

Selected Instruments and Related Products

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.

Current data are released electronically on Internet for all individual surveys as they become available. Use: <http://www.census.gov/econ/www/manumenu.html>. Individual reports can be accessed by choosing "Current Industrial Reports (CIR's)," clicking on "Report Number Index;" from the "Industrial Products by Numeric Index," choose the survey of interest. Follow the menu to view the PDF file or to download the worksheet file (WK format) to your personal computer.

These data are also available through the U.S. Department of Commerce and STAT-USA Electronic Bulletin Board by subscription. To access, dial 202-482-3870 and follow the prompts to register. Also, you may call 202-482-1986 or 1-800-STAT-USA, for further information. The Internet address is: www.stat-usa.gov/.

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.

SUMMARY OF FINDINGS

During 1999, the total value of shipments of selected instruments and related products totaled \$69 billion, down slightly from the 1998 value of \$70 billion. The 1999 figure includes automatic regulating, control, and solenoid valves, \$2.7 billion, up 2.9 percent from 1998; search, detection, navigation, guidance, aeronautical, and nautical systems, instruments, and equipment, \$26.5 billion, a decrease of 7 percent from 1998; laboratory apparatus and furniture, \$1.8 billion, down 1 percent from 1998; controls for monitoring residential and commercial environments, and appliance regulating controls, \$2.9 billion, unchanged from 1998; process control instruments, \$6.5 billion, down 1 percent; fluid meters and counting devices including motor vehicle instruments, \$4.2 billion, up 7.7 percent from 1998; test equipment and instruments to measure electricity, \$11.6 billion, an increase of 2.7 percent from 1998; analytical and scientific instruments (except optical), \$6.2 billion, an increase of 1 percent from 1998; optical instruments and lenses, \$2.7 billion, an increase of 7.8 percent from 1998; test equipment, instruments, and measuring and controlling devices, not elsewhere classified (n.e.c.), \$4.3 billion, a decrease of 10 percent from 1998.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Chris Blackburn, 301-457-4817.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-457-4673.

U S C E N S U S B U R E A U

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U.S. Department of Commerce
Economics and Statistics Administration
U.S. Census Bureau



Table 1. Value of Shipments of Selected Instruments and Related Products by Product Code: 1993 to 1999
 [Millions of dollars]

Product code	Product description	1999	1998	1997	1996	1995	1994	1993
332911F	Automatic regulating and control valves.....	2,213.2	2,081.9	2,097.2	1,892.6	1,860.4	1,807.1	1,647.5
332911H	Solenoid-operated valves (except nuclear and fluid power transfer).....	467.5	524.0	541.1	521.8	463.8	452.3	406.0
3345111	Aeronautical, nautical, and navigational instruments.....	2,636.8	2,503.9	2,531.0	2,274.3	2,124.5	1,858.9	2,121.2
3345113	Search and detection, navigation and guidance systems and equipment	23,835.9	26,030.5	26,584.1	26,093.9	24,697.4	25,566.7	28,604.4
3391110	Laboratory apparatus and laboratory furniture.....	1,822.9	1,843.3	1,887.5	1,799.3	1,836.9	1,811.1	1,597.8
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls.....	2,878.5	2,860.3	2,717.4	2,647.5	2,533.4	2,520.9	2,309.9
3345130	Process control instruments.....	6,546.4	6,637.0	7,073.1	6,745.1	6,438.5	6,240.0	5,934.9
3345141	Integrating and totalizing meters for gas and liquids.....	1,076.7	1,147.2	1,078.7	962.8	915.2	859.1	777.0
3345143	Counting devices.....	408.3	394.0	434.5	367.0	363.8	354.9	285.4
3345145	Motor vehicle instruments.....	2,799.1	2,435.8	2,245.1	2,218.8	2,193.1	2,092.0	1,768.1
3345151	Integrating instruments, electrical.....	477.2	460.3	457.3	458.0	445.0	440.3	461.0
3345153	Test equipment for testing electrical, radio and communication circuits, and motors.....	10,761.5	r/ 10,453.9	11,638.6	10,389.5	9,255.0	7,582.0	6,571.6
3345155	Instruments to measure electricity.....	359.9	r/ 376.6	455.9	499.8	554.9	554.4	525.8
3345160	Analytical and scientific instruments (except optical).....	6,222.2	r/ 6,162.4	6,058.6	5,478.4	5,737.2	5,534.0	4,766.1
3333141	Sighting, tracking, and fire control equipment, optical type.....	525.6	509.8	574.9	612.9	655.4	652.1	768.6
3333143	Optical instruments and lenses.....	2,252.2	2,068.0	2,005.0	1,748.9	1,579.1	1,596.7	1,455.8
3345191	Aircraft engine instruments (except flight).....	658.4	656.9	520.6	529.7	429.7	430.4	551.6
3345193	Physical properties and kinematic testing equipment.....	1,693.1	1,728.1	1,522.8	1,368.9	1,374.4	1,199.3	1,174.7
3345195	Nuclear radiation detection and monitoring instruments.....	531.9	567.2	529.6	496.5	501.2	489.1	519.4
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	1,111.4	r/ 1,533.8	1,676.7	1,451.6	1,373.2	1,344.0	1,271.4
3345199	Surveying and drafting instruments	310.2	r/ 297.3	359.8	364.8	355.9	324.3	301.4

r/Revised by 5 percent or more from previously published data.

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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	
332911F	Automatic valves (regulating and control type, except nuclear).....	140	(X)	b/	2,213,205	(X)	a/	2,081,929	
	Automated control valves:								
	Pneumatic actuated.....	(NA)	(X)		610,063	(X)		617,672	
	Sliding stem valves.....	(NA)	(S)		314,266	(S)		317,220	
332911F001	Globe body.....	28	166,472		222,229	r/	176,036	215,833	
332911F003	All other types.....	23	(S)	b/	92,037	(S)	b/	101,387	
	Rotary valves.....	(NA)	(S)		134,190	(S)		138,234	
332911F005	Ball.....	13	(S)		63,971	(S)		69,620	
332911F007	Butterfly	15	a/	39,381	45,391	r/	37,416	r/	44,816
332911F009	All other rotary valves, including eccentric disk.....	12	b/	14,808	24,828	b/	15,492	23,798	
332911F011	All other pneumatic power-operated control valves.....	17	a/	(S)	b/	44,258	(S)	b/	35,577
332911F013	Parts for pneumatic actuated valves sold separately.....	25	(X)		117,349	(X)		126,641	
	All other actuation, including electric-actuated and electro-hydraulic actuated.....	(NA)	(X)		380,689	(X)		339,233	
	Sliding stem valves.....	(NA)	(S)		93,622	(S)		89,537	
332911F015	Globe body.....	9	8,580		4,483	(S)		4,925	
332911F017	All other types.....	14	(S)	c/	89,139	(S)		84,612	
332911F022	Rotary valves, including ball, butterfly, and eccentric disk.....	11	(S)	a/	64,980	(S)	r/	60,319	
332911F025	All other power-operated (except pneumatic) control valves 1/.....	19	4,303		180,682	4,363		165,041	
332911F027	Parts for all other power-operated (except pneumatic) control valves.....	15	(X)		41,405	(X)		24,336	
332911F029	Valve actuators, sold separately.....	21	a/	156,898	a/	112,558	r/	163,236	120,619
	Regulator valves:								
332911F031	Remote-sensing direct actuated temperature regulators 1/.....	20	(S)	a/	75,999	(S)		70,372	
332911F033	Self-contained direct-actuated pressure regulators (except instrument type and safety relief valves) 1/.....	35	a/	4,810	217,273	5,053		226,034	
332911F035	Pilot (internal and external)-actuated pressure regulators 1/.....	31	a/	245	a/	86,481	210	78,250	
332911F037	Self-contained direct-acting precision and instrument-type pneumatic (air and gas) pressure regulators 1/.....	12	a/	420	a/	38,566	480	a/r/	39,646
332911F039	Flow regulators for gas, vapors, or liquids 1/.....	43	22,494		258,292	r/	19,983	r/	221,005
332911F041	Other regulator valves 1/.....	28	(X)	b/	364,248	(X)	b/	305,714	
332911F043	Parts for regulator valves, sold separately.....	36	(X)	a/	69,036	(X)		63,384	
332911H	Solenoid-operated valves (except nuclear and fluid power transfer).....	44	(X)	b/	467,536	(X)	b/	523,968	
	Solenoid-operated valves (except power transfer valves):								
	Commercial/industrial types:								
332911H001	Two-way 1/	32	b/	4,068	159,669	5,151		217,938	
332911H003	Three-way 1/.....	16	b/	531	a/	31,519	514	32,632	
332911H005	Other 1/ 2/.....	15	(D)		(D)	(D)		(D)	
332911H007	Household appliance type 1/ 2/.....	2	19,210		222,855	17,064		220,346	
332911H009	Parts, components, and operators for solenoid-operated valves (except nuclear and fluid power transfer valves, sold separately).....	21	(X)	a/	53,493	(X)		53,052	
3345111	Aeronautical, nautical, and navigational instruments (except aircraft engine instruments).....	81	(X)	a/	2,636,811	(X)	b/	2,503,869	
	Flight and navigation sensors, transmitters, and displays:								
3345111101	Compasses (all types).....	15	(X)	a/	418,772	(X)	a/	312,228	
3345111103	Altimeters (except radio and radar altimeters).....	9	(X)		30,280	(X)		21,519	
3345111105	Airspeed indicators, including machmeters and air data computers.....	17	(X)	a/	532,370	(X)		458,191	

