

Fluid Power Cylinder and Actuator Manufacturing

1997

Issued December 1999

EC97M-3339L

1997 Economic Census

Manufacturing

Industry Series



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

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U.S. Department of Commerce
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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following 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 Foodservices
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).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673
Service Sector Statistics Division 301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. 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. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

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 leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
333995	Fluid power cylinder & actuator mfg	283	320	23 062	900 438	15 106	31 498	526 000	2 029 250	1 388 455	3 407 013	111 432
359300	Fluid power cylinders & actuators	N	320	23 062	900 438	15 106	31 498	526 000	2 029 250	1 388 455	3 407 013	111 432
372820	Aircraft parts & equipment, n.e.c. (pt)	N	-	-	-	-	-	-	-	-	-	-

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
333995, FLUID POWER CYLINDER & ACTUATOR MFG												
United States	-	320	158	23 062	900 438	15 106	31 498	526 000	2 029 250	1 388 455	3 407 013	111 432
Alabama	-	8	6	395	11 578	291	615	7 906	18 747	34 243	53 046	2 337
California	-	47	15	2 937	124 754	1 599	3 393	64 836	263 913	122 004	364 299	8 497
Illinois	-	36	19	5 112	239 576	3 752	7 586	156 724	554 412	432 806	989 666	25 196
Indiana	-	11	7	488	17 027	355	771	10 900	68 720	29 609	98 029	1 603
Iowa	-	8	7	1 191	34 143	974	2 009	24 207	83 591	83 966	167 413	7 275
Michigan	-	21	11	1 028	35 966	597	1 250	18 314	106 694	84 115	190 802	7 061
Minnesota	-	9	5	833	32 138	512	1 140	15 388	68 628	53 203	122 780	2 998
New Jersey	-	5	2	306	9 095	91	229	2 754	14 205	9 469	24 107	901
New York	-	13	8	2 760	136 314	1 298	2 627	55 289	218 331	49 982	281 954	9 892
Ohio	-	35	17	1 657	52 435	1 162	2 373	33 322	115 712	68 283	187 729	9 786
Oregon	-	9	5	305	11 086	207	449	6 645	28 594	13 026	41 713	1 772
Tennessee	-	7	2	185	5 049	157	341	3 875	12 540	9 450	21 970	952
Texas	-	15	11	844	28 369	634	1 497	18 436	66 172	51 525	118 761	4 073
Wisconsin	-	14	10	1 124	33 479	733	1 552	20 251	81 732	141 308	225 262	6 097

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
333995, FLUID POWER CYLINDER & ACTUATOR MFG		333995, FLUID POWER CYLINDER & ACTUATOR MFG—Con.	
Companies ¹	number.. 283	Value added	\$1,000.. 2 029 250
All establishments	number.. 320	Total inventories, beginning of year	\$1,000.. 645 603
Establishments with 1 to 19 employees	number.. 162	Finished goods inventories, beginning of year	\$1,000.. 143 093
Establishments with 20 to 99 employees	number.. 100	Work-in-process inventories, beginning of year	\$1,000.. 307 827
Establishments with 100 employees or more	number.. 58	Materials and supplies inventories, beginning of year	\$1,000.. 194 683
All employees	number.. 23 062	Total inventories, end of year	\$1,000.. 680 925
Total compensation ²	\$1,000.. 1 174 227	Finished goods inventories, end of year	\$1,000.. 134 135
Annual payroll	\$1,000.. 900 438	Work-in-process inventories, end of year	\$1,000.. 327 477
Total fringe benefits	\$1,000.. 273 789	Materials and supplies inventories, end of year	\$1,000.. 219 313
Production workers, average for year	number.. 15 106	Gross book value of total assets at beginning of year	\$1,000.. 1 213 745
Production workers on March 12	number.. 14 930	Total capital expenditures (new and used)	\$1,000.. 111 432
Production workers on May 12	number.. 15 204	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 9 155
Production workers on August 12	number.. 15 002	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 102 277
Production workers on November 12	number.. 15 288	Total retirements ²	\$1,000.. 54 552
Production-worker hours	1,000.. 31 498	Gross book value of total assets at end of year	\$1,000.. 1 270 625
Production-worker wages	\$1,000.. 526 000	Total depreciation during year ²	\$1,000.. 98 171
Total cost of materials	\$1,000.. 1 388 455	Total rental payments ²	\$1,000.. 32 872
Cost of materials, parts, containers, etc., consumed	\$1,000.. 1 211 773	Buildings and other structures rental payments ²	\$1,000.. 16 730
Cost of resales	\$1,000.. 85 642	Machinery and equipment rental payments ²	\$1,000.. 16 142
Cost of fuels	\$1,000.. 9 560	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 8 248
Cost of purchased electricity	\$1,000.. 29 524	Response coverage ratio ⁴	percent.. 89
Cost of contract work	\$1,000.. 51 956	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 27 603
Quantity of electricity purchased for heat and power	1,000 kWh.. 504 823	Response coverage ratio ⁴	percent.. 89
Quantity of electricity generated less sold for heat and power	1,000 kWh.. —	Cost of purchased communications services ³	\$1,000.. 9 523
Total value of shipments	\$1,000.. 3 407 013	Response coverage ratio ⁴	percent.. 89
Primary products value of shipments	\$1,000.. 2 425 155	Cost of purchased legal services ³	\$1,000.. 19 242
Secondary products value of shipments	\$1,000.. 823 529	Response coverage ratio ⁴	percent.. 89
Total miscellaneous receipts	\$1,000.. 158 329	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 5 857
Value of resales	\$1,000.. 112 447	Response coverage ratio ⁴	percent.. 89
Contract receipts	\$1,000.. 13 263	Cost of purchased advertising services ³	\$1,000.. 15 230
Other miscellaneous receipts	\$1,000.. 32 619	Response coverage ratio ⁴	percent.. 89
Primary products specialization ratio	percent.. 74	Cost of purchased software and other data processing services ³	\$1,000.. 10 059
Value of primary products shipments made in all industries	\$1,000.. 2 999 934	Response coverage ratio ⁴	percent.. 89
Value of primary products shipments made in this industry	\$1,000.. 2 425 155	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 15 564
Value of primary products shipments made in other industries	\$1,000.. 574 779	Response coverage ratio ⁴	percent.. 89
Coverage ratio	percent.. 80		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
333995. FLUID POWER CYLINDER & ACTUATOR MFG												
All establishments	-	320	158	23 062	900 438	15 106	31 498	526 000	2 029 250	1 388 455	3 407 013	111 432
Establishments with 1 to 4 employees	8	65	-	153	4 405	108	180	2 674	9 594	5 930	15 791	630
Establishments with 5 to 9 employees	8	52	-	360	11 571	257	460	6 825	23 927	15 142	39 838	1 490
Establishments with 10 to 19 employees	2	45	-	604	17 617	441	822	11 205	38 159	24 194	64 780	1 444
Establishments with 20 to 49 employees	-	67	67	2 192	74 593	1 515	3 106	43 766	180 640	109 778	291 346	9 849
Establishments with 50 to 99 employees	-	33	33	2 330	75 553	1 703	3 521	46 999	190 661	122 052	314 885	9 743
Establishments with 100 to 249 employees	-	41	41	5 848	186 790	4 002	8 380	112 943	483 266	404 273	883 594	37 083
Establishments with 250 to 499 employees	-	11	11	3 756	135 359	2 234	4 954	69 497	274 428	203 751	487 855	16 039
Establishments with 500 to 999 employees	-	4	4	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	-	1	1	D	D	D	D	D	D	D	D	D
Administrative records ²	9	118	-	616	17 182	429	696	10 463	36 333	22 813	60 500	2 526

