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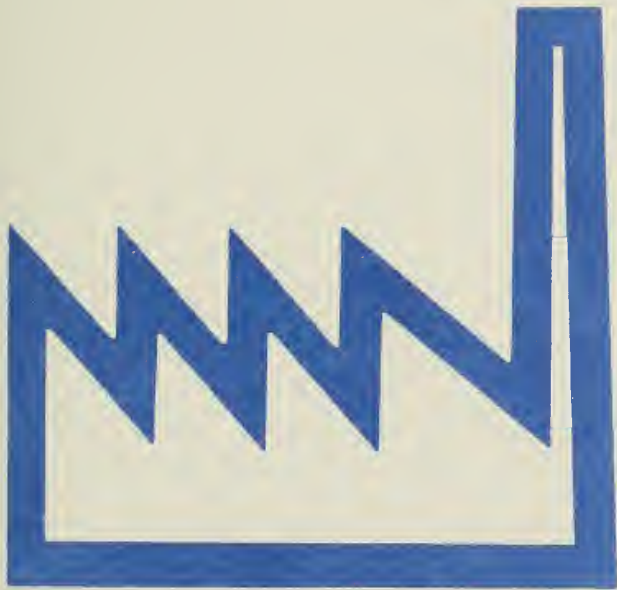
Census of Manufactures

MC87-I-34D

INDUSTRY SERIES

Screw Machine Products, Fasteners and Washers; Metal Forgings and Stampings; and Metal Services

Industries 3451, 3452, 3462, 3463, 3465, 3466, 3469,
3471, and 3479



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Many persons participated in the various activities of the 1987 Census of Manufactures.

The overall planning and review of the census operations were performed by the staff of the Office of the Assistant Director for Economic and Agriculture Censuses.

This report was prepared in the Industry Division. **John Govoni**, Assistant Chief for Census/ASM Programs, was responsible for the overall planning, management, and coordination of the census of manufactures. Planning and implementation were under the direction of **Kenneth I. Hansen**, Chief, Census/ASM Durables Branch, assisted by **Mendel D. Gayle**, Section Chief, with primary data analysis responsibilities performed by **Kimberly D. Degitz**.

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If you have any questions concerning the statistics in this report, call (301) 763-7304.

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INTRODUCTION

PURPOSE AND USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source of facts about the structure and functioning of the Nation's economy. They provide essential information for government, business, industry, and the general public.

Economic censuses furnish an important part of the framework for such composite measures as the gross national product, input-output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions.

Policy-making agencies of the Federal Government use the data, especially in monitoring economic activity and providing assistance to business.

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, and 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.

AUTHORITY AND SCOPE

Title 13 of the United States Code (sections 131, 191, and 224) directs the Census Bureau to take the economic censuses every 5 years, covering years ending in 2 and 7. The 1987 Economic Censuses consist of the

- Census of Retail Trade
- Census of Wholesale Trade
- Census of Service Industries
- Census of Transportation
- Census of Manufactures
- Census of Mineral Industries
- Census of Construction Industries

Special programs also cover enterprise statistics and minority-owned and women-owned businesses. (The 1987 Census of Agriculture and 1987 Census of Governments are conducted separately.) The next economic censuses are scheduled to be taken in 1993 covering the year 1992.

AVAILABILITY OF THE DATA

The results of each of the economic censuses are available in printed reports, for sale by the U.S. Government Printing Office, and on microfiche, computer tape, compact discs with read-only memory, and flexible diskettes, for sale by the Census Bureau. Order forms for all types of products are available on request from Customer Services, Census Bureau, Washington, DC 20233. A more complete description of publications being issued from this census is on the inside back cover of this document.

Census facts are also widely disseminated by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. Finally, State Data Centers in every State and Business and Industry Data Centers in many States also supply economic census statistics.

WHAT'S NEW IN 1987

Several changes have taken place for the 1987 censuses. Data will be reported on the basis of the newly revised Standard Industrial Classification (SIC) system with selected reports including "bridge tables," linking the old and new classification systems. A new set of metropolitan areas has been adopted, and more detailed information will be available for businesses with no paid employees. For additional information on these changes, review the subsequent text.

HISTORICAL INFORMATION

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

The economic censuses trace their beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for 1840 and subsequent censuses to include mining and some commercial

were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (n.s.k.) categories.

The industry classification codes included in the administrative-records 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 at the four-digit SIC level. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes these administrative-record cases were only given a two- or three-digit SIC group. For the 1987 Census of Manufactures, 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 four-digit SIC level. Establishments that did not return the classification form were coded later to those four-digit SIC industries identified as "not elsewhere classified" (n.e.c.) within the given two- or three-digit industry groups.

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 200,000 establishments covered in the mail canvass were divided into three groups:

- a. **ASM sample establishments**—This group consisted of approximately 56,000 establishments covering 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 (see appendix, Annual Survey of Manufactures).

In a census of manufactures 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 information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services. See appendix A, section 2, for an explanation of these items.

The census part of the report form is one of approximately 200 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of these many forms to canvass the 459 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 be performing. Respondents were requested to identify the products, the value of each product, and, in a large number of 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 material not identified on the form.

Finally, 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 84,000 establishments were included in this group. A variable cutoff, based on administrative-records payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive one of the approximately 200 census of manufactures 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 consisted of approximately 60,000 establishments. For those industries where application of the variable cutoff for administrative-records 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 one of the approximately 80 versions of the short form, which requested

summary product and material data and totals but no details on employment, payrolls, cost of materials, inventories, and capital expenditures.

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

Auxiliaries

In this industry report, the data on employment and payroll are limited to operating manufacturing establishments. The census report form filed for auxiliaries (ES-9200) requested a description of the activity of the establishments serviced. However, the manufacturing auxiliaries were coded only to the two-digit major group of the establishments they served; whereas, the operating establishments were coded to a four-digit manufacturing industry. Data for the approximately 10,000 separately operated auxiliaries are included in the geographic area series and in a report issued as part of the 1987 Enterprise Statistics Survey.

Auxiliaries are establishments whose employees are primarily engaged in performing supporting services for other establishments of the same company, rather than for the general public or for other business firms. They can be at different locations from the establishments served or at the same location as one of those establishments but not operating as an integral part thereof and serving two establishments or more. Where auxiliary operations are conducted at the same location as the manufacturing operation and operate as an integral part thereof, they usually are included in the report for the operating manufacturing establishment.

Included in the broad category of auxiliaries are administrative offices. Employees in administrative offices are concerned with the general management of multiestablishment companies, i.e., with the general supervision and control of two units or more, such as manufacturing plants, mines, sales branches, or stores. The functions of these employees may include (1) program planning, including sales research and coordination of purchasing, production, and distribution; (2) company purchasing, including general contracts and purchasing methods; (3) company financial policy and accounting; (4) general engineering, including design of product machinery and equipment, and direction of engineering effort conducted at the individual operation locations; (5) direction of company personnel matters; and (6) legal and patent matters.

Other types of auxiliaries serving the plants or central management of the company include purchasing offices, sales promotion offices, research and development organizations, etc.

Industry Classification of Establishments

Each of the establishments covered in the census was classified in 1 of 459 manufacturing industries in accordance with the industry definitions in the 1987 SIC Manual. The 1987 edition of this manual represents a major revision for manufacturing industries from the 1972 edition and its 1977 supplement. Appendix A of the 1987 Manual notes the revisions in the four-digit industry levels between 1972/77 and 1987.

An industry is generally defined as a group of establishments producing the same product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively become narrower with successive additions of numerical digits. For 1987, there are 20 major groups (two-digit SIC), 139 industry groups (three-digit SIC), and 459 industries (four-digit SIC). This represents an expansion of four-digit industries from 452 in 1972/77 and a reduction of three-digit groups from 143 in 1972/77. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 11,000 products identified by a seven-digit code. The seven-digit products are considered the primary products of the industry with the same four digits.

Accordingly, an establishment is usually classified in a particular industry on the basis of its major activity during a particular year, i.e., production of the products primary to that industry exceeds, in value, production of the products primary to any other single industry. In a few instances, however, the industry classification of an establishment is not only determined by the products it makes but also by the process employed in operations. Refining of nonferrous metals from ore or rolling and drawing of nonferrous metals (processes which involve heavy capitalization in specialized equipment) would be classified according to the process used during a census year. These establishments then would be "frozen" in that industry during the following ASM years.

In either a census or ASM year, establishments included in the ASM sample with certainty weight, other than those involved with heavily capitalized activities described above, are reclassified by industry only if the change in the primary activity from the prior year is significant or 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 (see appendix, Annual Survey of Manufactures).

However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The result of these rules covering the switching of plants from one industry classification to another is that, at the aggregate level, some industries comprise different mixes of establishments between survey years, and establishment data for such industry statistics as employment and payroll may be tabulated in different industries between survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the four-digit SIC 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.

While some establishments produce only the primary products of the industry in which they are classified, all establishments of an industry rarely specialize to this extent. The industry statistics (employment, inventories, value added by manufacture, total value of shipments including resales and miscellaneous receipts, etc.) shown in tables 1a through 5a, therefore, reflect not only the primary activities of the establishments in that industry but also their secondary activities. The product statistics in table 6a represent the output of all establishments whether or not they are classified in the same industry as the product. For this reason, in relating the industry statistics, especially the value of shipments to the product statistics, the composition of the industry's output shown in table 5b should be considered.

The extent to which industry and product statistics may be matched with each other is measured by two ratios which are computed from the figures shown in table 5b. The first of these ratios, called the primary product specialization ratio, measures the proportion of product shipments (both primary and secondary) of the establishments classified in the industry represented by the primary products of those establishments. The second ratio, called the coverage ratio, is the proportion of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments.