Continued

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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		
3345111107	Acceleration indicators and systems components 3/.....	9	(D)		(D)	(D)		(D)		
3345111109	Rate-of-climb indicators 4/.....	3	(D)		(D)	(D)		(D)		
3345111111	Angle-of-attack indicators 4/.....	8	(S)	a/	34,047	(S)	r/	32,248		
3345111113	Artificial horizon flight instruments 3/.....	5	c/	4,202	a/	10,819	(D)	(D)		
3345111115	Other aerospace and navigational instruments 3/.....	28	(X)		594,876	(X)		628,553		
	Gyroscopes, sold separately:									
3345111217	Vertical.....	4	(S)	b/	6,155	c/	849	b/	8,594	
3345111219	Directional.....	5	(S)	b/	3,618	(S)	b/	3,378		
3345111221	Free, torqued and untorqued 5/.....	2	(X)		(D)	(X)		(D)		
3345111223	Rate, inertial grade 5/.....	3	(X)		57,332	(X)		62,217		
3345111225	Rate, noninertial grade.....	5	(X)		54,766	(X)		59,111		
	Airframe equipment instruments:									
3345111227	Position indicators (mechanical, as for landing gear, cowl flaps, stabilizers, etc.).....	14	(X)	a/	38,630	(X)		32,129		
3345111229	Hydraulic system (both electrical and mechanical measuring means, as for liquid level and temperature and pressure indicators).....	12	(X)	a/	39,902	(X)	a/	41,187		
3345111231	Cabin environmental measuring and control instruments (air-conditioning and heating, cabin pressure, oxygen, etc.).....	12	(X)	a/	58,523	(X)		70,404		
3345111233	Other aerospace flight instruments.....	22	(X)	c/	562,402	(X)		567,042		
3345111335	Nautical instruments (all types, including temperature, speed, pitch, and roll instruments and system components, etc.).....	11	c/	170,448	b/	47,577	c/r/	201,094	b/	61,607
3345111437	Parts and components for aeronautical, nautical, and navigational instruments (except aircraft engine instruments, sold separately).....	25	(X)		146,742	(X)	r/	145,461		
33451113	Search and detection systems and navigation and guidance systems and equipment.....	200	(X)	b/	23,835,918	(X)	a/	26,030,509		
3345113101	Light reconnaissance and surveillance electronic systems and equipment (infrared, ultraviolet, and visible light).....	36	(X)	b/	1,519,616	(X)	r/	1,876,352		
3345113103	IFF equipment.....	11	(X)		222,468	(X)		163,229		
3345113105	Proximity fuses.....	5	(X)		(D)	(X)		(D)		
	Radar systems and equipment:									
	Search, detection, and acquisition radar systems and equipment (BMEWS, airborne and other early warning radar, air traffic control radar, air defense and fighter control radar, ship radar, harbor control radar, meteorological radar, etc.):									
3345113207	Airborne and missile/space radar.....	18	(X)	c/	1,936,476	(X)		2,342,438		
3345113209	Ship (marine) radar 6/.....	14	(X)		(D)	(X)		(D)		
3345113211	Ground radar 6/.....	18	(X)		1,231,997	(X)		1,313,302		
	Tracking radar systems and equipment (fire control, bombing, bombing navigational radar, aircraft and missile tracking radar, etc.):									
3345113313	Airborne and missile/space radar.....	9	(X)		(D)	(X)		(D)		
3345113315	Ship (marine) radar.....	8	(X)		(D)	(X)		(D)		
3345113317	Ground radar.....	17	(X)	a/	327,421	(X)		288,082		
	Instrumentation radar systems and equipment (altimeters, highway speed control radar, missile and space satellite tracking range radar, GCA and other precision approach radar, etc.):									
3345113319	Airborne, missile/space and ship (marine) radar.....	7	(X)	b/	70,771	(X)		83,318		
3345113321	Ground radar.....	7	(X)	a/	98,349	(X)	a/	91,355		

Continued

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 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1999		1998	
			Quantity	Value	Quantity	Value
3345113323	Electronic checkout, monitoring, evaluation, and other electronic support equipment for radar systems.....	12	(X) c/	78,559	(X)	93,290
3345113425	Sonar search, detection, tracking and communication systems and equipment, including ASW (sonar telephone communication equipment, depth finding, fire control, fusing, guidance, hydrophones, mapping, sonabuys, navigation, sonar fish finders, sonar range instrumentation, and other): Surface ship applications (destroyers, destroyer escorts, etc.).....	20	(X) a/	343,360	(X) a/	303,421
3345113427	Submarine applications.....	14	(X) a/	627,782	(X)	516,459
3345113429	Airborne.....	12	(X) b/	223,698	(X) a/	226,423
3345113431	Electronic checkout, monitoring, evaluation, and other electronic support equipment for sonar systems and submerged fixed systems.....	7	(X)	159,006	(X) a/	146,380
3345113433	Specialized command and control data processing and display equipment, sold separately from complete systems.....	19	(X) a/	595,021	(X) r/	916,831
3345113435	Search, detection, identification, and tracking systems and equipment, n.e.c.	22	(X)	897,306	(X)	1,281,177
3345113437	Electronic warfare systems and equipment: Countermeasures equipment: Jamming equipment, communications, and radar.....	20	(X)	1,385,521	(X)	1,321,949
3345113439	Underwater countermeasures equipment.....	5	(X) a/	77,535	(X) a/	78,992
3345113441	Other active countermeasures equipment, excluding passive materials such as chaff, window, needles, rope.....	11	(X)	188,326	(X) a/r/	106,893
3345113443	Specialized electronic and communication intelligence equipment, including specially designed DF equipment, signal reduction and processing equipment, and signal analyzers and display equipment.....	28	(X) a/	2,176,064	(X) a/	2,092,284
3345113545	Missile and space vehicle systems and equipment (beam riders, command guidance, inertial systems, infrared homing systems, radar systems, stellar trackers, television systems, combination systems, etc.): Missile-borne and space-vehicle-borne equipment.....	34	(X) b/	3,303,122	(X)	4,034,319
3345113547	Nonmissile and space vehicle guidance equipment (ground, ship, or airborne command guidance systems, etc.).....	12	(X)	523,031	(X)	457,929
3345113549	Electronic checkout, launching, and other missile and space vehicle support systems (ground, ship, and air).....	19	(X)	696,602	(X)	548,101
3345113651	Navigation systems and equipment, navigational aids for aircraft, ship, and ground navigation (autopilots, beacons, transponders, collision warning devices, DECCA, DME, ILS, Doppler navigation systems, inertial navigation systems, optical/laser LORAN, radio compasses and direction finders, SHORAN, TACAN, VOR, VORTAC equipment, etc.): Airborne navigational systems: Radio navigation receivers and displays, including OMNI, radio magnetic, glide slope/localizer, and DME.....	20	(X) b/	774,754	(X) a/	825,196
3345113653	Airborne integrated data systems/ flight recorders.....	6	(X)	88,727	(X)	151,824

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 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1999			1998				
			Quantity		Value	Quantity		Value		
3345113655	Distance measuring equipment (DME).....	4	(X)		(D)	(X)		(D)		
3345113657	Flight directors/situation display.....	7	(X)	b/	472,181	(X)		(D)		
3345113659	Heads-up display (HUD) systems.....	6	(X)		164,486	(X)		190,783		
3345113661	Inertial navigation systems.....	8	(X)		584,459	(X)	r/	743,366		
3345113663	Proximity warning/collision avoidance equipment.....	3	(X)	c/	66,794	(X)		225,512		
3345113665	Complete automatic pilots.....	5	(X)	a/	471,234	(X)	r/	425,210		
3345113667	Other airborne navigational systems.....	23	(X)	c/	1,384,758	(X)	a/	1,347,299		
3345113669	Surface (ship and ground) navigational systems.....	33	(X)	a/	268,677	(X)	r/	420,734		
3345113671	Underwater navigational systems.....	6	(X)		(D)	(X)		(D)		
3345113673	Electronic checkout, monitoring, evaluation, and other electronic support equipment for navigational systems and equipment.....	36	(X)	c/	812,175	(X)	a/	833,799		
3391110	Laboratory apparatus and laboratory furniture.....	145	(X)	b/	1,822,850	(X)	a/	1,843,284		
3391110112	Laboratory balances and scales.....	10	(S)		60,550	a/	125,993	b/	54,571	
3391110115	Laboratory furnaces and ovens.....	19	(X)	b/	29,655	(X)		a/	30,771	
3391110118	Laboratory centrifuges.....	15	b/	30,943	a/	101,809	b/	32,307	a/	103,930
3391110121	Laboratory distillation apparatus and rectifying apparatus 7/.....	4	(X)		(D)	(X)		(D)		
3391110123	Laboratory vacuum pumps 7/.....	1	(S)		7,039	(S)		7,628		
3391110125	Laboratory sterilizers and autoclaves.....	12	(X)	a/	188,608	(X)	a/	186,981		
3391110127	Laboratory filtering or purifying apparatus 8/.....	4	(X)		(D)	(X)		(D)		
3391110129	Laboratory burners and hotplates.....	10	(X)	b/	7,861	(X)		7,876		
3391110131	Laboratory heat exchangers.....	-	(X)		-	(X)		-		
3391110133	Laboratory granulators, mills, and other particle size reduction apparatus.....	7	(X)		2,368	(X)		1,945		
3391110135	Laboratory drying and evaporation apparatus.....	11	(X)		28,318	(X)		25,091		
3391110137	Laboratory blenders, mixers, shakers, dispensers, fraction collectors, and other liquid sample preparation apparatus.....	28	(X)	b/	133,997	(X)	b/	132,081		
3391110139	Laboratory incubators.....	12	c/	32,658	b/	55,816	b/	31,727	a/	54,672
3391110141	Environmental test chambers.....	19	(S)	b/	141,273	(S)		a/	148,023	
3391110143	Laboratory freezers.....	7	c/	10,408		49,069	c/	10,695		49,157
3391110145	Microtomes 8/.....	2	(D)		(D)	(D)		(D)		
3391110231	Laboratory furniture, including cabinets, cases, benches, tables, stools, reagent shelves, etc. 9/.....	20	(X)	a/	277,615	(X)	a/	287,429		
3391110233	Parts and components for laboratory furniture, sold separately 9/.....	5	(X)		5,161	(X)		(D)		
3391110151	All other laboratory apparatus, n.e.c. 8/.....	77	(X)	a/	613,311	(X)		627,705		
3391110155	Components, parts and accessories for laboratory and scientific apparatus, sold separately.....	50	(X)		120,400	(X)		125,424		
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls.....	101	(X)	a/	2,878,468	(X)	a/	2,860,262		
	Automatic controls of the type principally used as components of air-conditioning, refrigeration, and comfort heating, including pneumatic controls:									
3345120102	Temperature responsive (thermostats).....	35	b/	51,648	a/	384,075	a/	51,654		387,222
3345120105	Pressure responsive (pressurestats) 1/.....	11	a/	2,469	a/	27,770		2,547	a/	27,886
3345120107	Hydronic responsive 1/.....	6		2,371		51,643		2,080		43,943
3345120109	Humidity responsive (humidistats) 1/ 10/.....	6		(D)		(D)		(D)		(D)
3345120111	Light responsive 1/ 10/.....	2		7,799		43,585	r/	7,294	r/	40,833
3345120113	Liquid level 1/.....	9	(S)	a/	38,336	(S)	a/		41,713	
3345120115	Igniters 1/ 11/.....	7	(D)		(D)	(D)		(D)		
3345120117	Inherent motor protectors 1/ 11/.....	4	c/	161,636		315,720		166,498		318,946
3345120219	Microprocessor-based load programmers for buildings: energy control 1/.....	11	(S)	a/	59,665	(S)	b/		54,537	
3345120221	Computerized energy control systems for buildings.....	11	(S)	a/	512,280	(S)			451,337	
3345120223	Other.....	23	(X)	a/	629,186	(X)	r/		704,061	

