

Selected Instruments and Related Products: 2002

Issued August 2003

MA334B(02)-1

Current Industrial Reports

Current data are released electronically on Internet for all individual surveys as they become available. Use: <http://www.census.gov/mcd/>.

Individual reports can be accessed by choosing "Current Industrial Reports (CIR)," clicking on "CIRs by Subsector;" then 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 on Internet through the U.S. Department of Commerce and STAT-USA by subscription. The Internet address is: www.stat-usa.gov/. Follow the prompts to register. Also, you may call 202-482-1986 or 1-800-STAT-USA, for further information.

SUMMARY OF FINDINGS

During 2002, the total value of shipments of selected instruments and related products totaled \$77.2 billion, down slightly from the revised 2001 value of \$77.8 billion. The 2002 figure includes automatic regulating, control, and solenoid valves, \$2.7 billion, down

1.0 percent from 2001; search, detection, navigation, guidance, aeronautical, and nautical systems, instruments, and equipment, \$35.9 billion, an increase of 11.6 percent from 2001; laboratory apparatus and furniture, \$2.0 billion, down 17 percent from 2001; controls for monitoring residential and commercial environments, and appliance regulating controls, \$2.5 billion, unchanged from 2001; process control instruments, \$6.1 billion, down 8.4 percent; fluid meters and counting devices including motor vehicle instruments, \$4.4 billion, unchanged from 2001; test equipment and instruments to measure electricity, \$8.7 billion, the largest decrease of 24.8 percent from 2001; analytical and scientific instruments (except optical), \$7.5 billion, down 4.6 percent from 2001; optical instruments and lenses, \$2.6 billion a decrease of 6.0 percent from 2001; test equipment, instruments, and measuring and controlling devices, not elsewhere classified (n.e.c.), \$4.5 billion, a decrease of 2.8 percent from 2001.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Chris Blackburn, 301-763-5167.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-763-4673.

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

Helping You Make Informed Decisions

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU



Table 1. Value of Shipments of Selected Instruments and Related Products: 1996 to 2002
[Millions of dollars]

Product class	Product description	2002	2001	2000	1999	1998	1997	1996
332911F	Automatic regulating and control valves.....	2,270.9	2,260.7	2,299.4	2,347.2	2,081.9	2,097.2	1,892.6
332911H	Solenoid-operated valves (except nuclear and fluid power transfer).....	403.4	437.8	462.7	486.0	524.0	541.1	521.8
3345111	Aeronautical, nautical, and navigational instruments.....	2,537.3	2,861.2	2,729.5	2,799.8	2,503.9	2,531.0	2,274.3
3345113	Search and detection, navigation and guidance systems and equipment	33,398.7	29,340.0	27,165.3	24,597.7	26,030.5	26,584.1	26,093.9
3391110	Laboratory apparatus and laboratory furniture.....	1,984.7	2,407.2	2,077.8	1,782.1	1,843.3	1,887.5	1,799.3
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls.....	2,538.0 r/	2,537.6	3,259.5	3,013.4	2,860.3	2,717.4	2,647.5
3345130	Process control instruments.....	6,137.9	6,698.0	7,311.3	6,825.4	6,637.0	7,073.1	6,745.1
3345141	Integrating and totalizing meters for gas and liquids.....	1,148.4	1,094.5	1,062.5	1,081.0	1,147.2	1,078.7	962.8
3345143	Counting devices.....	439.6	413.7	511.5	391.3	394.0	434.5	367.0
3345145	Motor vehicle instruments.....	2,803.9	2,900.0	3,111.0	2,851.3	2,435.8	2,245.1	2,218.8
3345151	Integrating instruments, electrical.....	567.3	531.5	493.2	472.9	460.3	457.3	458.0
3345153	Test equipment for testing electrical, radio and communication circuits, and motors.....	7,719.1	10,628.0	13,982.0	11,034.0	10,453.9	11,638.6	10,389.5
3345155	Instruments to measure electricity.....	381.4 r/	371.2	439.7	365.0	376.6	455.9	499.8
3345160	Analytical and scientific instruments (except optical).....	7,512.2	7,873.3	6,808.2	7,581.2	6,162.4	6,058.6	5,478.4
3333141	Sighting, tracking, and fire-control equipment, optical type.....	481.6	512.1	432.5	534.3	509.8	574.9	612.9
3333143	Optical Instruments and lenses.....	2,166.1	2,302.9	2,698.5	2,354.4	2,068.0	2,005.0	1,748.9
3345191	Aircraft engine instruments (except flight).....	789.7 r/	777.6	818.7	657.9	656.9	520.6	529.7
3345193	Physical properties and kinematic testing equipment.....	1,602.5	1,718.1	1,845.3	1,736.4	1,728.1	1,522.8	1,368.9
3345195	Nuclear radiation detection and monitoring instruments.....	538.7	551.3	568.2	539.1	567.2	529.6	496.5
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	1,325.9 r/	1,272.7	1,203.6	1,080.7	1,533.8	1,676.7	1,451.6
3345199	Surveying and drafting instruments	222.9	289.8	331.7	313.7	297.3	359.8	364.8

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

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
332911F	Automatic valves (regulating and control type, except nuclear).....	131	(X) b/	2,270,893	(X) a/	2,260,719
	Automated control valves:					
	Pneumatic actuated.....	(NA)	(X)	708,782	(X) r/	708,597
	Sliding stem valves.....	(NA)	(S)	381,768	(S)	379,103
332911F101	Globe body.....	28	a/	194,806	a/	201,363
332911F103	All other types.....	25	(S)	132,263	(S) r/	136,237
	Rotary valves.....	(NA)	(S)	120,338	(S)	129,338
332911F105	Ball.....	13	(S)	52,263	(S)	57,105
332911F107	Butterfly.....	12		36,511		37,501
332911F109	All other rotary valves, including eccentric disk.....	13	b/	14,323	b/	14,882
332911F111	All other pneumatic power-operated control valves.....	16	(S) a/	33,447	a/r/	79,956
332911F113	Parts for pneumatic-actuated valves, sold separately.....	28	(X) b/	173,229	(X) r/	167,612
	All other actuation, including electric-actuated and electrohydraulic-actuated.....	(NA)	(X)	344,612	(X)	348,949
	Sliding stem valves.....	(NA)	(S)	67,207	(S)	60,289
332911F115	Globe body.....	12		7,828	b/	9,994
332911F117	All other types.....	15		213,928	a/	239,568
332911F122	Rotary valves, including ball, butterfly, and eccentric disk 1/ 2/.....	10	(D)		(D)	(D)
332911F125	All other power-operated (except pneumatic) control valves 1/ 2/.....	17		4,500	a/	240,859
332911F127	Parts for all other power-operated (except pneumatic) control valves.....	12	(X) c/	36,546	(X) c/	41,584
332911F129	Valve actuators, sold separately.....	22	a/	106,423	a/r/	126,178
	Regulator valves:					
332911F131	Remote-sensing direct-actuated temperature regulators 1/.....	15	(S)	67,599	(S)	67,042
332911F133	Self-contained direct-actuated pressure regulators (except instrument type and safety relief valves) 1/.....	30		4,335		243,154
332911F135	Pilot (internal and external) actuated pressure regulators 1/.....	27	a/	311	a/	117,415
332911F137	Self-contained direct-acting precision and instrument-type pneumatic (air and gas) pressure regulators 1/.....	14	b/	368	b/	37,123
332911F139	Flow regulators for gas, vapors, or liquids 1/.....	39		26,180	a/	244,141
332911F141	Other regulator valves 1/.....	25	(X) a/	288,121	(X) a/	275,354
332911F143	Parts for regulator valves, sold separately.....	34	(X) a/	96,976	(X) a/	93,131
332911H	Solenoid-operated valves (except nuclear and fluid power transfer).....	37	(X) a/	403,368	(X)	437,784
	Solenoid-operated valves (except power transfer valves):					
	Commercial/industrial types:					
332911H101	Two-way 1/.....	30		4,109	a/	202,343
332911H103	Three-way 1/.....	17		830	a/	35,784
332911H105	Other 1/ 3/.....	13	(D)		(D)	(D)
332911H107	Household appliance type 1/ 3/.....	2		6,769		127,791
332911H109	Parts, components, and operators for solenoid-operated valves (except nuclear and fluid power transfer valves, sold separately).....	16	(X)	37,450	(X)	40,905
3345111	Aeronautical, nautical, and navigational instruments (except aircraft engine instruments).....	72	(X) c/	2,537,343	(X)	2,861,206
	Flight and navigation sensors, transmitters, and displays:					
3345111101	Compasses (all types).....	13	(X) c/	356,609	(X) a/	418,413
3345111103	Altimeters (except radio and radar altimeters).....	8	(X)	33,272	(X) r/	31,884
3345111105	Airspeed indicators, including machmeters and air data computers).....	15	(X) b/	385,807	(X) a/	467,883

