

# Switchgear, Switchboard Apparatus, Relays, and Industrial Controls

1999

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Information about the scope of the survey, methodology, explanation of terms and historical notes for this survey may be found in the introduction of the 1997 Manufacturing Profiles, issued August 1999.

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NOTE: Data are now published on the new North American Industry Classification System (NAICS) basis and therefore are not always comparable to the old Standard Industrial Classification (SIC) code. For further information on NAICS, see [www.census.gov/epcd/www/naics.html](http://www.census.gov/epcd/www/naics.html).

## Summary of Findings

During 1999, the total value of shipments of switchgear and switchboard apparatus was \$7.2 billion, up 6.3 percent from the 1998 value of \$6.8 billion. The 1999 shipments include power circuit breakers, valued at \$577.8 million, an increase of 13.3 percent from 1998; low voltage panelboards, valued at \$2.4 billion, an increase of 7.2 percent from 1998; fuses and fuse equipment, valued at \$612.0 million, an increase of 6.0 percent from 1998; molded case circuit breakers, valued at \$1.4 billion, an increase of 4.9 percent from 1998; duct, valued at \$282.4 million, an increase of 1.5 percent from 1998; and switchgear valued at \$2.0 billion, an increase of 5.4 percent from 1998. During 1999, the total value of shipments of relays and industrial controls was \$9.5 billion, down 1.2 percent from the 1998 value of \$9.7 billion. The 1998 shipments include general-purpose relays valued at \$771.0 million, a decrease of 1.6 percent from 1998; specific-purpose industrial controls, valued at \$3.8 billion, a slight increase from 1998; general-purpose industrial controls, valued at \$4.5 billion, a decrease of 2.5 percent from 1998; and motor controller accessories valued at \$503.0 million, an increase of 1.4 percent from 1998.

## Current Industrial Reports

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Tempie Whittington, 301-457-4800.

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Table 1. Value of Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1992 to 1999  
[Millions of dollars]

Product code	Product description	1999	1998	1997	1996	1995	1994	1993	1992
3353131000	Power circuit breakers.....	544.8	481.0	459.5	412.7	442.9	550.9	520.8	480.8
3353133000	Low-voltage panelboards.....	2,359.6	2,201.0	2,169.4	2,093.3	2,025.4	1,750.8	1,687.1	1,531.1
3353135000	Fuses and fuse equipment.....	612.0	577.2	557.4	522.2	500.1	382.1	319.9	412.8
3353137000	Molded case circuit breakers.....	1,436.4	1,369.8	1,299.7	1,218.1	1,173.4	1,132.9	1,009.8	954.7
3353139000	Duct, 1,000 volts and under.....	282.4	278.1	284.0	254.5	238.5	227.9	200.1	189.1
335313A000	Switchgear (except ducts).....	1,987.6	1,885.6	1,830.5	1,868.2	1,758.3	1,663.7	1,581.3	161.5
3353141000	Relays, general purpose.....	771.0	783.2	829.7	786.6	808.1	804.0	750.6	781.5
3353143000	Specific-purpose industrial controls.....	3,788.5	3,785.4	3,568.2	3,454.9	3,312.4	2,747.9	2,321.6	1,915.7
3353145000	General-purpose industrial controls.....	4,471.7	4,587.2	4,362.7	4,323.8	4,189.2	3,840.3	3,326.3	2,778.2
3353147000	Motor controller accessories and parts for industrial controls.....	503.0	496.0	564.8	516.4	503.3	511.6	476.4	447.9