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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		
	Controls for major appliances such as domestic laundry and cooking appliances, refrigerators and freezers, vending machines, and air-conditioners:								
3345120225	Temperature responsive 1/.....	16	244,049	318,260	r/	249,393		319,881	
3345120227	All other controls for appliances 1/.....	14	50,841	332,814		(S)	r/	303,887	
3345120229	Parts and components for controls monitoring residential and commercial environments and for appliance regulating controls, sold separately.....	24	(X)	165,134		(X)	r/	166,016	
3345130	Process control instruments.....	497	(X)	b/ 6,546,446		(X)	a/	6,636,993	
	General-purpose control system instruments (commonly called receiver-type), operating from standardized transmission signals (electrical types ac or dc milliampere, millivolt, or telemetering signals; pneumatic types, 3 to 15 and 3 to 27 p.s.i. signals):								
	Electronic systems--unified architecture type:								
3345130101	Controllers (recording, indicating, or blind).....	35	b/ 157,818	b/ 151,607	b/	186,607	b/	164,173	
3345130103	Recorders, with or without self-contained set-point stations.....	18	(S)	b/ 127,488		(S)		105,030	
3345130105	Indicators, with or without self-contained set-point stations.....	26	c/ 95,818	35,425	b/	119,946		41,453	
3345130107	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, integrators, etc.	10	(S)	a/ 85,935		(S)	a/	65,647	
3345130109	Electronic systems--nonunified architecture type.....	67	(X)	b/ 1,523,554		(X)		1,224,655	
3345130111	Industrial multifunction process computers.....	52	(X)	a/ 416,111		(X)		672,223	
	Pneumatic systems, including all system-type control, display and computing instruments actuated from standardized pneumatic transmission signals:								
3345130113	Controllers (recording, indicating, or blind) 12/.....	12	(S)	a/ 44,569		(S)	r/	59,128	
3345130116	Recorders and indicators, with or without self-contained set-point stations 12/.....	8	(D)	(D)		(D)		(D)	
3345130119	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, integrators, etc.	4	(S)	c/ 6,411	b/	49,578	b/	7,048	
3345130121	Receiver-type gauges, analog and digital.....	8	(S)	a/ 8,228		(S)		8,917	
3345130123	Annunciators, industrial; electro-mechanical and solid-state types.....	7	a/ 28,248	c/ 23,118		27,651	r/	22,002	
	Temperature measuring instruments, excluding general-purpose receiver-type instruments:								
	Electrical and electronic measuring types (thermocouple, resistance temperature detector, radiation, optical, thermistor, and other electrical sensors):								
3345130225	Direct-deflecting types (controllers for all types of electrical temperature sensors).....	7	(S)	13,103		(S)	r/	13,449	
3345130227	Direct-deflecting types (indicators and recorders for all types of electrical temperature sensors).....	9	(S)	a/ 4,528		(S)	a/	5,917	

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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		
3345130229	Electromechanical self-balancing types (electric or pneumatic controllers for all types of electrical temperature sensors) 13/.....	2		(D)		(D)		(D)		(D)	
3345130231	Electromechanical self-balancing types (indicators, recorders, and integrators for all types of electrical temperature sensors) 13/.....	3		(S)	6,930		(S)		6,044		
3345130233	Electronic controllers for all types of electrical temperature sensors.....	24	c/	509,071	a/	132,411	a/	419,983	a/	122,192	
3345130235	Digital indicators for all types of electrical temperature sensors, excluding data loggers.....	31	b/	59,123	b/	17,831	b/	61,051	b/	21,642	
3345130237	Transmitters, producing standardized electric or pneumatic analog transmission signals for all types of electrical temperature sensors:										
	Electric.....	22	c/	126,584	a/	37,339	c/	140,612		40,896	
3345130239	Pneumatic.....	4	b/	394	c/	585		436		588	
	Mechanical measuring types, filled systems (liquid filled, vapor pressure, gas filled, and mercury filled types):										
3345130241	Indicating or recording controllers.....	9		(S)	17,331		(S)		20,302		
3345130243	Recorders, noncontrol.....	10		(S)	14,173		(S)		13,807		
3345130245	Indicators only, excluding indoor-outdoor and other household or appliance type thermometers.....	14	a/	501,406	a/	12,976	r/	432,314	a/r/	12,310	
3345130247	Transmitters producing standardized electric or pneumatic analog transmission signals.....	11	c/	22,848	b/	7,709	b/	33,184	a/r/	9,055	
	Primary temperature sensors, excluding aircraft types:										
3345130249	Thermocouples and thermocouple lead wire.....	61		(X)	216,040		(X)	a/	235,271		
3345130251	All other types (resistance temperature detectors, radiation and optical sensors, thermistors, etc.).....	47		(X)	138,789		(X)	a/	127,668		
	Pressure (gauge, absolute vacuum) and draft measuring instruments, excluding general-purpose, receiver-type instruments:										
3345130253	Indicating or recording controllers.....	15			816,459	c/	56,028	r/	489,996	a/r/	45,213
3345130255	Recorders, noncontrol.....	8	b/	7,329	b/	3,371	b/	12,223		5,118	
	Indicators only, excluding receiver-type gauges:										
3345130257	3-inch diameter and over 1/.....	18	b/	3,710		111,412		3,681		107,422	
3345130259	Under 3-inch diameter 1/.....	16		28,414	a/	69,520	r/	27,481	r/	87,240	
	Transmitters producing standardized analog transmission signals:										
3345130261	Transmitters producing standardized electronic analog transmission signals 1/.....	30		(S)	182,598		(S)	a/	165,213		
3345130263	Transmitters producing standardized pneumatic analog transmission signals.....	6		(S)	3,270		(S)	a/	3,309		
	Flow and liquid level measuring instruments, excluding general-purpose receiver-type instruments:										
	Differential pressure types:										
3345130265	Indicating or recording controllers.....	11		164,048	a/	35,270	r/	174,912	r/	35,582	
3345130267	Recorders, noncontrol; and indicators, noncontrol.....	14	a/	46,839	a/	24,743	b/	56,894	c/	31,730	
	Transmitters producing standardized analog transmission signals:										
3345130269	Transmitters producing standardized electronic analog transmission signals.....	22	c/	247,117	a/	285,593	c/	261,275		305,343	

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Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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		
3345130271	Transmitters producing standardized pneumatic analog transmission signals.....	9	c/	15,392	c/	9,057	b/	17,340	a/	9,679
3345130273	Primary pressure sensors (load cells, strain gauges, etc.).....	10	c/	49,822	b/	19,004	b/	69,508	b/	27,327
3345130275	Primary flow elements, including orifice plates, venturi tubes, low tubes, flow nozzles, pitot tubes, etc.	17	a/	266,288		54,508	a/r/	251,463		54,685
3345130277	Electromagnetic flowmeters: Primary device (magnetic flow tube).....	11	c/	86,425	c/	90,753	c/r/	85,327	b/	96,135
3345130279	Secondary device (magnetic transmitter, recorder, indicator or controller that receives signal directly from primary device).....	11	c/	38,356	b/	25,684	c/	40,056	b/r/	27,518
3345130281	Capacitance, ultrasonic, and other electronic types, including magnetic resonance, vortex-precession, and vortex-shedding type elements.....	38	b/	189,548	b/	158,439	b/r/	178,166	a/r/	156,477
3345130283	Variable area-controlling, recording, indicating, and transmitting instruments and associated primary flow elements 1/.....	15		(S)		90,585		(S)	r/	90,979
3345130285	Float and displacement (controlling, recording, indicating, and transmitting instruments and associated primary flow elements) 1/.....	25	a/	1,870		97,494	a/	1,732		110,543
3345130287	Turbine and propeller: controlling, recording, indicating, and transmitting instruments and associated primary flow elements.....	12	c/	68,207	b/	28,210	a/	63,350	b/	28,751
3345130289	Mass flow, i.e., controlling, thermal-controlling, recording indicating, and transmitting instruments and associated primary flow elements.....	15	a/	47,555		222,457		54,863		225,773
3345130291	Other types: controlling, recording, indicating, and transmitting instruments and associated primary flow elements.....	14		(S)	b/	45,469	r/	274,747	a/r/	47,545
3345130293	Humidity instruments (controlling, recording, indicating, and transmitting, and associated primary humidity elements, excluding home and general-purpose type).....	12		(S)	a/	24,931		(S)		36,649
	Continuous process instruments for on-stream gas and liquid analysis, including indicators, recorders, controllers, and analysis electrodes and cells, excluding laboratory analysis types:									
3345130295	Chromatographic analyzers.....	11	c/	3,654	a/	87,333		3,392		74,079
3345130297	Infrared analyzers.....	13	b/	9,117	c/	53,396	a/	10,020		61,012
3345130299	Oxygen analyzers.....	16	b/	31,889		58,574	b/r/	30,062	a/r/	55,413
334513021A	Other gas analyzers.....	26	b/	56,225	a/	116,363	a/	49,872	r/	114,334
334513021C	Ph analyzers.....	16	a/	76,570	a/	37,540	b/r/	58,322	r/	36,972
334513021E	Other liquid analyzers.....	23	c/	101,919	b/	80,701	a/	86,066	a/	71,801
	Instruments for all process variables not listed above (speed, weight, position, sequence, density, specific gravity, mechanical load, electrical load, millivolts):									
	Electrical and electronic measuring types:									
334513011G	Direct-deflecting type controllers, indicators, and recorders 14/.....	4		(S)		(D)		(S)	a/	15,654
334513011J	Electromechanical self-balancing electric or pneumatic controllers, indicators, recorders, and integrators 14/.....	4		(S)	c/	12,658		(S)	c/	2,139
334513021L	Digital indicators.....	16	c/	101,472	b/	37,727	c/	134,432	b/	38,306