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
333995	Fluid power cylinder & actuator mfg	320	23 062	900 438	15 106	31 498	526 000	2 029 250	1 388 455	3 407 013	111 432
3339951	Nonaerospace type hydraulic fluid power cylinders and actuators, linear and rotary	102	11 923	449 391	8 703	18 053	291 962	1 072 608	891 780	1 980 421	65 830
3339953	Nonaerospace type pneumatic fluid power cylinders and actuators, linear and rotary	34	3 015	104 026	1 828	3 885	55 148	261 316	159 550	422 698	14 988
3339955	Parts for hydraulic and pneumatic fluid power cylinders and actuators, including accumulators, cushions, etc.	25	1 265	43 163	870	1 816	24 572	94 018	79 341	175 580	5 365
3339957	Aerospace type fluid power cylinders and actuators, hydraulic and pneumatic	16	5 656	267 859	2 881	6 286	132 558	528 201	212 697	708 966	21 065

Table 6a. Products Statistics: 1997 and 1992

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
333995	Fluid power cylinders and actuators	N	X	X	2 999 934	N	X	X	N
3339951	Nonaerospace type hydraulic fluid power cylinders and actuators, linear and rotary @	N	X	X	1 277 813	N	X	X	724 447
33399511	Nonaerospace type hydraulic fluid power cylinders and actuators, linear and rotary	N	X	X	1 277 813	N	X	X	N
3339951100	Nonaerospace type hydraulic fluid power cylinders and actuators, linear and rotary	133	X	X	1 277 813	106	X	X	724 447
3339953	Nonaerospace type pneumatic fluid power cylinders and actuators, linear and rotary @	N	X	X	525 850	N	X	X	308 564
33399531	Nonaerospace type pneumatic fluid power cylinders and actuators, linear and rotary	N	X	X	525 850	N	X	X	N
3339953100	Nonaerospace type pneumatic fluid power cylinders and actuators, linear and rotary	84	X	X	525 850	74	X	X	308 564
3339955	Parts for hydraulic and pneumatic fluid power cylinders and actuators, including accumulators, cushions, etc. @	N	X	X	292 756	N	X	X	217 149
33399551	Parts for hydraulic and pneumatic fluid power cylinders and actuators, including accumulators, cushions, etc.	N	X	X	292 756	N	X	X	N
3339955100	Parts for hydraulic and pneumatic fluid power cylinders and actuators, including accumulators, cushions, etc.	83	X	X	292 756	85	X	X	217 149
3339957	Aerospace type fluid power cylinders and actuators, hydraulic and pneumatic @	N	X	X	803 560	N	X	X	N
33399571	Aerospace type fluid power cylinders and actuators, hydraulic and pneumatic	N	X	X	803 560	N	X	X	N
3339957100	Aerospace type fluid power cylinders and actuators, hydraulic and pneumatic	43	X	X	803 560	N	X	X	N
333995W	Fluid power cylinders and actuators, nsk, total	N	X	X	99 955	N	X	X	N
333995WY	Fluid power cylinders and actuators, nsk, total	N	X	X	99 955	N	X	X	N
333995WYWW	Fluid power cylinders and actuators, nsk, for nonadministrative-record establishments	N	X	X	41 415	N	X	X	N
333995WYWY	Fluid power cylinders and actuators, nsk, for administrative-record establishments	N	X	X	58 540	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. Product Class Shipments for Selected States: 1997 and 1992

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3339951	NONAEROSPACE TYPE HYDRAULIC FLUID POWER CYLINDERS AND ACTUATORS, LINEAR AND ROTARY @		
	United States	1 277 813	724 447
	Alabama	38 215	17 729
	California	79 004	16 946
	Illinois	307 775	245 297
	Indiana	24 968	27 021
	Iowa	112 575	53 539
	Kansas	58 707	30 807
	Michigan	40 418	36 682
	Minnesota	38 742	N
	Nebraska	31 734	17 115
	New York	19 290	N

See footnotes at end of table.

Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3339951	NONAEROSPACE TYPE HYDRAULIC FLUID POWER CYLINDERS AND ACTUATORS, LINEAR AND ROTARY @—Con.		
	Ohio	129 959	90 228
	Oregon	23 568	14 741
	Pennsylvania	8 621	3 652
	Tennessee	17 485	N
	Texas	83 813	38 926
	Washington	18 826	N
	Wisconsin	154 810	54 507
3339953	NONAEROSPACE TYPE PNEUMATIC FLUID POWER CYLINDERS AND ACTUATORS, LINEAR AND ROTARY @		
	United States	525 850	308 564
	Alabama	9 246	5 544
	Illinois	123 815	73 392
	Indiana	95 122	36 742
	Michigan	94 470	57 615
	New York	18 437	19 324
	Ohio	41 736	30 025
	Oregon	11 780	N
	Texas	7 813	N
	Wisconsin	7 689	N
3339955	PARTS FOR HYDRAULIC AND PNEUMATIC FLUID POWER CYLINDERS AND ACTUATORS, INCLUDING ACCUMULATORS, CUSHIONS, ETC. @		
	United States	292 756	217 149
	Alabama	2 724	2 218
	California	9 006	13 337
	Connecticut	6 598	3 306
	Illinois	48 536	21 208
	Indiana	34 744	25 172
	Kansas	6 851	N
	Michigan	33 240	23 396
	Minnesota	9 101	7 601
	New York	13 942	33 735
	Ohio	56 301	29 889
	Oregon	5 271	5 000
	South Carolina	7 291	N
	Texas	16 114	5 377
	Wisconsin	8 430	17 355
3339957	AEROSPACE TYPE FLUID POWER CYLINDERS AND ACTUATORS, HYDRAULIC AND PNEUMATIC @		
	United States	803 560	N
	California	295 332	N
	Connecticut	8 518	N
	New York	133 230	N