However, establishments making products falling into the same industry category may use a variety of processes and materials to produce them. Also, the same industry classification (based on end products) may include both establishments that are highly integrated and those that put only the finishing touches on an already highly fabricated item. For example, the refrigeration equipment industry includes instances of almost complete integration (production of the compressor, condensing unit, electric motor, casting, stamping of the case, and final assembly) all

carried on at one plant. On the other hand, the condensing unit, the motor, and the case may be purchased and only assembled into the finished product.

In some instances, separate industry categories have been established for integrated and nonintegrated establishments. For other industries, the census provides separate statistics on the production of intermediate commodities made and used in the producing plant. For some industries characterized by many plants of the same company, separate figures on interplant transfers of products usually are shown.

Differences in the integration of production processes, types of operations, and alternatives in types of materials used should be considered when relating the industry statistics (employment, payrolls, value added, etc.) to the product and material data.

Value of Shipments for the Industry Compared With Value of Product Shipments

This report shows value of shipments data for industries and products. In tables 1a through 5a, 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 table 6a represents the total value of all products shipped that are classified as primary to an industry.

CENSUS DISCLOSURE RULES

In accordance with Federal law governing census reports, no data are published that would disclose the data for an individual establishment or company. However, the number of establishments classified in a specific industry is not considered a disclosure, so this information may be released even though other information is withheld.

The disclosure analysis for the industry statistics in tables 1a through 5a of this report 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. However, the suppressed data are included in higher-level totals. Additional disclosure analysis is performed for new capital expenditures that can be suppressed even though value of shipments data are publishable.

SPECIAL TABULATIONS

Special tabulations of data collected in the 1987 Census of Manufactures may be obtained on computer tape or in tabular form. The data will be in summary form and 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) as are 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, Industry Division, Bureau of the Census, Washington, DC 20233.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

- Represents zero.
- (D) Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
- (NA) Not available.
- (NC) Not comparable.
- (S) Withheld because estimate did not meet publication standards.
- (X) Not applicable.
- (Z) Less than half the unit shown.
- do Ditto.

- n.e.c. Not elsewhere classified.
- n.s.k. Not specified by kind.
- pt. Part.
- r Revised.
- SIC Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

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Current Industrial Reports		
Durables	Malcolm Bernhardt	(301) 763-2518
Nondurables	Thomas Flood	(301) 763-5911
Import/Export Publications	Foreign Trade Division	(301) 763-5140
Industry Analysis and Forecasts	International Trade Administration	(202) 377-4356

Users' Guide for Locating Statistics in This Report by Table Number

For explanation of terms, see appendixes

Item	Four-digit industry statistics							Five-digit product class and seven-digit product statistics			
	Historical	Operating ratios	By geographic area	Summary and supplemental	By employment size	By industry and product class specialization	Materials consumed by kind	Industry-product analysis	Product shipments	Product class by geographic area	Historical product class
Number of companies	1a			3a					*6a		
Number of establishments	1a		2	3a	4	5a					
Employment and payroll:											
Number of employees	1a	1b	2	3a	4	5a					
Payroll	1a	1b	2	3a	4	5a					
Supplemental labor costs				3a							
Production workers	1a	1b	2	3a	4	5a					
Production- worker hours	1a	1b	2	3a	4	5a					
Production- worker wages	1a	1b	2	3a	4	5a					
Shipments, cost of materials, and value added:											
Value of shipments (four-digit)	1a	1b	2	3a	4	5a		5b			
Product class shipments (five-digits)									6a	6b	6c
Product shipments (seven-digit)									6a		
Value added by manufacture	1a	1b	2	3a	4	5a					
Cost of materials	1a	1b	2	3a	4	5a					
Fuels and electric energy				3a							
Materials consumed by kind							7				
Inventories:											
Total, end of year	1a			3a	4						
By stage of fabrication				3a							
Capital expenditures, assets, rental payments, and purchased services:											
New capital expenditures	1a		2	3b	4	5a					
Used plant and equipment expenditures				3b							
Gross assets				3b							
Depreciation				3b							
Retirements of buildings and machinery				3b							
Rental payments				3b							
Foreign content of materials consumed				3c							
Purchased services				3c							
Ratios:											
Specialization	1a			3a				5b			
Coverage	1a			3a				5b			

*Number of companies with shipments of more than \$100 thousand.

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Screw Machine Products, Fasteners and Washers; Metal Forgings and Stampings; and Metal Services

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DESCRIPTION OF INDUSTRIES AND SUMMARY OF FINDINGS

This report shows 1987 Census of Manufactures statistics for establishments classified in each of the following industries:

SIC code and title

3451	Screw Machine Products
3452	Bolts, Nuts, Rivets, and Washers
3462	Iron and Steel Forgings
3463	Nonferrous Forgings
3465	Automotive Stampings
3466	Crowns and Closures
3469	Metal Stampings, N.E.C.
3471	Plating and Polishing
3479	Metal Coating and Allied Services

The industry statistics (employment, payroll, cost of materials, value of shipments, inventories, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments but also their activities in the manufacture of secondary products as well as their miscellaneous activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account when comparing industry statistics (tables 1 through 5a) with product statistics (table 6) showing shipments by all industries of the primary products of the specified industry. The extent of the "product mix" is indicated in table 5b, which shows the value of primary and secondary products shipped by establishments classified in the specified industry and the value of primary products of the industry shipped as secondary products by establishments classified in other industries.

Small single-establishment companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. For these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated), data on payrolls and receipts were obtained from administrative records of other Federal agencies. The remaining statistics were developed from industry averages.

Establishment data were tabulated based on industry definitions included in the 1987 Standard Industrial Classification (SIC) Manual¹. The 1987 edition represents a major revision for manufacturing industries from the 1972

edition and its 1977 supplement. In addition to the 1987 SIC revision, changes were made to the product class (five-digit) and product code (seven-digit) categories. The product class and product code comparability between the 1987 and 1982 censuses is shown in the appendixes. These appendixes present, in tabular form, the linkage from 1987 to 1982.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

INDUSTRY 3451, SCREW MACHINE PRODUCTS

This industry is made up of establishments primarily engaged in manufacturing automatic or hand screw machine products from rod, bar, or tube stock of metal, fiber, plastics, or other material. The products of this industry consist of a wide variety of unassembled parts and are usually manufactured on a job or order basis. Establishments included in this industry may perform assembly of some parts manufactured in the same establishment, but establishments primarily engaged in producing assembled components are classified according to the nature of the components. Establishments primarily engaged in manufacturing standard bolts, nuts, rivets, screws, and other industrial fasteners on headers, threaders, and nut forming machines are classified in industry 3452.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3451, Screw Machine Products, had employment of 42.7 thousand. The employment figure was 2 percent above the 41.8 thousand reported in 1982. The leading States in employment in 1987 were Michigan, Illinois, Ohio, and California, accounting for 48 percent of the industry's employment. These same States were the leaders in 1982, when they also accounted for 48 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$2.8 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3451 shipped \$2.6 billion of products considered primary to the industry, \$137.1 million of secondary products, and

¹Standard Industrial Classification Manual: 1987. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 041-001-00314-2.

had \$90.7 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 95 percent (specialization ratio). In 1982, the specialization ratio was 96 percent.

Establishments in this industry also accounted for 93 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 94 percent. The products primary to industry 3451, no matter in what industry they were produced, appear in table 6a and aggregate to \$2.8 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the screw machine products industry amounted to \$1.1 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 10 percent of total value of shipments.

INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS

This industry is made up of establishments primarily engaged in manufacturing metal bolts, nuts, screws, rivets, washers, formed and threaded wire goods, and special industrial fasteners. Rolling mills engaged in manufacturing similar products are classified in major group 33; establishments primarily engaged in manufacturing screw machine products are classified in industry 3451; and those manufacturing plastics fasteners are classified in industry 3089.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3451, Bolts, Nuts, Rivets, and Washers, had employment of 52.0 thousand. The employment figure was less than 1 percent below the 52.2 thousand reported in 1982. The leading States in employment in 1987 were California, Illinois, Michigan, and Pennsylvania, accounting for 57 percent of the industry's employment. This represents a shift from 1982 when California, Illinois, Pennsylvania, and Ohio accounted for 55 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$5.1 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3452 shipped \$4.6 billion of products considered primary

to the industry, \$253.3 million of secondary products, and had \$238.0 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 95 percent (specialization ratio). In 1982, the specialization ratio was 93 percent.

Establishments in this industry also accounted for 96 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 95 percent. The products primary to industry 3452, no matter in what industry they were produced, appear in table 6a and aggregate to \$4.8 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the bolts, nuts, rivets, and washers industry amounted to \$2.1 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 11 percent of total value of shipments.

INDUSTRY 3462, IRON AND STEEL FORGINGS

This industry is made up of establishments primarily engaged in manufacturing iron and steel forgings, with or without the use of dies. This industry includes establishments primarily engaged in manufacturing metal forgings. These establishments generally operate on a job or order basis, manufacturing forgings for sale to others or for interplant transfer. Establishments which produce metal forgings for incorporation in end products produced in the same establishment are classified on the basis of the end product. Establishments further processing forgings are classified according to the particular product or process.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3462, Iron and Steel Forgings, had employment of 26.6 thousand. The employment figure was 9 percent below the 30.7 thousand reported in 1982. The leading States in employment in 1987 were Ohio, Pennsylvania, Texas, and Wisconsin. This represents a shift from 1982 when Ohio, Wisconsin, Illinois, and Michigan were the leading States.

The total value of shipments of for establishments classified in this industry was \$3.0 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry

3462 shipped \$2.7 billion of products considered primary to the industry, \$267.9 million of secondary products, and had \$65.3 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 91 percent (specialization ratio). In 1982, the specialization ratio was 89 percent.