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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	
334513021M	Transmitters producing standardized electric or pneumatic analog transmission signals.....	11	a/	35,828	a/	11,161	b/	35,814		15,651
	Mechanical measuring types:									
334513021P	Indicating or recording controllers and recorders, noncontrol.....	5	b/	9,602		3,125		8,020		2,487
334513021R	Indicators only.....	5		(S)		13,189		(S)	a/	11,828
334513021T	Transmitters producing standardized electric or pneumatic analog transmission signals.....	15		(S)	a/	51,025	b/	294,326		51,973
	All other industrial process instruments:									
334513022A	Other temperature instruments	28		(X)	a/	142,715		(X)	r/	139,897
334513022C	Other flow and liquid level instruments.....	29		(X)	b/	139,021		(X)	a/	139,531
334513022E	Other continuous process instruments.....	36		(X)	b/	287,721		(X)	a/r/	318,598
334513022G	Other industrial type instruments	56		(X)	a/	378,056		(X)	a/r/	432,956
	Parts, supplies, accessories, other primary sensors, n.e.c., panelboards, and other equipment associated with process control instrumentation:									
334513032J	Primarily designed for temperature instruments.....	18		(X)	a/	49,407		(X)	a/	49,111
334513032L	Primarily designed for flow and liquid level instruments.....	33		(X)	b/	88,076		(X)	b/	75,965
334513032N	Primarily designed for continuous process instruments.....	26		(X)	c/	126,502		(X)		138,017
334513032P	Primarily designed for industrial type instruments.....	37		(X)	c/	91,569		(X)	b/	93,621
3345141	Integrating and totalizing meters for gas and liquids.....	43		(X)	a/	1,076,691		(X)		1,147,181
	Gas meters, consumption registering:									
	Diaphragm type; positive displacements; aluminum, iron, and tin case:									
3345141001	Residential size (up to 400 cu. ft/hr of 0.64 specific gravity gas, at 0.5 inches water drop) 1/.....	4	b/	2,424		110,906	r/	2,366	r/	113,501
3345141003	Other sizes, including commercial and industrial.....	6	a/	173,447		43,406	a/r/	153,220	r/	44,781
3345141005	Turbine type (all sizes) 15/.....	8		(D)		(D)		(D)		(D)
3345141007	Other gas meters, consumption registering 15/.....	3		58,977		65,055	a/	48,002	a/	61,532
	Liquid meters, positive displacement with registers and counters:									
	Water meters, consumption registering:									
3345141009	Small meters, up to and including 1 inch 1/.....	9		4,925		256,812		4,659		228,892
3345141011	Intermediate meters, over 1 inch, up to and including 2 inches.....	11		152,244		39,707		162,092		40,672
3345141013	Large meters, over 2 inches.....	10		348,361		85,821		336,012		80,860
3345141015	Liquid fuel dispensing meters, excluding service station dispensing pumps 16/.....	8		(D)		(D)		(D)		(D)
3345141017	Other liquid meters; industrial bulk plants, pipeline, batching, and treatment facilities 16/.....	16	c/	1,123,237		258,534	a/	1,428,771		335,773
3345141019	Parts, components, and accessories for gas and liquid meters, sold separately.....	30		(X)		216,450		(X)		241,170
3345143	Counting devices, excluding motor vehicle instruments.....	42		(X)	a/	408,252		(X)	a/	394,013
3345143001	Mechanical input 1/.....	8		(S)		27,270		(S)	r/	29,860
3345143003	Electrical input 1/.....	12	b/	942		24,668		1,046		25,844
3345143005	Electronic input.....	16		(S)		112,680		(S)		91,541
3345143007	All other counting devices not specified above, including toll meters, fare collection equipment (systems), parking lot systems, etc., but excluding parking meters.....	11		(X)	b/	234,680		(X)		237,940

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Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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
3345143009	Components and parts for counting devices (except parking meters, sold separately).....	7	(X) b/	8,954	(X)	8,828
3345145	Motor vehicle instruments.....	32	(X) a/	2,799,131	(X)	2,435,751
3345145001	Speedometers (speedometers, including odometers, are classified as speedometers).....	11	(X)	50,426	(X) r/	51,075
3345145003	Tachometers.....	9	(X) c/	30,200	(X) c/r/	23,405
3345145005	Odometers (speedometers, including odometers, are classified as speedometers).....	6	(X)	1,673	(X)	1,025
3345145007	Fuel level gauges.....	9	(X)	57,072	(X) a/r/	18,083
3345145009	Water temperature gauges.....	11	(X) b/	30,725	(X) a/r/	28,547
3345145011	Ammeters.....	9	(X) c/	5,780	(X) a/r/	6,047
3345145013	Oil pressure gauges.....	7	(X) b/	14,365	(X) a/r/	12,720
3345145015	Instrument panels, including cluster modules.....	16	(X)	2,527,394	(X)	2,216,893
3345145017	Other motor vehicle instruments.....	17	(X) a/	81,496	(X) c/r/	77,956
3345151	Integrating instruments, electrical.....	19	(X) a/	477,208	(X) b/	460,348
Ac watt-hour meters:						
3345151001	Single phase 1/.....	7	b/	5,625	b/	5,164
3345151003	Polyphase.....	7		321,882		289,980
3345151005	Demand meters (kW and kVA), combined watt-hour and demand meters (single phase and polyphase), and combined watt-hour and time switch meters.....	8	b/	673,060	b/	688,613
3345151007	Other electrical integrating meters, including dc watt-hour meters, ampere-hour meters, and other miscellaneous integrating instruments not included in the above classifications.....	8	(X) a/	75,279	(X) a/r/	74,964
3345151009	Parts and accessories for electric integrating meters, including meter mountings and registers, sold separately.....	8	(X)	90,809	(X)	86,544
3345153	Test equipment for testing electrical, radio and communication circuits, and motors.....	361	(X) c/	10,761,548	(X) a/r/	10,453,930
Voltage, current, and resistance measuring equipment (except multimeters):						
Electronic:						
3345153001	Digital.....	28	(X)	346,130	(X) r/	329,251
3345153003	Analog.....	25	(X)	65,132	(X) r/	52,900
3345153005	Electrical, excluding panel meters.....	14	(X)	103,753	(X) a/r/	80,302
Multimeters:						
3345153007	Electronic, digital and analog 17/.....	10	(X)	(D)	(X)	(D)
3345153009	Electrical 17/.....	6	(X)	162,450	(X)	146,388
Power and energy measuring equipment:						
Electronic:						
3345153011	Analog.....	5	(X) a/	4,799	(X)	5,051
3345153013	Digital.....	13	(X) b/	37,287	(X) c/r/	18,291
3345153015	Electrical power measuring equipment, excluding electrical integrating instruments, sold separately.....	4	(X)	854	(X)	(D)
3345153018	Frequency counters, timers, and other frequency and time measuring equipment, excluding standards.....	17	(X)	89,458	(X)	99,502
3345153026	Waveform measuring and/or analyzing equipment, including oscilloscopes and spectrum analyzers.....	27	(X) b/	989,789	(X) r/	1,044,394
Signal generating equipment:						
3345153031	Audio.....	11	(X) a/	17,304	(X)	15,871
3345153033	RF (over 20 kHz to 890 MHz) 18/.....	14	(X)	(D)	(X)	(D)
3345153035	Microwave (890 MHz and above) 18/.....	11	(X)	289,835	(X)	289,390
Field strength and intensity measuring equipment, including RFI measuring equipment:						