Additional information is available for this item; see Appendix F.
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
333995	FLUID POWER CYLINDER & ACTUATOR MFG				
33399603	Fluid power pumps purchased for incorporation into products of this establishment	X	91 418	X	15 745
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products	X	89 511	X	N
33291901	Metal pipe, valves, and pipe fittings (except forgings)	X	19 156	X	9 450
33200075	Other fabricated metal products (except forgings)	X	157 029	X	37 350
33210001	Forgings	X	42 869	X	3 002
33151001	Iron and steel castings (rough and semifinished)	X	83 301	X	N
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished)	X	14 185	X	N
33152003	Other nonferrous castings (rough and semifinished)	X	17 322	X	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products)	X	183 854	X	N
33120017	Steel sheet and strip, including tin plate	X	5 137	X	N
33121000	Steel tubing	X	113 961	X	45 440
33120061	All other steel shapes and forms (except castings, forgings, and fabricated metal products)	X	37 546	X	44 602
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc.	X	25 144	X	11 533
33100047	Other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	18 908	X	10 727
33100077	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products)	X	6 872	X	3 174

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1997 and 1992—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
333995	FLUID POWER CYLINDER & ACTUATOR MFG—Con.				
331000AA	Metal powders	X	D	X	343
32410005	Lubricating and cutting oils	X	7 271	X	3 029
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products	X	4 030	X	N
33531201	Electric motors and generators	X	19 968	X	3 984
33299105	Ball bearings (mounted or unmounted)	X	3 061	X	4 441
33299103	Roller bearings (mounted or unmounted)	X	D	X	4 082
33361301	Plain bearings and bushings	X	9 724	X	2 215
33361200	Mechanical speed changers, gears, and industrial high-speed drives	X	6 205	X	2 222
33999103	Gaskets (all types), and packing and sealing devices	X	21 225	X	12 301
33351503	Cutting tools for machine tools	X	27 525	X	N
00970099	All other materials and components, parts, containers, and supplies	X	116 329	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	66 000	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

333995 FLUID POWER CYLINDER AND ACTUATOR MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing fluid power (i.e., hydraulic and pneumatic) cylinders and actuators.

The data published with NAICS code 333995 include the following SIC industries:

- 3593 Fluid power cylinders and actuators
- 3728 Aircraft parts and equipment, n.e.c. (pt)

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census – Manufacturing implemented the conversion to NAICS differently. Data for NAICS industry 333995 include establishments primarily engaged in the manufacture of aerospace-type fluid power actuators. The NAICS definitions will be fully implemented with the 2002 Economic Census.

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The 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. The economic census – manufacturing 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 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. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F.

Footnotes for Products Statistics and Materials Consumed by Kind

Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3339951	For additional detail, see Current Industrial Report MA333N, Fluid Power Products.
@3339953	For additional detail, see Current Industrial Report MA333N, Fluid Power Products.
@3339955	For additional detail, see Current Industrial Report MA333N, Fluid Power Products.
@3339957	For additional detail, see Current Industrial Report MA333N, Fluid Power Products.

Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3333112	35812	35812	3333191	35891	35891	3334120344 pt	3564344 pt	3564339
3333112155	3581255	3581251 pt	3333191111	3589111	3589111	3334120463	3564413	3564413
3333112159	3581259	3581251 pt	3333191116	3589113	3589113	3334120465	3564415	3564415
3333112269	3581269	3581269	3333191122	3589130	3589130	3334120573	3564433	3564433
3333112YVV	3581200	3581200	3333191131	3589131	3589131	3334120575	3564435	3564435
333311W	35810	35810	3333191241	3589161	3589161	3334120688 pt	3564438 pt	3564437
333311WYVV	3581000	3581000	3333191251	3589163	3589163	3334120688 pt	3564438 pt	3564439
333311WYVY	3581002	3581002	3333191261	3589167	3589167	3334120YVWW pt	3564400 pt	3564000 pt
3333120	35820	35820	3333191271	3589170	3589170	3334120YVW pt	3564300	3564300
3333120101 pt	3582013 pt	3582011	3333191281	3589181	3589181	3334120YVW pt	3564400	3564400
3333120101 pt	3582013 pt	3582012	3333191391	3589185	3589185	3334120YVY	3564002 pt	3564002 pt
3333120211	3582017	3582017	3333191YVV	3589100	3589100	3334141	34333	34333
3333120231	3582021	3582018 pt	3333193	35893	35893	3334141101	3433321	3433321
3333120241	3582025	3582018 pt	3333193101	3589301	3589301	3334141106	3433335	3433335
3333120351	3582027	3582027	3333193111	3589302	3589302	3334141111	3433365	3433365
3333120361	3582028	3582029 pt	3333193221	3589307	3589307	3334141116	3433377	3433377
3333120366	3582030	3582029 pt	3333193YVV	3589300	3589300	3334141YVV	3433300	3433300
3333120471	3582031	3582031	3333195	35597	35597	3334143	34334	34334
3333120491	3582091	3582091	3333195101	3559701	3559701	3334143101	3433411	3433410 pt
3333120577	3582041	3582039 pt	3333195106	3559702	3559702	3334143106	3433413	3433410 pt
3333120581	3582045	3582039 pt	3333195111	3559703	3559703	3334143111	3433415	3433410 pt
3333120586	3582049	3582039 pt	3333195116	3559704	3559704	3334143116	3433417	3433410 pt
3333120YVV	3582000	3582000	3333195121	3559705	3559705	3334143121	3433419	3433410 pt
3333120YVY	3582002	3582002	3333195126	3559709	3559709	3334143126	3433421	3433410 pt
3333131	35792	35792	3333195231	3559711	3559711	3334143131	3433422	3433422
3333131000	3579200	3579200	3333195YVV	3559700	3559700	3334143136	3433430	3433430
3333134	35784 pt	35784 pt	3333197	36991	36991	3334143141	3433440	3433440
3333134000	3578410	3578400 pt	3333197000	3699100	3699100	3334143146	3433462	3433462
3333137	35793	35793	3333199 pt.	35892	35892	3334143151	3433474	3433474
3333137000	3579300	3579300	3333199 pt.	35892	35892	3334143YVV	3433400	3433400
333313A	35795	35795	3333199 pt.	35894 pt	35894 pt	3334145	34335	34335
333313A000	3579500	3579500	3333199101	3589201	3589201	3334145101	3433512	3433512
333313D	35799 pt	35799 pt	3333199106	3589202	3589202	3334145111	3433520	3433520
333313D000	3579910	3579900 pt	3333199111	3589222	3589222	3334145YVV	3433500	3433500
333313G	35789 pt	35789 pt	3333199116	3589226	3589226	3334147	34338	34338
333313G000 pt	3578910	3578900 pt	3333199146	3589273	3589273	3334147101	3433820	3433820
333313G000 pt	3578900 pt	3578900 pt	3333199151	3589275	3589275	3334147106	3433830	3433830
333313J	3579A pt	3579A pt	3333199161	3589285	3589281 pt	3334147111	3433832	3433832
333313J000	3579A10	3579A00 pt	3333199166	3589287	3589281 pt	3334147116	3433838	3433838
333313W pt.	35780 pt	35780 pt	3333199171	3589288	3589281 pt	3334147121	3433854	3433854
333313W pt.	35790 pt	35790 pt	3333199178	3589282	3589282	3334147126	3433888	3433888
333313WYVV pt.	3578000 pt	3578000 pt	3333199182	3589283	3589283	3334147YVV	3433800	3433800
333313WYVY pt.	3579000 pt	3579000 pt	3333199186	3589284	3589284	3334149 pt.	34339	34339
333313WYVY pt.	3578002 pt	3578002 pt	3333199189	3589286	3589286	3334149 pt.	36345 pt	36345 pt
333313WYVY pt.	3579002 pt	3579002 pt	3333199194	3589291	3589296 pt	3334149 pt.	36349 pt	36349 pt
3333141 pt.	36992 pt	36992 pt	3333199196	3589295	3589296 pt	3334149101 pt	3634901 pt	3634906
3333141 pt.	38271	38271	3333199221	3589227	3589227	3334149101 pt	3634901 pt	3634906
3333141000 pt	3699221	3699200 pt	3333199236	3589245	3589245	3334149101 pt	3634901 pt	3634906