Establishments in this industry also accounted for 92 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 81 percent. The products primary to industry 3462, no matter in what industry they were produced, appear in table 6a and aggregate to \$2.9 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the iron and steel forgings industry amounted to \$1.6 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 12 percent of total value of shipments.

INDUSTRY 3463, NONFERROUS FORGINGS

This industry is made up of establishments primarily engaged in manufacturing nonferrous forgings, with or without the use of dies. This industry includes establishments primarily engaged in manufacturing metal forgings. These establishments generally operate on a job or order basis, manufacturing forgings for sale to others or for interplant transfer. Establishments which produce metal forgings for incorporation in end products produced in the same establishment are classified on the basis of the end product. Establishments further processing forgings are classified according to the particular product or process.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3463, Nonferrous Forgings, had employment of 7.3 thousand. The employment figure was 8 percent below the 7.9 thousand reported in 1982. Compared with 1986, employment decreased 8 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses. The leading States in employment in 1987 were California, Ohio, Massachusetts, and Michigan. These same States were the leaders in 1982.

The total value of shipments for establishments classified in this industry was \$1.0 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3463 shipped \$808.5 million of products considered primary to the industry, \$136.5 million of secondary products, and had \$58.7 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 86 percent (specialization ratio). In 1982, the specialization ratio was 84 percent.

Establishments in this industry also accounted for 76 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 73 percent. The products primary to industry 3463, no matter in what industry they were produced, appear in table 6a and aggregate to \$1.1 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the nonferrous forgings industry amounted to \$565.6 million. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 5 percent of total value of shipments.

INDUSTRY 3465, AUTOMOTIVE STAMPINGS

This industry is made up of establishments primarily engaged in manufacturing automotive stampings, such as body parts, hubs, and trim. This industry includes establishments primarily engaged in manufacturing metal stampings. These establishments generally operate on a job or order basis, manufacturing metal stampings for sale to others or for interplant transfer. Establishments which produce metal stampings for incorporation in end products produced in the same establishments are classified on the basis of the end product. Establishments further processing stampings are classified according to the particular product or process.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3465, Automotive Stampings, had employment of 119.8 thousand. The employment figure was 32 percent above the 90.5 thousand reported in 1982. The leading States in employment in 1987 were Michigan, Ohio, Indiana, and Illinois accounted for 79 percent of the industry's employment. These same States were the leaders in 1982 when they accounted for 80 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$15.3 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3465 shipped \$14.0 billion of products considered primary to the industry, \$765.4 million of secondary products, and had \$523.2 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 95 percent (specialization ratio). In 1982, the specialization ratio was 92 percent.

Establishments in this industry also accounted for 93 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 88 percent. The products primary to industry 3465, no matter in what industry they were produced, appear in table 6a and aggregate to \$15.0 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the automotive stampings industry amounted to \$8.6 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 6 percent of total value of shipments.

INDUSTRY 3466, CROWNS AND CLOSURES

This industry is made up of establishments primarily engaged in manufacturing metal crowns and closures. Products of this industry also are collected in the Current Industrial Report MQ-34H, Closures for Containers.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3466, Crowns and Closures, had employment of 6.1 thousand. The employment figure was 9 percent below the 6.7 thousand reported in 1982. The leading States in employment in 1987 were Connecticut, Illinois, Indiana, and Pennsylvania. This represents a shift from 1982 when Illinois, Pennsylvania, Indiana, and New Jersey were the leading States.

The total value of shipments for establishments classified in this industry was \$819.8 million.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry

3466 shipped \$772.7 million of products considered primary to the industry, \$35.2 million of secondary products, and had \$11.9 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 96 percent (specialization ratio). In 1982, the specialization ratio was 92 percent.

Establishments in this industry also accounted for 95 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 92 percent. The products primary to industry 3466, no matter in what industry they were produced, appear in table 6a and aggregate to \$811.4 million. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the crowns and closures industry amounted to \$443.1 million. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 10 percent of total value of shipments.

INDUSTRY 3469, METAL STAMPINGS, N.E.C.

This industry is made up of establishments primarily engaged in manufacturing metal stampings and spun products, not elsewhere classified, including porcelain enameled products. Products of this industry include household appliance housings and parts; cooking and kitchen utensils; and other nonautomotive job stampings. These establishments generally operate on a job or order basis, manufacturing metal stampings for sale to others or for interplant transfer. Establishments which produce metal stampings for incorporation in end products produced in the same establishment are classified on the basis of the end product. Establishments further processing stampings are classified according to the particular product or process.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3469, Metal Stampings, N.E.C., had employment of 95.5 thousand. The employment figure was 5 percent below the 100.4 thousand reported in 1982. The leading States in employment in 1987 were Illinois, Ohio, California, and Wisconsin, accounting for 40 percent of the industry's employment. This represents a shift from 1982 when Illinois, Ohio, California, and Massachusetts accounted for 41 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$8.3 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3469 shipped \$7.2 billion of products considered primary to the industry, \$825.4 million of secondary products, and had \$290.8 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1982, the specialization ratio was 88 percent.

Establishments in this industry also accounted for 91 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 88 percent. The products primary to industry 3469, no matter in what industry they were produced, appear in table 6a and aggregate to \$8.0 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the metal stampings, n.e.c., industry amounted to \$4.0 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 17 percent of total value of shipments.

INDUSTRY 3471, PLATING AND POLISHING

This industry is made up of establishments primarily engaged in all types of electroplating, plating, anodizing, coloring, and finishing of metals and formed products for the trade. Also included in this industry are establishments which perform these types of activities, on their own account, on purchased metals or formed products. Establishments that both manufacture and finish products are classified according to the products.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3471, Plating and Polishing, had employment of 71.1 thousand. The employment figure was 15 percent above the 61.9 thousand reported in 1982. Compared with 1986, employment increased 8 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses. The leading States in employment in 1987 were California, Michigan, Ohio, and Illinois, accounting for 44 percent of

the industry's employment. This represents a shift from 1982 when California, Illinois, Michigan, and New York accounted for 45 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$3.9 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3471 shipped \$3.6 billion of products considered primary to the industry, \$106.1 million of secondary products, and had \$151.2 million of miscellaneous receipts, resales, and contract work.

The products primary to industry 3471, no matter in what industry they were produced, appear in table 6a and aggregate to \$3.8 billion.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the plating and polishing industry amounted to \$1.2 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 20 percent of total value of shipments.

INDUSTRY 3479, METAL COATING AND ALLIED SERVICES

This industry is made up of establishments primarily engaged in performing the following types of services on metals for the trade: (1) enameling, lacquering, and varnishing metal products; (2) hot dip galvanizing of mill sheets, plates and bars, castings, and formed products fabricated of iron and steel; hot dip coating such items with aluminum, lead, or zinc; retinning cans and utensils; (3) engraving, chasing and etching jewelry, silverware, notarial and other seals, and other metal products for purposes other than printing; and (4) other metal services, not elsewhere classified. Also included in this industry are establishments which perform these types of activities on their own account on purchased metals or formed products. Establishments that both manufacture and finish products are classified according to the products.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3479, Metal Coating and Allied Services, had employment of 41.5 thousand. The employment figure was 19 percent above the 35.0 thousand reported in 1982. The leading States in employment in 1987 were California, Ohio, Michigan, and Illinois, accounting for 45 percent of the

industry's employment. This represents a shift from 1982 when California, Texas, Ohio, and Illinois accounted for 46 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$3.9 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3479 shipped \$3.5 billion of products considered primary to the industry, \$271.8 million of secondary products, and had \$155.1 million of miscellaneous receipts, resales, and contract work.

The products primary to industry 3479, no matter in what industry they were produced, appear in table 6a and aggregate to \$3.8 billion.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the metal coating and allied services industry amounted to \$1.9 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 18 percent of total value of shipments.