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1999 and 1998  
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1999				1998			
			Quantity		Value		Quantity		Value	
335313	Switchgear and switchboard apparatus.....	(NA)	(X)		7,222,746		(X)		6,792,833	
3353131	Power circuit breakers, all voltages.....	33	(X)	a/	544,791		(X)		481,031	
3353131001	Power circuit breakers (sold separately) for use in metal-clad switchgear, oil and oilless, over 1,000 volts, (number of breakers).....	11	(S)	c/	36,271		3,639	a/ r/	29,671	
3353131003	All other power circuit breakers (sold separately).....	25	(S)	a/	466,649		2,290,090		398,101	
3353131029	Parts for all power circuit breakers.....	20	(X)	c/	41,871		(X)	b/	53,259	
3353133	Low voltage panelboards, distribution boards, and other switching and interrupting devices, 1,000 volts and below.....	114	(X)	a/	2,359,602		(X)	a/	2,201,034	
	Panelboards, including enclosing cabinets:									
3353133201	Fusible, including combination switch fuse.....	41	(S)		145,469		(S)	a/ r/	141,057	
3353133104	Circuit breaker.....	52	a/	1,359,100	638,682		1,306,041		607,916	
	Distribution switchboards:									
3353133207	Fusible.....	30	b/	29,552	126,924	a/	39,274		153,996	
3353133211	Circuit breaker.....	43	b/	78,891	349,234		73,397		307,842	
3353133213	Other, including theater switchboards.....	5	(D)		(D)		(D)		(D)	
	Switches (except switches commonly known as snap, toggle, and rotary switches and switch devices intended primarily to be used with electric motor controls):									
	Knife switches, enclosed:									
3353133216	Heavy duty.....	11	a/	1,623,227	203,732	a/ r/	1,598,416		185,858	
3353133219	General duty.....	7		1,215,287	61,290	r/	1,263,047	r/	59,667	
3353133222	Enclosed fusible, service entrance, and branch circuit cutouts.....	6	(D)		(D)		(D)		(D)	
3353133225	Circuit breaker type.....	16	a/	10,899,594	303,159		11,019,672		277,555	
3353133228	Load centers:									
	Grouped metering panels (combinations of two or more meters and related switching units with overcurrent protection associated with each meter, including accessory components, excluding single socket load combinations).....	15	(S)	a/	33,988		(S)	r/	34,879	
3353133231	Other switches, excluding snap, bolted, toggle, push, etc., including open knife switches, motor contact, motor disconnect, meter service equipment other than metermounting, and test devices.....	17	(X)	b/	131,533		(X)	a/ r/	127,579	
3353133234	Other low voltage switchgear apparatus.....	26	(X)	a/	355,806		(X)	b/	293,945	
3353135	Fuses and fuse equipment, under 2,300 volts (except power distribution cutouts) .....	18	(X)	c/	611,965		(X)	c/	577,241	
3353135001	Nonrenewable plug fuses 1/.....	2	(X)		(D)		(X)		(D)	
3353135004	Nonrenewable cartridge fuses.....	9	(X)	c/	276,647		(X)	c/ r/	251,435	
3353135007	Renewable plug and cartridge fuses, including renewable links 1/.....	3	(X)		2,746		(X)		4,114	
3353135011	Other fuses and open fuse material, including cutouts, clips, bases, etc. ....	17	(X)	c/	332,573		(X)	c/	321,692	
3353137	Molded case circuit breakers, 1,000 volts and under.....	34	(X)	a/	1,436,395	b/	(X)	a/	1,369,777	
	Industrial type, assembled as complete units in supporting and enclosing housing of insulating materials, with or without accessories or attachments:									
3353137001	With ground fault detection capability 2/.....	14	(D)		(D)		(D)		(D)	
3353137004	Without ground fault detection capability 2/.....	18	b/	38,083,393	755,226	b/	36,175,444	a/	718,982	

