

1	<b>SAFETY AND PROTECTION OF SYSTEMS AND DEVICES</b>	38	..Transformer with structurally combined protective device
2	.Arc suppression at switching point (i.e., includes solid- state switch)	39	...With lightning arrester and fuse
3	..Synchronized or sequential opening or closing	40	...With lightning arrester (e.g., spark gap)
4	...Counter electromotive force	41	...With fuse
5	..With current sensitive control circuit	42	.Ground fault protection
6	...With voltage sensitive control circuit	43	..Fault suppression (e.g., Petersen coil)
7	..With combined voltage and current sensitive control circuit	44	..With differential sensing in a polyphase system
8	...Shunt bypass	45	..With differential sensing in a single phase system
9	...With sequentially inserted impedance	46	...With more than two wires
10	..By inserting series impedance	47	..In a polyphase system
11	..Nonlinear impedance	48	...With more than three wires
12	..By arc stretching (e.g., horn gap)	49	..In a single phase system
13	..Shunt bypass of main switch	50	...With more than two wires
14	..Arc blowout for main breaker contact (e.g., electromagnet, gas, fluid, etc.)	51	.Overspeed responsive
15	.Capacitor protection	52	.By regulating source or load (e.g., generator field killed)
16	..Series connected capacitors	53	..Prime mover control
17	..Shunt connected capacitors	54	.Load shunting by fault responsive means (e.g., crowbar circuit)
18	.Voltage regulator protective circuits	55	..Disconnect after shunting
19	.Superconductor protective circuits	56	..Voltage responsive
20	.Generator protective circuits	57	..Current responsive
21	..Voltage responsive	58	.Impedance insertion
22	.Compressor protective circuits	59	.Circuit automatically reconnected only after the fault is cleared
23	.Motor protective condition responsive circuits	60	..With differential voltage comparison across the circuit interrupting means
24	..Current and temperature	61	..Reclosing of the nonfaulty phases of a polyphase system
25	..Motor temperature	62	.Feeder protection in distribution networks
26	...With bimetallic sensor	63	..With current responsive fault sensor
27	...With thermistor sensor	64	...With communication between feeder disconnect points
28	..With time delay	65	..With current and voltage responsive fault sensors
29	...During energization of motor	66	...With communication between feeder disconnect points
30	..Current and voltage	67	.Series connected sections with faulty section disconnect
31	..Current	68	..With communication between disconnect points
32	..Bimetallic element	69	...Pilot wire communication
33	..Voltage		
34	..Bimetallic element		
35	.Transformer protection		
36	..With differential sensing means		
37	..With temperature or pressure sensing means		

70	..Constant current system	93.6	..Transformer sensor (i.e., toroidal current sensor)
71	.Automatic reclosing		
72	..With lockout means	93.7	..Resistor sensor
73	...Including timer reset before lockout	93.8	..Thermal sensing
74	..Continuous	93.9	..Current limiting
75	...With time delay before reclosing	94	..With time delay protective means
76	..With phase sequence network analyzer	95	...With instantaneous override
77	.Reverse phase responsive	96	...With multiple timing characteristics (e.g., short, long)
78	..With specific quantity comparison means	97	...With multiple timing characteristics
79	..Voltage and current	98	...Transistorized
80	...Distance relaying	99	...Combined thermal-electromagnetic relay
81	...With communication means between disconnect points	100	..With semiconductor circuit interrupter (e.g., SCR, Triac, Tunnel Diode, etc.)