Table 1a. Historical Statistics for the Industry: 1987 and Earlier Years

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year ¹	All establishments ³			All employees		Production workers			Value added by manufacture ⁴ (million dollars)	Cost of materials ⁵ (million dollars)	Value of shipments ⁶ (million dollars)	New capital expenditures ⁶ (million dollars)	End-of-year inventories ⁴ (million dollars)	Ratios	
	Companies ² (no.)	Total (no.)	With 20 employees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Specialization ⁷ (per cent)	Coverage ⁸ (per cent)
INDUSTRY 3451, SCREW MACHINE PRODUCTS															
1987 Census ---	1 608	1 635	635	42.7	945.3	34.1	72.9	666.1	1 770.5	1 048.9	2 806.2	99.7	355.5	95	93
1986 ASM -----	(NA)	(NA)	(NA)	43.5	908.2	34.6	69.2	658.7	1 776.7	1 158.7	2 928.3	98.5	355.6	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	44.4	892.8	35.8	71.4	640.0	1 870.2	1 179.5	2 947.8	109.4	483.4	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	45.2	882.1	36.9	73.3	641.7	1 778.0	1 167.1	2 903.8	91.9	361.5	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	40.9	737.6	33.0	66.6	518.1	1 448.6	898.9	2 337.8	59.9	315.8	(NA)	(NA)
1982 Census ---	1 744	1 787	643	41.8	718.9	33.7	65.2	503.2	1 328.0	831.6	2 173.1	77.2	297.0	96	94
1981 ASM -----	(NA)	(NA)	(NA)	47.7	786.5	39.4	80.7	557.5	1 471.2	1 061.4	2 537.7	79.4	323.5	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	52.3	777.0	42.8	84.9	557.8	1 476.9	1 055.5	2 520.2	96.4	324.5	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	51.7	739.8	43.9	89.3	537.6	1 534.1	990.9	2 483.0	79.8	312.9	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	48.5	638.4	40.8	82.3	463.0	1 257.4	857.5	2 097.5	80.0	273.5	(NA)	(NA)
1977 Census ---	1 727	1 770	654	43.8	551.6	36.0	74.3	395.5	1 023.9	762.2	1 771.7	71.9	230.6	96	92
1976 ASM -----	(NA)	(NA)	(NA)	40.8	465.6	33.3	67.5	326.0	858.5	613.3	1 456.6	38.2	200.0	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	40.5	433.7	32.8	65.0	308.3	795.4	529.9	1 327.7	47.9	180.0	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	48.3	492.5	40.1	84.0	359.0	979.9	628.2	1 586.6	45.3	218.3	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	48.8	460.2	40.5	86.0	332.9	894.2	601.7	1 480.4	58.5	172.0	(NA)	(NA)
1972 Census ---	1 781	1 804	612	40.5	357.3	33.2	68.2	257.9	648.5	424.3	1 063.8	33.2	115.7	96	90
INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS															
1987 Census ---	828	937	471	52.0	1 325.0	38.7	80.5	886.9	2 995.8	2 115.7	5 084.0	150.4	955.5	95	96
1986 ASM -----	(NA)	(NA)	(NA)	49.7	1 197.0	36.6	74.2	800.4	2 640.9	2 061.7	4 713.6	144.5	866.5	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	52.8	1 206.8	38.9	79.2	793.7	2 621.8	2 139.6	4 794.8	138.2	900.8	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	51.0	1 139.0	38.5	78.2	765.3	2 605.8	2 001.1	4 568.7	124.1	973.9	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	49.5	1 040.4	35.7	71.6	689.8	2 224.6	1 691.8	3 897.3	¹⁰ 120.1	975.7	(NA)	(NA)
1982 Census ---	780	903	450	52.2	1 008.1	37.2	69.1	644.6	1 981.2	1 588.1	3 661.3	109.8	945.0	93	95
1981 ASM -----	(NA)	(NA)	(NA)	63.2	1 176.3	47.0	93.4	787.3	2 573.9	1 932.0	4 484.9	148.4	969.3	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	65.8	1 152.2	49.0	97.9	752.2	2 465.2	1 865.9	4 311.5	168.5	927.8	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	69.7	1 114.5	52.4	106.6	769.7	2 465.0	1 981.0	4 366.8	144.9	890.1	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	64.5	986.9	48.9	100.5	678.8	2 113.7	1 745.6	3 811.3	139.5	804.8	(NA)	(NA)
1977 Census ---	722	857	448	60.9	862.4	45.6	93.9	587.6	1 840.3	1 510.1	3 319.5	112.3	714.3	94	94
1976 ASM -----	(NA)	(NA)	(NA)	58.8	754.8	43.8	87.5	509.3	1 656.6	1 306.0	2 939.4	83.7	718.6	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	56.1	651.7	40.6	80.1	433.6	1 459.8	1 123.3	2 581.3	74.2	614.6	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	66.1	749.6	51.2	105.7	530.9	1 775.3	1 281.5	2 966.8	107.6	653.8	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	61.2	649.5	47.3	101.3	451.4	1 442.8	1 005.9	2 438.4	62.4	453.8	(NA)	(NA)
1972 Census ---	580	678	396	60.1	590.7	46.0	96.6	407.7	1 196.8	851.9	2 027.6	55.7	407.8	93	91
INDUSTRY 3462, IRON AND STEEL FORGINGS															
1987 Census ---	379	406	202	26.6	746.5	19.1	37.8	484.3	1 394.0	1 553.5	3 003.6	108.2	610.8	91	92
1986 ASM -----	(NA)	(NA)	(NA)	25.2	675.6	18.3	35.0	449.3	1 247.1	1 368.6	2 602.1	74.4	552.6	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	27.5	728.9	20.1	38.5	487.7	1 309.6	1 509.9	2 857.9	95.6	568.6	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	29.8	754.7	22.0	42.0	519.3	1 386.1	1 531.3	3 014.8	97.3	640.3	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	25.0	597.4	18.5	33.8	402.6	1 103.3	1 247.2	2 380.7	80.2	477.9	(NA)	(NA)
1982 Census ---	336	380	220	30.7	690.7	22.4	40.7	462.9	1 347.6	1 520.7	2 943.5	158.0	618.7	89	81
1981 ASM -----	(NA)	(NA)	(NA)	38.1	845.3	29.3	56.2	594.6	1 855.6	2 040.6	3 864.2	181.0	564.6	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	38.8	780.3	29.8	57.7	555.7	1 544.7	1 918.8	3 475.6	148.6	528.9	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	40.2	759.9	31.3	63.3	562.8	1 557.1	1 970.3	3 490.8	153.8	575.8	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	41.4	725.7	32.6	64.6	538.6	1 474.7	1 739.2	3 191.3	118.3	506.6	(NA)	(NA)
1977 Census ---	312	358	231	39.1	641.5	31.0	60.8	474.8	1 301.4	1 505.4	2 795.7	126.7	452.7	92	84
1976 ASM -----	(NA)	(NA)	(NA)	37.6	537.2	30.4	57.0	400.8	1 126.8	1 228.8	2 353.5	118.7	390.2	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	36.3	490.8	29.4	56.8	371.1	1 046.1	1 165.7	2 198.7	77.5	353.3	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	39.4	503.5	32.4	65.1	392.7	995.3	1 144.6	2 105.3	54.7	382.3	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	38.2	460.6	30.8	63.4	359.0	822.3	918.9	1 720.2	38.2	300.0	(NA)	(NA)
1972 Census ---	252	280	180	34.3	387.2	27.8	55.2	299.5	661.8	761.8	1 416.1	28.1	219.4	92	68
INDUSTRY 3463, NONFERROUS FORGINGS															
1987 Census ---	72	79	41	7.3	218.1	5.4	11.4	145.4	428.2	565.6	1 003.7	29.8	278.7	86	76
1986 ASM -----	(NA)	(NA)	(NA)	7.9	247.2	5.6	10.9	161.3	497.8	586.1	1 086.1	43.8	347.5	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	8.3	245.5	6.0	11.7	159.6	543.6	648.3	1 181.2	45.1	354.5	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	9.1	258.8	6.6	12.7	169.8	516.2	733.5	1 237.4	45.5	393.5	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	8.6	225.7	6.1	11.2	142.1	540.7	572.9	1 151.5	45.7	345.8	(NA)	(NA)
1982 Census ---	59	64	46	7.9	200.7	5.7	10.6	128.7	461.2	569.3	1 093.8	100.3	302.6	84	73
1981 ASM -----	(NA)	(NA)	(NA)	8.6	203.3	6.4	13.3	140.9	510.0	651.2	1 168.5	42.5	288.9	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	9.0	189.7	6.8	13.3	132.0	483.0	604.3	1 048.6	39.0	295.6	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	8.0	158.6	6.0	12.7	116.4	416.9	453.4	823.5	27.4	238.1	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	6.2	115.8	4.7	9.6	83.2	274.9	315.5	569.8	24.6	163.5	(NA)	(NA)
1977 Census ---	43	47	31	5.4	93.7	4.2	8.2	64.8	240.7	234.9	456.7	12.2	123.8	87	67
1976 ASM -----	(NA)	(NA)	(NA)	5.2	84.1	3.8	7.2	57.1	205.8	191.6	401.3	10.5	100.6	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	6.1	86.9	4.5	9.0	60.6	193.0	185.7	386.2	13.8	104.8	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	6.4	88.2	5.0	10.7	64.4	202.0	178.6	354.4	7.1	114.9	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	6.1	74.6	4.6	9.8	54.0	141.2	154.8	283.0	9.0	81.4	(NA)	(NA)
1972 Census ---	40	46	33	5.8	63.7	4.5	9.0	45.4	104.0	118.9	222.5	7.0	60.0	84	63
INDUSTRY 3465, AUTOMOTIVE STAMPINGS															
1987 Census ---	597	713	502	119.8	3 976.9	99.9	213.3	3 157.5	6 659.3	8 582.2	15 251.6	1 285.0	1 153.9	95	93
1986 ASM -----	(NA)	(NA)	(NA)	119.1	3 942.7	99.9	216.5	3 162.5	6 521.2	8 310.9	14 826.6	1 183.0	1 123.2	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	119.2	3 795.5	100.6	217.4	3 058.3	6 850.5	8 183.8	15 037.7	830.6	1 175.1	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	112.4	3 368.9	95.2	203.8	2 717.1	6 631.8	7 594.8	14 137.4	462.3	1 154.3	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	96.6	2 729.6	81.1	172.2	2 175.5	5 409.5	5 846.8	11 176.4	234.9	973.0	(NA)	(NA)
1982 Census ---	566	668	434	90.5	2 292.6	74.5	145.2								

Table 1a. Historical Statistics for the Industry: 1987 and Earlier Years—Con.