Continued

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1999 and 1998  
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1999		1998	
			Quantity	Value	Quantity	Value
3353137007	Residential or light duty type, (primarily) for load center application, assembled as complete units in supporting and enclosing housing of insulating materials: With ground fault detection capability 3/.....	7	(D)	(D)	(D)	(D)
3353137011	Without ground fault detection capability 3/.....	6	(S)	335,790	(S)	312,656
3353137013	Individually enclosed industrial type, excluding panelboards and busway plugs .....	13	(S)	16,748	(S)	17,015
3353137017	Other molded case circuit breakers: Marine, Navy, aircraft and aerospace type .....	7	(S)	c/ 138,416	(S)	c/ 138,602
3353137031	All other types, including automotive and electronic .....	15	(S)	b/ 190,215	(S)	b/ 182,522
3353139	Duct, including plug-in units and accessories, 1,000 volts and under, consisting of enclosed sectionalized prefabricated bus bars rated 20 amperes or more and associated structures and fittings.....	20	(X)	282,401	(X)	278,125
335313A	Switchgear (except ducts).....	125	(X)	a/ 1,987,592	(X)	1,885,625
335313A101	Automatic and manual control panels (generators, transformers, feed-controls, etc.).....	65	(X)	a/ 271,554	(X)	a/ 255,841
335313A204	Metal-clad switchgear (using power circuit breakers, oil and oilless), all voltages above 1,000 volts, up to and including 38 kV, excluding load interrupter switchgear.....	44	(X)	c/ 376,612	(X)	a/ 367,331
335313A307	Metal-enclosed load interrupter switchgear assemblies, all voltages, including parts.....	38	(X)	a/ 215,470	(X)	185,387
335313A311	Metal-enclosed low-voltage power circuit breaker switchgear assemblies 1,000 volts and below, including parts and excluding load interrupter switchgear.....	34	(X)	c/ 147,244	(X)	r/ 143,455
335313A313	Metal-enclosed bus bars when sold separately, above 1,000 volts, including isolated, segregated, nonsegregated and cable bus bars.....	15	(X)	a/ 35,945	(X)	39,674
335313A316	Power switching equipment, 2,300 volts and over, including attachments, auxiliaries, bus supports and fittings, and accessories, but excluding power fuses, sold separately. Also includes single-phase circuit reclosers:					
335313A319	Outdoor, excluding structures.....	26	(X)	a/ 394,358	(X)	367,821
335313A322	Indoor.....	9	(X)	7,068	(X)	r/ 9,808
335313A325	Power fuses and fuse links for 2,300 volts and over, ac service, excluding distribution cutouts 4/.....	11	(X)	(D)	(X)	(D)
335313A328	Power and ground connectors generally used in substation construction 4/.....	5	(X)	195,538	(X)	183,634
335313A331	Overhead transmission and distribution connectors (clamps, taps, terminals, and splices).....	5	(X)	a/ 46,293	(X)	47,219
335313A334	Transmission and distribution connectors, n.e.c., including underground deadends, hot line taps, stirrups, and repair sleeves, etc. 5/.....	4	(X)	(D)	(X)	(D)
335313A337	Distribution cutouts.....	8	(X)	b/ 82,344	(X)	80,315
335314	Other switchgear devices, including regulators and miscellaneous switchboard devices (for sale separately) 5/.....	23	(X)	b/ 215,166	(X)	a/ 205,140
3353141	Relays and industrial controls.....	(NA)	(X)	a/ 9,534,268	(X)	9,651,752
3353141	General-purpose and other relays.....	107	(X)	b/ 770,996	(X)	b/ 783,207