82	...Reverse energy responsive (e.g., directional)		
83	...With time delay protective means	101	...With transistor circuit interrupter
84	..Reverse energy responsive (e.g., directional)	102	..With mechanical circuit breaker
85	..Phase	103	.Circuit interruption by thermal sensing
86	..Voltage	104	..With fuse
87	..Current	105	..With bimetallic element
88	..With specific voltage responsive fault sensor	106	..With thermistor
89	..With time delay protective means	107	..With specific transmission line (e.g., guarded)
90	..Overvoltage and undervoltage	108	..Plural conductors in single sheath (e.g., compound)
91.1	..Overvoltage	109	..Too large fault makes breaker inoperative
91.2	...With resistor sensor	110	..Transient nonresponsive (e.g., ignores surge on transmission line)
91.3	...Including time delay	111	..Transient responsive
91.4	...Including photo-coupling (e.g., photo-receptors, photo-emitters, etc.)	112	..With space discharge means
91.5	...Including P-N junction (e.g., a diode, a zener diode, or transistor)	113	..With tuned circuit
91.6	...With zener diode sensor	114	..With manual or automatic opening of breaker and manual reclose
91.7	...Protection by snubber circuitry	115	..With specific circuit breaker or control structure
91.8	...Protection for thyristor	116	..Pneumatically operated circuit breaker
92	..Undervoltage		
93.1	..With specific current responsive fault sensor	117	..High voltage dissipation (e.g., lightning arrester)
93.2	..Digital control	118	..Surge prevention (e.g., choke coil)
93.3	..Rating plug		
93.4	..Automatic reset after trip	119	...In communication systems
93.5	..Transformer and resistor sensors	120	..Vacuum or gas filled space discharge

121	..Fluid (e.g., mercury, quenching)	156	...With capacitor charging or discharging through coil
122	...Electrolytic	157	.Including instrument (e.g., meter-relay)
123	...Gas blast	158	..Temperature indicating instrument
124	..Thermal (e.g., fusible, bimetallic)	159	.Including means for using, or compensating for, the induced EMF of the electromagnetic device
125	...With cutout (e.g., blowout type)	160	.For relays or solenoids
126	..Current limiting material in discharge path	161	..Including thermal device
127	..Nonlinear material (e.g., valve type)	162	...Thermoelectric
128	...With plural gaps in discharge path	163	...Bimetallic element
129	..Plural gaps with common electrode	164	...Including heater
130	..Plural gaps serially connected	165	...Thermistor
131	..Combined (e.g., with disconnect switch)	166	..Plural relays or solenoids sequentially operated
132	..With line supporting insulator	167	...Alternately operated
133	..With magnetic means (e.g., electromagnet)	168.1	...Pulse responsive
134	...Arc stretching (e.g., blowout)	169.1	...Including electronic element
135	...By separating contacts	170	..Condition responsive (e.g., external circuit condition)
136	..For grounding line	171	...Code responsive
137	..Horn gap	172	...Including electronic element
138	..With resistance insertion	173	...Light
139	<b>CONTROL CIRCUITS FOR ELECTROMAGNETIC DEVICES</b>	174	...Light sensor controls its light path
140	.Including compensation for thermal change of electromagnetic device	175	...Including electronic element
141	.Including superconductivity	176	....Plural light sensors
142	.Including housing	177	...Plural light sensors
143	.Systems for magnetizing, demagnetizing, or controlling the magnetic field	178	...Fluid (e.g., liquid level, humidity)
144	..For lifting or holding	179	...Proximity or contact
145	..Magnetic chuck-type	180	...Metal presence or absence responsive
146	..Systems for magnetic field stabilization or compensation	181	...Capacitance change-type
147	..With permanent magnet	182	...Frequency (e.g., audio, radio)
148	...Calibration or permanent magnet	183	...Plural relays or solenoids as loads
149	..Demagnetizing	184	...Specific frequency responsive relay
150	...Television degaussing	185	...Phase
151	..Magnetic tape	186	...Pulse
152	..Including particular drive circuit	187	...Voltage or current level discriminators
153	...Pulse initiated	188	...Variable impedance
154	..Including means to establish plural distinct current levels (e.g., high, low)	189	..Plural switches in control circuit
