Electrical

Comparison of IEC & NEMA Schematic Diagrams

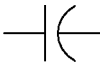
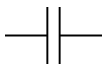
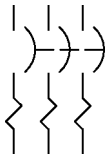
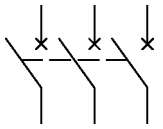
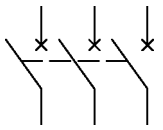
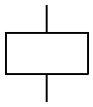
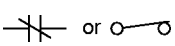
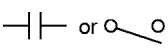
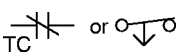
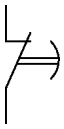
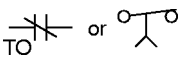
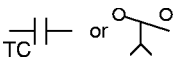
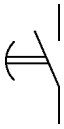
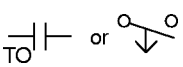
Technical Focus

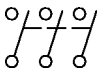
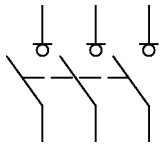
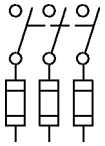
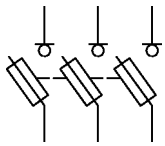
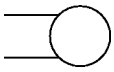
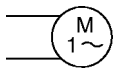
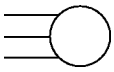
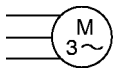
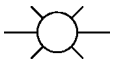
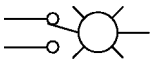
General.

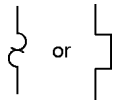
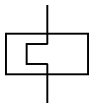
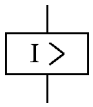
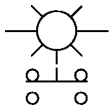
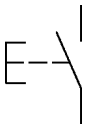
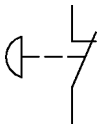
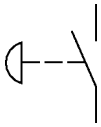
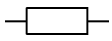
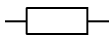
With the increasing emphasis on globalisation, many industries are now looking to all parts of the world to produce, market and sell their products. Electrical manufacturers are no exception. Since the electrical standards adopted by various nations may vary, the markings and symbols used to describe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

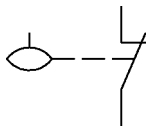
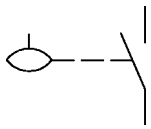
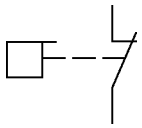
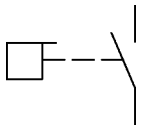
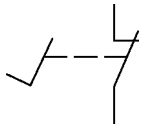
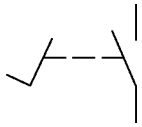
The purpose of this document is to provide a simple cross-reference of common schematic/wiring diagram symbols used throughout various parts of the world.

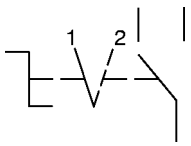
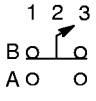
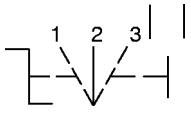
The following tables describe the device and show the symbol by area of usage.

Description	NEMA	IEC
Capacitor		
Capacitor Magnetic only		
Thermal-magnetic		
Coil		
Basic contacts Normally closed		
Normally open		
Time delay contacts Normally closed, timed closed		
Normally closed, timed open		
Normally open timed closed		
Normally open timed open		

Description	NEMA	IEC
Disconnect switch Non-fused		
Fused		
Fuse		
Earth (Ground)		
Induction motor Single phase		
Three phase		
Indicating lights Standard		
	Insert colour code inside symbol	Insert colour code next to symbol
Push-to-test		
	Insert colour code inside symbol	
Meters		
	Insert function code inside symbol	Insert function code next to symbol

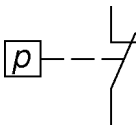
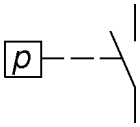
Description	NEMA	IEC
Overload relays		
Thermal element		
Magnetic element		
Pushbuttons		
Illuminated		
Momentary (N.C.)		
Momentary (N.O.)		
Mushroom head (N.C.)		
Mushroom head (N.O.)		
Resistor		

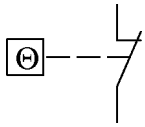
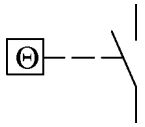
Description	NEMA	IEC
Switches		
Float (N.C.)		
Float (N.O.)		
Flow (N.C.)		
Flow (N.O.)		
Foot (N.C.)		
Foot (N.O.)		
Limit (N.C.)		
Limit (N.O.)		