Continued

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Product code	Product description	No. of cos.	1999				1998			
			Quantity		Value		Quantity		Value	
3353141001	Industrial-control relays (all voltages), n.e.c. ....	41	(S)	a/	242,395		(S)	a/	263,551	
	General-purpose electromechanical relays:									
	Over 100 MW actuating power and sealed (either hermetically or environmentally):									
3353141004	0 through 2.0 amperes contact rating 6/.....	8	(D)		(D)		(D)		(D)	
3353141007	Over 2.0 through 10.0 amperes contact rating 6/.....	17	(D)		(D)		(D)		(D)	
3353141011	Over 10.0 amperes contact rating 6/.....	8	2,374,166		46,857		2,368,154		46,154	
	Over 100 MW actuating power and not sealed:									
3353141013	0 through 10.0 amperes contact rating.....	13	a/	880,876	a/	8,419	a/	858,978	a/	8,383
3353141016	Over 10.0 amperes contact rating 7/.....	12	c/	665,589	b/	9,646	b/	720,447	b/	10,002
3353141019	0 through 100 MW actuating power (both sealed and not sealed) 7/.....	2	(D)		(D)		(D)		(D)	
	Miniature printed circuit mounted electromechanical relays, excluding reed relays (profile height 1/2-inch max.):									
	Sealed (either hermetically or environmentally):									
3353141022	0 through 2.0 amperes contact rating .....	2	(D)		(D)		(D)		(D)	
3353141025	Over 2.0 amperes contact rating .....	2	(D)		(D)		(D)		(D)	
3353141028	Not sealed.....	4	(D)		(D)		(D)		(D)	
	DIP or SIP footprint:									
3353141031	Sealed (either hermetically or environmentally).....	1	(D)		(D)		(D)		(D)	
	Telephone relays, all types:									
3353141034	Sealed (either hermetically or environmentally) .....	3	(D)		(D)		(D)		(D)	
3353141037	Not sealed .....	4	c/	31,479	c/	368	c/	36,359	b/	418
3353141041	General-purpose solid-state relays, pure solid-state and hybrid solid-state, excluding time delay.....	10	(S)	b/	13,873		(S)	b/	13,661	
	High performance military/aerospace/ aircraft relays and contactors (generally pertaining to Mil-R5757, 6106, 19523, 25108, and 39016):									
3353141043	Round and square can multipole airframe relays and contactors (both sealed and not sealed) (all sizes).....	5	(S)	c/	44,132		(S)	a/	40,219	
	Crystal can types (sealed):									
3353141046	Larger than full size.....	4	(D)		(D)		(S)		24,683	
3353141049	Full size.....	4	(S)	c/	7,965	a/	145,775	a/	9,759	
3353141052	Half size and smaller, including TO-5 package .....	5	(D)		(D)		1,371,480		36,448	
3353141055	RF, antenna and coaxial relays (sealed and not sealed), excluding reed relays .....	5	(D)		(D)		(D)		(D)	
	Reed relays:									
	Dry reed:									
3353141058	Miniature size (glass length less than .85 inch).....	8	(D)		(D)		(D)		(D)	
3353141061	Standard size .....	6	(D)		(D)		(D)		(D)	
3353141064	Mercury wetted reed .....	4	(S)		1,832		(S)		1,805	
3353141067	Stepping switches, stepping and impulse relays .....	4	(D)		(D)		(D)		(D)	
3353141071	Switchgear and protective relays .....	6	(D)		(D)		(D)		(D)	
	Timing relays (timers):									
3353141073	Solid-state/EMR combination.....	22	b/	1,262,368	c/	35,301	b/	1,241,224	b/	35,357
3353141076	Solid-state-pure.....	18	a/	312,330	c/	13,077		341,232		14,227
3353141079	All other timing relays (timers), including pneumatic, motor driven, electronic, etc. ....	15	c/	397,351	c/	16,390	c/	406,191	c/	18,196
3353141082	All other general-purpose and special-purpose relays, n.e.c. ....	21	(X)		155,434		(X)		141,201	