155	...With capacitor charging or discharging through coil	190	...Including electronic switch
		191	..Plural relay or solenoid load selectively operated
		192	...Including interlock
		193	...Electronic interlock

194	..Holding means	230	<b>ELECTRIC CHARGE GENERATING OR</b>
195	..Time delay		<b>CONDUCTING MEANS (E.G.,</b>
196	...Including semiconductor device		<b>CHARGING OF GASES)</b>
	connected to timing element	231	.Modification of environmental
197	....Threshold device (e.g.,		electric charge
	zener, schockley diode)	232	.For application to living beings
198	....Including three or more	233	.Use of forces of electric charge
	electrodes (e.g., unijunction)		or field
199	...Including electric discharge	234	..Pinning
	device	235	.With specific power supply
200	....Threshold device (neon tube)	236	<b>ELECTRICAL SPEED SIGNAL</b>
201	....Including thyatron		<b>PROCESSING SYSTEMS</b>
202	..Electromechanical delay means	237	.With centrifugal weight means
203	..With oscillator	238	.Antislip detection and circuitry
204	..With magnetic amplifier or	239	.With speed analog electrical
	saturable reactor		signal
205	..Threshold device (e.g., SCR,	240	.Including frequency generators
	thyatron)	241	.Two position (e.g., on-off)
206	..Particular relay or solenoid	242	.With speed comparison
207	..Electrostatic	243	.Synchronization of shafts
208	..Polarized	244	..Phase comparison
209	..Alternating current type	245	<b>POLARITY REVERSING</b>
210	..Plural coils	246	.Automatic
211	<b>CONTROL CIRCUITS FOR</b>	247	<b>IGNITING SYSTEMS</b>
	<b>NONELECTROMAGNETIC TYPE RELAY</b>	248	.For explosive devices
	<b>(E.G., THERMAL RELAYS)</b>	249	..With sequential firing by
212	<b>DISCHARGING OR PREVENTING</b>		electronic switching
	<b>ACCUMULATION OF ELECTRIC</b>	250	..With sequential firing by
	<b>CHARGE (E.G., STATIC</b>		mechanical switching
	<b>ELECTRICITY)</b>	251	..With capacitor discharging into
213	.By charged gas irradiation		explosive device
214	.Of paper or paper handling	252	..With electromechanical power
	machine		source
215	.Of storage or hazardous area or	253	.For electric spark ignition
	fluid handling	254	..With electromagnet control
216	.Structurally combined with		means
	building or vehicle	255	...Including spark electrode
217	..With external structure of		make-break
	vehicle	256	..With capacitor discharging into
218	..Aircraft		sparkling transformer
219	..Chain-type grounding means	257	..With capacitor discharge into
220	..Specific conduction means or		spark gap
	dissipator	258	..With electromechanical
221	..Brush- or roller-type structure		generator
222	..Rod-type structure	259	...With permanent magnet
223	..Shoe type	260	...With piezoelectric element
224	..Integral with shoe	261	..With mechanical arrangement for
225	<b>ELECTRIC CHARGING OF OBJECTS OR</b>		spark electrode make-break
	<b>MATERIALS</b>	262	..With one spark electrode which
226	.Particulate matter (e.g.,		is hand held
	liquids with suspended	263	..With spark coil or transformer
	particles)	264	.For incandescent ignition
227	..For spray production	265	..With electromagnet control
228	..Liquid type		means
229	.By charged gas irradiation		

266	..With helical heating element	299.2	.....Details of electrical connecting means (e.g., terminal or lead)
267	<b>DEMAGNETIZING SYSTEMS AND PROCESSES</b>		
268	<b>TRANSFORMERS AND INDUCTORS WITH INTEGRAL SWITCH, CAPACITOR, OR LOCK (E.G., IGNITION COIL)</b>	299.3	.....Details of mounting means
		299.4	.....With adjustment means
269	..With lock for preventing unauthorized use	299.5	.....Details of insulator feature
270	..With capacitor element	298.2	....Details of plate feature
271	<b>ELECTROSTATIC CAPACITORS</b>	298.3	....Details of dielectric
272	..With protection or compensating means	298.4	....Details of electrical connecting means (e.g., terminal or lead)
273	..Self-healing	298.5	....With adjustment means
274.1	..Temperature	300	...With controlling or indicating means
274.2	..With fluid cooling means		
274.3	..With heat sink	301.1	.Fixed capacitor
275.1	..For electrical irregularities	301.2	..Special type (e.g., "bypass" type)
275.2	..With over-pressure breakaway fuse	301.3	..Encapsulated