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Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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
3345153037	Electronic.....	13	(X)	264,476	(X)	242,156
3345153039	Electrical field measuring equipment.....	4	(X)	(D)	(X)	(D)
	Impedance and standing wave ratio measuring equipment (transfer function measuring equipment):					
3345153043	Electronic impedance and related measuring equipment.....	8	(X)	b/ 20,360	(X)	b/r/ 19,159
3345153045	Standing wave measuring equipment (slotted lines, sliding shorts, reflectometers, and other SWR equipment).....	4	(X)	(D)	(X)	(D)
3345153047	X-Y plotters (recorders), electronic.....	2	(X)	(D)	(X)	(D)
	Automatic test and measuring equipment:					
3345153049	Combination and/or group test sets.....	44	(X)	a/ 1,932,787	(X)	1,874,203
	Component part test sets:					
3345153051	Electron tube test equipment.....	3	(X)	c/ 240	(X)	312
	Semiconductor component test equipment:					
3345153053	Memory.....	15	(X)	a/ 150,249	(X)	255,980
3345153055	Linear 19/.....	9	(X)	(D)	(X)	b/ 158,560
3345153057	Microprocessor.....	14	(X)	801,585	(X)	r/ 560,708
3345153059	Other semiconductor component test equipment 19/.....	38	(X)	1,348,745	(X)	r/ 1,112,779
3345153061	Circuit board loaded test equipment.....	14	(X)	287,170	(X)	r/ 262,498
3345153063	Other component part test sets and equipment.....	28	(X)	c/ 325,281	(X)	r/ 713,514
3345153065	Equipment and subassembly test equipment, n.e.c., including disc drive testers, power supply testers, etc.	20	(X)	b/ 165,773	(X)	a/ 155,220
3345153068	Standards and calibration equipment for test measuring equipment, including laboratory types (metered benchtop, rack mountable, or plug-in equipment).....	25	(X)	a/ 135,971	(X)	a/ 139,334
	Analyzers for testing characteristics of internal-combustion engines, excluding aircraft:					
3345153071	Portable 20/.....	6	(X)	b/ 505,415	(X)	b/r/ 443,682
3345153073	Other 20/.....	5	(X)	(D)	(X)	c/ 85,773
	Communications test equipment, n.e.c.:					
3345153075	Network analyzers.....	18	(X)	594,317	(X)	378,483
3345153077	Cable backplane and other continuity testers.....	12	(X)	98,527	(X)	70,581
3345153079	Fiber optics test equipment (OTDR, optical S/N meters, etc.).....	11	(X)	a/ 267,433	(X)	a/r/ 227,225
3345153081	Other communications test, monitoring, and control equipment (except microwave).....	34	(X)	b/ 587,471	(X)	584,190
3345153083	Microwave test equipment, n.e.c., (1,300 MHz and above).....	7	(X)	a/ 29,439	(X)	r/ 26,989
	Logic test, development, and analysis equipment:					
3345153085	Logic analyzers, and similar logic state, timing, and signature analyzers 21/.....	4	(X)	(D)	(X)	(D)
3345153087	Microprocessor development systems 21/.....	7	(X)	229,426	(X)	240,373
3345153089	Pulse, function, and data generators and similar metered frequency synthesizers.....	11	(X)	b/ 174,376	(X)	135,096
3344160041	Portable instrument transformers.....	8	(X)	48,198	(X)	(D)
3345153091	Other field service test and measurement equipment, logic probes, clips, and pulsers 22/.....	5	(X)	(D)	(X)	(D)
3345153093	Other measuring and checking instruments for testing electrical, radio and communication circuits, and motors 22/.....	28	(X)	(D)	(X)	(D)
3345153095	Other analyzing instruments for checking electrical quantities 22/.....	8	(X)	404,413	(X)	432,067

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Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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
3345153097	Parts and components for test equipment for testing electrical, radio and communication circuits, and motors, sold separately.....	41	(X)	269,159	(X) a/	175,550
3345155	Instruments to measure electricity.....	84	(X) a/	359,888	(X) a/r/	376,615
3345155001	Electrical indicating instruments: Panel type instruments: Digital panel meters (DPMs) between 0.05 percent and 1 percent, plus or minus one-digit accuracy, excluding precision DVMs and electronic counters.....	22	b/ 692,677 a/	76,358	b/ 722,322 a/	80,229
3345155003	Analog solid state panel meters (generally of plus or minus 2-percent accuracy) with LED, LCD, or neon gas discharge display.....	9	c/ 32,866 b/	4,779	c/ 30,897 b/	4,252
3345155005	Panel types other than ruggedized or sealed (generally of 2-percent accuracy): Ac, including moving iron vane and dynamometer types.....	10	a/ 427,746 b/	9,531	a/r/ 426,514 a/r/	9,389
3345155007	Dc, including rectifier- and self-contained thermocouple types 1/.....	14	b/ 1,235 b/	30,316	b/r/ 1,250 b/r/	30,793
3345155009	Panel types ruggedized or sealed (generally of 2-percent accuracy) 23/.....	8	b/ 54,900 a/	6,230	b/ 33,293 a/r/	4,383
3345155011	Panel types with control or signal initiating means, including instrument relays 23/.....	4	(D)	(D)	c/ 14,972 b/	3,009
3345155013	All other panel type instruments, including ammeters and voltmeters for motor vehicles 1/.....	11	b/ 2,082 a/	36,957	b/ 2,057 a/r/	38,603
3345155015	Switchboard instruments that are generally of 1-percent accuracy: Ac, including moving iron vane and dynamometer types 24/.....	3	(D)	(D)	(D)	(D)
3345155017	Dc, including rectifier and thermocouple types 24/.....	6	31,509	3,102	r/ 34,862 r/	4,074
3345155019	Elapsed time meters (with or without reset) 1/.....	8	(S)	15,118	(S) r/	14,408
3345155021	Portable instruments that are generally capable of accuracies within plus or minus 2 percent of full scale indication, and can be enclosed in a case so that they can be moved and used at various locations, and that are an end product.....	15	c/ 395,016	52,673	c/ 403,529	47,728
3345155023	Electrical recording instruments (portable and for panel mounting): Direct deflecting (direct acting), (except temperature calibrated instruments) 25/.....	2	(D)	(D)	(S)	(D)
3345155025	Oscillographic recorders, pen or stylus, and light beam type 25/.....	2	(X)	(D)	(X)	(D)
3345155027	Other electrical recording instruments 25/.....	19	(X)	53,669	(X) a/r/	59,461
3345155029	Parts and accessories for indicating and recording instruments: Transducers for volts, amperes, watts, vars, frequency, temperature and power factor.....	15	(X) a/	31,448	(X)	35,885
3345155031	Tachometer generators (except aerospace types) 26/.....	3	(X)	(D)	(X)	(D)
3345155033	Other, including instrument shunts 26/.....	18	(X)	39,707	(X)	44,401
3345160	Analytical and scientific instruments (except optical).....	283	(X) c/	6,222,178	(X) a/r/	6,162,379
3345160001	Electrochemical instruments: Ph electrodes and meters.....	19	(X) b/	59,765	(X) b/	65,319
3345160003	Ion selective electrodes and meters.....	13	(X) a/	39,041	(X) b/	31,740
3345160007	Electrophoresis instruments.....	12	(X) a/	62,879	(X) b/	60,941

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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		
3345160009	Other (except process type), including photometers.....	12	(X)	b/	10,069	(X)	b/	13,895		
3345160012	Chromatographic instruments, including gas, liquid, paper, gel, and thin layer.....	36	a/	337,657	c/	892,790	342,339	873,193		
Spectrophotometric instruments:										
3345160017	Atomic absorption 27/.....	4	(X)		(D)	(X)		(D)		
3345160019	Optical emission, including spark, arc, and glow, spectrographs, and all other (except ICP).....	7	(X)	a/	21,122	(X)		21,423		
3345160021	Optical emission, including laser excited source, which includes laser microprobe source emission, laser source Raman, and laser microprobe source Raman spectrometers 27/.....	5	(X)		(D)	(X)		(D)		
3345160023	Optical emission with inductively coupled plasma, ICP 27/.....	3	(X)	c/	131,963	(X)	r/	129,627		
3345160025	Infrared, including Fourier transfer methods.....	18	(X)	b/	132,722	(X)	b/	140,436		
3345160027	Ultraviolet, visible and colorimeters.....	21	(X)	b/	136,843	(X)	b/	147,334		
3345160029	Fluorescent instruments, including fluorometers (except chemicals).....	13	(X)		58,016	(X)		43,920		
3345160031	Color measuring devices.....	9	(X)	a/	78,537	(X)		81,926		
3345160033	Other, including vacuum ultraviolet, Raman, light scattering reflectors, helium glow, and light measuring.....	12	(X)	b/	28,829	(X)	a/r/	26,572		
3345160035	Thermal analysis instruments, including thermogravimetric analyzers (TGA), quantitative thermal analyzers (QTA) and differential thermal analyzers (DTA).....	10	(X)	c/	136,978	(X)	b/	134,462		
3345160037	Nuclear magnetic resonance spectrometers, including electron paramagnetic spin types (EP) 28/.....	4	(D)		(D)	(D)		(D)		
3345160039	Microscopes, scanning type, including electron and proton.....	6		735	b/	109,963	694	b/	102,716	
3345160041	Particle beam excitation instruments, including electron microprobes, augers, energy ion spectroscopes, secondary ion mass spectrometers (SIMS), and ion microprobes 28/.....	3	c/	466		156,919	b/	463	149,954	
3345160043	Photon excitation analyzers, including: X-ray fluorescence, simultaneous; X-ray fluorescence, sequential; X-ray fluorescence, sequential with diffraction; X-ray fluorescence, diffraction; X-ray diffraction; and energy dispersive systems (EDSs).....	11	c/	2,036	b/	76,043	c/	2,269	b/	76,193
3345160045	Mass spectroscopy instrumentation.....	17	(X)		355,069	(X)		329,049		
3345160047	Clinical laboratory instrumentation, including instruments used in the clinical laboratory for measuring, analyzing, and processing clinical specimens.....	(NA)	(X)		1,150,862	(X)		1,108,931		
3345160049	Chemistry (measure and identify substances, e.g., metabolites, enzymes, and drugs).....	10	c/	15,188		365,233	c/	12,999	283,535	
3345160051	Hematology (measure and identify substances or cells contained in blood or substances influencing the development and clotting of blood, e.g., cell counting coagulation factors).....	9	c/	10,168	b/	303,933	10,172		301,638	
3345160053	Microbiology (enumerate or identify pathogenic organisms or measure their susceptibility to anti-microbial agents) 29/.....	5	(D)		(D)	(D)		(D)		
3345160053	Histology (process tissue and cells, e.g., tissue processors, cell stainers) 29/.....	2	(D)		(D)	(D)		(D)		