Continued

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1999 and 1998  
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1999				1998			
			Quantity		Value		Quantity		Value	
3353141085	Parts for general-purpose and special-purpose relays (sold separately).....	8	(X)	a/	10,864		(X)	b/	10,564	
3353143	Specific-purpose industrial controls.....	238	(X)	a/	3,788,540		(X)	a/	3,785,355	
3353143301	U.S. Coast Guard, Navy, and Marine auxiliary controls and accessories.....	20	b/	77,312	b/	183,428	a/	77,704	b/	156,039
3353143104	Metal mill controls and accessories (all voltages).....	8	(S)			89,355	(S)			67,246
3353143307	Crane and hoist controls, constant and adjustable voltage, including operators' desks and stations.....	17	a/	34,305		130,296	a/	40,364		138,158
3353143311	Definite-purpose contactors and starters (600 volts and less).....	18	a/	39,172,376	a/	99,075		37,920,317		107,499
	Machine tool applications (motion controllers):									
	Stand-alone controls for numerically controlled machine tools:									
3353143313	Computer numerical controls (CNC); positioning (point-to-point).....	7	(S)			15,304	(S)			18,756
3353143316	Computer numerical controls (CNC); continuous path (contouring).....	11	b/	30,623	c/	412,460	a/	34,603		403,782
3353143319	Robotic controls 8/.....	4	(D)			(D)	(D)			(D)
3353143322	Other stand-alone motion controls 8/.....	16	c/	88,901	b/	98,506		97,967	a/	105,386
3353143325	Subordinate motion controls .....	11	(S)		c/	14,757	(S)		c/	15,911
3353143228	Programmable controllers, sold separately.....	55	(S)	a/	1,571,280		(S)	a/	1,496,344	
3353143331	Other specific- or special-purpose ac and dc controllers, other definite-purpose devices.....	146	(X)	b/	1,174,079		(X)	a/	1,276,234	
3353145	General-purpose industrial controls and power circuit devices.....	250	(X)	b/	4,471,699		(X)	a/	4,587,165	
	General-purpose controls:									
3353145001	Ac full voltage noncombination magnetic starters (1,000 volts or less) .....	27	b/	964,313	b/	149,064	b/	942,912	a/	159,249
	Ac full voltage combination magnetic starters (1,000 volts or less):									
3353145004	Combination starters (less pumping panels) .....	22	a/	117,684	a/	68,627		103,167		69,604
3353145007	Pumping panels .....	19	a/	56,093	a/	37,041		61,919		38,639
3353145011	Disconnect switches (600 volts or less).....	21		2,270,110		65,721		1,826,705		53,360
	Ac full voltage manual controllers, 1,000 volts or or less:									
3353145013	Designed and rated to U. S. National Standards (NEMA) 9/.....	10		1,190,409	b/	44,142		1,166,780		48,323
3353145016	Designed and rated to International Standards (IEC) 9/.....	6	(D)			(D)	(D)			(D)
	Ac contactors, 1,000 volts or less, excluding controls for packaged adjustable speed drives and synchronous motor controls:									
3353145019	Designed and rated to U. S. National Standards (NEMA) .....	14		619,749		83,868		593,781		84,794
3353145022	Designed and rated to International Standards (IEC) .....	18		1,271,630		64,901	(S)			57,428
3353145025	Ac reduced voltage controls, 1,000 volts or less, excluding synchronous motor starters.....	21	a/	74,966		56,309	b/	78,525	b/	56,740
3353145028	Synchronous motor starters, 1,000 volts or less, including both full and reduced voltage.....	4	(S)			1,617	(S)			915
3353145031	Motor control centers, 1,000 volts or less.....	37	(X)			711,143	(X)			704,414
3353145034	Starters and contactors for squirrel cage and wound rotor and synchronous and nonsynchronous motors, over 1,000 to 7,200 volts, air break, vacuum, and oil immersed.....	7	(S)	a/	72,898		(S)			76,628