3333141000 pt	3827100	3827100	3333199256	3589276	3589276	3334149101 pt	3634901 pt	3634906
3333143	38274	38274	3333199299	3589297	3589297	3334149101 pt	3634901 pt	3634906
3333143110	3827410	3827410	3333199301	3599431	3599431	3334149101 pt	3634901 pt	3634906
3333143230	3827420	3827420	3333199326	3599442	3599442	3334149106	3433965	3433965
3333143YVV	3827400	3827400	3333199331	3599443	3599443	3334149111	3433985	3433985
333314W pt.	36990 pt	36990 pt	3333199341	3599446	3599446	3334149111	3433916	3433916
333314W pt.	38270	38270	3333199YVV pt.	3599200	3599200	3334149116	3433918	3433918
333314WYVV pt.	3699000 pt	3699000 pt	3333199YVV pt.	3599400 pt.	3599400 pt	3334149121	3433919	3433919
333314WYVY pt.	3827000	3827000	333319W pt.	35990 pt.	35990 pt.	3334149126	3433960	3433960
333314WYVY pt.	3699002 pt.	3699002 pt.	333319W pt.	35990 pt.	35990 pt.	3334149131	3433971	3433971
3333151 pt.	36992 pt.	36992 pt.	333319W pt.	35990 pt.	35990 pt.	3334149136	3433975	3433975
3333151 pt.	38611	38611	333319W pt.	36990 pt.	36990 pt.	3334149140	3634520	3634500 pt
3333151101 pt	3861131 pt.	3861111	333319WYVV pt.	3599000 pt.	3599000 pt.	3334149150	3634930	3634920 pt
3333151101 pt	3861131 pt.	3861121	333319WYVY pt.	3599000 pt.	3599000 pt.	3334149151	3634930	3634920 pt
3333151101 pt	3861131 pt.	3861132	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149151 pt.	3433989 pt.	3433945
3333151206	3861167	3861167	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149151 pt.	3433989 pt.	3433950
3333151311	3861173	3861173	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149151 pt.	3433989 pt.	3433961
3333151416	3861181	3861181	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149YVV pt.	3433989 pt.	3433999
3333151521 pt	3861181	3861181	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149YVV pt.	3433900	3433900
3333151521 pt	3699251	3699200 pt	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149YVV pt.	3634500	3634500 pt
3333151521 pt	3861197	3861197	3334111	35646	35646	3334149YVV pt.	3634900 pt.	3634900 pt
3333151YVV pt.	3699200 pt.	3699200 pt	3334111101	3564611	3564611	333414W pt.	34330	34330
3333151YVV pt.	3861100	3861100	3334111165	3564621	3564621	333414WYVV pt.	3634000 pt.	3634000 pt
3333153	38612	38612	3334111YVV	3564600	3564600	333414WYVY pt.	3433002	3433002
3333153100	3861200	3861200	3334113	35645	35645	333414WYVY pt.	3634002 pt.	3634002 pt
3333155	38614	38614	3334113103	3564543	3564543	3334151 pt.	34432 pt.	34432 pt
3333155101	3861406	3861406	3334113207	3564531	3564531	3334151 pt.	35851	35851 pt
3333155103	3861403	3861403	3334113211	3564541	3564541	3334151000 pt.	3443297	3443298 pt
3333155111	3861404	3861404	3334113231	3564546	3564546	3334151000 pt.	3585100	3585100 pt
3333155116	3861405	3861405	3334113355	3564547	3564547	3334153	35853	35853
3333155221	3861421	3861421	3334113YVV	3564500	3564500	3334153101	3585312	3585312
3333155YVV	3861400	3861400	333411W	35640 pt.	35640 pt.	3334153106	3585315	3585315
3333157	38613	38613	333411WYVV	3564000 pt.	3564000 pt.	3334153111	3585318	3585318
3333157101 pt	3861332 pt.	3861311	333411WYVY	3564002 pt.	3564002 pt.	3334153116	3585322	3585322
3333157101 pt	3861332 pt.	3861321	3334120 pt.	35640 pt.	35640 pt.	3334153121	3585323	3585323
3333157206	3861352	3861352	3334120 pt.	35643	35643	3334153126	3585328	3585328
3333157311	3861397	3861397	3334120101	35644	35644	3334153131	3585332	3585332
3333157YVV	3861300	3861300	3334120107	3564441	3564441	3334153136	3585335	3585335
333315W pt.	36990 pt.	36990 pt.	3334120104	3564443	3564443	3334153141	3585337	3585337
333315W pt.	38610 pt.	38610 pt.	3334120217	3564445	3564445	3334153146	3585343	3585343
333315WYVV pt.	3699000 pt.	3699000 pt.	3334120219	3564319	3564319	3334153151	3585352	3585352
333315WYVY pt.	3861000 pt.	3861000 pt.	3334120221	3564317	3564317	3334153156	3585357	3585357
333315WYVY pt.	3699002 pt.	3699002 pt.	3334120224	3564319	3564319	3334153191	3585398	3585398
333315WYVY pt.	3861002 pt.	3861002 pt.	3334120224	3564321	3564321	3334153YVV	3585300	3585300
			3334120324	3564324	3564324	3334155	35855	35855
			3334120327	3564327	356			