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year ¹	All establishments ³			All employees		Production workers			Value added by manufacture ⁴ (million dollars)	Cost of materials ⁵ (million dollars)	Value of shipments (million dollars)	New capital expenditures ⁶ (million dollars)	End-of-year inventories ⁴ (million dollars)	Ratios	
	Companies ² (no.)	Total (no.)	With 20 employees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Specialization ⁷ (per cent)	Coverage ⁸ (per cent)
INDUSTRY 3465, AUTOMOTIVE STAMPINGS—Con.															
1977 Census	495	591	432	132.4	2 446.0	112.5	236.8	1 956.6	4 654.5	5 130.8	9 739.2	292.2	948.3	92	91
1976 ASM	(NA)	(NA)	(NA)	123.1	2 024.4	104.1	213.5	1 601.5	3 934.8	4 200.5	8 070.5	176.1	861.5	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	107.4	1 526.8	90.0	173.0	1 178.6	2 872.4	3 247.0	6 116.2	215.5	608.6	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	121.7	1 622.6	102.1	202.1	1 264.6	3 011.6	3 122.6	6 103.0	225.5	734.7	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	135.4	1 743.7	114.1	242.7	1 385.0	3 141.3	2 983.7	6 085.9	171.5	585.6	(NA)	(NA)
1972 Census	388	453	364	123.3	1 485.4	103.0	217.5	1 174.6	2 663.8	2 624.5	5 286.0	117.5	447.0	92	92
INDUSTRY 3466, CROWNS AND CLOSURES															
1987 Census	44	57	34	6.1	161.6	4.9	10.3	119.8	382.1	443.1	819.8	26.5	151.9	96	95
1986 ASM	(NA)	(NA)	(NA)	6.4	159.6	5.1	10.6	116.6	376.7	532.5	914.5	38.7	145.8	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	6.7	161.6	5.3	10.1	120.8	353.7	509.7	862.5	22.0	147.9	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	6.8	158.5	5.5	11.0	119.1	344.8	499.0	805.3	20.2	158.1	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	7.1	161.1	5.7	11.4	121.6	373.0	494.9	866.5	19.8	157.6	(NA)	(NA)
1982 Census	48	64	36	6.7	143.5	5.4	10.6	106.8	372.4	441.7	804.8	21.6	140.7	92	92
1981 ASM	(NA)	(NA)	(NA)	7.1	143.9	5.8	11.7	107.7	335.0	437.5	765.8	30.1	127.9	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	7.2	128.2	5.8	11.5	96.3	293.3	390.3	678.7	19.4	123.3	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	6.9	114.2	5.6	11.3	86.1	276.8	349.1	631.1	17.0	117.4	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	7.3	108.9	5.9	11.6	81.6	277.0	310.5	574.1	14.1	125.0	(NA)	(NA)
1977 Census	42	56	43	7.9	104.8	6.5	12.6	80.2	265.4	283.2	536.9	17.1	121.0	95	86
1976 ASM	(NA)	(NA)	(NA)	7.6	96.7	6.3	13.0	75.2	239.0	290.3	522.4	10.7	95.5	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	7.5	88.3	6.1	12.4	67.3	218.0	265.6	479.9	13.3	93.8	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	8.1	83.8	6.7	13.5	63.6	211.9	228.2	431.5	10.5	101.6	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	7.3	72.9	5.9	11.8	54.4	169.7	187.1	355.2	7.8	71.1	(NA)	(NA)
1972 Census	42	53	48	8.1	74.1	6.7	13.4	55.1	166.7	180.9	343.5	8.3	62.6	88	83
INDUSTRY 3469, METAL STAMPINGS, N.E.C.															
1987 Census	2 707	2 815	1 162	95.5	2 131.9	73.2	146.2	1 402.0	4 311.4	4 034.4	8 331.1	268.9	1 145.3	90	91
1986 ASM	(NA)	(NA)	(NA)	95.9	2 067.6	73.3	142.4	1 364.6	4 032.4	3 584.1	7 625.5	256.9	1 076.1	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	107.1	2 216.9	82.6	164.7	1 446.5	4 261.4	3 773.5	8 084.3	305.0	1 193.7	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	110.5	2 193.5	85.7	167.4	1 448.4	4 436.0	4 062.4	8 410.2	290.9	1 310.8	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	102.9	1 920.7	78.6	155.6	1 251.8	3 836.7	3 269.3	7 079.3	192.5	1 147.1	(NA)	(NA)
1982 Census	2 718	2 843	1 156	100.4	1 782.7	75.6	146.3	1 154.0	3 414.2	2 986.4	6 437.7	200.1	1 014.7	88	88
1981 ASM	(NA)	(NA)	(NA)	112.8	1 796.9	90.4	176.1	1 241.4	3 648.9	3 538.8	7 160.6	217.1	948.9	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	113.8	1 643.5	91.6	175.3	1 134.5	3 353.1	3 215.3	6 577.5	221.5	914.6	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	114.5	1 542.4	93.1	180.2	1 084.3	3 234.5	3 097.2	6 278.2	202.0	918.8	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	106.2	1 356.3	85.6	168.8	932.6	2 705.9	2 664.9	5 329.1	179.3	793.0	(NA)	(NA)
1977 Census	2 544	2 663	1 138	103.2	1 225.4	82.0	161.2	842.5	2 451.5	2 318.0	4 735.7	154.7	715.7	88	88
1976 ASM	(NA)	(NA)	(NA)	91.9	1 045.6	72.7	142.1	711.2	2 047.7	1 892.2	3 902.1	114.0	596.0	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	83.3	884.5	64.3	123.0	586.8	1 709.0	1 503.4	3 249.6	95.0	507.3	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	101.1	981.2	81.2	159.0	684.8	1 935.6	1 700.8	3 596.8	123.5	604.5	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	101.9	917.0	83.4	165.5	655.8	1 696.7	1 436.5	3 097.5	93.4	483.3	(NA)	(NA)
1972 Census	2 277	2 356	982	92.0	781.0	74.2	146.5	554.8	1 461.0	1 247.9	2 688.8	76.7	382.3	86	85
INDUSTRY 3471, PLATING AND POLISHING															
1987 Census	3 351	3 451	1 043	71.1	1 335.5	55.9	112.0	884.7	2 633.6	1 235.3	3 866.9	140.2	226.9	(⁹)	(⁹)
1986 ASM	(NA)	(NA)	(NA)	65.8	1 179.1	51.5	104.6	784.3	2 252.3	1 149.2	3 408.3	137.7	208.4	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	69.0	1 182.3	55.7	113.3	802.2	2 203.2	1 245.5	3 445.8	160.4	241.1	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	68.7	1 143.4	55.7	112.6	793.9	2 207.8	1 254.8	3 457.4	184.5	221.6	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	65.7	916.6	52.5	104.9	680.4	1 777.9	1 113.0	2 849.4	79.7	253.4	(NA)	(NA)
1982 Census	3 367	3 450	898	61.9	919.0	49.7	98.1	631.9	1 693.9	1 038.4	2 731.4	109.2	225.5	(⁹)	(⁹)
1981 ASM	(NA)	(NA)	(NA)	62.0	855.4	50.2	98.6	598.8	1 613.1	969.6	2 594.6	102.4	163.2	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	63.1	803.6	52.1	101.5	551.6	1 613.9	956.5	2 596.9	105.1	205.7	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	64.1	729.9	53.8	106.1	508.8	1 487.8	928.6	2 412.7	110.3	151.1	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	65.9	724.1	55.4	111.5	507.2	1 413.1	784.3	2 194.9	194.6	140.4	(NA)	(NA)
1977 Census	3 344	3 447	904	61.2	634.8	51.2	101.3	446.1	1 181.8	674.1	1 848.5	73.2	128.3	(⁹)	(⁹)
1976 ASM	(NA)	(NA)	(NA)	58.5	545.8	49.2	94.6	384.1	1 092.1	524.9	1 610.0	70.6	109.8	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	51.2	467.0	42.2	81.6	318.1	861.1	443.7	1 319.0	47.8	89.8	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	55.8	477.3	46.4	89.0	333.9	949.5	386.9	1 332.8	51.1	83.3	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	60.9	478.4	50.5	99.2	347.5	880.9	384.1	1 263.7	39.5	72.0	(NA)	(NA)
1972 Census	3 180	3 264	825	54.6	403.1	45.2	89.2	289.5	741.2	294.8	1 034.5	40.2	51.3	(⁹)	(⁹)
INDUSTRY 3479, METAL COATING AND ALLIED SERVICES															
1987 Census	1 699	1 814	616	41.5	831.5	32.3	65.0	558.8	1 995.4	1 936.9	3 922.6	105.3	417.3	(⁹)	(⁹)
1986 ASM	(NA)	(NA)	(NA)	42.7	824.2	32.8	66.1	545.9	1 735.0	1 824.2	3 573.7	137.9	361.6	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	43.3	814.2	34.2	68.3	527.0	1 641.2	1 618.7	3 253.2	150.5	350.4	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	40.6	715.5	32.5	65.1	479.2	1 502.7	1 525.8	3 008.3	111.3	349.6	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	33.2	579.6	25.7	53.2	396.0	1 154.5	1 235.2	2 391.9	88.9	261.6	(NA)	(NA)
1982 Census	1 524	1 620	507	35.0	599.1	27.5	54.1	403.7	1 202.6	1 195.9	2 393.4	91.0	292.1	(⁹)	(⁹)
1981 ASM	(NA)	(NA)	(NA)	39.6	623.3	32.0	65.4	440.6	1 399.9	1 137.4	2 528.6	136.8	194.7	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	38.5	541.4	31.2	60.9	383.5	1 175.3	1 094.7	2 278.7	53.7	205.7	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	38.1	516.3	31.0	61.4	371.3	1 124.8	1 037.9	2 156.5	81.8	206.6	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	33.7	415.3	27.2	54.5	285.8	895.5	937.6	1 825.1	70.9	175.2	(NA)	(NA)
1977 Census	1 556	1 648	469	32.3	373.7	25.8	52.2	260.2	781.1	831.7	1 607.7	47.9	159.0	(⁹)	(⁹)
1976 ASM	(NA)	(NA)	(NA)	31.9	356.6	25.3	51.1	260.0	726.7	583.1	1 490.7	39.2	130.9	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	30.3	318.7	23.8	48.0	230.3	579.7	607.4	1 065.5	56.4	99.2	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	33.5	302.9	26.6	52.9	219.1	561.8	607.4	973.1	44.8	122.4	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	30.4	253.8	24.9	51.0	182.9	428.1	459.7	897.6	26.3	83.1	(NA)	(NA)
1972 Census	1 427	1 497	372	27.6	221.1	22.5	43.5	155.8	379.2	328.7	701.8	24.0	64.8	(⁹)	(⁹)

¹In annual survey of manufacturers (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1972, see 1972 Census of Manufactures, vol. II, table 1a of the Industry chapter.

²For the Census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

³Includes establishments with payroll at any time during year.