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Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1999 and 1998  
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1999				1998			
			Quantity		Value		Quantity		Value	
3353145037	Brakes and clutches.....	18	(S)	b/	64,375		(S)		70,615	
3353145041	Digital readout systems, including dial or plugboard type.....	19	11,237	a/	6,251	c/	9,063	b/	6,775	
	Presence sensors and motion measurement devices: Limit switches (positioning sensors):									
3353145043	Electromechanical positioning sensors.....	32	(X)		133,651		(X)		138,224	
3353145046	Movement sensors.....	21	(X)		39,024		(X)		39,131	
	Solid-state positioning sensors:									
3353145049	Nonoptical proximity sensors.....	24	(X)		110,395		(X)		83,590	
3353145052	Optical proximity sensors.....	16	(X)		169,935		(X)		175,992	
3353145055	All other pilot circuit devices, excluding relays and limit switches.....	10	(X)	c/	11,576		(X)	c/	10,607	
3353145058	Dc power circuit devices (all voltages).....	12	(X)	b/	24,435		(X)	b/	24,714	
3353145061	Other control sensors (all voltages).....	19	(X)	a/	100,015		(X)		107,019	
	Pushbuttons and pushbutton stations, excluding operators' desks and stations:									
3353145064	Pushbuttons, 18 mm and smaller.....	12	(X)		3,541		(X)		3,888	
3353145067	Pushbuttons, 19 mm to 29 mm.....	21	(X)		71,377		(X)		64,140	
3353145071	Pushbuttons, 30 mm and larger.....	25	(X)		203,951		(X)		220,502	
3353145073	Rheostats and resistors (except for electronic applications) sold separately, n.e.c. ....	13	(X)	a/	24,935		(X)		26,046	
	Controls for adjustable speed drives, including electronic and nonelectric and operators' desks and stations:									
3353145076	Controls for ac packaged drives.....	37	c/	600,734	b/	484,898	a/	586,511	a/	506,821
3353145079	Controls for dc packaged drives.....	28	b/	122,859	b/	65,699	a/	132,754		72,898
3353145082	Ac drives systems.....	36	c/	42,400	a/	172,110	c/	44,552		166,416
3353145085	Dc drives systems.....	24	a/	(S)	80,651	a/	334,590		104,735	
3353145088	Solid-state motor controllers (all voltages).....	49	c/	761,243	b/	218,524	b/	1,312,851	a/	257,026
3353145091	All other general industry devices and systems.....	95	(X)	a/	1,131,025		(X)	a/	1,157,912	
3353147	Motor controller accessories and parts for industrial controls.....	117	(X)	a/	503,033		(X)	a/	496,025	
3353147001	Motor controller accessories, including those items that are sold separately, but become part of a motor controller. Includes overload relays, auxiliary contacts, heater elements, mechanical interlocks, control transformers, kits to add push buttons, selector switches, pilot lights, separate controller enclosure fittings, reset mechanisms, etc., excluding motor circuit switches sold, separately.....	38	(X)		176,051		(X)	a/	165,905	
3353147004	Parts for industrial controls.....	97	(X)	a/	326,982		(X)	a/	330,120	

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.  
r/Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

- 1/Product codes 3353135001 and 3353135007 are combined to avoid disclosing data for individual companies.
- 2/Product codes 3353137001 and 3353137004 are combined to avoid disclosing data for individual companies.
- 3/Product codes 3353137007 and 3353137011 are combined to avoid disclosing data for individual companies.
- 4/Product codes 335313A322 and 335313A325 are combined to avoid disclosing data for individual companies.
- 5/Product codes 335313A331 and 335313A337 are combined to avoid disclosing data for individual companies.
- 6/Product codes 3353141004, 3353141007, and 3353141011 are combined to avoid disclosing data for individual companies.
- 7/Product codes 3353141016 and 3353141019 are combined to avoid disclosing data for individual companies.
- 8/Product codes 3353143319 and 3353143322 are combined to avoid disclosing data for individual companies.
- 9/Product codes 3353145013 and 3353145016 are combined to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item is estimated.  
b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 3. Shipments, Exports, Imports, and Apparent Consumption of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1999  
[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/
3353131001, 03	Power circuit breakers.....	502,920	144,840	109,318
3353131029	Parts for power circuit breakers.....	41,871	-	64,683
3353133104 3353133201, 207, 211, 213	Low voltage panelboards and distribution boards.....	(D)	144,904	367,922
3353133216, 216	Knife switches.....	265,022	3,937	14,411
3353133228, 234	Grouped metering panels, including accessory components and other low voltage switchgear apparatus.....	389,806	41,750	50,388
3353135001, 004, 007, 011	Fuses and fuse equipment, under 2,300 volts.....	611,965	206,378	96,000
3353137001, 004, 007, 011, 013, 017, 031	Molded case circuit breakers, 1,000 volts and under.....	1,436,395	109,227	388,614
3353139000	Duct, including plug-in units and accessories.....	282,401	26,741	7,971
335313A101, 204, 307, 311, 313, 316, 319, 334, 337	Switchgear and switchgear assemblies 3/.....	(D)	21,967	11,704
335313A322	Power fuses and fuse links, 2,300 volts and over 3/.....	(D)	10,443	3,384
335313A325, 328, 331	Power and ground connectors and transmission and distribution connectors 3/.....	1,987,592	129,620	73,456
3353141001, 004, 007, 011, 013, 016, 019, 022, 025, 028, 031, 034, 037, 041, 043, 046, 049, 052, 055, 058, 061, 064, 067, 071, 073, 076, 079, 082	Relays.....	770,996	587,358	767,227
3353143313, 316	Controls for numerically controlled machine tools.....	427,764	34,313	44,603
3353143228	Programmable controllers.....	1,571,280	154,702	439,475
3353145001, 004, 007, 028	Motor starters.....	311,041	69,194	37,814
3353145031	Motor control centers, 1,000 volts or less.....	711,143	81,331	38,483
3353145037	Brakes and clutches.....	64,375	37,490	85,690
3353145043, 046	Limit switches.....	172,675	-	-
3353145073	Rheostats and resistors.....	27,935	6,996	13,500