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3334159	35859	35859	333512W pt	36990 pt	36990 pt	3335153146	3545446	3545445 pt
3334159101	3585901	3585901	333512WYWW pt	3541000	3541000	3335153152	3545447	3545445 pt
3334159111	3585902	3585902	333512WYWW pt	3699000 pt	3699000 pt	3335153154	3545457	3545459 pt
3334159121	3585903	3585903	333512WYWY pt	3541002	3541002	3335153156	3545451	3545451
3334159131	3585911	3585906 pt	333512WYWY pt	3699002 pt	3699002 pt	3335153166	3545458	3545459 pt
3334159141	3585915	3585906 pt				3335153176	3545498	3545498
3334159YVW	3585900	3585900	3335131	35421	35421	3335153YVW	3545400	3545400
			3335131000	3542100	3542100			
333415A	3585A	35854 pt	3335133	35422	35422	333515W	354500 pt	354500 pt
333415A000	3585A00	3585400 pt	3335133000	3542200	3542200	333515WYWW	3545000 pt	3545000 pt
						333515WYWY	3545002 pt	3545002 pt
333415C	3585C	3585C	3335135	35423	35423			
333415C000	3585C00	3585C00	3335135000	3542300	3542300			
333415D	3585D	3585D	3335137	35424	35424	3335161	35471	35471
333415D101	3585D10	3585D10	3335137101	3542409	3542411 pt	3335161101 pt	3547115 pt	3547111
333415D111	3585D20	3585D20	3335137111	3542410	3542411 pt	3335161101 pt	3547115 pt	3547113
333415D121	3585D30	3585D30	3335137116	3542475	3542475	3335161101 pt	3547115 pt	3547117
333415D131	3585D40	3585D40	3335137YVW	3542400	3542400	3335161191	3547118	3547118
333415D141	3585D50	3585D50				3335161YVW	3547100	3547100
333415D151	3585D60	3585D60	333513W	35420	35420			
333415D161	3585D73	3585D70 pt	333513WYWW	3542000	3542000	3335163	35472	35472
333415D171	3585D75	3585D70 pt	333513WYWY	3542002	3542002	3335163101	3547221	3547221
333415D181	3585D80	3585D80				3335163106	3547223	3547223
333415DYVW	3585D00	3585D00	3335140 pt	35440 pt	35440 pt	3335163191 pt	3547226 pt	3547227
						3335163191 pt	3547226 pt	3547228
333415E	3585E	35852 pt	3335140 pt	35441	35441	3335163YVW	3547200	3547200
333415E000	3585E00	3585200 pt	3335140101	3544113	3544113			
			3335140103	3544115	3544115	3335165	35473	35473
333415F	3585F	35852 pt	3335140106	3544114	3544117 pt	3335165101	3547335	3547335
333415F000	3585F00	3585200 pt	3335140109	3544116	3544117 pt	3335165106 pt	3547345 pt	3547341
			3335140112	3544118	3544118	3335165106 pt	3547345 pt	3547343
333415G	3585G	35852 pt	3335140215	3544119	3544119	3335165106 pt	3547345 pt	3547347
333415G000	3585G00	3585200 pt	3335140318	3544121	3544121	3335165111	3547349	3547349
			3335140321	3544122	3544122	3335165116	3547351	3547351
333415W pt	34430 pt	34430 pt	3335140326	3544124	3544124	3335165121	3547352	3547352
			3335140332	3544126	3544126	3335165YVW	3547300	3547300
333415W pt	35850 pt	35850 pt	3335140423	3544123	3544123			
333415WYWW pt	3443000 pt	3443000 pt	3335140429	3544125	3544125	333516W	35470	35470
333415WYWW pt	3585000 pt	3585000 pt	3335140535	3544127	3544127	333516WYWW	3547000	3547000
333415WYWW pt	3443002 pt	3443002 pt	3335140538	3544128	3544128	333516WYVW	3547002	3547002
333415WYWW pt	3585002 pt	3585002 pt	3335140541	3544133	3544133			
			3335140543	3544135	3544135	3335181	35492	35492
3335110 pt	35440 pt	35440 pt	3335140546	3544132	3544132	3335181101	3549211	3549211
			3335140549	3544143	3544143	3335181206	3549215	3549215
3335110 pt	35442	35442	3335140652	3544144	3544144	3335181311	3549217	3549217
3335110101	3544203	3544203	3335140655	3544145	3544145	3335181416	3549213	3549213
3335110106	3544205	3544205				3335181521	3549218	3549218
3335110211	3544207	3544207	3335140658	3544146	3544146	3335181YVW	3549200	3549200
3335110216	3544209	3544209	3335140661	3544147	3544147			
3335110221	3544214	3544214	3335140663	3544148	3544148	3335183	35495	35495
3335110226	3544221	3544221	3335140666	3544173	3544173	3335183101	3549501	3549501
3335110231	3544225	3544225	3335140769	3544175	3544175	3335183106	3549502	3549502
3335110236	3544241	3544241	3335140772	3544177	3544177	3335183111	3549503	3549503
3335110241	3544242	3544242	3335140775	3544178	3544178	3335183116	3549543	3549543
3335110246	3544245	3544245	3335140878	3544189	3544189	3335183121	3549545	3549545
			3335140981	3544189	3544189	3335183126	3549592	3549592
3335110251	3544247	3544247	3335140YWW pt	3544000 pt	3544000 pt	3335183131	3549595	3549595
3335110261	3544255	3544255	3335140YWW pt	3544100	3544100	3335183YVW	3549500	3549500
3335110266	3544259	3544259	3335140YWY	3544002 pt	3544002 pt			
3335110276	3544264	3544263 pt				333518W	35490	35490
3335110281	3544265	3544263 pt	3335151	35451	35451	333518WYWW	3549000	3549000
3335110286	3544267	3544267	3335151102	3545114	3545114	333518WYVW	3549002	3549002
3335110356	3544251	3544251	3335151124	3545132	3545132			
3335110YVW pt	3544000 pt	3544000 pt	3335151126	3545136	3545136	3336110	35110	35110
3335110YVW pt	3544200	3544200	3335151128	3545142	3545142	3336110101	3511005	3511005
3335110YWY	3544002 pt	3544002 pt	3335151132	3545147	3545147	3336110211	3511011	3511011
			3335151148	3545167	3545167	3336110706	3511009	3511009
3335121 pt	35413	35413	3335151152	3545172	3545172	3336110741	3511071	3511071
			3335151188	3545198	3545198	3336110746	3511072	3511072
3335121100 pt	3541300	3541300	3335151204	3545115	3545115	3336110761	3511081	3511081
3335121100 pt	3699233	3699200 pt	3335151206	3545121	3545121	3336110766	3511083	3511083
3335121YVW	3699200 pt	3699200 pt				3336110776	3511095	3511095
			3335151308	3545122	3545122	3336110836	3511061	3511061
3335122	35414	35414	3335151312	3545124	3545124	3336110856	3511079	3511079
3335122000	3541400	3541400	3335151314	3545125	3545125	3336110871	3511091	3511091
			3335151316	3545126	3545126	3336110951	3511075	3511075
3335123	35415	35415	3335151318	3545127	3545127	3336110YWW	3511000	3511000
3335123000	3541500	3541500	3335151322	3545129	3545129	3336110YVW	3511002	3511002
			3335151434	3545151	3545151			
3335124	35416	35416	3335151436	3545152	3545152	3336123	35663	35663 pt
3335124000	3541600	3541600	3335151438	3545153	3545153	3336123111 pt	3566311 pt	3566041 pt
			3335151442	3545154	3545154	3336123111 pt	3566311 pt	3566042 pt
3335125	35418	35418				3336123113 pt	3566313 pt	3566041 pt
3335125101	3541811	3541811	3335151444	3545162	3545162	3336123113 pt	3566313 pt	3566042 pt
3335125106	3541831	3541831	3335151446	3545164	3545164	3336123116 pt	3566316 pt	3566041 pt
3335125111	3541851	3541851	3335151554	3545173	3545173	3336123116 pt	3566316 pt	3566043
3335125116	3541871	3541871	3335151558	3545175	3545175	3336123118 pt	3566318 pt	3566041 pt
3335125199	3541891	3541891	3335151562	3545179	3545179	3336123118 pt	3566318 pt	3566044
3335125YVW	3541800	3541800	3335151564	3545181	3545181	3336123125 pt	3566325 pt	3566041 pt
			3335151568	3545186	3545186			
3335126	35419	35419	3335151572	3545187	3545187			
3335126101	3541911	3541911	3335151574	3545189	3545189	3336123135 pt	3566335 pt	3566041 pt
3335126106	3541941	3541941	3335151576	3545192	3545192	3336123135 pt	3566335 pt	3566046 pt
3335126YVW	3541900	3541900				3336123146 pt	3566346 pt	3566041 pt
			3335151578	3545194	3545194	3336123153	3566353	3566041 pt
3335127	3541A	3541A	3335151582	3545195	3545195	3336123155	3566355	3566041 pt
3335127000	3541A00	3541A00	3335151584	3545196	3545196	3336123157	3566357	3566041 pt
			3335151586	3545197	3545197	3336123YVW	3566300	3566000 pt
3335128	3541B	3541B	3335151592	3545199	3545199			
3335128000	3541B00	3541B00	3335151656	3545174	3545174	3336127	35667	35667 pt
			3335151766	3545183	3545183	3336127114	3566714	3566024 pt
3335129	3541C	3541C	3335151YVW	3545100	3545100	3336127116 pt	3566716	3566024 pt