Table 1a. Historical Statistics for the Industry: 1987 and Earlier Years—Con.

⁴Beginning with the 1982 Census of Manufactures, all respondents were requested to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior Censuses and annual surveys of manufactures in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, inventories and value added by manufacture are not comparable to prior-year data.

⁵Detailed data on materials consumed by type are shown in table 7.
⁶Detailed data on new machinery and equipment expenditures are provided in table 3c.

⁷Represents ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for establishments classified in the industry.

⁸Represents ratio of primary products shipped by establishments classified in industry to total shipments of such products by all manufacturing establishments, wherever classified.

⁹Relationships are not meaningful because of predominance of miscellaneous receipts, particularly receipts of contract and commission work on materials owned by others.

¹⁰Estimates for new capital expenditures have associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

Table 1b. Selected Operating Ratios for the Industry: 1987 and Earlier Years

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
INDUSTRY 3451, SCREW MACHINE PRODUCTS									
1987 Census	22 138	80	2 138	9.14	37	71	41 464	53	24.29
1986 ASM	20 878	80	2 000	9.52	40	71	40 844	51	25.67
1985 ASM	20 108	81	1 994	8.96	40	70	42 122	48	26.19
1984 ASM	19 515	82	1 986	8.75	40	71	39 336	50	24.26
1983 ASM	18 034	81	2 018	7.78	38	70	35 418	51	21.75
1982 Census	17 198	81	1 935	7.72	38	71	31 770	54	20.37
1981 ASM	16 488	83	2 048	6.91	42	73	30 843	53	18.23
1980 ASM	14 856	82	1 984	6.57	42	73	28 239	53	17.40
1979 ASM	14 309	85	2 034	6.02	40	70	29 673	48	17.18
1978 ASM	13 162	84	2 017	5.63	41	71	25 926	51	15.28
1977 Census	12 593	82	2 064	5.32	43	74	23 377	54	13.78
1976 ASM	11 411	82	2 027	4.83	42	74	21 042	54	12.72
1975 ASM	10 708	81	1 982	4.74	40	73	19 640	55	12.24
1974 ASM	10 196	83	2 095	4.27	40	71	20 288	50	11.67
1973 ASM	9 430	83	2 123	3.87	41	72	18 324	51	10.40
1972 Census	8 822	82	2 054	3.78	40	73	16 012	55	9.51
INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS									
1987 Census	25 481	74	2 080	11.02	42	68	57 612	44	37.21
1986 ASM	24 084	74	2 027	10.79	44	69	53 137	45	35.59
1985 ASM	22 856	74	2 036	10.02	45	70	49 655	46	33.10
1984 ASM	22 333	75	2 031	9.79	44	69	51 094	44	33.32
1983 ASM	21 018	72	2 006	9.63	43	70	44 941	47	31.07
1982 Census	19 312	71	1 858	9.33	43	71	37 954	51	28.67
1981 ASM	18 612	74	1 987	8.43	43	69	40 726	46	27.56
1980 ASM	16 948	74	1 998	7.68	43	69	37 465	45	25.18
1979 ASM	15 989	75	2 034	7.22	45	71	35 366	45	23.12
1978 ASM	15 300	76	2 055	6.75	46	72	32 771	47	21.03
1977 Census	14 160	75	2 059	6.26	45	71	30 218	47	19.60
1976 ASM	12 836	74	1 998	5.82	44	70	28 173	46	18.93
1975 ASM	11 616	72	1 973	5.41	44	69	26 021	45	18.22
1974 ASM	11 340	77	2 064	5.02	43	68	26 858	42	16.80
1973 ASM	10 612	77	2 142	4.46	41	68	23 575	45	14.24
1972 Census	9 828	77	2 100	4.22	42	71	19 913	49	12.39
INDUSTRY 3462, IRON AND STEEL FORGINGS									
1987 Census	28 064	72	1 979	12.81	52	77	52 406	54	36.88
1986 ASM	26 809	73	1 913	12.84	53	79	49 488	54	35.63
1985 ASM	26 505	73	1 915	12.67	53	78	47 622	56	34.02
1984 ASM	25 325	74	1 909	12.36	51	76	46 513	54	33.00
1983 ASM	23 896	74	1 827	11.91	52	77	44 132	54	32.64
1982 Census	22 498	73	1 817	11.37	52	75	43 896	51	33.11
1981 ASM	22 186	77	1 918	10.58	53	75	48 703	46	33.02
1980 ASM	20 110	77	1 936	9.63	55	78	39 812	51	26.77
1979 ASM	18 902	78	2 022	8.89	56	78	38 734	49	24.60
1978 ASM	17 528	79	1 982	8.34	54	77	35 621	49	22.83
1977 Census	16 406	79	1 961	7.81	54	77	33 284	49	21.40
1976 ASM	14 287	81	1 875	7.03	52	75	29 968	48	19.77
1975 ASM	13 520	81	1 932	6.53	53	75	28 818	47	18.42
1974 ASM	12 779	82	2 009	6.03	54	78	25 261	51	15.29
1973 ASM	12 057	81	2 058	5.66	53	80	21 526	56	12.97
1972 Census	11 288	81	1 986	5.43	54	81	19 294	59	11.99
INDUSTRY 3463, NONFERROUS FORGINGS									
1987 Census	29 877	74	2 111	12.75	56	78	58 658	51	37.56
1986 ASM	31 291	71	1 946	14.80	54	77	63 013	50	45.67
1985 ASM	29 578	72	1 950	13.64	55	76	65 494	45	46.46
1984 ASM	28 439	73	1 924	13.37	59	80	56 725	50	40.65
1983 ASM	26 244	71	1 836	12.69	50	69	62 872	42	48.28
1982 Census	25 405	72	1 860	12.14	52	70	58 380	44	43.51
1981 ASM	23 639	74	2 078	10.59	56	73	59 302	40	38.35
1980 ASM	21 077	76	1 956	9.92	58	76	53 667	39	36.32
1979 ASM	19 825	75	2 117	9.17	55	74	52 113	38	32.83
1978 ASM	18 677	76	2 043	8.67	55	76	44 339	42	28.64
1977 Census	17 351	78	1 952	7.90	51	72	44 574	39	29.35
1976 ASM	16 173	73	1 895	7.93	48	69	39 577	41	28.58
1975 ASM	14 245	74	2 000	6.73	48	71	31 639	45	21.44
1974 ASM	13 781	78	2 140	6.02	50	75	31 563	44	18.88
1973 ASM	12 229	75	2 130	5.51	55	81	23 148	53	14.41
1972 Census	10 982	78	2 000	5.04	53	82	17 931	61	11.56

See footnotes at end of table.

Table 1b. Selected Operating Ratios for the Industry: 1987 and Earlier Years—Con.