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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		
3345160055	Blood bank and immunology (process blood and specimens for testing; measure and identify, using immunoassay, substances in clinical specimens) 29/.....	8	(S)	344,632	(S) r/	369,953		
3345160057	Other clinical laboratory instrumentation not specified above.....	15	c/	25,532	c/r/	29,034		
3345160059	Organic elemental analysis instruments, including carbon, hydrogen, nitrogen, oxygen, and sulphur.....	12	a/	34,013	a/	41,945		
3345160061	Amino acid, protein and/or peptide analyzers, including chromatographic type 30/.....	7	(D)	(D)	(D)	(D)		
3345160063	Gas detectors.....	25	349,009	b/	100,183	r/	316,316	
3345160065	Other analytical and scientific instruments, n.e.c., including molecular weight, monochrometers (analytical type), nephelometers (except meteorological), osmometers, particle size analyzers, photo multipliers, surface area analyzers, turbidimeters, and breatholyzers 30/.....	99	(X)	a/	1,338,538	(X)	a/	1,293,589
3345160067	Parts, components, and accessories for analytical and scientific instruments, sold separately, including photo tubes, thermal conductivity sensors, thermopiles.....	109	(X)	b/	1,077,191	(X)	a/r/	1,153,272
3333141	Sighting, tracking, and fire control equipment, optical type.....	39	(X)	b/	525,580	(X)	b/	509,824
3333141001	Made from lenses, prisms, etc., produced in the same plant.....	10	(X)		94,976	(X)	a/	69,337
3333141003	Made from purchased lenses, prisms, etc.	26	(X)	b/	394,363	(X)	b/	411,151
3333141005	Parts and accessories.....	14	(X)	a/	36,241	(X)	a/	29,336
3333143	Optical instruments and lenses.....	159	(X)	b/	2,252,222	(X)	b/	2,067,960
3333143111	Binoculars, prismatic and nonprismatic, and terrestrial and celestial telescopes.....	11	(X)		66,321	(X)		56,137
3333143113	Other astronomical instruments, excluding radio astronomy.....	6	(X)		17,319	(X)		17,832
3333143115	Parts and accessories, including mountings, for binoculars, optical telescopes and other astronomical equipment.....	12	(X)		23,968	(X)		15,622
3333143231	Optical test and inspection equipment, including standard sources, modulators, optical comparators, interferometers (except optical microscopes).....	41	(X)		195,596	(X)		191,977
3333143233	Optical microscopes.....	13	(X)	a/	59,077	(X)	r/	53,102
3333143235	Optical components: Filters, including parts and accessories thereof.....	30	(X)	a/	115,995	(X)	a/r/	75,310
3333143237	Lenses (except ophthalmic focus lenses): Unmounted lenses.....	40	(X)		285,326	(X)	r/	216,710
3333143242	Mounted lenses, including photographic.....	13	(X)		212,013	(X)	r/	241,047
3333143243	Other (prisms, mirrors, etc.).....	49	(X)		163,573	(X)		139,500
3333143245	Other optical instruments, including optical alignment and display instruments; excluding analytical instruments and binoculars and astronomical instruments listed above, and sighting and fire control equipment.....	41	(X)	a/	801,192	(X)		822,825
3333143247	Parts and accessories for other optical microscopes 31/.....	10	(X)		(D)	(X)	b/r/	25,204
3333143249	Parts and accessories for other optical instruments 31/.....	20	(X)		311,842	(X)	r/	212,694
3345191	Aircraft engine instruments (except flight).....	41	(X)	a/	658,397	(X)		656,892
3345191001	Temperature sensors, transmitters, and displays.....	24	(X)		235,476	(X)		203,494

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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
3345191003	Pressure ratio sensors, displays, and controls 32/.....	6	(X)	(D)	(X)	(D)
3345191005	Pressure and vacuum sensors, transmitters, and displays 32/.....	11	(X)	a/ 86,438	(X)	105,434
3345191007	Fuel and oil flow rate sensors, transmitters, and displays, including mixture controls 33/.....	9	(X)	(D)	(X)	(D)
3345191009	Fuel and oil quantity sensors, transmitters, and displays, including densitometers 33/.....	7	(X)	156,643	(X)	125,733
3345191011	Tachometer generators and indicators.....	8	(X)	a/ 6,480	(X)	a/ 8,697
3345191013	All other not specified above.....	15	(X)	b/ 158,500	(X)	r/ 195,956
3345191015	Parts and components for aircraft engine instruments (except flight), sold separately.....	10	(X)	a/ 14,860	(X)	17,578
3345193	Physical properties testing and inspection equipment and kinematic testing and measuring equipment.....	158	(X)	c/ 1,693,074	(X)	1,728,112
	Physical properties testing equipment, including hardness, tensile, stress, strain, abrasion, strength, torsion, wear, and similar testing equipment; including components and parts, sold separately:					
3345193001	For testing of metals.....	25	(X)	456,479	(X)	411,872
3345193003	Other.....	47	(X)	b/ 355,375	(X)	r/ 389,046
3345193005	Parts for physical properties testing equipment, sold separately.....	29	(X)	c/ 71,330	(X)	78,638
	Physical properties inspection equipment, including flaw detection, thickness measuring, and similar inspection equipment, including components and parts, sold separately:					
3345193007	For testing of metals.....	23	(X)	215,446	(X)	217,574
3345193009	Measuring and checking flow of fluids.....	13	(X)	a/ 72,662	(X)	67,976
3345193011	Other.....	40	(X)	a/ 257,161	(X)	278,944
3345193013	Parts for physical properties inspection equipment, sold separately.....	22	(X)	b/ 43,884	(X)	a/r/ 46,809
3345193015	Kinematic testing and measuring equipment, including vibration, acceleration, and other motion testing equipment.....	29	(X)	219,121	(X)	a/ 234,513
3345193017	Parts for kinematic testing and measuring equipment, sold separately.....	5	(X)	1,616	(X)	b/ 2,740
3345195	Nuclear radiation detection and monitoring instruments.....	53	(X)	b/ 531,891	(X)	a/ 567,190
3345195001	Radiation detecting elements, including ion chambers.....	17	c/ 135,025	a/ 54,292	a/ 155,799	a/ 68,944
3345195003	Solid state detectors 34/.....	5	(D)	(D)	(D)	(D)
3345195005	Nuclear monitoring instruments, including environmental, personal dosimetry, and medical monitors, both stationary and portable types.....	13	(S)	b/ 141,936	r/ (S)	a/ 165,476
3345195007	Sample and flow counting systems, manual and automatic.....	8	(X)	a/ 19,277	(X)	a/ 21,624
3345195009	Scalers 35/.....	6	(D)	(D)	(D)	(D)
3345195011	Special amplifiers for nuclear applications 35/.....	3	c/ 8,332	5,453	c/ 8,913	6,023
	Pulse analyzers, including nuclear spectrometers:					
3345195013	Single channel pulse height analyzers 36/.....	3	(D)	(D)	(D)	(D)
3345195015	Multichannel pulse height analyzers 36/.....	3	(S)	5,170	(S)	5,671
3345195017	Count rate meters.....	8	(S)	(D)	(S)	(D)
3345195019	Measurement and control devices using beta, gamma, or neutron gauge technology.....	11	(X)	a/ 101,626	(X)	108,107
3345195021	Nuclear power supplies 37/.....	5	(X)	(D)	(X)	(D)

Continued

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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		
3345195023	Neutron and photon activation analysis systems.....	5	(X)		(D)	(X)		(D)		
3345195025	Nuclear instrument modules, n.e.c. 37/.....	11	(X)	a/	46,922	(X)	r/	40,720		
3345195027	Other nuclear radiation detection and monitoring instruments 34/.....	12	(X)		106,783	(X)		93,930		
3345195029	Parts and components for nuclear radiation detection and monitoring instruments, sold separately.....	17	(X)	b/	45,052	(X)	a/	49,751		
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	149	(X)	a/	1,111,431	(X)	r/	1,533,786		
3345197001	Barometers and barographs, aneroid and mercurial types, including recorders, wall, pendant, meteorological, hygrothermographs, and barometer-thermometer-humidity combinations.....	13	(X)	b/	4,981	(X)	b/	8,295		
3345197003	Hydrometers, glass, all types, including thermo-hydrometers 1/.....	5	c/	181	a/	1,639	c/	189	a/	1,753
3345197005	Liquid-in-glass thermometers: Engraved (etched) stem, thermoregulators, deep-sea reversing, laboratory, encased glass, ASTM standards, pocket case, max-min registering (except clinical thermometers).....	12	(X)	a/	5,210	(X)	a/	5,456		
3345197007	Threaded and flanged types, fixed and adjustable angle, inline and duct installations, for process, food, air-conditioning, and refrigeration installations 1/.....	12	c/	528	c/	9,454	c/	552	b/	9,985
3345197009	Household and commercial thermometers such as wall, outdoor, domestic science, cupcase, filled systems, and indoor-outdoor 1/ 38/.....	14		3,302		8,496	(D)		(D)	
3391121656	Medical thermometers 1/ 38/.....	-		-		-	r/	6,512	r/	9,510
3345197011	Bimetal thermometers: Threaded and flanged types, for pipeline and duct installations, including general and pocket test 1/.....	17	c/	1,227	c/	26,173	b/	1,216	b/	26,949
3345197013	Domestic science, commercial general test, indoor, outdoor, desk models, oven, and refrigerator 1/.....	10		6,316		16,220		6,427	r/	16,662
3345197015	Humidity indicating and recording instruments such as bi-hygroscopic and hygroscopic element, indicators, psychrometers, wet and dry bulb, hygrometers, and indicating hygrometers.....	17	c/	68		9,614	c/	87		10,416
3345197017	Other thermometers (infrared, meteorological, commercial, and industrial).....	22	(X)		154,077	(X)	r/	264,966		
3345197023	Meteorological electronics equipment and radio astronomy equipment (automatic weather stations and weather tracking equipment, ceilometers, transimeters, space satellite meteorological systems, and specialized meteorological telemetering equipment).....	22	(X)	a/	193,111	(X)		192,251		
3345197025	Other meteorological instruments, including speed and direction instruments, rain gauges, thermographs, and parts, sold separately.....	16	(X)	a/	33,586	(X)		32,592		
3345197027	Seismic instruments.....	11	(X)		107,156	(X)		274,314		
3345197029	All other geophysical instruments and equipment.....	17	(X)	c/	136,395	(X)	r/	175,768		
3345197031	Other commercial and industrial instruments (except aircraft), including compasses, altimeters, test equipment for hydraulic and pneumatic systems and controls, and environmental gas detectors, sold separately.....	42	(X)		376,715	(X)		483,401		
3345197033	Parts and accessories for meteorological and commercial and industrial instruments.....	19	(X)		28,604	(X)		21,468		