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3336127437	3566737	3566051 pt	333618W pt	36990 pt	36990 pt	3339227 pt	35355	35355
3336127438	3566738	3566051 pt	333618WYWW pt	3519000 pt	3519000 pt	3339227101	3535505	3535505
3336127441	3566741	3566051 pt	333618WYWW pt	3699000 pt	3699000 pt	3339227206	3535509	3535509
3336127443	3566743	3566051 pt	333618WYWW pt	3519002 pt	3519002 pt	3339227211	3535511	3535511
3336127445	3566745	3566051 pt	333618WYWW pt	3699002 pt	3699002 pt	3339227221	3535519	3535519
3336127447	3566747	3566051 pt				3339227226	3535523	3535523
333612744G	3566748	3566051 pt	3339111 pt	35612	35611	3339227231	3535527	3535527
333612744R	3566749	3566051 pt				3339227236	3535512	3535531 pt
3336127553 pt	3566753 pt	3566025 pt	3339111 pt	35613	35613	3339227241	3535513	3535531 pt
3336127553 pt	3566753 pt	3566029 pt				3339227251	3523271	3523200 pt
			3339111 pt	3561K	35615 pt	3339227261	3535541	3535541
3336127555	3566755	3566029 pt						
3336127559 pt	3566759 pt	3566025 pt	3339111 pt	35618	35615 pt	3339227276	3535551	3535551
3336127559 pt	3566759 pt	3566029 pt				3339227281	3535555	3535555
3336127666 pt	3566766 pt	3566021 pt	3339111 pt	35617	35615 pt	3339227316	3535515	3535515
3336127666 pt	3566766 pt	3566051 pt				3339227466	3535543	3535543
3336127771 pt	3566771 pt	3566028 pt	3339111 pt	35614	35615 pt	3339227471	3535545	3535545
3336127771 pt	3566771 pt	3566051 pt	3339111110	3561300	3561300	3339227YVW pt	3523200 pt	3523200 pt
3336127773 pt	3566773 pt	3566027 pt	3339111220	3561400	3561530	3339227YVW pt	3535500	3535500
3336127773 pt	3566773 pt	3566051 pt	3339111330	3561700	3561510			
3336127776 pt	3566776 pt	3566027 pt	3339111440	3561200	3561100	3339229	35356	35356
			3339111590	3561800	3561520	3339229101	3535611	3535611
3336127776 pt	3566776 pt	3566028 pt	3339111YVW	3561K00	3561500	3339229106	3535625	3535625
3336127879	3566779	3566051 pt				3339229211	3535637	3535637
3336127983	3566783	3566011	3339115 pt	35619	35616	3339229YVW	3535600	3535600
3336127A88	3566788	3566051 pt						
3336127B99 pt	3566799 pt	3566047	3339115 pt	37431 pt	37431 pt	333922W pt	35230 pt	35230 pt
3336127B99 pt	3566799 pt	3566049	3339115105	3743107	3743103 pt	333922WYVW pt	3523000 pt	3523000 pt
3336127B99 pt	3566799 pt	3566051 pt	3339115133	3561900 pt	3561600 pt	333922WYVW pt	3535000	3535000
3336127YVW	3566700	3566000 pt	3339115YVW pt	3561900 pt	3561600 pt	333922WYVW pt	3523002 pt	3523002 pt
			3339115YVW pt	3743100 pt	3743100 pt	333922WYVW pt	3535002	3535002
333612W	35660	35660 pt	333911W pt	35610	35610			
333612WYVW	3566000	3566000 pt				3339231	35363	35363
333612WYVW	3566002	3566002	333911W pt	37430 pt	37430 pt	3339231101	3536301	3536301
			333911WYVW pt	3561000	3561000	3339231106	3536302	3536302
3336131	35681	35681	333911WYVW pt	3743000 pt	3743000 pt	3339231111	3536303	3536303
3336131112	3568112	3568112	333911WYVW pt	3561002	3561002	3339231116	3536313	3536313
3336131151	3568151	3568151	333911WYVW pt	3743002 pt	3743002 pt	3339231121	3536314	3536314
3336131YVW	3568100	3568100				3339231131	3536316	3536316
			3339121 pt	3563K	35631 pt	3339231141	3536332	3536332
3336133	35683	35683				3339231146	3536334	3536334
3336133111	3568311	3568311	3339121 pt	35633	35631 pt	3339231151	3536338	3536338
3336133213	3568313	3568313				3339231261	3536345	3536345
3336133219	3568319	3568319	3339121 pt	35634	35631 pt	3339231YVW	3536300	3536300
3336133237	3568320	3568320	3339121 pt	35634	35631 pt			
3336133329	3568323	3568323	3339121110	3563300	3563130			
3336133444	3568333	3568333	3339121220	3563400	3563120			
3336133545	3568335	3568335	3339121YVW	3563K00	3563100			
3336133648	3568336	3568336						
3336133649	3568336	3568336	3339125	35636	35632			
3336133756	3568325	3568325	3339125100	3563600	3563200			
			3339127	35637	35635			
3336133763	3568344	3568344	3339127131	3563731	3563531			
3336133788	3568377 pt	3568394	3339127151	3563751	3563551			
3336133788 pt	3568377 pt	3568396	3339127199	3563799	3563500 pt			
3336133792 pt	3568383 pt	3568326	3339127YVW	3563700	3563500 pt			
3336133792 pt	3568383 pt	3568328						
3336133792 pt	3568383 pt	3568330	333912W	35630	35630			
3336133792 pt	3568383 pt	3568389	333912WYVW	3563000	3563000			
3336133798 pt	3568395 pt	3568391	333912WYVW	3563002	3563002			
3336133798 pt	3568395 pt	3568399						
3336133YVW	3568300	3568300	3339130	35860	35860			
			3339130113	3586013	3586013			
333613W	35680	35680	3339130114	3586014	3586014			
333613WYVW	3568000	3568000	3339130223	3586015	3586015			
333613WYVW	3568002	3568002	3339130224	3586016	3586016			
			3339130355 pt	3586055 pt	3586031			
3336181	35191	35191	3339130355 pt	3586055 pt	3586051			
3336181000	3519100	3519100	3339130355 pt	3586055 pt	3586089			
			3339130391	3586091	3586091			
3336183	35193	35193	3339130YVW	3586000	3586000			
3336183000	3519300	3519300	3339130YVW	3586002	3586002			
3336185	35194	35194	3339211	35841	35841			
3336185000	3519400	3519400	3339211101	3584105	3584105			
			3339211106	3584107	3584107			
3336187 pt	35195	35195	3339211211	3584112	3584112			
3336187 pt	3699A pt	3699A pt	3339211316	3584113	3584113			
3336187100 pt	3519500	3519500	3339211321	3584115	3584115			
3336187100 pt	3699A07	3699A07	3339211326	3584131	3584131			
			3339211331	3584151	3584151			
3336189	35196	35196	3339211336	3584196	3584196			
3336189000	3519600	3519600	3339211YVW	3584100	3584100			
333618A	35197	35197	3339213	35842	35842			
333618A101	3519721	3519721	3339213101	3584201	3584200 pt			
333618A106	3519751	3519751	3339213106	3584202	3584200 pt			
333618AYVW	3519700	3519700	3339213YVW	3584200	3584200 pt			
333618F	35199 pt	35199 pt	333921W	35840	35840			
333618F101	3519901	3519901	333921WYVW	3584000	3584000			
333618F106	3519908	3519908						
333618F111	3519909	3519909	333921YVW	3584002	3584002			
333618F116	3519921	3519921						
333618F121	3519924	3519924	3339221	35853	35853			
333618F126	3519925	3519925	3339221101	3585309	3585309			
333618F131	3519933	3519933	3339221106	3585313	3585313			
333618F136	3519927	3519927	3339221311	3585314	3585314			
333618F141	3519931	3519931	3339221416	3585317	3585317			
333618F146	3519932	3519932	3339221421	3585301 pt	3585321 pt			
			3339221426	3585302	3585321 pt			
333618F151	3519935	3519935	3339221431	3585303	3585323 pt			
333618F156	3519939	3519939	3339221436	3585304	3585323 pt			
333618F161	3519949	3519949	3339221441	3585335	3585335			
333618F166	3519963	3519963	3339221446	3585337	3585337			
333618F171	3519967	3519967	3339221451	3585341	3585341			
333618F176	3519971	3519971	3339221456	3585307	3585347 pt			
333618F186	3519983	3519983	3339221461	3585308	3585347 pt			
333618F196	3519991	3519991	3339221YVW	3585300	3585300			
333618F199	3519999	3519999						
333618F281	3519975	3519975						
333618FYVW	3519900 pt	3519900 pt	3339223	35854	35854			
			3339223100	3585400	3585400			
333618W pt	35190 pt	35190 pt	3339227 pt	35232 pt	35232 pt			

