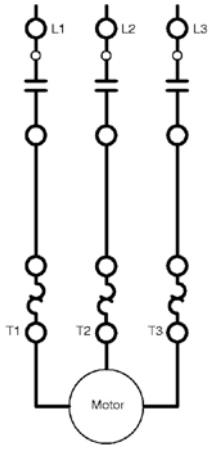
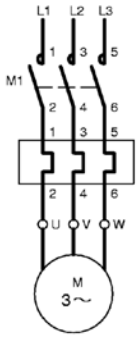
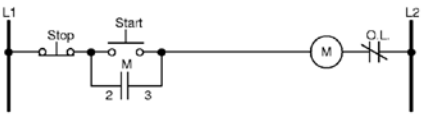
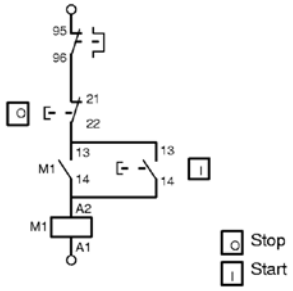
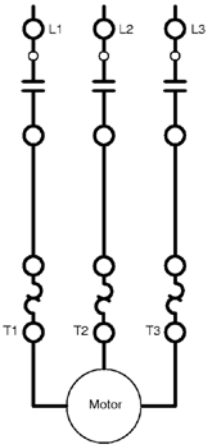
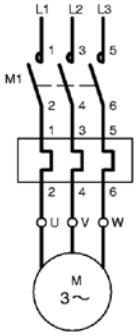
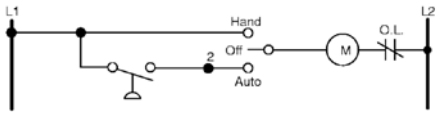
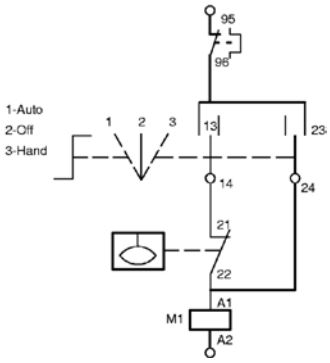
Powering Business Worldwide

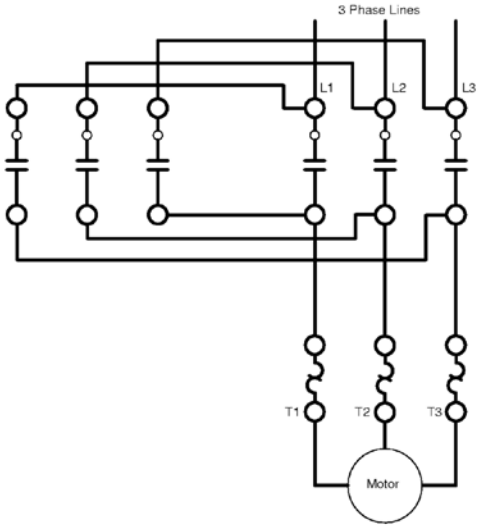
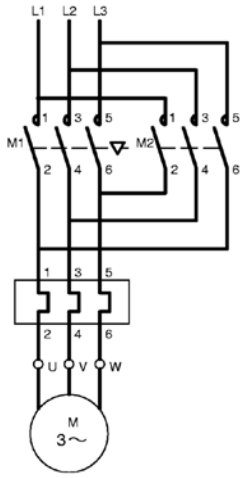
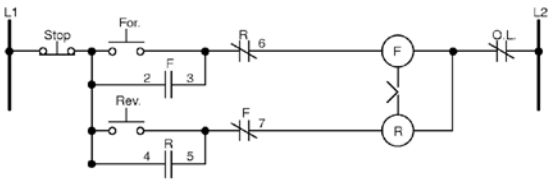
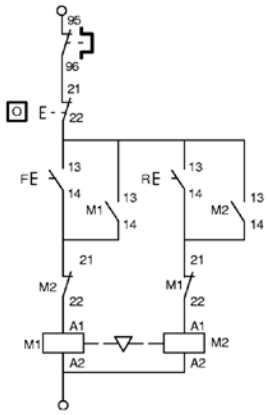
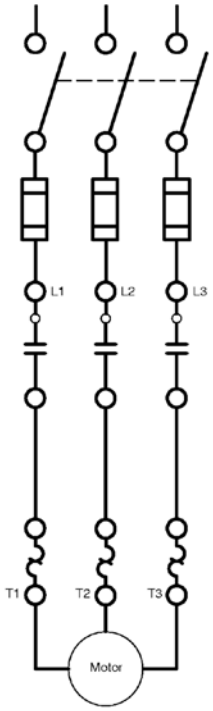
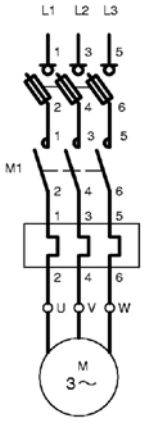
Description		NEMA®	IEC
Capacitor			
Circuit breaker	Magnetic only		
	Thermal-magnetic		
Coil			
Basic contacts	Normally closed		
	Normally open		
Time delay contacts	Normally closed, time closed		
	Normally closed, time open		
	Normally open, time closed		
	Normally open, time open		
Disconnect switch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

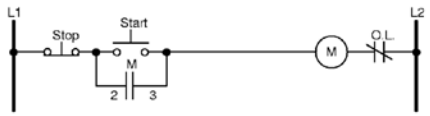
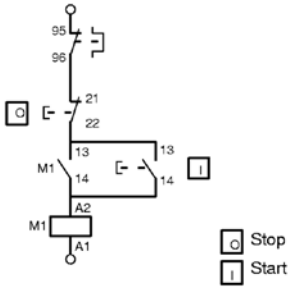
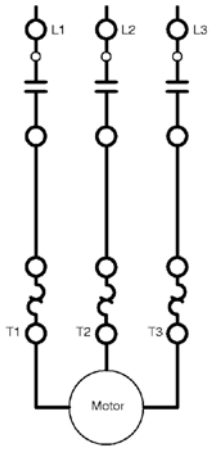
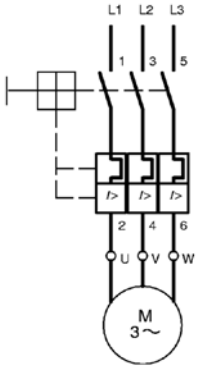
Description		NEMA®	IEC
Earth (ground)			
Induction motor	Single-phase		
	Three-phase		
Indicating lights	Standard	 Insert color code inside symbol	 Insert color code next to symbol
	Push-to-test	 Insert color code inside symbol	
Meters		 Insert function code inside symbol	 Insert function code next to symbol
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	 	
	Three-position	 	

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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