

INDUSTRIAL ELECTRICAL SYMBOLS . . .

DISCONNECT	CIRCUIT INTERRUPTER	CIRCUIT BREAKER WITH THERMAL OL	CIRCUIT BREAKER WITH MAGNETIC OL	CIRCUIT BREAKER W/ THERMAL AND MAGNETIC OL

LIMIT SWITCHES		FOOT SWITCHES	PRESSURE AND VACUUM SWITCHES	LIQUID LEVEL SWITCH	TEMPERATURE-ACTUATED SWITCH	FLOW SWITCH (AIR, WATER, ETC.)
NORMALLY OPEN	NORMALLY CLOSED					
HELD CLOSED	HELD OPEN	NO	NO	NO	NO	NO
		NC	NC	NC	NC	NC
HELD OPEN	HELD CLOSED	NO	NO	NO	NO	NO
		NC	NC	NC	NC	NC

SPEED (PLUGGING)	ANTI-PLUG	SYMBOLS FOR STATIC SWITCHING CONTROL DEVICES			
		<p>STATIC SWITCHING CONTROL IS A METHOD OF SWITCHING ELECTRICAL CIRCUITS WITHOUT USE OF CONTACTS, PRIMARILY BY SOLID-STATE DEVICES. USE SYMBOLS SHOWN IN TABLE AND ENCLOSE THEM IN A DIAMOND.</p>			
		INPUT COIL	OUTPUT NO	LIMIT SWITCH NO	LIMIT SWITCH NC

SELECTOR

TWO-POSITION	THREE-POSITION	TWO-POSITION SELECTOR PUSHBUTTON																														
 J K A1 A2 X-CONTACT CLOSED	 J K L A1 A2 X-CONTACT CLOSED	 A B 1 2 3 4 X - CONTACT CLOSED																														
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: left;">CONTACTS</th> <th colspan="4" style="text-align: center;">SELECTOR POSITION</th> </tr> <tr> <th colspan="2" style="text-align: center;">A</th> <th colspan="2" style="text-align: center;">B</th> </tr> <tr> <th colspan="2" style="text-align: center;">BUTTON</th> <th colspan="2" style="text-align: center;">BUTTON</th> </tr> <tr> <th style="text-align: center;">FREE</th> <th style="text-align: center;">DEPRESSED</th> <th style="text-align: center;">FREE</th> <th style="text-align: center;">DEPRESSED</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1-2</td> <td style="text-align: center;">X</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">3-4</td> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> </tbody> </table>				CONTACTS	SELECTOR POSITION				A		B		BUTTON		BUTTON		FREE	DEPRESSED	FREE	DEPRESSED	1-2	X				3-4		X	X	X
CONTACTS	SELECTOR POSITION																															
	A		B																													
BUTTON		BUTTON																														
FREE	DEPRESSED	FREE	DEPRESSED																													
1-2	X																															
3-4		X	X	X																												

PUSHBUTTONS

MOMENTARY CONTACT				MAINTAINED CONTACT		ILLUMINATED
SINGLE CIRCUIT	DOUBLE CIRCUIT	MUSHROOM HEAD	WOBBLE STICK	TWO SINGLE CIRCUIT	ONE DOUBLE CIRCUIT	
NO	NO AND NC					
NC						