Continued

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001			
			Quantity	Value	Quantity	Value		
3345111107	Acceleration indicators and systems components	8	c/	8,502	67,762	c/	10,883	62,189
3345111109	Rate-of-climb indicators 4/.....	3		(D)	(D)		(D)	(D)
3345111111	Angle-of-attack indicators 4/.....	7		9,756	33,828		16,149	33,576
3345111113	Artificial horizon flight instruments	6	b/	6,231	17,313	a/r/	6,563	15,150
3345111115	Other aerospace and navigational instruments....	24		(X)	682,500		(X)	827,710
	Gyroscopes, sold separately:							
3345111217	Vertical 5/.....	1		(S)	(D)		(S)	(D)
3345111219	Directional 5/.....	6		(S)	59,503		(S)	47,532
3345111221	Free, torqued and untorqued 6/.....	1		(X)	(D)		(X)	(D)
3345111223	Rate, inertial grade 6/.....	3		(X)	(D)		(X)	(D)
3345111225	Rate, noninertial grade 6/.....	4		(X)	125,478		(X)	113,530
	Airframe equipment instruments:							
3345111227	Position indicators (mechanical, as for landing gear, cowl flaps, stabilizers, etc.).....	10		(X)	b/ 30,891		(X)	r/ 33,925
3345111229	Hydraulic system (both electrical and mechanical measuring means, as for liquid level and temperature and pressure indicators).....	10		(X)	b/ 53,992		(X)	a/ 51,520
3345111231	Cabin environmental measuring and control instruments (air-conditioning and heating, cabin pressure, oxygen, etc.).....	9		(X)	69,331		(X)	68,583
3345111233	Other aerospace flight instruments.....	18		(X)	b/ 407,793		(X)	460,550
3345111335	Nautical instruments (all types, including temperature, speed, pitch, and roll instruments and system components, etc.).....	10	c/	185,820	c/ 46,562	c/	166,385	c/ 51,604
3345111437	Parts and components for aeronautical, nautical, and navigational instruments (except aircraft engine instruments, sold separately).....	24		(X)	166,702		(X)	r/ 177,157
33451113	Search and detection systems and navigation and guidance systems and equipment.....	170		(X)	c/ 33,398,703		(X)	a/ 29,339,985
3345113101	Light reconnaissance and surveillance electronic systems and equipment (infrared, ultraviolet, and visible light).....	33		(X)	b/ 3,152,941		(X)	b/ 2,645,564
3345113103	IFF equipment.....	13		(X)	b/ 373,245		(X)	289,221
3345113105	Proximity fuses.....	2		(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.....	19		(X)	b/ 2,002,184		(X)	a/ 1,819,221
3345113209	Ship (marine) radar 7/.....	11		(X)	(D)		(X)	(D)
3345113211	Ground radar 7/.....	16		(X)	1,669,908		(X)	1,562,553
	Tracking radar systems and equipment (fire control, bombing, bombing navigational radar, aircraft and missile tracking radar, etc.):							
3345113313	Airborne and missile/space radar 8/.....	9		(X)	(D)		(X)	(D)
3345113315	Ship (marine) radar 8/.....	9		(X)	(D)		(X)	(D)
3345113317	Ground radar.....	15		(X)	663,285		(X)	522,725
	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.....	8		(X)	a/ 73,736		(X)	a/ 80,496
3345113321	Ground radar.....	7		(X)	c/ 111,810		(X)	c/ 106,736
3345113323	Electronic checkout, monitoring, evaluation, and other electronic support equipment for radar systems.....	11		(X)	c/ 114,196		(X)	a/ 231,929

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
	Sonar search, detection, tracking and communication systems and equipment, including ASW (sonar telephone communication equipment, depth finding, fire control, fusing, guidance, hydrophones, mapping, sonabuoy, navigation, sonar fish finders, sonar range instrumentation, and other):					
3345113425	Surface ship applications (destroyers, destroyer escorts, etc.) 8/.....	15	(X)	(D)	(X)	(D)
3345113427	Submarine applications.....	12	(X)	289,426	(X)	628,719
3345113429	Airborne 8/.....	9	(X)	3,372,945	(X)	r/ 2,689,723
3345113431	Electronic checkout, monitoring, evaluation, and other electronic support equipment for sonar systems and submerged fixed systems.....	5	(X)	(D)	(X)	(D)
3345113433	Specialized command and control data processing and display equipment, sold separately from complete systems.....	16	(X)	a/ 434,566	(X)	r/ 850,445
3345113434	Search, detection, identification, and tracking laser systems and equipment.....	1	(X)	(D)	(X)	(NA)
3345113435	Search, detection, identification, and tracking systems and equipment, n.e.c.	22	(X)	1,535,809	(X)	1,739,441
	Electronic warfare systems and equipment: Countermeasures equipment:					
3345113437	Jamming equipment, communications, and radar.....	15	(X)	2,151,250	(X)	1,268,424
3345113439	Underwater countermeasures equipment.....	3	(X)	(D)	(X)	(D)
3345113441	Other active countermeasures equipment, excluding passive materials such as chaff, window, needles, rope, etc.	9	(X)	c/ 147,561	(X)	a/ 299,121
3345113443	Specialized electronic and communication intelligence equipment, including specially designed DF equipment, signal reduction and processing equipment, and signal analyzers and display equipment.....	18	(X)	a/ 1,994,919	(X)	a/ 2,032,762
	Missile and space vehicle systems and equipment (beam riders, command guidance, inertial systems, infrared homing systems, radar systems, stellar trackers, television vision systems, combination systems, etc.):					
3345113545	Missile-borne and space-vehicle-borne equipment.....	29	(X)	b/ 7,653,508	(X)	a/ 5,444,598
3345113547	Nonmissile and space vehicle guidance equipment (ground, ship, or airborne command guidance systems, etc.).....	13	(X)	484,488	(X)	570,392
3345113549	Electronic checkout, launching, and other missile and space vehicle support systems (ground, ship, and air).....	16	(X)	c/ 666,039	(X)	514,509
	Navigation systems and equipment, navigational aids for aircraft, ship, and ground navigation (auto pilots, 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:					
3345113651	Radio navigation receivers and displays, including OMNI, radio magnetic, glide slope/localizer, DME, etc.).....	20	(X)	c/ 1,059,080	(X)	c/ 762,521
3345113653	Airborne integrated data systems/flight recorders.....	8	(X)	216,644	(X)	265,737
3345113655	Distance measuring equipment (DME) 9/.....	3	(X)	(D)	(X)	(D)
3345113657	Flight directors/situation display 9/.....	5	(X)	(D)	(X)	(D)
3345113659	Heads-up display (HUD) systems 9/.....	4	(X)	(D)	(X)	(D)
3345113661	Inertial navigation systems.....	8	(X)	483,453	(X)	599,457

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001			
			Quantity	Value	Quantity	Value		
3345113663	Proximity warning/collision avoidance equipment.....	7	(X)	381,801	(X) r/	484,817		
3345113665	Complete automatic pilots.....	4	(X) a/	320,549	(X)	348,580		
3345113667	Other airborne navigational systems 9/.....	19	(X) c/	2,389,900	(X) c/	2,050,505		
3345113669	Surface (ship and ground) navigational systems.....	31	(X) a/	359,190	(X)	329,632		
3345113671	Underwater navigational systems.....	3	(X)	(D)	(X)	(D)		
3345113673	Electronic checkout, monitoring, evaluation, and other electronic support equipment for navigational systems and equipment.....	28	(X) c/	830,839	(X) a/	750,740		
3391110	Laboratory apparatus and laboratory furniture.....	138	(X) b/	1,984,679	(X) a/	2,407,199		
3391110112	Laboratory balances and scales.....	9	(S)	33,022	(S)	54,863		
3391110115	Laboratory furnaces and ovens.....	18	(X) b/	27,779	(X) a/	35,349		
3391110118	Laboratory centrifuges.....	14	b/	27,602	a/	108,898		
3391110121	Laboratory distillation apparatus and rectifying apparatus 10/.....	3	(X)	(D)	(X)	(D)		
3391110125	Laboratory sterilizers and autoclaves.....	12	(X) a/	211,495	(X) a/	199,779		
3391110129	Laboratory burners and hotplates.....	5	(X)	8,647	(X) a/r/	10,194		
3391110133	Laboratory granulators, mills, and other particle size reduction apparatus.....	7	(X) b/	1,412	(X)	1,563		
3391110135	Laboratory drying and evaporation apparatus.....	13	(X)	37,466	(X)	36,315		
3391110137	Laboratory blenders, mixers, shakers, dispensers, fraction collectors, and other liquid sample preparation apparatus.....	26	(X) b/	128,677	(X)	179,692		
3391110139	Laboratory incubators.....	10	c/	33,758	b/	64,342		
3391110141	Environmental test chambers.....	21	b/	8,752	b/	143,302		
3391110143	Laboratory freezers.....	9		16,869	61,857	a/	13,470	
3391110231	Laboratory furniture, including cabinets, cases, benches, tables, stools, reagent shelves, etc.....	18	(X) b/	320,810	(X)	380,208		
3391110233	Parts and components for laboratory furniture, sold separately 10/.....	4	(X)	9,966	(X)	11,766		
3391110151	All other laboratory apparatus, n.e.c.	72	(X) a/	688,089	(X) a/	963,263		
3391110155	Components, parts and accessories for laboratory and scientific apparatus, sold separately.....	47	(X) a/	138,917	(X)	143,669		
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls.....	92	(X) a/	2,537,992	(X) a/r/	2,537,603		
	Automatic controls of the type principally used as components of air-conditioning, refrigeration, and comfort heating, including pneumatic controls:							
3345120102	Temperature responsive (thermostats) 1/.....	34		44,692	420,891	a/r/	50,983	
3345120105	Pressure responsive (pressurestats) 1/.....	10		1,570	12,212	r/	1,902	
3345120107	Hydronic responsive 1/ 11/.....	4	(D)	(D)	(D)	(D)	(D)	
3345120109	Humidity responsive (humidistats) 1/ 11/.....	5	(D)	(D)	(D)	(D)	(D)	
3345120111	Light responsive 1/ 11/.....	1		9,192	43,882	r/	5,968	
3345120113	Liquid level 1/.....	10	(S) c/	47,413	(S) c/	43,683		
3345120115	Igniters 1/ 12/.....	7	(D)	(D)	(D)	(D)	(D)	
3345120117	Inherent motor protectors 1/ 12/.....	5		110,415	403,932	101,239	361,668	
3345120219	Microprocessor-based load programmers for buildings energy control 1/.....	10	(S) b/	51,270	(S) b/	73,667		
3345120221	Computerized energy control systems for buildings.....	10		859,700	a/	252,792	r/	999,213
3345120222	Lighting controls, including occupancy and motion sensors, lighting control panels, dimming control systems, timing devices, etc. 11/.....	2	(D)	(D)	(NA)	(NA)		
3345120223	Other.....	23	(X) a/	713,017	(X)	657,241		
	Controls for major appliances such as domestic laundry and cooking appliances, refrigerators and freezers, vending machines, air-conditioners, etc.:							
3345120225	Temperature responsive 1/.....	15		85,347	225,585	101,803	270,097	