- Represents zero. D Withheld to avoid disclosing data for individual companies.

1/Source: Census Bureau report EM 545, U.S. Exports.

2/Source: Census Bureau report IM 145, U.S. Imports for Consumption.

3/Data for "Switchgear and switchgear assemblies" and "Power fuses and fuse links" are combined with "Power and ground connectors and transmission and distribution connectors" to avoid disclosing data for individual companies.



Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 1999

Product code	Product description	Export number 1/	Import number 2/
3353131001, 003	Power circuit breakers.....	8535.21.0000 8535.29.0020 8535.29.0040 8536.20.0040	8535.21.0000 8535.29.0020 8535.29.0040 8536.20.0040
3353131029	Parts for power circuit breakers.....	8538.90.8020	8538.90.8020
3353133104 3353133201, 207, 211, 213	Low voltage panelboards and distribution boards.....	8537.10.9050	8537.10.9050
3353133216, 219	Knife switches.....	8536.50.9045	8536.50.9045
3353133228, 234	Grouped metering panels, including accessory components and other low voltage switchgear apparatus.....	8537.10.9020	8537.10.9020
3353135001, 004, 007, 011	Fuses and fuse equipment, under 2,300 volts.....	8535.10.0040 8536.10.0020 8536.10.0040	8535.10.0040 8536.10.0020 8536.10.0040
3353137001, 004, 007, 011, 013, 017, 031	Molded case circuit breakers, 1,000 volts and under.....	8536.20.0020	8536.20.0020
3353139000	Duct, including plug-in units and accessories.....	8536.90.8010	8536.90.8010
335313A101, 204, 307, 311, 313, 316, 319, 334, 337	Switchgear and switchgear assemblies.....	8537.20.0020	8537.20.0020
335313A322	Power fuses and fuse links, 2,300 volts and over .....	8535.10.0020	8535.10.0020
335313A325, 328, 331	Power and ground connectors and transmission and distribution connectors.....	8535.90.8040	8535.90.8040
3353141001, 004, 007, 011, 013, 016, 019, 022, 025, 028, 031, 034, 037, 041, 043, 046, 049, 052, 055, 058, 061, 064, 067, 071, 073, 076, 079, 082	Relays.....	8536.41.0005 8536.41.0020 8536.41.0030 8536.41.0045 8536.41.0050 8536.41.0060 8536.49.0050 8536.49.0055 8536.49.0065 8536.49.0075 8536.49.0080	8536.41.0005 8536.41.0020 8536.41.0030 8536.41.0045 8536.41.0050 8536.41.0060 8536.49.0050 8536.49.0055 8536.49.0065 8536.49.0075 8536.49.0080
3353143313, 316	Controls for numerically controlled machine tools.....	8537.10.9030	8537.10.9030
3353143228	Programmable controllers.....	8537.10.9060	8537.10.9060
3353145001, 004, 007, 028	Motor starters.....	8536.50.4000	8536.50.4000
3353145031	Motor control centers, 1,000 volts or less.....	8537.10.6000	8537.10.6000
3353145037	Brakes and clutches.....	8505.20.0000	8505.20.0000
3353145043, 046	Limit switches.....	8536.50.8055	8536.50.8055
3353145073	Rheostats and resistors.....	8533.40.0040 8533.40.8040	8533.40.8040

1/Source: 1999 edition, Harmonized System-Based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (1999).