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3339243	35374	35374	3339927	35483	35483	3339940YWW pt	3567000 pt	3567100
3339243101	3537412	3537411	3339927101	3548305	3548305	3339940YWW pt	3567000 pt	3567400
3339243106	3537413	3537418 pt	3339927106	3548306	3548306	3339940YWW pt	3567000 pt	3567500
3339243111	3537414	3537418 pt	3339927111	3548307	3548307	3339940YWW pt	3567000 pt	3567600
3339243YVV	3537400	3537400	3339927116	3548308	3548308	3339940YWW pt	3567002	3567002
333924W	353700 pt	353700 pt	3339927121	3548309	3548309	3339951	35934	35934
333924WYVV	3537000 pt	3537000 pt	3339927126	3548311	3548311	3339951100	3593400	3593400
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3339911	35462	35462	3339927YVW	3548300	3548300	3339953100	3593500	3593500
3339911101	3546237	3546237	3339929101	35484	35484	3339955	35939	35939
3339911106	3546238	3546238	3339929101	3548401	3548401	3339955100	3593900	3593900
3339911111	3546241	3546241	3339929106	3548402	3548402	3339957 pt	35932	35932
3339911116	3546242	3546242	3339929111	3548403	3548403	3339957 pt	37284 pt	37284 pt
3339911121	3546244	3546244	3339929116	3548404	3548404	3339957100 pt	3593200	3593200
3339911126	3546245	3546245	3339929121	3548405	3548405	3339957100 pt	3728400 pt	3728400 pt
3339911131	3546248	3546248	3339929126	3548409	3548409	3339957100 pt	3728409 pt	3728473 pt
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3339911141	3546251	3546251	333992A pt	35485	35485	3339957100 pt	3728409 pt	3728485 pt
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3339911151 pt	3546273 pt	3546272	333992A111	3548513	3548513	333995WYVVV pt	3728000 pt	3728000 pt
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3339911YVV	3546200	3546200	333992A121	3548515	3548515	333995WYVY pt	3728002 pt	3728002 pt
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3339913101	3546301	3546301	333992A131	3548517	3548517	3339961100	3594300	3594300
3339913106	3546311	3546311	333992A131	3548514	3548514	3339963	35944	35944
3339913111	3546317	3546319 pt	333992A141	3548507	3548507	3339963100	3594400	3594400
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3339917	35464	35464	333992AYVW pt	3699200 pt	3699200 pt	3339967 pt	35946	35946
3339917101	3546401	3546401	333992W pt	35480 pt	35480 pt	3339967 pt	37284 pt	37284 pt
3339917106	3546405	3546405	333992W pt	36990 pt	36990 pt	3339967100 pt	3594600	3594600
3339917111	3546406 pt	3546409	333992WYVVV pt	3548000 pt	3548000 pt	3339967100 pt	3728400 pt	3728400 pt
3339917111 pt	3546406 pt	3546415	333992WYVVV pt	3699000 pt	3699000 pt	3339967100 pt	3728405 pt	3728473 pt
3339917116	3546418	3546419 pt	333992WYVY pt	3548002 pt	3548002 pt	3339967100 pt	3728405 pt	3728475 pt
3339917121	3546421	3546421	333992WYVY pt	3699002 pt	3699002 pt	3339969 pt	35949	35949
3339917126	3546421	3546421	3339931	35651	35651	3339969100 pt	37284 pt	37284 pt
3339917YVV	3546400	3546400	3339931103	3565123	3565123	3339969100 pt	3594900	3594900
3339919	35465	35465	3339931207	3565125	3565125	3339969100 pt	3728400 pt	3728400 pt
3339919101 pt	3546510 pt	3546502	33399311103	3565103	3565103	3339969100 pt	3728407 pt	3728473 pt
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3339919101 pt	3546510 pt	3546509	3339931315	3565131	3565131	333996W pt	37280 pt	37280 pt
3339919104	3546511	3546511	3339931319	3565104	3565104	333996WYVVV pt	3594000	3594000
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3339919121	3546515	3546515	3339931437	3565151	3565151	3339971	35961	35961
3339919124	3546516	3546516	3339931544	3565133	3565133	3339971101	3596101	3596101
3339919128	3546517	3546517	3339931545	3565135	3565135	3339971103	3596103	3596103
3339919132	3546521	3546521	3339931651	3565145	3565145	3339971205	3596105	3596105
3339919136	3546522	3546522	3339931755	3565137	3565137	3339971207	3596107	3596107
3339919141	3546523	3546523	3339931859	3565141	3565141	3339971209 pt	3596110 pt	3596109
3339919144	3546524	3546524	3339931963	3565143	3565143	3339971209 pt	3596110 pt	3596111
3339919148	3546525	3546525	3339931A67	3565118	3565118	3339971211	3596113	3596113
3339919152	3546527	3546527	3339931A71	3565149	3565149	3339971215	3596117	3596117
3339919156	3546528	3546528	3339931B75	3565127	3565127	3339971313	3596115	3596115
3339919161	3546529	3546529	3339931B83	3565153	3565153	3339971YVW	3596100	3596100
3339919164	3546531	3546531	3339931C99	3565159	3565159	3339973	35962	35962
3339919168	3546533	3546533	3339931YVW	3565100	3565100	3339973101	3596201	3596201
3339919172	3546536	3546536	3339935100	3565200	3565200	3339973101	3596201	3596201
3339919176	3546537	3546537	333993W	35650	35650	3339973103 pt	3596209 pt	3596205
3339919181	3546538	3546538	333993WYVVV	3565000	3565000	3339973103 pt	3596209 pt	3596207
3339919184	3546539	3546539	333993WYVY	3565002	3565002	3339973107	3596212	3596214
3339919188	3546541	3546541	3339940 pt	35670 pt	35670	3339973109	3596221	3596221
3339919192	3546543	3546543	3339940 pt	35670 pt	35670	3339973YVW	3596200	3596200
3339919YVW	3546500	3546500	3339940 pt	35670 pt	35670	3339975	35963	35963
333991W	35460	35460	3339940 pt	35670 pt	35670	3339975101	3596301	3596301
333991WYVV	3546000	3546000	3339940 pt	35670 pt	35670	3339975103	3596303	3596303
333991WYVY	3546002	3546002	3339940 pt	35670 pt	35670	3339975105	3596305	3596305
3339921	35481 pt	35481 pt	3339940 pt	35670 pt	35670	3339975107	3596309	3596309
3339921101	3548103	3548103	3339940 pt	35670 pt	35670	3339975YVW	3596300	3596300
3339921106	3548101	3548104 pt	3339940323 pt	3567040 pt	3567403	333997W	35960	35960
3339921111	3548102	3548104 pt	3339940323 pt	3567040 pt	3567404	333997WYVVV	3596000	3596000
3339921126	3548107	3548107	3339940323 pt	3567040 pt	3567403	333997WYVY	3596002	3596002
3339921131	3548108	3548108	3339940323 pt	3567040 pt	3567404	3339991	35693	35693
3339921136	3548109	3548109	3339940323 pt	3567042 pt	3567111 pt	3339991104	3569304	3569304
3339921141	3548111	3548111	3339940323 pt	3567042 pt	3567121 pt	3339991108 pt	3569308 pt	3569305
3339921146	3548112	3548112	3339940323 pt	3567042 pt	3567129 pt	3339991108 pt	3569308 pt	3569306
3339921151	3548114	3548114	3339940323 pt	3567044 pt	3567111 pt	3339991111	3569311	3569311
3339921156	3548115	3548115	3339940323 pt	3567044 pt	3567121 pt	3339991212	3569312	3569312
3339921161	3548118	3548119	3339940323 pt	3567044 pt	3567129 pt	3339991389 pt	3569389 pt	3569300 pt
3339921YVW	3548100 pt	3548100 pt	3339940323 pt	3567044 pt	3567143 pt	3339991389 pt	3569389 pt	3569309
3339923	35482	35482	3339940323 pt	3567047	3567121 pt	3339991YVW	3569300	3569300 pt
3339923101	3548203	3548203	3339940639 pt	3567050 pt	3567129 pt	3339993	35694	35694
3339923106	3548204	3548204	3339940639 pt	3567050 pt	3567143 pt	3339993000	3569400	3569400
3339923111	3548205	3548205	3339940639 pt	3567053 pt	3567111 pt	3339994	35695	35695
3339923116	3548206	3548206	3339940639 pt	3567053 pt	3567129 pt	3339994000	3569500	3569500
3339923121	3548209	3548209	3339940639 pt	3567053 pt	3567129 pt	3339996	35696	35696
3339923126	3548211	3548211	3339940639 pt	3567053 pt	3567143 pt	3339996000	3569600	3569600
3339923131	3548212	3548212	3339940759	3567059	3567512 pt	3339996	35696	35696
3339923136	3548213	3548213	3339940871	3567071	3567503	3339996000	3569600	3569600
3339923141	3548214	3548214	3339940875	3567075 pt	3567503	3339996	35696	35696
3339923146	3548217	3548217	3339940875 pt	3567075 pt	3567503	3339996000	3569600	3569600
3339923151	3548218	3548218	3339940979	3567079 pt	3567511			
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			3339940YVW pt	3567000 pt	3567000			

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3339998218	3569903	3569903	3339998870 pt	3569945 pt	3569944	3339999100 pt	3599498	3599498
3339998321	3569921	3569921	3339998880	3569907	3569913 pt			
3339998425	3569905	3569905	3339998883	3569908	3569913 pt	3339999W pt	35690	35690
3339998436	3569915	3569915	3339998886	3569917	3569917			
3339998446	3569946	3569947 pt	3339998899	3569927	3569927	3339999W pt	35990 pt	35990 pt
3339998451	3569950	3569951 pt	3339998991	3569931	3569931	3339999YWWW pt...	3569000	3569000
3339998556	3569901	3569901	3339998995 pt	3569948 pt	3569925	3339999YWWW pt...	3599000 pt	3599000 pt
3339998661	3569911	3569911	3339998995 pt	3569948 pt	3569947 pt	3339999YWWW pt...	3599098	3599000 pt
3339998763	3569923	3569923	3339998996	3569952	3569951 pt	3339999YWY pt ...	3569002	3569002
3339998870 pt	3569945 pt	3569941	3339998YVW	3569900	3569900	3339999YWY pt ...	3599002 pt	3599002 pt