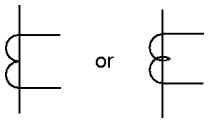
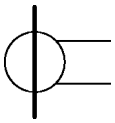
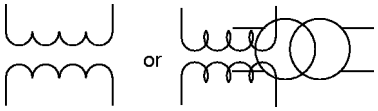
Description	NEMA	IEC
Selector switch		
2 position		
3 position		

Letter Sym	Position	
	1	2
A		X
B	X	

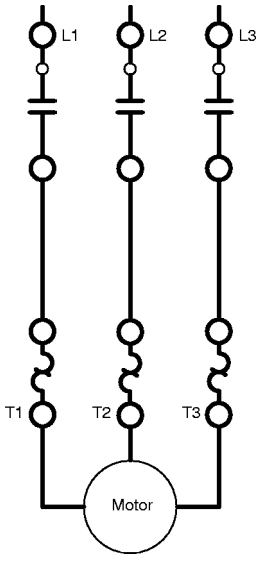
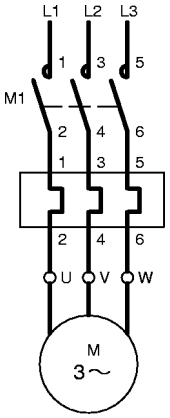
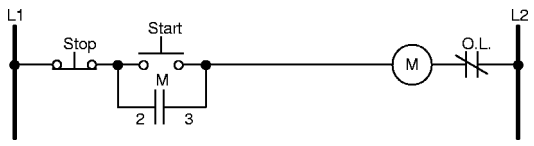
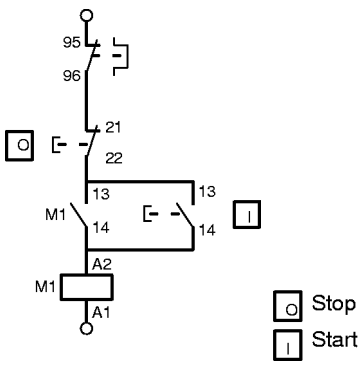
Letter Sym	Position		
	1	2	3
A	X		
B			X

Description	NEMA	IEC
Switches		
Pressure (N.C.)		
Pressure (N.O.)		

Description	NEMA	IEC
Switches		
Temperature (N.C.)		
Temperature (N.O.)		

Description	NEMA	IEC
Transformer		
Current		
Voltage		

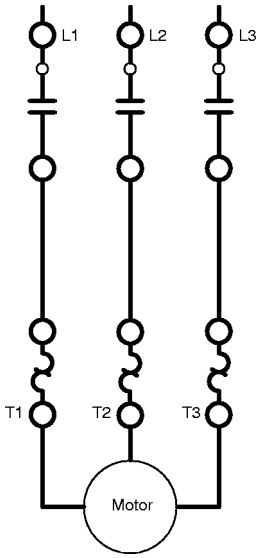
Common Schematic diagrams Across the line non-reversing starters with Start - Stop pushbuttons

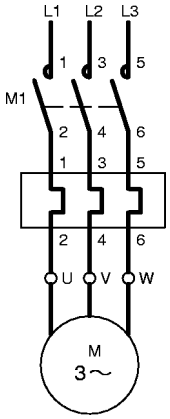
NEMA	IEC
Power circuit	
	
Control circuit	
	

Common Schematic diagrams Across the line non-reversing starters with Hand - Off - Auto selector switch