Continued

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002			2001		
			Quantity	Value	Quantity	Value		
3345120227	All other controls for appliances 1/.....	14	63,650	282,828	55,689	266,588		
3345120229	Parts and components for controls monitoring residential and commercial environments and for appliance regulating controls, sold separately.....	24	(X)	84,170	(X)	144,310		
3345130	Process control instruments..... General-purpose control system instruments (commonly call receiver-type), operating 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:	457	(X) b/	6,137,943	(X) b/	6,697,955		
3345130101	Controllers (recording, indicating, or blind).....	34 a/	209,279 a/	131,028 a/r/	163,543 a/	113,539		
3345130103	Recorders, with or without self-contained set-point stations.....	13 c/	62,121 a/	72,493 a/	58,434 a/r/	73,277		
3345130105	Indicators, with or without self-contained set-point stations.....	19 c/	54,127 c/	13,136	88,700	19,764		
3345130107	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, integrators, etc.	8	(S) a/	120,618	(S)	111,971		
3345130109	Electronic systems-nonunified architecture type.....	57	(X) b/	1,117,240	(X) b/	1,399,996		
3345130111	Industrial multifunction process computers.....	47	(X) a/	398,222	(X)	397,691		
3345130113	Pneumatic systems, including all system system-type control, display and computing instruments actuated from standardized pneumatic transmission signals: Controllers (recording, indicating, or blind) 13/.....	10	(S) a/	33,663	(S) a/	52,375		
3345130116	Recorders and indicators, with or without self-contained set-point stations 13/.....	9	(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.	5	(S) c/	5,020	(S) c/	7,667		
3345130121	Receiver-type gauges, analog and digital 13/.....	6	(D)	(D)	(D)	(D)		
3345130123	Annunciators, industrial; electromechanical and solid-state types.....	8 a/	30,897 b/	19,733 a/	32,165 b/	19,953		
3345130225	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): Direct-deflecting types (controllers for all types of electrical temperature sensors) 14/.....	5	(S)	(D)	(S)	(D)		
3345130227	Direct-deflecting types (indicators and recorders for all types of electrical temperature sensors) 14/.....	7	(S) b/	14,387	(S) b/r/	14,709		
3345130231	Electromechanical self-balancing types (indicators, recorders, and integrators for all types of electrical temperature sensors).....	3	(S) a/	4,247	(S) r/	5,167		
3345130233	Electronic controllers for all types of electrical temperature sensors.....	22 b/	603,612 b/	129,784 a/	492,786 a/r/	119,435		

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002				2001			
			Quantity		Value		Quantity		Value	
3345130235	Digital indicators for all types of electrical temperature sensors, excluding data loggers.....	27	a/	41,304	b/	12,091	a/	57,081	b/r/	25,567
3345130237	Transmitters, producing standardized electric or pneumatic analog transmission signals for all types of electrical temperature of electrical temperature sensors: Electric.....	19	c/	163,254	b/	51,858	a/	260,736	a/	65,502
3345130239	Pneumatic.....	4	c/	300	c/	503	b/	283	c/	473
3345130241	Mechanical measuring types, filled systems (liquid filled, vapor pressure, gas filled, and mercury filled types): Indicating or recording controllers.....	8		(S)		10,814		(S)		12,964
3345130243	Recorders, noncontrol.....	11		(S)	b/	20,713		(S)	b/	17,296
3345130245	Indicators only, excluding indoor-outdoor and other household or appliance type thermometers.....	12		379,042	a/	9,457		444,041	a/	11,037
3345130247	Transmitters producing standardized electric or pneumatic analog transmission signals.....	10	a/	14,575	a/	5,854	a/	14,916	a/	6,648
3345130249	Primary temperature sensors, excluding aircraft types: Thermocouples and thermocouple lead wire.....	55		(X)	a/	209,513		(X)		226,314
3345130251	All other types (resistance temperature detectors, radiation and optical sensors, thermistors, etc.).....	47		(X)	b/	155,455		(X)	a/	164,434
3345130253	Pressure (gauge, absolute vacuum) and draft measuring instruments, excluding general-purpose receiver-type instruments: Indicating or recording controllers.....	15		(S)	c/	42,421		(S)	b/	49,167
3345130255	Recorders, noncontrol.....	7	b/	11,742	c/	5,601	b/	12,557	a/r/	6,237
3345130257	Indicators only, excluding receiver-type gauges: 3-inch diameter and over 1/.....	15		3,939	a/	87,086		3,817	a/	91,067
3345130259	Under 3-inch diameter 1/.....	14		26,347		74,695		27,053	r/	77,543
3345130261	Transmitters producing standardized analog transmission signals: Transmitters producing standardized electronic analog transmission signals 1/ 15/.....	29	b/	1,097	a/	173,856		1,690		194,541
3345130263	Transmitters producing standardized pneumatic analog transmission signals 15/.....	4		(D)		(D)		(D)		(D)
3345130265	Flow and liquid level measuring instruments, excluding general-purpose receiver-type instruments: Differential pressure types: Indicating or recording controllers.....	9		140,737	a/	15,394		170,533	a/	18,762
3345130267	Recorders, noncontrol, and indicators, noncontrol.....	13		79,747	a/	28,091		77,741		32,413
3345130269	Transmitters producing standardized analog transmission signals: Transmitters producing standardized electronic analog transmission signals.....	19	c/	267,554		314,697		296,591		319,348
3345130271	Transmitters producing standardized pneumatic analog transmission signals.....	8	c/	14,988	c/	8,343	c/	12,932	c/	6,989
3345130273	Primary pressure sensors (load cells, strain gauges, etc.).....	8		30,594		13,426	r/	39,132	r/	16,484
3345130275	Primary flow elements, including orifice plates, venturi tubes, low tubes, flow nozzles, pitot tubes, etc.	20	a/	245,045		62,126		247,442		68,421
3345130277	Electromagnetic flowmeters: Primary device (magnetic flow tube).....	13	b/	80,705	b/	80,123	a/	84,411	b/r/	89,142