275.3	..With resistance element	301.4	..Stack
275.4	..With thermal fuse	301.5	..Wound
276	..Cryogenic	302	..Feed through
277	..Variable	303	..Significant electrode feature
278	..With significant electrode or terminal feature	304	...Non-self-supporting electrodes
279	..Gas or vacuum dielectric	305	...Material
280	..Responsive to external condition	306.1	..Details of electrical connection means (e.g., terminal or lead)
281	...Electrical	306.2	...For decoupling type capacitor
282	...Thermal	306.3	...For multilayer capacitor
283.1	...Pressure	307	...Lead extends into body of capacitor
283.2	....By displacement of stylus or lever	308.1	...Lead attached to edge of capacitor
283.3	....By differential capacitor		
283.4	....By diaphragm	308.2	....Cap
284	...Liquid level	308.3	....Wire
285	...Fluid flow	309	....Metallized terminal
286	...Humidity	310	...Lead extends around at least a portion of capacitor
287	..Mechanically variable		
288	...Push button	311	..Solid dielectric
289	...Motor driven	312	...Plural dielectrics
290	...By varying distance between electrodes	313	....Layered
291	....Compression type	314	....Impregnated
292	...By varying effective area of electrode	315	....With specific impregnant
		316	.....Including wax
		317	.....Including halogen (e.g., chlorinated)
293	....Disk trimmer		
294	....Direct travel piston type	318	.....With stabilizer or modifying substance
295	....Piston trimmer		
296	....Sliding plates	319	....With stabilizer or modifying substance
297	....Spiral or helical plates		
298.1	....Rotary plates	320	...Ceramic and glass
299.1	.....Plural capacitors	321.1	...Ceramic, glass, or oxide particles

321.2	...With multilayer ceramic capacitor	630	...With fuses
321.3	....Including metallization coating	631	...With switches
321.4	....Composition	632	...With switch actuating arrangements
321.5	...Composition	633	...Plugboards
321.6	...With tubular capacitor	634	...With circuit breaker arrangements
322	...Oxide film	635	...With discriminating means
323	...Plastic	636	...Plug-in or removable
324	...Fibrous or fabric (e.g., paper, etc.)	637	...Busbar or conductor arrangements
325	...Mica	638	...U-shaped member
326	..Vacuum or gas dielectric	639	...With horizontal busbar
327	..Liquid dielectric	640	...With removable or plug-in connection
328	..Multiple capacitors	641	..Electrical service distribution box
329	...Distinct physically	642	...With fuse
330	...Shared electrode	643	...With switch
600	<b>HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE ELECTRICAL COMPONENTS</b>	644	...Including panel board
601	..For electrical power distribution systems and devices	645	...Adjustable panel
602	..Distribution station (i.e., substation)	646	...With fuse support means
603	...Having transformer	647	...With switch support means
604	...Gas insulated	648	...Busbar arrangements
605	..Electrical switchgear	649	....U-shaped member
606	...Truck type	650	....Spaced parallel relationship
607	...With interlock	651	...Panel board corner mountings
608	...Drawer type	652	...Circuit breaker supporting arrangements
609	...With interlock	653	....With discriminating means
610	...Pivoted support means	654	....With tamper prevention means
611	...Busbar arrangements	655	....Having two row arrangement
612	...Gas insulated	656	....With plug-in circuit breakers
613	...Liquid insulated	657	...With removable member
614	...With plural removable control units in housing	658	...With plastic enclosure or support
615	...With interlock	659	..For electricity service meter
616	...Door or cover type	660	...Plural
617	...Shutter type	661	...With meter circuit controller
618	...Gas insulated	662	...Bypass arrangement
619	...Having gas circuit breaker	663	...With transformer or circuit breaker
620	...Having transformer	664	...Meter mounting arrangements
621	...Having isolating switch	665	...Adaptable meter supports
622	..Distribution or control unit	666	...Retractable or detachable meter support
623	..Having transformer	667	...Removable cover
624	...Having busbar arrangement	668	...Meter terminal and connector arrangements
625	...Portable	669	...Terminal block
626	...Having fuse or relay	670	...Contact blade receiving structure
627	..Distribution or control panel board		