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 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
3345199	Surveying and drafting instruments and associated equipment.....	31	(X) b/	310,244	(X) c/r/	297,325
3345199001	Surveying instruments, including alidades, transits, plumb bobs, sextants, theodolites, surveyors, compasses, surveyor's levels, and tapes.....	20	(X) b/	264,022	(X) a/r/	248,563
3345199003	Parts and components for surveying instruments, sold separately.....	7	(X)	(D)	(X)	(D)
3345199005	Drafting instruments and machines, manual and automatic, drafting tables, plotting instruments, slide rules, T-squares, drafting templates, rules, etc.	11	(X) c/	23,863	(X) a/	25,010
3345199007	Parts and components for drafting instruments and machines, sold separately.....	2	(X)	(D)	(X)	(D)
3345199009	Photogrammetric and geodetic equipment, excluding cameras.....	1	(X)	(D)	(X)	(D)
3345199011	Parts and components for photogrammetric and geodetic equipment, sold separately.....	1	(X)	(D)	(X)	(D)

- Represents zero. 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/The quantity for this product code is in thousands of units.
- 2/Product code 332911H005 is combined with product code 332911H007 to avoid disclosing data for individual companies.
- 3/For 1999 value, product codes 3345111107 and 3345111115 are combined to avoid disclosing data for individual companies.
- For 1998, product codes 3345111107 and 3345111113 are combined with product code 3345111115 to avoid disclosing data for individual companies.
- 4/Product code 3345111109 is combined with product code 3345111111 to avoid disclosing data for individual companies.
- 5/Product code 3345111221 is combined with product code 3345111223 to avoid disclosing data for individual companies.
- 6/Product code 3345113209 is combined with product code 3345113211 to avoid disclosing data for individual companies.
- 7/Product code 3391110121 is combined with product code 3391110123 to avoid disclosing data for individual companies.
- 8/Product codes 3391110127 and 3391110145 are combined with product code 3391110151 to avoid disclosing data for individual companies.
- 9/For 1998 value, product code 3391110231 is combined with product code 3391110233 to avoid disclosing data for individual companies.
- 10/Product code 3345120109 is combined with product code 3345120111 to avoid disclosing data for individual companies.
- 11/Product code 3345120115 is combined with product code 3345120117 to avoid disclosing data for individual companies.
- 12/Product code 3345130113 is combined with product code 3345130116 to avoid disclosing data for individual companies.
- 13/Product code 3345130229 is combined with product code 3345130231 to avoid disclosing data for individual companies.
- 14/Product code 334513011G is combined with product code 334513011J to avoid disclosing data for individual companies.
- 15/Product code 3345141005 is combined with product code 3345141007 to avoid disclosing data for individual companies.
- 16/Product code 3345141015 is combined with product code 3345141017 to avoid disclosing data for individual companies.
- 17/Product code 3345153007 is combined with product code 3345153009 to avoid disclosing data for individual companies.
- 18/Product code 3345153033 is combined with product code 3345153035 to avoid disclosing data for individual companies.
- 19/Product code 3345153055 is combined with product code 3345153059 to avoid disclosing data for individual companies.
- 20/Product code 3345153071 is combined with product code 3345153073 to avoid disclosing data for individual companies.
- 21/Product code 3345153085 is combined with product code 3345153087 to avoid disclosing data for individual companies.
- 22/Product codes 3345153091 and 3345153093 are combined with product code 3345153095 to avoid disclosing data for individual companies.
- 23/Product code 3345155009 is combined with product code 3345155011 to avoid disclosing data for individual companies.
- 24/Product code 3345155015 is combined with product code 3345155017 to avoid disclosing data for individual companies.
- 25/Product codes 3345155023 and 3345155025 are combined with product code 3345155027 to avoid disclosing data for individual companies.
- 26/Product code 3345155031 is combined with product code 3345155033 to avoid disclosing data for individual companies.
- 27/Product codes 3345160017 and 3345160021 are combined with product code 3345160023 to avoid disclosing data for individual companies.
- 28/Product code 3345160037 is combined with product code 3345160041 to avoid disclosing data for individual companies.
- 29/Product codes 3345160051 and 3345160053 are combined with product code 3345160055 to avoid disclosing data for individual companies.
- 30/Product code 3345160061 is combined with product code 3345160065 to avoid disclosing data for individual companies.
- 31/Product code 3333143247 is combined with product code 3333143249 to avoid disclosing data for individual companies.
- 32/Product code 3345191003 is combined with product code 3345191005 to avoid disclosing data for individual companies.
- 33/Product code 3345191007 is combined with product code 3345191009 to avoid disclosing data for individual companies.
- 34/Product code 3345195003 is combined with product code 3345195027 to avoid disclosing data for individual companies.
- 35/Product code 3345195009 is combined with product code 3345195011 to avoid disclosing data for individual companies.
- 36/Product code 3345195013 is combined with product code 3345195015 to avoid disclosing data for individual companies.
- 37/Product code 3345195021 is combined with product code 3345195025 to avoid disclosing data for individual companies.
- 38/For 1998, product code 3345197009 is combined with product code 3391121656 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 has been estimated. b/26 to 50 percent of this item has been estimated. c/Over 50 percent of this item has been estimated.

Table 3. Shipments, Exports and Imports of Selected Instruments and Related Products: 1999
 [Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption (value) 2/ 3/
332911F001, 003, 005, 007, 009, 011, 013	Pneumatic actuated automatic valves.....	610,063	58,670	41,817
332911F015, 017, 022, 025, 027, 029	All other control valves, including electric and electrohydraulic.....	493,247	512,934	546,920
332911F031, 033, 035, 037, 039, 041	Self-generating power-actuated regulator valves.....	1,040,859	158,637	347,467
332911H001, 003, 005, 007, 009	Solenoid-operated valves (except nuclear and fluid transfer).....	467,536	154,122	496,749
3345111101	Compasses (magnetic and gyroscopic).....	418,772	75,037	31,841
3345111103, 105, 107, 109, 111, 113, 115, 217, 219, 221, 223, 225, 227, 229, 231, 233, 335, 437 3345113101, 103, 105	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments) 4/.....	3,960,123	791,894	327,561
3345113207, 209, 211, 313, 315, 317, 319, 321, 323	Radar systems and equipment 5/.....	3,743,573	393,813	95,400
3345113651	Radio navigational aid receivers and displays.....	774,754	447,400	290,226
3345113665	Automatic pilots.....	471,234	91,733	28,230
3345113425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 545, 547, 549, 653, 655, 657, 659, 661, 663, 667, 669, 671 673	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuys, navigation, sonar fish finders, sonar range instrumentation, and other).....	15,388,057	105,889	122,593
3345120102, 225	Temperature responsive automatic controls (thermostats).....	702,335	152,861	321,948
3345120105, 107, 109, 111, 113, 115, 117, 219, 223, 227	Pressure responsive automatic, hydraulic automatic, pneumatic automatic, and automatic control, n.e.c.	1,498,719	1,485,722	1,297,219
3345120229	Parts and components for automatic controls, sold separately.....	165,134	(NA)	(NA)
3345130	Process control instruments.....	6,546,446	495,632	519,915
3345141001, 003, 005, 007	Gas meters, consumption registering (except parts).....	219,367	34,059	8,499
3345141009, 011, 013, 015, 017	Liquid meters (except parts).....	640,874	53,266	9,638
3345141019	Parts, components, and accessories for gas and liquid meters, sold separately.....	216,450	90,803	68,395
3345143001, 003, 005, 007 3345145, 155, 191	Counting devices, n.e.c., including taxi meters and parts, parking meters and parts, motor vehicle instruments, aircraft engine instruments (except flight), and instruments to measure electricity.....	4,216,714	418,335	991,175
3345151	Electricity meters.....	477,208	58,329	28,458
3345153001, 003, 005	Voltage, current, and resistance measuring equipment (except multimeters).....	515,015	302,450	88,973
3345153011, 013, 015	Power and energy testing equipment.....	42,940	(NA)	(NA)
3345153071, 073	Analyzers for testing characteristics of internal-combustion engines (except aircraft).....	505,415	206,243	117,442

Table 3. Shipments, Exports and Imports of Selected Instruments and Related Products: 1999
 [Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption (value) 2/ 3/
3345153031, 033, 035	Signal generating equipment.....	307,139	87,482	43,718
3345153007, 009, 018, 026, 037, 039, 043, 045, 047, 049, 051, 053, 055, 057, 059, 061, 063, 065, 068, 075, 077, 079, 081, 083, 085, 087, 089, 093	Test equipment for testing multimeters, electrical, radio, and communication circuits, and motors, n.e.c.	8,926,602	1,219,432	361,160
3391110, 3345160	Laboratory, analytical, and scientific instruments	8,045,028	1,758,665	825,310
3333141	Sighting, tracking, and fire-control equipment, optical type.....	525,580	38,113	88,716
3333143111, 113, 115	Binoculars and astronomical instruments and parts and accessories.....	107,608	115,680	318,735
3333143231, 235, 237, 242, 243, 245, 247, 249	Optical instruments and lenses, n.e.c.	2,085,537	439,049	39,491
3333143233	Microscopes, optical.....	59,077	66,773	202,827
3345193	Physical properties testing and inspection equipment, and kinematic testing and measuring equipment	1,693,074	602,414	86,310
3345195	Nuclear radiation detection and monitoring instruments and equipment.....	531,891	270,591	42,650
3391121656	Liquid-in-glass thermometers, clinical.....	-	(NA)	(NA)
3345197005, 007, 009	Liquid-in-glass thermometers, n.e.c.....	23,160	11,644	18,669
3345197011, 013, 017	Thermometers (except liquid-in-glass type).....	196,470	20,513	(NA)
3345197029	Geophysical instruments and equipment.....	136,395	176,367	70,840
3345197027	Seismic instruments.....	107,156	9,706	9,511
3345197001, 015, 023, 025	Commercial, geophysical, meteorological, and general-purpose instruments, n.e.c.	241,292	130,377	155,164
3345199001, 003	Surveying instruments (except photogrammetrical and geodetic equipment).....	(D)	68,504	107,547
3345199005	Drafting instruments and machines, manual and automatic.....	23,863	2,716	238,030

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.