... INDUSTRIAL ELECTRICAL SYMBOLS ...									
CONTACTS								OVERLOAD RELAYS	
INSTANT OPERATING				TIMED CONTACTS - CONTACT ACTION RETARDED AFTER COIL IS:				THERMAL	MAGNETIC
WITH BLOWOUT		WITHOUT BLOWOUT		ENERGIZED		DE-ENERGIZED			
NO	NC	NO	NC	NOTC	NCTO	NOTO	NCTC		
SUPPLEMENTARY CONTACT SYMBOLS									
SPST NO		SPST NC		SPDT		TERMS			
SINGLE BREAK	DOUBLE BREAK	SINGLE BREAK	DOUBLE BREAK	SINGLE BREAK	DOUBLE BREAK	SPST SINGLE-POLE, SINGLE-THROW			
						SPDT SINGLE-POLE, DOUBLE-THROW			
DPST, 2NO		DPST, 2NC		DPDT		DPST DOUBLE-POLE, SINGLE-THROW			
SINGLE BREAK	DOUBLE BREAK	SINGLE BREAK	DOUBLE BREAK	SINGLE BREAK	DOUBLE BREAK	DPDT DOUBLE-POLE, DOUBLE-THROW			
						NO NORMALLY OPEN			
						NC NORMALLY CLOSED			
METER (INSTRUMENT)					PILOT LIGHTS				
INDICATE TYPE BY LETTER	TO INDICATE FUNCTION OF METER OR INSTRUMENT, PLACE SPECIFIED LETTER OR LETTERS WITHIN SYMBOL.				INDICATE COLOR BY LETTER				
	NON PUSH-TO-TEST					PUSH-TO-TEST			
	AM or A	AMMETER	VA	VOLTMETER					
	AH	AMPERE HOUR	VAR	VARMETER					
	µA	MICROAMMETER	VARH	VARHOUR METER					
	mA	MILLAMMETER	W	WATTMETER					
	PF	POWER FACTOR	WH	WATTHOUR METER					
	V	VOLTMETER							
INDUCTORS		COILS							
IRON CORE				DUAL-VOLTAGE MAGNET COILS				BLOWOUT COIL	
AIR CORE				HIGH-VOLTAGE	LOW-VOLTAGE				

... INDUSTRIAL ELECTRICAL SYMBOLS ...

TRANSFORMERS

AUTO	AIR CORE	CURRENT	CONTROL TRANSFORMER		AUTOTRANSFORMER FOR REDUCED-VOLTAGE STARTING
			SINGLE-VOLTAGE	DUAL-VOLTAGE	

AC MOTORS

SINGLE-PHASE	SEPARATE PHASE, TWO-SPEED	THREE-PHASE	SEPARATE WINDING, TWO-SPEED	CONSTANT-TORQUE, TWO-SPEED
VARIABLE-TORQUE, TWO-SPEED	CONSTANT-HORSEPOWER, TWO-SPEED	WYE/DELTA, REDUCED-VOLTAGE	WYE-CONNECTED, PART WINDING, REDUCED-VOLTAGE	

DC MOTORS

WIRING

CONNECTIONS

ARMATURE	SHUNT FIELD	SERIES FIELD	COMM OR COMPENS FIELD	NOT CONNECTED	POWER	WIRING TERMINAL	MECHANICAL
				CONNECTED	CONTROL	GROUND	MECHANICAL INTERLOCK

CONTROL AND POWER CONNECTIONS-600 V OR LESS ACROSS-THE-LINE STARTERS

	1 ϕ	2 ϕ , 4-WIRE	3 ϕ
LINE MARKINGS	L1, L2	L1, L3 PHASE 1 L2, L4 PHASE 2	L1, L2, L3
GROUND WHEN USED	L1 IS ALWAYS UNGROUNDED	—	L2
MOTOR RUNNING OVERCURRENT UNITS IN	{ 1 ELEMENT 2 ELEMENT 3 ELEMENT	— L1, L4 —	— — L1, L2, L3
CONTROL CIRCUIT CONNECTED TO	L1, L2	L1, L3	L1, L2
FOR REVERSING INTERCHANGE LINES	—	L1, L3	L1, L3

... INDUSTRIAL ELECTRICAL SYMBOLS					
RESISTORS			CAPACITORS		
FIXED	ADJUSTABLE BY FIXED TAPS	RHEOSTAT, POT, OR ADJUSTABLE TAP	FIXED	ADJUSTABLE	POLARIZED
 HEATING ELEMENT	 	 			
FUSE	BELL	BUZZER	HORN, SIREN, ETC.	HALF-WAVE RECTIFIER	FULL-WAVE RECTIFIER
POWER OR CONTROL 					
BATTERY	THERMOCOUPLE	IGNITRON TUBE	SEMICONDUCTORS ...		
		DOT IN TUBE DENOTES GAS 	DIODE 	TUNNEL DIODE 	UNIDIRECTIONAL BREAKDOWN (ZENER) DIODE
... SEMICONDUCTORS ...					
BIDIRECTIONAL BREAKDOWN DIODE	PHOTOSENSITIVE CELL	TRIAC (BIDIRECTIONAL TRIODE THYRISTOR)	SILICON CONTROLLED RECTIFIER	PROGRAMMABLE UNIT - JUNCTION TRANSISTOR (PUT)	
... SEMICONDUCTORS					
TRANSISTOR			UNIUNCTION TRANSISTOR		
PNP BASE	NPN BASE		P BASE	N BASE	