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
3345130279	Secondary device (magnetic transmitter, recorder, indicator or controller which receives signal directly from primary device).....	9	c/ 33,842	23,805	35,233	r/ 24,097
3345130281	Capacitance, ultrasonic, and other electronic types, including magnetic resonance, vortex precession, and vortex-shedding type elements.....	36	b/ 158,846	150,371	181,913	a/ 165,879
3345130283	Variable area-controlling, recording, indicating, and transmitting instruments and associated primary flow elements 1/.....	14	(S) b/	78,544	(S) b/	86,672
3345130285	Float and displacement (controlling, recording, indicating, and transmitting instruments and associated primary flow elements) 1/.....	22	c/ 1,854	112,053	a/ 1,672	112,142
3345130287	Turbine and propeller: controlling, recording, indicating, and transmitting instruments and associated primary flow elements.....	11	a/ 75,765	32,196	89,686	38,983
3345130289	Mass flow, i.e., controlling, thermal-controlling, recording, indicating, and transmitting instruments and associated primary flow elements.....	18	(S) a/	308,953	(S) r/	356,118
3345130291	Other types: controlling, recording, indicating, and transmitting instruments and associated primary flow elements.....	16	c/ 1,022,489	207,624	984,188	208,426
3345130293	Humidity instruments (controlling, recording, indicating, and transmitting, and associated primary humidity elements, excluding home and general-purpose type).....	12	c/ 65,338	33,301	63,632	34,611
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.....	9	c/ 3,379	55,695	b/r/ 4,256	b/r/ 60,085
3345130297	Infrared analyzers.....	10	(S) b/	15,329	(S) b/r/	14,866
3345130299	Oxygen analyzers.....	16	a/ 34,159	74,437	37,308	67,624
334513021A	Other gas analyzers.....	23	b/ 62,132	116,009	69,616	128,156
334513021C	Ph analyzers.....	12	a/ 134,914	42,098	r/ 152,726	a/r/ 50,392
334513021E	Other liquid analyzers.....	23	c/ 120,489	95,986	b/ 125,049	a/ 97,589
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.....	7	(S)	28,589	(S)	12,685
334513021L	Digital indicators.....	17	c/ 119,263	40,496	c/r/ 106,967	b/r/ 40,310
334513021M	Transmitters producing standardized electric or pneumatic analog transmission signals.....	9	c/ 46,327	13,038	c/r/ 44,539	b/ 12,616
Mechanical measuring types:						
334513021P	Indicating or recording controllers and recorders, noncontrol.....	4	(S)	2,061	(S)	2,587
334513021R	Indicators only.....	4	(S)	11,899	(S)	10,999
334513021T	Transmitters producing standardized electric or pneumatic analog transmission signals.....	12	(S)	46,496	(S)	55,619
All other industrial process instruments:						
334513022A	Other temperature instruments.....	27	(X) b/	149,860	(X) a/	148,610
334513022C	Other flow and liquid level instruments.....	25	(X) b/	224,805	(X) a/	229,440
334513022E	Other continuous process instruments.....	31	(X) a/	202,297	(X) a/r/	210,992
334513022G	Other industrial type instruments.....	58	(X) a/	302,644	(X) a/	355,044

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001		
			Quantity	Value	Quantity	Value	
	Parts, supplies, accessories, other primary sensors, n.e.c., panelboards, and other equipment associated with process control instrumentation:						
334513032J	Primarily designed for temperature instruments.....	16	(X)	42,348	(X) r/	41,550	
334513032L	Primarily designed for flow and liquid level instruments.....	27	(X) a/	104,375	(X) a/r/	100,946	
334513032N	Primarily designed for continuous process instruments.....	22	(X) c/	100,625	(X) c/	112,513	
334513032P	Primarily designed for industrial type instruments.....	33	(X) c/	80,321	(X) b/r/	82,511	
3345141	Integrating and totalizing meters for gas and liquids.....	40	(X) b/	1,148,390	(X)	1,094,482	
	Gas meters, consumption registering: Diaphragm type; positive displacements; aluminum, iron, and tin case:						
3345141101	Residential size (up to 400 cu. ft/hr of 0.64 specific gravity gas, at 0.5 inches water drop) 1/ 16/.....	5	(S)	(D)	(S)	(D)	
3345141103	Other sizes, including commercial and industrial 16/.....	4	(S)	(D)	(S)	(D)	
3345141105	Turbine type (all sizes).....	4	b/	5,492 b/	17,935	4,917	14,472
3345141107	Other gas meters, consumption registering 16/.....	5	(S) c/	161,872	(S)	186,364	
	Liquid meters, positive displacement with registers and counters:						
	Water meters, consumption registering:						
3345141109	Small meters, up to and including 1 inch 1/....	9		4,743	263,204	4,603	238,493
3345141111	Intermediate meters, over 1 inch up to and including 2 inches.....	9		155,889	39,049	154,152	42,240
3345141113	Large meters, over 2 inches.....	8	c/	441,211 b/	102,993	547,116	107,320
3345141115	Liquid fuel dispensing meters, excluding service station dispensing pumps 17/.....	8	(D)	(D)	(D)	(D)	
3345141117	Other liquid meters; industrial bulk plants, pipeline, batching, and treatment facilities 17/.....	15	c/	1,071,917 b/	265,063	1,026,530	256,538
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately.....	28	(X) b/	298,274	(X)	249,055	
3345143	Counting devices, excluding motor vehicle instruments.....	40	(X) b/	439,639	(X)	413,670	
3345143101	Mechanical input 1/.....	9	(S) c/	23,157	(S)	34,917	
3345143103	Electrical input 1/.....	12	c/	841 c/	52,473	843	49,318
3345143105	Electronic input.....	14	c/	1,929,204 c/	107,006	2,067,541	101,035
3345143107	All other counting devices not specified above, including toll meters, fare collection equipment (systems), parking lot systems, etc., but excluding parking meters.....	10	(X)	251,732	(X)	224,281	
3345143109	Components and parts for counting devices (except parking meters), sold separately.....	9	(X) c/	5,271	(X) r/	4,119	
3345145	Motor vehicle instruments.....	31	(X)	2,803,864	(X)	2,899,988	
3345145101	Speedometers (speedometers including odometers are classified as speedometers).....	10	(X)	12,819	(X)	13,360	
3345145103	Tachometers.....	9	(X)	27,355	(X)	25,950	
3345145105	Odometers (speedometers including odometers are classified as speedometers) 18/.....	5	(X)	(D)	(X)	(D)	
3345145107	Fuel level gauges 18/.....	8	(X)	47,834	(X)	53,963	
3345145109	Water temperature gauges.....	10	(X)	19,038	(X)	19,502	
3345145111	Ammeters.....	9	(X)	2,543	(X)	3,253	
3345145113	Oil pressure gauges.....	8	(X)	5,615	(X)	7,367	
3345145115	Instrument panels, including cluster modules.....	17	(X)	2,620,170	(X)	2,659,285	
3345145117	Other motor vehicle instruments.....	18	(X)	68,490	(X) r/	117,308	

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
3345151	Integrating instruments, electrical.....	23	(X)	567,312	(X) b/	531,516
	Ac watt-hour meters:					
3345151101	Single phase 1/.....	6		5,248	5,808	189,854
3345151103	Polyphase.....	5		239,700	222,236	32,485
3345151105	Demand meters (kW and kVA), combined watt-hour and demand meters (single phase and polyphase), and combined watt-hour and time switch meters.....	10		797,205	813,770	137,432
3345151107	Other electrical integrating meters, including dc watt-hour meters, ampere-hour meters, and other miscellaneous integrating instruments not included in the above classifications.....	11	(X)	140,426	(X) a/	119,170
3345151109	Parts and accessories for electric integrating meters, including meter mountings and registers, sold separately.....	9	(X)	49,074	(X)	52,575
3345153	Test equipment for testing electrical, radio and communication circuits, and motors.....	314	(X) b/	7,719,050	(X) a/	10,628,033
	Voltage, current, and resistance measuring equipment (except multimeters):					
	Electronic:					
3345153101	Digital.....	25	(X) a/	80,128	(X)	67,134
3345153103	Analog.....	21	(X) a/	41,507	(X)	45,304
3345153105	Electrical, excluding panel meters 19/.....	14	(X)	(D)	(X)	147,367
	Multimeters:					
3345153107	Electronic, digital and analog 19/.....	11	(X)	242,847	(X)	146,554
3345153109	Electrical.....	5	(X) a/	20,235	(X) b/	22,160
	Power and energy measuring equipment:					
3345153114	Electronic, digital and analog.....	14	(X) b/	57,812	(X) b/	72,805
3345153115	Electrical power measuring equipment, excluding electrical integrating instruments, sold separately 20/.....	4	(X)	(D)	(X)	(D)
3345153118	Frequency counters, timers, and other frequency and time measuring equipment, excluding standards.....	18	(X)	74,710	(X)	113,031
3345153126	Waveform measuring and/or analyzing equipment, including oscilloscopes and spectrum analyzers.....	22	(X) c/	603,506	(X) c/	652,927
	Signal generating equipment:					
3345153131	Audio.....	12	(X) a/	14,449	(X) a/	16,306
3345153133	RF (over 20 kHz to 890 MHz) 21/.....	13	(X)	(D)	(X)	(D)
3345153135	Microwave (890 MHz and above) 21/.....	8	(X) b/	123,187	(X) r/	147,080
	Field strength and intensity measuring equipment, including RFI measuring equipment:					
3345153137	Electronic 22/.....	13	(X) a/	94,806	(X) a/	168,886
3345153139	Electrical field measuring equipment 22/.....	3	(X)	(D)	(X)	(D)
	Impedance and standing wave ratio measuring equipment (transfer function measuring equipment):					
3345153143	Electronic impedance and related measuring equipment.....	5	(X) a/	7,363	(X) b/	18,195
	Automatic test and measuring equipment:					
3345153149	Combination and/or group test sets.....	37	(X)	1,232,770	(X)	1,852,667
	Component part test sets:					
3345153151	Electron tube test equipment 20/.....	2	(X)	(D)	(X)	(D)
	Semiconductor component test equipment:					
3345153153	Memory.....	13	(X) a/	29,811	(X)	42,546
3345153155	Linear 23/.....	7	(X)	(D)	(X)	(D)
3345153157	Microprocessor.....	13	(X)	272,048	(X)	563,102
3345153159	Other semiconductor component test equipment 23/.....	35	(X)	1,353,670	(X) r/	1,708,276
3345153161	Circuit board loaded test equipment.....	14	(X) b/	271,541	(X) b/	329,148
3345153163	Other component part test sets and equipment.....	24	(X) a/	129,006	(X) a/r/	172,645
3345153165	Equipment and subassembly test equipment, n.e.c., including disc drive testers, and power supply testers, etc.	15	(X) a/	131,586	(X) r/	151,863