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
INDUSTRY 3465, AUTOMOTIVE STAMPINGS									
1987 Census	33 196	83	2 135	14.80	56	82	55 587	60	31.22
1986 ASM	33 104	84	2 167	14.61	56	83	54 754	60	30.12
1985 ASM	31 841	84	2 161	14.07	54	80	57 471	55	31.51
1984 ASM	29 972	85	2 141	13.33	54	78	59 002	51	32.54
1983 ASM	28 256	84	2 123	12.63	52	77	55 999	50	31.41
1982 Census	25 332	82	1 949	12.34	53	79	45 463	56	28.34
1981 ASM	25 171	83	1 909	12.39	51	78	46 737	54	29.40
1980 ASM	22 334	83	1 860	11.15	50	77	41 452	54	26.83
1979 ASM	20 371	85	1 955	9.68	53	77	39 425	52	23.75
1978 ASM	19 327	85	2 033	8.94	52	77	37 894	51	21.85
1977 Census	18 474	85	2 105	8.26	53	78	35 155	53	19.66
1976 ASM	16 445	85	2 051	7.50	52	77	31 964	51	18.43
1975 ASM	14 216	84	1 922	6.81	53	78	26 745	53	16.60
1974 ASM	13 332	84	1 979	6.26	51	78	24 746	54	14.90
1973 ASM	12 878	84	2 127	5.71	49	78	23 200	56	12.94
1972 Census	12 047	84	2 112	5.40	50	78	21 604	56	12.25
INDUSTRY 3466, CROWNS AND CLOSURES									
1987 Census	26 492	80	2 102	11.63	54	74	62 639	42	37.10
1986 ASM	24 937	80	2 078	11.00	58	76	58 859	42	35.54
1985 ASM	24 119	79	1 906	11.96	59	78	52 791	46	35.02
1984 ASM	23 308	81	2 000	10.83	62	82	50 706	46	31.35
1983 ASM	22 690	80	2 000	10.67	57	76	52 535	43	32.72
1982 Census	21 417	81	1 963	10.08	55	73	55 582	39	35.13
1981 ASM	20 267	82	2 017	9.21	57	76	47 183	43	28.63
1980 ASM	17 805	81	1 983	8.37	58	76	40 736	44	25.50
1979 ASM	16 550	81	2 018	7.62	55	73	40 116	41	24.50
1978 ASM	14 917	81	1 966	7.03	54	73	37 945	39	23.88
1977 Census	13 265	82	1 938	6.37	53	72	33 595	39	21.06
1976 ASM	12 723	83	2 063	5.78	56	74	31 447	40	18.38
1975 ASM	11 773	81	2 033	5.43	55	74	29 067	41	17.58
1974 ASM	10 345	83	2 015	4.71	53	72	26 160	40	15.70
1973 ASM	9 986	81	2 000	4.61	53	73	23 247	43	14.38
1972 Census	9 148	83	2 000	4.11	53	74	20 580	44	12.44
INDUSTRY 3469, METAL STAMPINGS, N.E.C.									
1987 Census	22 324	77	1 997	9.59	48	74	45 146	49	29.49
1986 ASM	21 559	76	1 943	9.58	47	74	42 048	51	28.32
1985 ASM	20 699	77	1 994	8.78	47	74	39 789	52	25.87
1984 ASM	19 850	78	1 953	8.65	48	74	40 145	49	26.50
1983 ASM	18 665	76	1 980	8.04	46	73	37 286	50	24.66
1982 Census	17 755	75	1 935	7.89	46	74	34 006	52	23.34
1981 ASM	15 929	80	1 948	7.05	49	75	32 348	49	20.72
1980 ASM	14 442	80	1 914	6.47	49	74	29 465	49	19.13
1979 ASM	13 470	81	1 936	6.02	49	74	28 249	48	17.95
1978 ASM	12 771	81	1 972	5.52	50	75	25 479	50	16.03
1977 Census	11 874	79	1 966	5.23	49	75	23 755	50	15.21
1976 ASM	11 377	79	1 955	5.00	48	75	22 282	51	14.41
1975 ASM	10 618	77	1 913	4.77	46	73	20 516	52	13.89
1974 ASM	9 705	80	1 958	4.31	47	75	19 145	51	12.17
1973 ASM	8 999	82	1 984	3.96	46	76	16 651	54	10.25
1972 Census	8 489	81	1 974	3.79	46	75	15 880	53	9.97
INDUSTRY 3471, PLATING AND POLISHING									
1987 Census	18 783	79	2 004	7.90	32	66	37 041	51	23.51
1986 ASM	17 919	78	2 031	7.50	34	68	34 229	52	21.53
1985 ASM	17 134	81	2 034	7.08	36	70	31 930	54	19.45
1984 ASM	16 643	81	2 022	7.05	36	69	32 137	52	19.61
1983 ASM	14 636	80	1 998	6.49	39	73	27 061	54	16.95
1982 Census	14 846	80	1 974	6.44	38	72	27 365	54	17.27
1981 ASM	13 796	81	1 964	6.07	37	70	26 018	53	16.36
1980 ASM	12 735	83	1 948	5.43	37	69	25 577	50	15.90
1979 ASM	11 386	84	1 972	4.80	38	69	23 211	49	14.02
1978 ASM	10 987	84	2 013	4.55	36	69	21 443	51	12.67
1977 Census	10 372	84	1 979	4.40	36	71	19 310	54	11.67
1976 ASM	9 329	84	1 923	4.06	33	67	18 668	50	11.54
1975 ASM	9 121	82	1 934	3.90	34	69	16 818	54	10.55
1974 ASM	8 553	83	1 918	3.75	29	65	17 016	50	10.67
1973 ASM	7 855	83	1 964	3.50	30	68	14 465	54	8.88
1972 Census	7 382	83	1 973	3.25	28	67	13 575	54	8.31
INDUSTRY 3479, METAL COATING AND ALLIED SERVICES									
1987 Census	20 036	78	2 012	8.60	49	71	48 082	42	30.70
1986 ASM	19 302	77	2 015	8.26	51	74	40 632	48	26.25
1985 ASM	18 803	79	1 997	7.72	50	75	37 903	50	24.03
1984 ASM	17 623	80	2 003	7.36	51	75	37 012	48	23.08
1983 ASM	17 457	77	2 070	7.44	52	76	34 774	50	21.70
1982 Census	17 117	79	1 967	7.46	50	75	34 360	50	22.23
1981 ASM	15 739	81	2 044	6.74	45	70	35 351	45	21.41
1980 ASM	14 062	81	1 952	6.30	48	72	30 527	46	19.30
1979 ASM	13 551	81	1 981	6.05	48	72	29 522	46	18.32
1978 ASM	12 323	81	2 004	5.24	51	74	26 573	46	16.43

See footnotes at end of table.

Table 1b. Selected Operating Ratios for the Industry: 1987 and Earlier Years—Con.

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
INDUSTRY 3479, METAL COATING AND ALLIED SERVICES—Con.									
1977 Census	11 569	80	2 023	4.98	52	75	24 183	48	14.96
1976 ASM	11 178	79	2 020	5.09	39	63	22 781	49	14.22
1975 ASM	10 518	79	2 017	4.80	61	91	19 132	55	12.08
1974 ASM	9 041	79	1 989	4.14	62	94	16 770	54	10.62
1973 ASM	8 348	82	2 048	3.59	51	79	14 082	59	8.39
1972 Census	8 010	82	1 933	3.58	47	78	13 739	58	8.72

Note: For qualifications of data, see footnotes on table 1a.

Table 2. Industry Statistics for Selected States: 1987 and 1982

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1987										1982			
	All establishments		All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees ² (1,000)	Value added by manufacture (million dollars)	
	Total (no.)	With 20 employees or more (no.)	Number ² (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)							
INDUSTRY 3451, SCREW MACHINE PRODUCTS														
United States	E1	1 635	635	42.7	945.3	34.1	72.9	666.1	1 770.5	1 048.9	2 806.2	99.7	41.8	1 328.0
Arizona	E1	11	4	.3	8.6	.3	.6	7.0	17.2	4.2	21.4	.8	AA	(D)
California	E1	171	57	3.9	94.9	3.2	6.9	65.7	167.4	70.8	237.5	7.5	3.4	105.6
Connecticut	E1	131	48	3.5	73.7	2.7	5.5	49.8	134.3	56.4	189.3	6.2	3.3	90.6
Florida	E2	37	11	.5	9.8	.4	.9	7.1	18.8	9.3	28.0	.9	.6	17.4
Illinois	-	206	82	5.1	116.4	4.0	8.5	79.6	208.1	129.3	337.9	10.8	6.0	199.4
Indiana	E1	56	25	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.7	50.3
Iowa	-	9	6	.4	7.3	.3	.6	4.8	17.3	10.5	27.6	(D)	.5	17.6
Maryland	-	4	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Massachusetts	E1	63	23	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2.0	57.1
Michigan	-	229	106	6.8	154.9	5.4	11.7	106.8	312.5	245.4	554.7	(D)	6.0	226.0
Minnesota	E1	37	16	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.1	37.6
Missouri	E1	34	16	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.8	28.5
Nebraska	-	6	3	.2	4.5	.2	.5	3.5	7.2	3.8	10.8	.2	.2	4.5
New Hampshire	E1	13	4	.2	3.4	.1	.3	2.6	6.5	2.7	9.2	(D)	(NA)	(NA)
New Jersey	E1	75	21	1.6	36.6	1.2	2.6	26.1	64.0	35.1	99.3	1.9	2.1	58.7
New York	E1	108	46	3.5	72.4	2.6	5.6	47.9	133.5	96.1	227.1	5.8	2.9	95.6
North Carolina	E1	11	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Ohio	-	163	70	4.8	105.3	3.8	8.2	73.7	207.5	134.5	341.4	10.2	4.5	143.8
Oregon	E1	13	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	9.2
Pennsylvania	-	51	18	1.1	21.4	.9	1.8	15.3	41.2	18.5	59.3	(D)	1.4	42.1
Rhode Island	E3	32	6	.5	8.7	.4	.8	6.5	14.1	8.1	22.2	.6	CC	(D)
South Carolina	-	8	4	.2	5.1	.2	.3	2.9	11.2	3.3	14.5	(D)	(NA)	(NA)
Tennessee	-	11	7	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Texas	E2	27	6	.5	9.5	.4	.8	6.5	16.8	9.9	26.7	(D)	.5	19.6
Vermont	-	4	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Washington	E1	9	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Wisconsin	-	65	24	1.6	33.0	1.3	2.9	25.2	60.7	29.3	89.3	11.9	1.3	41.6
INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS														
United States	E1	937	471	52.0	1 325.0	38.7	80.5	886.9	2 995.8	2 115.7	5 084.0	150.4	52.2	1 981.2
Alabama	E3	11	7	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Arizona	-	6	4	.2	4.1	.2	.3	2.8	10.3	3.5	14.1	.1	(NA)	(NA)
Arkansas	E8	5	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	4.4
California	-	116	62	11.2	313.1	8.5	18.1	216.5	712.5	273.0	964.8	38.2	9.3	404.9
Connecticut	E1	39	21	1.9	54.2	1.3	2.9	32.3	117.6	79.8	197.8	5.0	2.5	99.0
Florida	E4	17	6	.8	15.3	.6	1.2	10.6	31.9	20.3	51.2	1.5	.8	21.7
Illinois	-	132	67	8.3	209.6	6.3	13.3	142.7	459.9	396.6	853.7	26.3	8.4	289.3
Indiana	-	26	17	1.3	29.2	1.0	2.1	18.9	78.2	51.2	129.5	3.6	EE	(D)
Iowa	E1	7	4	.5	10.8	.4	.8	7.9	20.0	26.3	46.2	(D)	.4	10.2
Kentucky	-	10	6	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.9	31.4
Massachusetts	E2	32	14	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2.4	80.9
Michigan	-	109	64	5.5	149.7	4.3	8.8	108.5	394.3	324.3	707.7	17.8	3.4	161.5
Minnesota	-	11	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	12.2
Mississippi	E2	4	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Missouri	E2	14	6	.3	6.9	.2	.5	4.5	14.7	11.5	26.1	.4	.2	5.9
New Jersey	E1	43	22	2.3	58.5	1.5	3.3	35.5	119.4	78.3	201.0	7.5	2.1	99.4
New York	E1	52	22	2.3	53.7	1.5	2.9	28.4	110.9	70.5	175.4	4.1	2.0	77.4
North Carolina	-	8	4	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.8	22.6
Ohio	E1	93	44	4.1	107.7	2.9	6.0	71.3	256.6	222.7	481.7	16.4	4.8	186.0
Pennsylvania	-	53	31	4.7	118.7	3.5	7.1	79.2	252.1	150.4	407.2	8.8	6.2	213.0

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1987 and 1982—Con.