628	...With switches and fuses		
629	...Unit block		

671	....Adjustable or adaptable contacts	716	.....Plural
672	...Tamper resistant	717	....For active solid state devices
673	..Circuit breaker supporting means (i.e., attaching, mounting, etc.)	718	.....For integrated circuit
674	..For ballast elements	719	.....Circuit board mounted
675	..Bus duct	720	....For printed circuit board
676	..With cooling means	721	.....Plural
677	...Fluid	722	....For electronic circuit
678	....Air	723	....For lead frame
679	..For electronic systems and devices	724	..Cabinet-type housing
680	..Including keyboard support	725	...With retractable or readily detachable chassis
681	..Including display support	726	...With locking means or device
682	..CRT support	727	...Sliding component or compartment
683	..Computer related support	728	..Module
684	...Memory unit support	729	...Plural
685	....Disk drive support	730	....With housing
686	...Input/output device support	731	.....Interchangeable
687	...With cooling means	732	.....Having lock or interlock
688	..With cooling means	733	.....Selective connections
689	...Fluid	734	...With coupling or decoupling capacitor
690	....Air	735	....Stacked
691	.....Pressurized or conditioned	736	...With printed circuit boards
692	.....Plural Openings	737	....IC card or card member
693	.....Circular	738	....With resistor and capacitor
694	.....With air circulating means	739	....With particular material
695	.....Fan or blower	740	....With locking means or device
696	.....With heat exchanger unit	741	....Guiding means
697	.....With heat sink or cooling fins	742	....With spacer
698	.....And liquid	743	....Solder connection
699	....Liquid	744	....Cordwood type
700	.....Change of physical state	745	.....Welded connection
701	....With heat exchanger unit	746	...With specific dielectric material or layer
702	....With cold plate or heat sink	747	...With locking means or device
703	....With cooling fins	748	..Printed circuit board
704	...Thermal conduction	749	...Flexible board
705	....By specific coating	750	....With specific dielectric material or layer
706	.....Containing silicon or aluminum	751	....With particular conductive material or coating
707	....Through support means	752	...With housing or chassis
708	.....Specific chemical compound or element	753	....Specific chassis or ground
709	.....Heat sink	754	....With ejector means
710	.....Details	755	....Rotatable
711	.....Cooling plate or bar	756	....Guiding means
712	.....Thermally and electrically conductive	757	....With particular material
713	.....Electrically insulating thermally conductive	758	....With spacer
714	....Through component housing	759	....With lock or interlock
715	....For module	760	...Connection of components to board

761	....Component within printed circuit board	803	....Interconnection details
762	.....With specific dielectric material or layer	804	....Spacer details
763	.....Capacitor and electrical component	805	..Matrix assembly
764	.....Integrated circuit	806	...Diode
765	....By direct coating of components on board	807	..Component mounting or support means
766	.....Capacitor and resistor	808	...Mounting pad
767	....With mounting pad	809	...With discrete structure or support
768	.....Having leadless component	810	...Plural mounting or support
769	.....Having spring member	811	...With passive components
770	.....Having spacer	812	...With particular insulation
771	.....Having particular material	813	..Lead frame
772	....With specific lead configuration	814	..Radio type
773	.....Shaped lead on components	815	...Tube mounting
774	.....Shaped lead on board	816	..Shielding
775	.....Busbar	817	...For electronic tube
776	.....Flexible connecting lead	818	...EMI
777	....By specific pattern on board	819	..For relay
778	.....Cross-connected	820	..For semiconductor device
779	....With specific connection material	821	..For capacitor and inductor
780	....Different voltage layers	822	.Contact banks
781	....With switch	823	.Terminal block
782	....Having passive component	824	..With protective device or unit
783	....Having semiconductive device	825	.Support brackets
784	...Plural	826	.Wire distribution (e.g., harness, rack, etc.)