Continued

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002			2001				
			Quantity		Value	Quantity		Value		
3345153168	Standards and calibration equipment for test measuring equipment, including laboratory types (metered bench top, rack mountable, or plug-in equipment).....	25	(X)	b/	234,901	(X)	a/	258,379		
	Analzers for testing characteristics of internal-combustion engines, excluding aircraft:									
3345153171	Portable.....	5	(X)		175,000	(X)		142,402		
3345153173	Other.....	5	(X)	c/	31,756	(X)	a/	30,774		
	Communications test equipment, n.e.c.:									
3345153175	Network analyzers.....	14	(X)		791,459	(X)	r/	1,092,644		
3345153177	Cable backplane and other continuity testers.....	10	(X)	a/	16,099	(X)	a/	41,175		
3345153179	Fiber optics test equipment (OTDR, optical S/N meters, etc.).....	9	(X)	a/	452,192	(X)	r/	739,978		
3345153181	Other communications test, monitoring, and control equipment (except microwave).....	26	(X)	b/	215,572	(X)	b/	541,810		
3345153183	Microwave test equipment, n.e.c., (1,300 MHz and above).....	10	(X)		103,093	(X)	r/	148,093		
	Logic test, development, and analysis equipment:									
3345153185	Logic analyzers, and similar logic state, timing, and signature analyzers 24/.....	4	(X)		(D)	(X)		(D)		
3345153187	Microprocessor development systems 24/.....	7	(X)	c/	158,337	(X)	a/	226,035		
3345153189	Pulse, function, and data generators and similar metered frequency synthesizers.....	12	(X)		169,279	(X)		198,296		
3345153191	Other field service test and measurement equipment, logic probes, clips, and pulsers.....	8	(X)		23,681	(X)	a/r/	27,834		
3345153193	Other measuring and checking instruments for testing electrical, radio, and communication circuits, and motors.....	30	(X)	a/	279,203	(X)	a/	375,204		
3345153195	Other analyzing instruments for checking electrical quantities 20/.....	9	(X)		124,099	(X)		133,831		
3345153197	Parts and components for test equipment for testing electrical, radio and communication circuits, and motors, sold separately.....	47	(X)	a/	163,397	(X)	a/	233,582		
3345155	Instruments to measure electricity.....	77	(X)	b/	381,446	(X)	b/r/	371,152		
	Electrical indicating instruments:									
	Panel type instruments:									
3345155101	Digital panel meters (DPM) between 0.05 percent and 1 percent, plus or minus one-digit accuracy, excluding precision DVM's and electronic counters.....	20	b/	311,536	a/	35,153	b/r/	440,610	b/	48,517
3345155103	Analog solid state panel meters (generally of plus or minus 2-percent accuracy) with LED, LCD, or neon gas discharge display.....	8	c/	17,038	a/	2,489	c/r/	32,886	a/r/	5,402
	Panel types other than ruggedized or sealed (generally of 2-percent accuracy):									
3345155105	Ac, including moving iron vane and dynamometer types.....	8	b/	132,068	b/	2,750	b/	148,942	b/r/	2,996
3345155107	Dc, including rectifier and self-contained thermocouple types 1/.....	12	c/	750	b/	21,093	c/	781	b/r/	20,154
3345155109	Panel types ruggedized or sealed (generally 2-percent accuracy).....	7	c/	30,099	a/	5,968	c/r/	42,655	b/r/	4,486
3345155113	All other panel type instruments, including ammeters and voltmeters for motor meters for motor vehicles 1/.....	12	a/	1,309	b/	53,576	a/	1,283	a/	32,465
3345155116	Switchboard instruments which are generally of 1-percent accuracy, including ac and dc.....	5		14,600		2,026		18,667		2,194
3345155119	Elapsed time meters (with and without reset) 1/ 25/.....	8		(S)		(D)		(S)	b/	17,175
3345155121	Portable instruments which 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 which are an end product.....	16		473,272		100,423		360,547		79,216

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
3345155124	Electrical recording instruments (portable and for panel mounting) including oscillographic and direct deflecting types.....	22	4,822	81,485	2,872	91,433
3345155129	Parts and accessories for indicating and recording instruments: Transducers for volts, amperes, watts, vars, frequency, temperature and power factor.....	18	(X) b/	27,205	(X) a/	31,269
3345155133	Other, including instrument shunts 25/.....	16	(X)	49,278	(X) r/	35,845
3345160	Analytical and scientific instruments (except optical).....	259	(X) b/	7,512,246	(X) a/	7,873,325
3345160101	Electrochemical instruments: Ph electrodes and meters.....	18	(X) a/	96,544	(X) a/	82,300
3345160103	Ion selective electrodes and meters.....	12	(X) a/	58,545	(X) a/r/	44,177
3345160107	Electrophoresis instruments.....	8	(X)	102,256	(X) a/	122,540
3345160109	Other (except process type), including photometers.....	11	(X)	12,244	(X) a/	14,195
3345160112	Chromatographic instruments, including gas, liquid, paper, gel, and thin layer.....	36	a/ 547,477	1,093,785	308,534 r/	1,170,341
3345160117	Spectrophotometric instruments: Atomic absorption.....	6	(X)	33,704	(X)	32,548
3345160119	Optical emission, including spark, arc, and glow, spectrographs, all other (except ICP).....	6	(X) a/	10,973	(X) b/	7,738
3345160121	Optical emission, including laser excited source, which includes laser microprobe source emission, laser source Raman, and laser microprobe source Raman spectrometers..	7	(X)	47,274	(X)	40,085
3345160123	Optical emission with inductively coupled plasma, ICP.....	5	(X)	47,334	(X) b/r/	61,064
3345160125	Infrared including Fourier transfer methods.....	17	(X) a/	120,173	(X) a/r/	133,358
3345160127	Ultraviolet, visible and colorimeters.....	21	(X)	144,378	(X) a/	151,519
3345160129	Fluorescent instruments, including fluorometers (except chemicals).....	15	(X)	56,203	(X)	57,266
3345160131	Color measuring devices.....	8	(X)	155,191	(X)	169,111
3345160133	Other, including vacuum ultraviolet, Raman, Raman, light scattering reflectors, helium glow, and light measuring.....	14	(X)	46,889	(X)	46,123
3345160135	Thermal analysis instruments, including thermogravimetric analyzers (TGA), quantitative thermal analyzers (QTA), and differential thermal analyzers (DTA).....	11	(X)	145,394	(X) a/r/	147,145
3345160137	Nuclear magnetic resonance spectrometers, including electron paramagnetic spin types (EP) 26/.....	5	(D)	(D)	(D)	(D)
3345160139	Microscopes, scanning type, including electron and proton 26/.....	4	(D)	(D)	(D)	(D)
3345160141	Particle beam excitation instruments, including electron microprobes, augers, energy ion spectrometers, secondary ion mass spectrometers (SIMS), ion microprobes 26/.....	3	(D)	(D)	(D)	(D)
3345160143	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).....	9	c/ 1,547 a/	58,533	c/ 1,658 a/	61,650
3345160145	Mass spectroscopy instrumentation.....	14	(X)	412,787	(X) r/	360,435
3345160147	Clinical laboratory instrumentation, including instruments used in the clinical laboratory for measuring, analyzing, and processing clinical specimens.....	(NA)	(X)	1,235,449	(X)	1,314,315
3345160147	Chemistry (measure and identify substances, e.g., metabolites, enzymes, and drugs).....	12	(S)	519,625	(S) r/	598,338