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

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

3/Value represents the c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

4/Product code 3345113105 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.

5/Product codes 3345113313 and 3345113315 are excluded from manufacturers' shipments 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/
332911F001, 003, 005, 007, 009, 011, 013	Pneumatic actuated automatic valves.....	8481.80.9035	8481.80.9035
332911F015, 017, 022, 025, 027, 029	All other control valves, including electric and electrohydraulic.....	8481.80.9020	8481.80.9020
		8481.80.9030	8481.80.9030
		8481.80.9045	8481.80.9045
		8481.80.9050	8481.80.9050
332911F031, 033, 035, 037, 039, 041	Self-generating power-actuated regulator valves.....	8481.80.9015	8481.80.9015
332911H001, 003, 005, 007, 009	Solenoid-operated valves (except nuclear and fluid transfer).....	8481.80.9005	8481.80.9005
3345111101	Compasses (magnetic and gyroscopic).....	9014.10.1040	9014.10.1000
		9014.10.1080	9014.10.6000
		9014.10.6040	9014.10.7030
		9014.10.6080	9014.10.7060
		9014.10.7040	9014.10.9000
		9014.10.7080	
3345111103, 105, 107, 109, 111, 113, 115, 217, 219, 221, 223, 225, 227, 229, 231, 233, 335, 437 3345113101, 103, 105	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments).....	9014.20.2000	9014.20.2000
		9014.20.6000	9014.20.6000
		9014.20.8040	9014.20.8040
		9014.20.8080	9014.20.8080
		9014.90.0000	9014.90.2040
			9014.90.2080
	9014.90.6000		
	9014.80.1000		
3345113207, 209, 211, 313, 315, 317, 319, 321, 323	Radar systems and equipment.....	8526.10.0010	8526.10.0020
		8526.10.0020	8526.10.0040
		8526.10.0070	
3345113651	Radio navigational aid receivers and displays.....	8526.91.0010	8526.91.0020
		8526.91.0030	8526.91.0040
		8526.91.0070	
3345113665	Automatic pilots.....	9014.20.4000	9014.20.4000
		9014.90.0000	9014.90.1000
3345113425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 545, 547, 549, 653, 655, 657, 659, 661, 663, 667, 669, 671 673	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuys, navigation, sonar fish finders, sonar range instrumentation, and other).....	9014.80.2000	9014.80.2000
		9014.80.6000	9014.80.4000
			9014.80.5000
3345120102, 225	Temperature responsive automatic controls (thermostats).....	9032.10.0000	9032.10.0030
			9032.10.0060
			9032.10.0090

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/
3345120105, 107, 109, 111, 113, 115, 117, 219, 223, 227	Pressure responsive automatic, hydraulic automatic, pneumatic automatic, and automatic controls, n.e.c.	9032.20.0000	9032.20.0000
		9032.81.0080	9032.81.0080
		9032.89.6020	9032.89.6015
		9032.89.6085	9032.89.6020
			9032.89.6025 9032.89.6085
3345120229	Parts and components for automatic controls, sold separately.....	9032.29.0000	9032.90.2000
			9032.90.4000
			9032.90.6020
			9032.90.6040
			9032.90.6060 9032.90.6080
3345130	Process control instruments.....	9032.81.0040	9032.81.0020
		9032.81.0080	9032.81.0060
		9032.89.6030	9032.89.6030
		9032.89.6040	9032.89.6040
		9032.89.6050	9032.89.6050
		9032.89.6060	9032.89.6060
		9032.89.6070 9032.89.6075	9032.89.6070 9032.89.6075
3345141001, 003, 005, 007	Gas meters, consumption registering (except parts)	9028.10.0000	9028.10.0000
3345141009, 011, 013, 015, 017	Liquid meters (except parts).....	9028.20.0000	9028.20.0000
3345141019	Parts, components, and accessories for gas and liquid meters, sold separately.....	9028.90.0080	9028.90.0080
3345143001, 003, 005, 007 3345145, 155, 191	Counting devices, n.e.c., including taxi meters and parts, parking meters and parts, motor vehicle instruments, aircraft engine instruments (except flight), and instruments to measure electricity.....	9106.20.0000	9016.20.0000
		9028.90.0040	9029.10.4000
		9029.10.0000	9028.90.0040
		9029.20.4040	9029.10.8000
		9029.20.5000	9029.20.4040
		9029.90.0000	9029.20.4080
			9029.90.2000 9029.90.8040 9029.90.8080
3345151	Electricity meters.....	9028.30.0000	9028.30.0000
3345153001, 003, 005	Voltage, current, and resistance measuring equipment (except multimeters).....	9030.39.0040	9030.39.0040
3345153011, 013, 015	Power and energy testing equipment.....	9030.39.0080	9030.39.0080
3345153071, 073	Analyzers for testing characteristics of internal-combustion engines (except aircraft).....	9031.80.8060	9031.80.8060
		9031.80.8070	9031.80.8070

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/
3345153031, 033, 035	Signal generating equipment.....	8543.20.0000	8543.20.0000
3345153007, 009, 018, 026, 037, 039, 043, 045, 047, 049, 051, 053, 055, 057, 059, 061, 063, 065, 068, 075, 077, 079, 081, 083, 085, 087, 089 093	Test equipment for testing multimeters, electrical, radio, and communication circuits, and motors, n.e.c.	9029.20.6000	9029.20.6000
		9030.31.0000	9030.31.0000
		9030.81.0080	9030.81.0080
		9030.20.0000	9030.89.0080
		9030.89.0080	9030.89.8000
		9030.90.8010	9030.90.4500
		9030.90.8020	9030.90.8400
		9030.90.8030	9030.90.8810
		9030.90.8040	9030.90.8820
		9030.90.8050	9030.90.8830
		9030.90.8060	9030.90.8840
			9030.90.8855
			9030.90.8860
3391110, 3345160	Laboratory, analytical, and scientific instruments.....	9027.50.5000	9027.50.4015
		9027.50.1000	9027.50.4020
		9027.20.4040	9027.20.5030
		9027.20.2000	9027.20.5050
		9027.20.5000	9027.20.5060
		9027.20.5030	9027.20.5080
		9027.20.9000	9027.20.8030
		9027.30.4040	9027.20.8060
		9027.30.4080	9027.20.8090
		9027.80.2000	9027.30.4040
		9027.80.3100	9027.30.4080
		9027.80.3200	9027.50.4015
		9027.80.3500	9027.50.4020
		9027.80.8000	9027.80.4520
		9027.90.2000	9027.80.4530
		9012.10.0000	9027.80.4560
			9027.80.4590
			9027.90.4000
			9027.90.8400
			9027.90.8800
	9012.10.0000		
	9027.80.8020		
	9027.80.8030		
	9027.80.8060		
	9027.80.8090		
3333141	Sighting, tracking, and fire-control equipment, optical type.....	9013.10.2000	9013.10.1000
		9013.10.4000	9013.10.3000
			9013.10.4000
3333143111, 113, 115	Binoculars and astronomical instruments and parts and accessories.....	9005.10.0020	9005.10.0020
		9005.10.0040	9005.10.0040
		9005.10.0080	9005.10.0080
		9005.80.4020	9005.80.4020
		9005.80.4040	9005.80.4040
		9005.80.6000	9005.80.6000
		9005.90.0000	9005.90.4000
		9005.90.8000	

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/
3333143231, 235, 237, 242, 243, 245, 247, 249	Optical instruments and lenses, n.e.c.	9031.40.0080	9031.40.8080
		9031.19.0000	9031.90.4500
			9031.90.5400
			9031.90.5800
3333143233	Microscopes, optical.....	9011.10.0000	9011.10.4000
		9011.20.0000	9011.10.8000
		9011.80.0000	9011.20.4000
		9011.90.0000	9011.20.8000
			9011.80.0000
			9011.90.0000
3345193	Physical properties testing and inspection equipment, and kinematic testing and measuring equipment.....	9024.10.0000	9024.10.0000
		9024.80.0000	9024.80.0000
		9024.90.0000	9024.90.0040
			9024.90.0080
3345195	Nuclear radiation detection and monitoring instruments and equipment.....	9030.10.0000	9030.10.0000
		9030.90.4000	
3391121656	Liquid-in-glass thermometers, clinical.....	9025.11.2000	9025.11.2000
3345197005, 007, 009	Liquid-in-glass thermometers, n.e.c.....	9025.11.4000	9025.11.4000
3345197011, 013, 017	Thermometers (except liquid-in-glass type).....	9025.19.4000	9025.19.0040
		9025.19.8040	9025.19.0080
3345197029	Geophysical instruments and equipment.....	9015.80.8040	9015.80.8040
3345197027	Seismic instruments.....	9015.80.6000	9015.80.6000
3345197001, 015, 023, 025	Commercial, geophysical, meteorological, and general-purpose instruments, n.e.c.	9025.20.0000	9025.20.4000
		9025.80.0000	9025.20.8000
		9015.80.8080	9025.80.1000
			9025.80.2000
			9025.80.3500
			9025.80.4000
			9025.80.5000
	9025.90.0000		
			9015.80.8080
3345199001, 003	Surveying instruments (except photogrammetrical and geodetic equipment).....	9015.10.0000	9015.10.4000
		9015.20.0000	9015.10.8000
		9015.30.0000	9015.20.4000
			9015.20.8000
			9015.30.4000
			9015.30.8000
			9015.90.0010
	9015.90.0020		
			9015.90.0030

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/
3345199005	Drafting instruments and machines, manual and automatic.....	9017.10.4000 9017.10.8000 9017.20.4000 9017.20.7000 9017.20.8080 9017.20.8090	9017.10.4000 9017.10.8000 9017.20.4000 9017.20.7000 9017.20.8080 9017.20.8090

n.e.c. Not elsewhere classified.

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).