785	....With separable connector or socket means	827	..With interconnecting cable
786	.....Having key connection	828	..With switchboard or switch
787	.....Having spring member	829	.Frame
788	.....Having backplane connection	830	..With plurality of capacitors
789	.....Having flexible connector	831	..With cooling means
790	.....Stacked	832	..With switchboard or switch
791	.....Multiple contact pins	833	.Fuse block
792	....Plural contiguous boards	834	..Plural
793	.....Thick film component or material	835	.Fuse pullout device
794	.....Power, voltage, or current layer	836	.For transformer
795	.....Plural dielectric layers	837	.For switch or fuse
796	....With housing or chassis	500	<b>ELECTROLYTIC SYSTEMS OR DEVICES</b>
797	.....Storage or file cabinet	501	.Coulometer (i.e., electrochemical timer)
798	.....With ejector or extractor	502	.Double layer electrolytic capacitor
799	.....Grounding Construction or Detail	503	.Liquid electrolytic capacitor
800	.....With Shielding Structure	504	..With significant electrolyte
801	.....Specific latching or retaining device	505	...Salt solute
802	.....Specific alignment or guide means	506	...Ethylene glycol
		507	...With depolarizer
		508	..Anode type electrode
		509	...Aluminum or tantalum
		510	...Anode riser
		511	...Wound
		512	....With separator



513	...With mounting means (e.g., anchoring means or clamping)	Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collections listed below. These Collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.	
514	...With heat conductor (e.g., heat sink)		
515	...With common conductor (e.g., stripline)		
516	..Cathode type electrode (e.g., cathode casing)		
517	..Casing		
518	..With hermetic seal		
519	..With header, cover, or endseal		
520	...Significant electrical connection means (e.g., terminals or leads)		
521	..With vent means		<b>SAFETY AND PROTECTION OF SYSTEMS AND DEVICES (361/1)</b>
522	..Multiple capacitors		.With specific voltage responsive fault sensor (361/88)
523	.Solid electrolytic capacitor (e.g., dry electrolytic capacitor)		FOR 100 ..Overvoltage (361/91)
524	..Dielectric		<b>SAFETY AND PROTECTION OF SYSTEMS AND DEVICES (361/1)</b>
525	..With significant electrolyte or semiconductor		FOR 101 .With specific current responsive fault sensor (361/93)
526	...Paste or gel		
527	...Organic salt (e.g., TCNQ)		
528	..Anode type electrode		
529	...Aluminum or tantalum		
530	...Wound		
531	...With lead conductor		
532	..Cathode type electrode		
533	..With significant lead		
534	..With protection means		
535	..Casing		
536	..With hermetic seal		
537	..With header, cover, or endseal		
538	...Significant electrical connection means (e.g., terminals or leads)		
539	...With potting		
540	..With terminal		
541	..Multiple capacitors		
434	.Systems (e.g., plural cells, standby exciting voltage)		
435	.Current interruption type (e.g., circuit breaker, D.C.-to-pulse converters)		
436	.Rectifiers		
437	<b>MISCELLANEOUS</b>		

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FOR 000 CLASS-RELATED FOREIGN DOCUMENTS