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
3345160149	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).....	12	22,448	318,945	21,848	329,531
3345160151	Microbiology (enumerate or identify pathogenic organisms or measure their susceptibility to antimicrobial agents).....	5	(S)	81,408	(S)	56,085
3345160153	Histology (process tissue and cells, e.g., tissue processors, cell stainers) 26/.....	2	(D)	(D)	(D)	(D)
3345160155	Blood bank and immunology (process blood and specimens for testing; measure and identify, using immunoassay, substances in clinical specimens).....	6	5,250	196,103	a/ 6,134	a/r/ 191,877
3345160157	Other clinical laboratory instrumentation not specified above.....	12	b/ 19,586	119,368	b/r/ 22,206	138,484
3345160159	Organic elemental analysis instruments, including carbon, hydrogen, nitrogen, oxygen, and sulphur..	14	b/ 24,878	a/ 89,490	c/ 43,334	a/ 92,322
3345160161	Amino acid, protein and/or peptide, including chromatographic type 26/.....	8	(D)	(D)	(D)	(D)
3345160163	Gas detectors.....	19	431,534	b/ 108,930	403,926	111,433
3345160164	Analytical and scientific laser systems and equipment 26/.....	3	(D)	(D)	(NA)	(NA)
3345160165	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 26/.....	92	(X) c/ 2,241,449		(X) a/ 2,400,476	
3345160167	Parts, components, and accessories for analytical and scientific instruments, sold separately, including photo tubes, thermal conductivity sensors, thermopiles, etc.	98	(X) a/ 1,194,721		(X) a/ 1,253,184	
3333141	Sighting, tracking, and fire control equipment optical type.....	37	(X)	481,594	(X)	512,121
3333141101	Made from lenses, prisms, etc., produced in the same plant.....	8	(X)	217,678	(X)	162,532
3333141103	Made from purchased lenses, prisms, etc.	19	(X)	200,350	(X)	314,468
3333141104	Sighting and tracking laser systems and equipment 27/.....	2	(X)	(D)	(X)	(NA)
3333141105	Parts and accessories 27/.....	15	(X) b/ 63,566		(X) b/r/ 35,121	
3333143	Optical instruments and lenses.....	156	(X) a/ 2,166,068		(X)	2,302,933
3333143111	Binoculars, prismatic and nonprismatic, terrestrial and celestial telescopes.....	13	(X) c/ 101,128		(X) c/ 82,890	
3333143113	Other astronomical instruments, excluding radio astronomy 28/.....	4	(X)	(D)	(X)	(D)
3333143115	Parts and accessories, including mountings for binoculars, optical telescopes and other astronomical equipment.....	12	(X) c/ 42,401		(X) c/ 40,070	
3333143231	Optical test and inspection equipment, including standard sources, modulators, optical comparators, interferometers (except optical microscopes).....	34	(X)	213,053	(X)	231,097
3333143233	Optical microscopes.....	13	(X) a/ 27,149		(X) r/ 42,365	
3333143235	Optical components: Filters, including parts and accessories thereof.....	32	(X)	106,791	(X)	141,554
3333143237	Lenses (except ophthalmic focus lenses): Unmounted lenses.....	39	(X) a/ 237,861		(X) a/ 256,028	
3333143242	Mounted lenses, including photographic 29/.....	17	(X)	(D)	(X)	251,310
3333143243	Other (prisms, mirrors, etc.) 29/.....	48	(X) a/ 483,654		(X)	260,462

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
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)	721,151	(X) r/	739,996
3333143247	Parts and accessories for other optical microscopes 28/.....	13	(X)	(D)	(X)	(D)
3333143249	Parts and accessories for other optical instruments 28/.....	20	(X)	232,880	(X)	257,161
3345191	Aircraft engine instruments (except flight).....	32	(X) b/	789,717	(X) r/	777,617
3345191101	Temperature sensors, transmitters, and displays.....	20	(X)	216,120	(X)	238,281
3345191103	Pressure ratio sensors, displays, and controls 30/.....	4	(X)	(D)	(X)	9,945
3345191105	Pressure and vacuum sensors, transmitters, and displays.....	11	(X)	57,671	(X)	70,322
3345191107	Fuel and oil flow rate sensors, transmitters, and displays, including mixture controls.....	7	(X)	32,609	(X)	27,586
3345191109	Fuel and oil quantity sensors, transmitters, and displays, including densitometers 30/ 31/.....	6	(X)	(D)	(X)	(D)
3345191111	Tachometer generators and indicators.....	8	(X)	8,077	(X)	7,597
3345191113	All other not specified above.....	10	(X)	162,358	(X)	163,674
3345191115	Parts and components for aircraft engine instruments (except flight), sold separately 30/ 31/.....	11	(X)	312,882	(X) r/	260,212
3345193	Physical properties testing and inspection equipment and kinematic testing and measuring equipment.....	155	(X) a/	1,602,463	(X) a/	1,718,051
	Physical properties testing equipment, including hardness, tensile, stress, strain, abrasion, strength, torsion, wear, and similar testing equipment, including components and sold separately:					
3345193101	For testing of metals.....	25	(X)	487,794	(X)	453,820
3345193103	Other.....	44	(X)	400,158	(X) r/	429,917
3345193105	Parts for physical properties testing equipment, sold separately.....	23	(X) b/	19,578	(X) a/	79,107
	Physical properties inspection equipment, including flaw detection, thickness measuring, and similar inspection equipment, including components and parts, sold separately:					
3345193107	For testing of metals.....	20	(X)	182,689	(X)	179,933
3345193109	Measuring and checking flow of fluids.....	11	(X) c/	73,222	(X)	68,501
3345193111	Other.....	36	(X) a/	212,145	(X) a/	241,837
3345193113	Parts for physical properties inspection equipment, sold separately.....	23	(X) c/	35,497	(X) a/	39,324
3345193115	Kinematic testing and measuring equipment, including vibration, acceleration, and other motion testing equipment.....	32	(X) a/	187,998	(X)	211,342
3345193117	Parts for kinematic testing and measuring equipment, sold separately.....	7	(X) c/	3,382	(X) c/r/	14,270
3345195	Nuclear radiation detection and monitoring instruments.....	49	(X) b/	538,689	(X) a/	551,276
3345195101	Radiation detecting elements, including ion chambers.....	15	b/	66,734	a/	81,915
3345195103	Solid state detectors 32/.....	6	(D)	(D)	r/ (D)	65,895 (D)
3345195105	Nuclear monitoring instruments, including environmental, personal dosimetry, and medical monitors, both stationary and portable types.....	13	(S) a/	145,320	(S) a/	174,434

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002			2001				
			Quantity		Value	Quantity		Value		
3345195107	Sample and flow counting systems, manual and automatic.....	6	(X)	b/	15,494	(X)	a/	15,759		
3345195109	Scalers.....	6	(S)	b/	804	(S)		891		
3345195114	Pulse analyzers, including single and multi-channel, and nuclear spectrometers.....	4	b/	773	c/	6,585	a/	814	7,470	
3345195117	Count rate meters 33/.....	8	(D)		(D)		(D)	(D)		
3345195119	Measurement and control devices using beta, gamma, or neutron gauge technology.....	9	(X)	a/	78,676	(X)		81,621		
3345195121	Nuclear power supplies.....	6	(X)		17,948	(X)		15,755		
3345195123	Neutron and photon activation analysis systems 33/.....	4	(X)		6,076	(X)	r/	6,037		
3345195125	Nuclear instrument modules, n.e.c.	10	(X)	a/	42,842	(X)		31,430		
3345195127	Other nuclear radiation detection and monitoring instruments 32/.....	13	(X)		94,402	(X)	r/	101,472		
3345195129	Parts and components for nuclear radiation detection and monitoring instruments, sold separately.....	16	(X)	b/	48,627	(X)		50,526		
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	139	(X)	a/	1,325,880	(X)	r/	1,272,733		
3345197101	Barometers and barographs, aneroid and mercurial types, including recorders, wall, pendant, meteorological, hygrothermographs, barometer-thermometer-humidity combinations.....	9	(X)	a/	841	(X)	r/	2,036		
3345197103	Hydrometers, glass, all types, including thermo-hydrometers 1/.....	5	(S)	b/	1,316	(S)	a/r/	1,453		
3345197105	Liquid-in-glass thermometers: Engraved (etched) stem, thermoregulators, deep-sea reversing, laboratory, encased glass, ASTM standards, pocket case, max-min registering (except clinical thermometers).....	11	(X)	c/	4,193	(X)	a/	4,793		
3345197107	Threaded and flanged types, fixed and adjustable angle, inline and duct installations, for process, food, air-conditioning, and refrigeration installations 1/.....	9	b/	396	b/	6,153	c/	463	c/	7,732
3345197109	Household and commercial thermometers such as wall, outdoor, domestic science, cupcase, filled systems, and indoor-outdoor 1/.....	10		1,783		3,510		2,864		6,534
3345197111	Bimetal thermometers: Threaded and flanged types, for pipeline and duct installations, including general and pocket test 1/.....	13		1,231		19,634		1,361		21,927
3345197113	Domestic science, commercial general test, indoor, outdoor, desk models, oven, refrigerator 1/.....	9	(S)			7,894	(S)			11,113
3345197115	Humidity indicating and recording instruments, such as bi-hygroscopic and hygroscopic element, indicators, psychrometers, wet and dry bulb, hygrometers, indicating hygrometers.....	17	(X)			13,074	(X)			11,648
3345197117	Other thermometers (infrared, meteorological, commercial, and industrial).....	18	(X)	a/	88,870	(X)	c/			62,067
3345197123	Meteorological electronics equipment and radio astronomy equipment (automatic weather stations and weather tracking equipment, ceilometers, transitometers, space satellite meteorological systems, and specialized meteorological telemetering equipment).....	19	(X)	a/	317,766	(X)	r/			258,593
3345197125	Other meteorological instruments, including speed and direction instruments, rain gauges, thermographs, and parts, sold separately.....	17	(X)	b/	39,140	(X)	b/r/			40,087