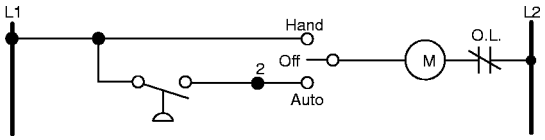
NEMA	IEC

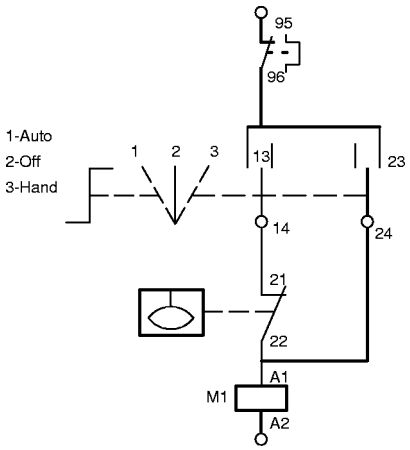
Power circuit





Control circuit

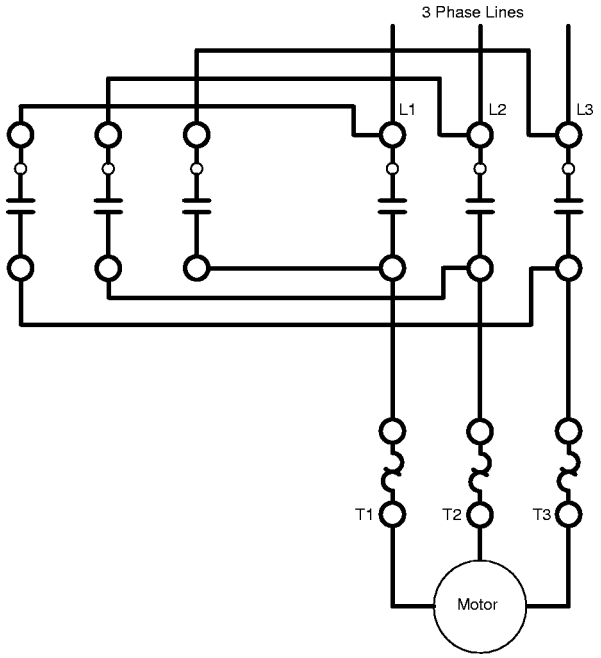


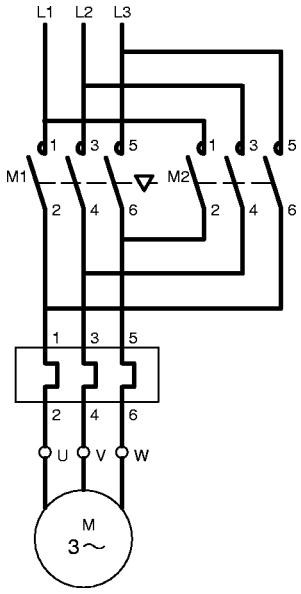


Common Schematic diagrams Across the line reversing starters with Forward - Reverse - Stop pushbuttons

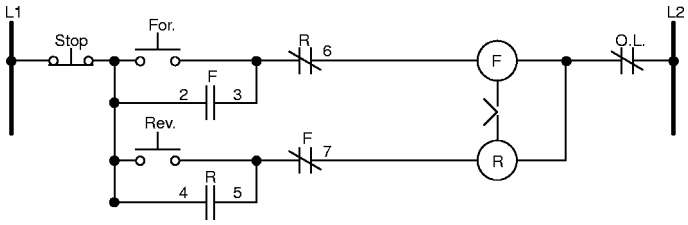
NEMA	IEC

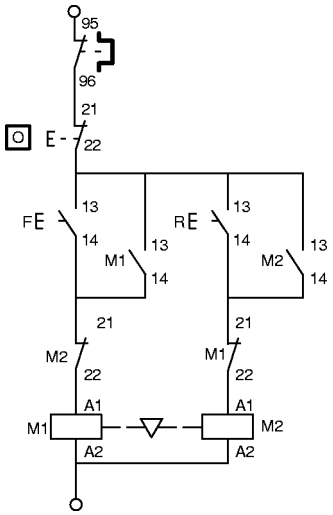
Power circuit





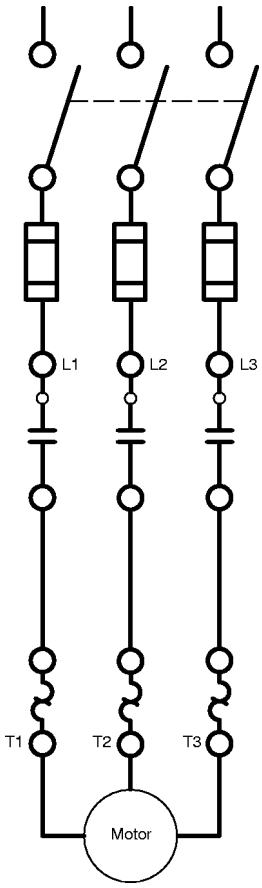
Control circuit

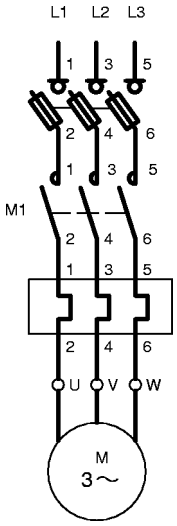




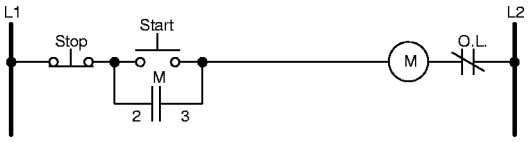
NEMA **IEC**

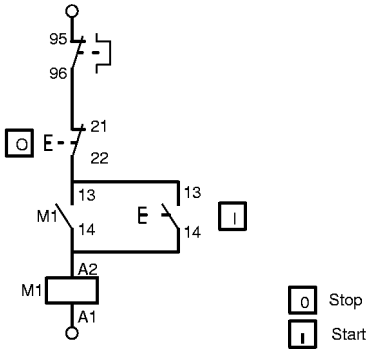
Power circuit





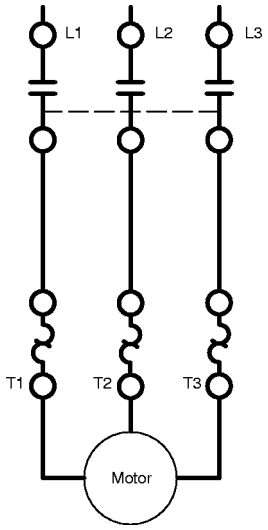
Control circuit



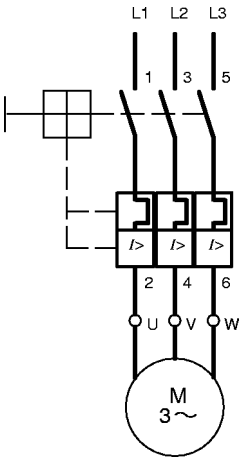


NEMA

Power circuit



IEC



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