Continued

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
3345197127	Seismic instruments.....	8	(X)	145,295	(X)	204,700
3345197129	All other geophysical instruments and equipment.....	19	(X)	136,838	(X) r/	132,464
3345197130	Commercial, geophysical, and meteorological laser systems and equipment.....	-	(X)	-	(X)	(NA)
3345197131	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.....	39	(X)	502,467	(X) r/	469,409
3345197133	Parts and accessories for meteorological and commercial and industrial instruments.....	23	(X) a/	38,889	(X) r/	38,177
3345199	Surveying and drafting instruments and associated equipment.....	27	(X) a/	222,910	(X)	289,755
3345199101	Surveying instruments, including alidades, transits, plumb bobs, sextants, theodolites, surveyors, compasses, surveyor's levels, tapes, etc.	15	(X) b/	159,990	(X)	237,008
3345199103	Parts and components for surveying instruments, sold separately.....	5	(X)	(D)	(X)	(D)
3345199105	Drafting instruments and machines, manual and automatic, drafting tables, plotting instruments, slide rules, T-squares, drafting templates, rules, etc.	10	(X) a/	34,403	(X) a/r/	24,124
3345199107	Parts and components for drafting instruments and machines, sold separately.....	2	(X)	(D)	(X)	(D)
3345199108	Surveying and drafting laser systems and equipment.....	1	(X)	(D)	(X)	(NA)
3345199109	Photogrammetric and geodetic equipment, excluding cameras.....	1	(X)	(D)	(X)	(D)
3345199111	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 specified by kind. 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 332911F122 is combined with product code 332911F125 to avoid disclosing data for individual companies.
- 3/Product code 332911H105 is combined with product code 332911H107 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 3345111217 is combined with product code 3345111219 to avoid disclosing data for individual companies.
- 6/Product codes 3345111221 and 3345111223 are combined with product code 3345111225 to avoid disclosing data for individual companies.
- 7/Product code 3345113209 is combined with product code 3345113211 to avoid disclosing data for individual companies.
- 8/Product codes 3345113313, 3345113315, and 3345113425 are combined with product code 3345113429 to avoid disclosing data for individual companies.
- 9/Product codes 3345113655, 3345113657, and 3345113659 are combined with product code 3345113667 to avoid disclosing data for individual companies.
- 10/Product code 3391110121 is combined with product code 3391110233 to avoid disclosing data for individual companies.
- 11/Product codes 3345120107, 3345120109, and 3345120222 are combined with product code 3345120111 to avoid disclosing data for individual companies.
- 12/Product code 3345120115 is combined with product code 3345120117 to avoid disclosing data for individual companies.
- 13/Product codes 3345130113 and 3345130116 are combined with product code 3345130121 to avoid disclosing data for individual companies.
- 14/Product code 3345130225 is combined with product code 3345130227 to avoid disclosing data for individual companies.
- 15/Product code 3345130261 is combined with product code 3345130263 to avoid disclosing data for individual companies.
- 16/Product codes 3345141101 and 3345141103 are combined with product code 3345141107 to avoid disclosing data for individual companies.
- 17/Product code 3345141115 is combined with product code 3345141117 to avoid disclosing data for individual companies.
- 18/Product code 3345145105 is combined with product code 3345145107 to avoid disclosing data for individual companies.
- 19/For 2002 value, product code 3345153105 is combined with product code 3345153107 to avoid disclosing data for individual companies.
- 20/Product codes 3345153115 and 3345153151 are combined with product code 3345153195 to avoid disclosing data for individual companies.
- 21/Product code 3345153133 is combined with product code 3345153135 to avoid disclosing data for individual companies.
- 22/Product code 3345153137 is combined with product code 3345153139 to avoid disclosing data for individual companies.

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2002 and 2001
[Quantity in number of units. Value in thousands of dollars]

23/Product code 3345153155 is combined with product code 3345153159 to avoid disclosing data for individual companies.

24/Product code 3345153185 is combined with product code 3345153187 to avoid disclosing data for individual companies.

25/For 2002 value, product code 3345155119 is combined with product code 3345155133 to avoid disclosing data for individual companies.

26/Product codes 3345160137, 3345160139, 3345160141, 3345160153, 3345160161, and 3345160164 are combined with product code 3345160165 to avoid disclosing data for individual companies.

27/Product code 3333141104 is combined with product code 3333141105 to avoid disclosing data for individual companies.

28/Product codes 3333143113 and 3333143247 are combined with product code 3333143249 to avoid disclosing data for individual companies.

29/For 2002 value, product code 3333143242 is combined with product code 3333143243 to avoid disclosing data for individual companies.

30/For 2002 value, product codes 3345191103 and 3345191109 are combined with product code 3345191115 to avoid disclosing data for individual companies.

31/For 2001 value, product code 3345191109 is combined with product code 3345191115 to avoid disclosing data for individual companies.

32/Product code 3345195103 is combined with product code 3345195127 to avoid disclosing data for individual companies.

33/Product code 3345195117 is combined with product code 3345195123 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: 2002
 [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 2/ (value 3/
332911F101, 103, 105, 107, 109, 111, 113	Pneumatic actuated automatic valves.....	708,782	65,493	29,920
332911F115, 117, 122, 125, 127, 129	All other control valves including electric and electrohydraulic.....	467,582	576,741	569,802
332911F131, 133, 135, 137, 139, 141	Self-generating power actuated regulator valves.....	997,553	164,726	504,181
332911H101, 103, 105, 107, 109	Solenoid-operated valves (except nuclear and fluid transfer).....	403,368	145,242	599,584
3345111101	Compasses (magnetic and gyroscopic).....	356,609	61,114	40,564
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/.....	5,706,920	866,084	410,898
3345113207, 209, 211, 313, 315, 317, 319, 321, 323	Radar systems and equipment 5/.....	4,635,119	660,762	93,202
3345113651	Radio navigational aid receivers and displays.....	1,059,080	357,203	558,207
3345113665	Automatic pilots.....	320,549	260,736	19,454
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 phone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping sonabuys, navigation, sonar fish finders, sonar finders, sonar range instrumentation, and other).....	21,207,075	124,665	134,557
3345120102, 225	Temperature responsive automatic controls (thermostats).....	646,476	143,330	379,361
3345120105, 107, 109, 111, 113, 115, 117, 219, 223, 227	Pressure responsive automatic, hydraulic automatic, pneumatic automatic, and automatic control, n.e.c. .	1,554,554	1,234,181	1,455,932
3345120229	Parts and components for automatic controls, sold separately.....	84,170	515,747	478,859
3345130	Process control instruments.....	6,137,943	759,544	801,551
3345141101, 103, 105, 107	Gas meters, consumption registering (except parts).....	179,807	24,102	9,466
3345141109, 111, 113, 115, 117	Liquid meters (except parts).....	670,309	75,465	9,118
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately.....	298,274	52,544	112,501
3345143101, 103, 105, 107 3345145, 3345191, 3345155	Counting devices, n.e.c., including taxi meters and parts, parking meters and parts, aircraft engine and motor vehicle instruments.....	4,409,395	505,482	1,022,982
3345151	Electricity meters.....	567,312	59,353	88,723
3345153101, 103, 105	Voltage, current, and resistance measuring equipment (except multimeters) 6/.....	(D)	207,037	113,806
3345153114, 115	Power and energy testing equipment.....	(D)	266,227	79,201
3345153171, 173	Analyzers for testing characteristics of internal-combustion engines (except aircraft).....	206,756	228,614	120,432
3345153131, 133, 135	Signal generating equipment.....	137,636	94,494	40,400

Continued

Table 3. Shipments, Exports and Imports of Selected Instruments and Related Products: 2002
 [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 2/ (value 3/
3345153107, 109, 118, 126, 137, 139, 143, 149, 151, 153, 155, 157, 159, 161, 163, 165, 168, 175, 177, 179, 181, 183, 185, 187, 189, 193	Test equipment for testing multimeters, electrical, radio and communication circuits, and motors, n.e.c. 6/ 7/.....	7,005,669	1,899,351	605,124
3391110, 3345160	Laboratory, analytical, and scientific instruments	9,757,233	1,912,141	1,264,488
3333141	Sighting, tracking, and fire control equipment, optical type.....	481,594	30,495	80,187
3333143111, 113, 115	Binoculars and astronomical instruments and parts and accessories 8/.....	143,529	128,456	295,704
3333143231, 235, 237, 242, 243, 245, 247, 249	Optical instruments and lenses, n.e.c. 9/.....	1,995,390	1,385,686	242,534
3333143233	Microscopes, optical.....	27,149	47,569	224,992
3345193	Physical properties testing and inspection equipment and kinematic testing and measuring equipment	1,602,463	476,189	89,155
3345195	Nuclear radiation detection and monitoring instruments and equipment.....	538,689	337,804	119,833
3345197105, 107, 109	Liquid-in-glass thermometers, n.e.c.	13,856	8,078	24,302
3345197111, 113, 117	Thermometers (except liquid-in-glass type).....	116,398	19,670	202,183
3345197129	Geophysical instruments and equipment.....	136,838	168,099	128,299
3345197127	Seismic instruments.....	145,295	9,855	12,666
3345197101, 115, 123, 125	Commercial, geophysical, meteorological, and general-purpose instruments, n.e.c.	370,821	198,213	271,521
3345199101, 103	Surveying instruments (except photogrammetrical and geodetic equipment).....	(D)	64,265	150,698
3345199105	Drafting instruments and machines, manual and automatic.....	34,403	49,457	33,762

D Withheld to avoid disclosing data for individual companies. 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.

6/For Manufacturers' shipments, product codes are combined to avoid disclosing data for individual companies.

7/Product code 3345153151 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.

8/Product code 3333143113 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.

9/Product code 3333143113 is included with manufacturers' shipments to avoid disclosing data for individual companies.

Table 4. Comparison of North American Industry Classification (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2002

Product code	Product description	Export code 1/	Import code 2/
332911F101, 103, 105, 107, 109, 111, 113	Pneumatic actuated automatic valves.....	8481.80.9035	8481.80.9035
332911F115, 117, 122, 125, 127, 129	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
332911F131, 133, 135, 137, 139, 141	Self-generating power actuated regulator valves.....	8481.80.9015	8481.80.9015
332911H101, 103, 105, 107, 109	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	
		9014.10.9040	
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 (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2002

Product code	Product description	Export code 1/	Import code 2/
332911F101, 103, 105, 107, 109, 111, 113	Pneumatic actuated automatic valves.....	8481.80.9035	8481.80.9035
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 9032.81.0080 9032.89.6020 9032.89.6085	9032.20.0000 9032.81.0080 9032.89.6015 9032.89.6025 9032.89.6085
3345120229	Parts and components for automatic controls, sold separately.....	9032.90.0000	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 9032.81.0080 9032.89.6030 9032.89.6040 9032.89.6050 9032.89.6060 9032.89.6070 9032.89.6075	9032.81.0020 9032.81.0060 9032.89.6030 9032.89.6040 9032.89.6050 9032.89.6060 9032.89.6070 9032.89.6075
3345141101, 103, 105, 107	Gas meters, consumption registering (except parts)	9028.10.0000	9028.10.0000
3345141109, 111, 113, 115, 117	Liquid meters (except parts).....	9028.20.0000	9028.20.0000
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately.....	9028.90.0080	9028.90.0080
3345143101, 103, 105, 107, 3345145, 3345191, 3345155	Counting devices, n.e.c., including taxi meters and parts, parking meters and parts, and motor vehicle instruments.....	9106.20.0000 9028.90.0040 9029.10.0000 9029.20.4040 9029.20.5000 9029.90.0000	9106.20.0000 9029.10.4000 9028.90.0040 9029.10.8000 9029.20.4040 9029.20.4080 9029.90.2000 9029.90.8040 9029.90.8080
3345151	Electricity meters.....	9028.30.0000	9028.30.0000
3345153101, 103, 105	Voltage, current, and resistance measuring equipment (except multimeters).....	9030.39.0040	9030.39.0040
3345153114, 115	Power and energy testing equipment.....	9030.39.0080	9030.39.0080
3345153171, 173	Analyzers for testing characteristics of internal-combustion engines (except aircraft).....	9031.80.8060 9031.80.8070	9031.80.8060 9031.80.8070
3345153131, 133, 135	Signal generating equipment.....	8543.20.0000	8543.20.0000

Table 4. Comparison of North American Industry Classification (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2002

Product code	Product description	Export code 1/	Import code 2/
332911F101, 103, 105, 107, 109, 111, 113	Pneumatic actuated automatic valves.....	8481.80.9035	8481.80.9035
3345153107, 109, 118, 126, 137, 139, 143, 149, 151, 153, 155, 157, 159, 161, 163, 165, 168, 175, 177, 179, 181, 183, 185, 187, 189, 193	Test equipment for testing multimeters, electrical, radio and communication circuits, and motors, n.e.c.	9029.20.6000 9030.31.0000 9030.82.0000 9030.20.0000 9030.90.8010 9030.90.8020 9030.90.8030 9030.90.8040 9030.90.8050 9030.90.8060	9029.20.6000 9030.31.0000 9030.82.0000 9030.90.4500 9030.90.8400 9030.90.8810 9030.90.8820 9030.90.8830 9030.90.8840 9030.90.8855 9030.90.8860
3391110, 3345160	Laboratory, analytical, and scientific instruments.....	9027.50.5000 9027.50.2000 9027.20.2000 9027.20.6050 9027.20.5030 9027.20.9000 9027.30.4040 9027.30.4080 9027.80.2000 9027.80.3100 9027.80.3200 9027.80.3500 9027.80.8000 9027.90.2000 9012.10.0000	9027.20.5030 9027.20.5050 9027.20.5060 9027.20.5080 9027.20.8030 9027.20.8060 9027.20.8090 9027.30.4040 9027.30.4080 9027.50.4015 9027.50.4020 9027.80.4520 9027.80.4530 9027.80.4560 9027.80.4590 9027.90.8400 9027.90.8800 9012.10.0000 9027.80.8030 9027.80.8060 9027.80.8090
3333141	Sighting, tracking, and fire control equipment, optical type.....	9013.10.2000 9013.10.4000	9013.10.1000 9013.10.3000 9013.10.4000
3333143111, 113, 115	Binoculars and astronomical instruments and parts and accessories.....	9005.10.0020 9005.10.0040 9005.10.0080 9005.80.4020 9005.80.4040 9005.80.6000 9005.90.0000	9005.10.0020 9005.10.0040 9005.10.0080 9005.80.4020 9005.80.4040 9005.80.6000 9005.90.4000 9005.90.8000
3333143231, 235, 237, 242, 243, 245, 247, 249	Optical instruments and lenses, n.e.c.	9031.41.0000 9031.90.0000	9031.41.0020 9031.41.0040 9031.41.0060 9031.90.4500 9031.90.5400 9031.90.5800

Table 4. Comparison of North American Industry Classification (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2002

Product code	Product description	Export code 1/	Import code 2/
332911F101, 103, 105, 107, 109, 111, 113	Pneumatic actuated automatic valves.....	8481.80.9035	8481.80.9035
3333143233	Microscopes, optical.....	9011.10.0000 9011.20.0000 9011.80.0000 9011.90.0000	9011.10.4000 9011.10.8000 9011.20.4000 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 9024.80.0000 9024.90.0000	9024.10.0000 9024.80.0000 9024.90.0040 9024.90.0080
3345195	Nuclear radiation detection and monitoring instruments and equipment.....	9030.10.0000 9030.90.4000	9030.10.0000
3345197105, 107, 109	Liquid-in-glass thermometers, n.e.c.....	9025.11.4000	9025.11.4000
3345197111, 113, 117	Thermometers (except liquid-in-glass type).....	9025.19.4000 9025.19.8040	9025.19.8040 9025.19.8080
3345197129	Geophysical instruments and equipment.....	9015.80.8040	9015.80.8040
3345197127	Seismic instruments.....	9015.80.6000	9015.80.6000
3345197101, 115, 123, 125	Commercial, geophysical, meteorological, and general purpose instruments, n.e.c.	9025.80.1500 9025.80.5050 9015.80.8080 9025.90.0000	9025.80.1500 9025.20.8000 9025.80.1000 9025.80.2000 9025.80.3500 9025.80.4000 9025.80.5000 9025.90.0000 9015.80.8080
3345199101, 103	Surveying instruments (except photogrammetrical and geodetic equipment).....	9015.10.0000 9015.20.0000 9015.30.0000	9015.10.4000 9015.10.8000 9015.20.4000 9015.20.8000 9015.30.4000 9015.30.8000 9015.90.0010 9015.90.0020 9015.90.0030
3345199105	Drafting instruments and machines, manual and automatic.....	9017.10.0000 9017.20.4000 9017.20.8060	9017.10.4000 9017.10.8000 9017.20.4000 9017.20.7000 9017.20.8080

n.e.c. Not elsewhere classified.

1/Source: 2002 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 (2002).

Appendix.

General CIR Survey Information, Explanation of General Terms and Historical Note

GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

- 21 Mining
- 22 Utilities
- 23 Construction
- 31-33 Manufacturing
- 42 Wholesale Trade
- 44-45 Retail Trade
- 48-49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing
- 54 Professional, Scientific, and Technical Services
- 55 Management of Companies and Enterprises
- 56 Administrative and Support and Waste Management and Remediation Services
- 61 Educational Services
- 62 Health Care and Social Assistance
- 71 Arts, Entertainment, and Recreation
- 72 Accommodation and Food Services
- 81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

EXPLANATION OF GENERAL TERMS

Capacity. The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

Consumption. Materials used in producing or processing a product or otherwise removing the product from the inventory.

Exports. Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

Gross shipments. The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

Interplant transfers. Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

Inventories. The quantity or value of finished goods, work in progress, and materials on hand.

Machinery in place. The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

Net receipts. Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

Production. The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

Quantities produced and consumed. Quantities of each type of product produced by a company for internal consumption within that same company.

Quantity and value of new orders. The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

Quantity and value of shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and

returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Stocks. Total quantity of ending finished inventory.

Unfilled orders (backlog). Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

HISTORICAL NOTE

Data on selected instruments and related products have been collected by the Census Bureau since 1961. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.