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1987											1982		
	All establishments		All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees ² (1,000)	Value added by manufacture (million dollars)	
	E ¹	Total (no.)	With 20 employees or more (no.)	Number ² (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)							Wages (million dollars)
INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS—Con.														
Rhode Island	E5	12	8	.5	10.8	.4	.8	8.0	20.8	15.5	36.1	.7	CC	(D)
South Carolina	E1	5	2	.2	3.4	.2	.3	2.7	4.7	4.3	9.0	(D)	(NA)	(NA)
Tennessee	E1	11	4	.4	7.6	.3	.6	5.7	16.3	13.2	30.1	.4	CC	(D)
Texas	E3	38	13	1.0	22.6	.7	1.5	13.5	46.8	39.6	88.3	2.8	1.4	52.7
Virginia	-	6	5	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Wisconsin	E1	25	15	1.1	24.1	.8	1.6	15.9	60.5	41.1	101.7	1.7	.9	36.1
INDUSTRY 3462, IRON AND STEEL FORGINGS														
United States	E1	406	202	26.6	746.5	19.1	37.8	484.3	1 394.0	1 553.5	3 003.6	108.2	30.7	1 347.6
Alabama	-	7	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
California	E2	35	11	1.1	32.0	.8	1.6	20.9	69.5	97.3	169.6	(D)	1.0	64.6
Connecticut	E1	6	4	.5	11.5	.4	.8	6.6	23.9	21.2	44.8	1.0	.4	13.7
Illinois	E2	43	25	2.5	72.6	1.8	3.7	41.4	157.3	145.4	302.4	10.3	4.0	151.2
Indiana	-	11	5	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Iowa	E3	7	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	11.9
Kansas	-	2	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Kentucky	-	5	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Massachusetts	-	8	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Michigan	E1	43	21	2.4	71.3	1.9	3.9	51.4	175.5	167.7	341.8	(D)	3.2	152.6
New Jersey	E2	11	1	.3	8.6	.2	.4	4.8	16.1	13.8	28.9	.2	BB	(D)
New York	E2	18	12	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.9	40.6
North Carolina	E1	4	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Ohio	-	51	36	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Pennsylvania	-	38	24	3.2	87.8	2.3	4.5	55.8	131.7	209.1	337.0	8.2	2.9	113.9
South Carolina	-	2	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Tennessee	-	11	7	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Texas	E1	29	17	3.2	101.9	2.0	3.9	54.4	105.3	146.8	291.7	14.3	2.8	117.4
Wisconsin	-	12	9	2.9	92.2	2.2	4.0	66.3	185.0	130.6	326.2	8.6	4.2	182.4
INDUSTRY 3463, NONFERROUS FORGINGS														
United States	-	79	41	7.3	218.1	5.4	11.4	145.4	428.2	565.6	1 003.7	29.8	7.9	461.2
California	-	19	19	2.4	69.0	1.7	3.8	42.1	131.4	153.2	291.6	9.0	2.8	165.9
Connecticut	-	2	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.4	23.0
Illinois	E5	3	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	7.8
Indiana	-	2	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Massachusetts	-	3	1	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Michigan	E2	12	5	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Nevada	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Ohio	-	5	3	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Pennsylvania	-	5	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Virginia	-	2	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
INDUSTRY 3465, AUTOMOTIVE STAMPINGS														
United States	-	713	502	119.8	3 976.9	99.9	213.3	3 157.5	6 659.3	8 582.2	15 251.6	1 285.0	90.5	4 114.4
Alabama	-	4	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Arkansas	-	3	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
California	E2	26	14	1.9	35.3	1.6	3.1	27.0	51.7	76.6	128.1	4.5	.8	23.6
Florida	-	7	5	1.0	17.1	.9	1.9	13.9	38.6	55.4	93.6	1.7	.7	22.1
Georgia	-	10	10	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	32.8
Illinois	-	31	20	6.6	262.1	5.6	12.0	217.3	452.2	509.2	977.7	51.1	6.9	334.4
Indiana	-	45	34	11.2	402.4	9.5	20.3	331.1	585.9	774.4	1 354.1	(D)	6.6	318.4
Iowa	-	8	7	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Massachusetts	E1	8	6	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Michigan	-	333	237	48.2	1 580.7	40.0	84.5	1 221.3	2 859.3	3 379.8	6 241.9	387.8	37.4	1 769.8
Minnesota	E1	5	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Mississippi	-	3	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Missouri	E1	10	8	.6	17.6	.5	1.0	11.3	30.9	33.1	63.7	(D)	.3	12.2
New Jersey	E1	6	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
New York	-	8	4	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Ohio	-	129	97	28.5	1 079.2	24.0	53.5	881.7	1 494.6	2 392.4	3 866.5	493.2	21.6	979.4
Pennsylvania	-	18	11	5.0	191.6	4.2	9.7	159.6	335.3	305.6	642.1	10.0	FF	(D)
South Carolina	-	4	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Tennessee	-	14	10	1.8	45.3	1.3	2.5	23.4	80.8	217.6	302.0	10.4	1.0	33.1
Texas	E1	6	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Utah	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Virginia	-	1	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
West Virginia	-	2	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Wisconsin	-	11	8	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1987 and 1982—Con.

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1987											1982		
	E1	All establishments		All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees ² (1,000)	Value added by manufacture (million dollars)
		Total (no.)	With 20 employees or more (no.)	Number ² (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
INDUSTRY 3466, CROWNS AND CLOSURES														
United States	E1	57	34	6.1	161.6	4.9	10.3	119.8	382.1	443.1	819.8	26.5	6.7	372.4
California	-	7	4	.5	13.3	.3	.8	9.0	37.1	27.8	66.0	(D)	.4	37.4
Connecticut	-	6	5	.9	18.5	.7	1.4	13.4	34.8	31.4	66.0	(D)	BB	(D)
Illinois	E1	6	4	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.6
Indiana	-	6	5	1.2	31.2	1.0	2.0	20.1	72.3	89.4	160.1	(D)	(D)	1.2
New Jersey	-	3	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
New York	-	4	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Oklahoma	-	3	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Pennsylvania	E2	6	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3
Texas	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
INDUSTRY 3469, METAL STAMPINGS, N.E.C.														
United States	E1	2 815	1 162	95.5	2 131.9	73.2	146.2	1 402.0	4 311.4	4 034.4	8 331.1	268.9	100.4	3 414.2
Alabama	-	20	4	.8	18.3	.7	1.5	15.1	31.3	23.3	54.7	.6	.7	22.9
Arizona	-	22	10	.6	14.1	.5	1.0	10.1	29.9	17.7	47.7	(D)	.6	20.1
Arkansas	E4	7	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
California	E2	378	117	8.3	187.9	6.3	12.7	122.8	389.2	257.4	641.9	15.6	9.7	329.2
Colorado	E4	23	6	.4	9.7	.3	.7	6.4	19.9	12.8	32.7	(D)	CC	(D)
Connecticut	E2	131	51	5.5	123.6	4.2	8.3	85.1	239.4	194.0	430.5	11.7	5.3	177.9
Florida	E1	60	18	1.3	25.0	.9	1.7	14.6	53.1	44.5	96.9	2.6	CC	(D)
Georgia	E2	28	16	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Illinois	E1	320	157	13.0	317.5	10.1	20.6	211.5	670.5	665.1	1 334.0	34.7	11.9	463.4
Indiana	E1	86	50	3.8	80.6	2.9	5.7	51.3	159.5	180.6	338.0	(D)	3.0	101.3
Iowa	-	20	8	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	57.5
Kansas	E3	12	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Kentucky	E1	35	27	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	35.5
Maryland	E4	18	8	.6	12.2	.4	.9	7.7	21.5	15.0	36.4	(D)	.2	7.8
Massachusetts	E2	114	48	3.9	82.7	2.9	6.0	52.2	165.4	113.6	275.9	(D)	8.7	276.5
Michigan	E1	142	57	3.5	82.1	2.7	5.6	51.9	188.5	287.5	477.6	(D)	3.0	99.4
Minnesota	E1	96	43	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Mississippi	E5	18	9	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Missouri	E1	57	18	1.5	33.9	1.2	2.1	18.4	69.8	60.0	129.6	8.0	1.6	57.0
New Hampshire	E1	15	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
New Jersey	E1	159	56	4.2	100.2	3.2	6.0	60.6	182.9	156.6	340.3	8.2	5.4	171.4
New York	E2	238	79	6.3	137.9	4.9	9.5	88.9	266.9	197.1	474.3	(D)	7.1	226.2
North Carolina	E1	39	17	1.5	32.4	1.1	2.2	18.8	66.4	56.0	121.5	.4	EE	(D)
Ohio	E1	246	127	9.7	214.4	7.6	15.3	145.6	464.5	444.2	912.4	29.2	10.8	421.3
Oklahoma	E1	17	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Oregon	E1	23	7	.3	7.5	.3	.5	5.2	13.4	10.6	24.1	(D)	.3	14.2
Pennsylvania	E1	132	63	5.3	115.5	4.1	8.3	80.3	216.9	214.8	430.1	13.2	5.9	199.8
Rhode Island	E2	41	14	.9	17.6	.6	1.3	11.0	36.3	39.0	74.4	2.8	.9	23.5
Tennessee	-	32	16	1.0	18.2	.8	1.6	13.2	36.6	72.3	109.1	(D)	1.0	28.9
Texas	E2	82	34	2.1	42.9	1.7	3.3	29.5	102.8	64.7	167.2	(D)	EE	(D)
Virginia	E2	12	4	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	6.9
Washington	-	21	7	.5	12.5	.4	.7	8.4	31.2	52.5	81.8	2.4	BB	(D)
West Virginia	-	9	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.5	13.7
Wisconsin	-	112	65	7.4	173.3	5.4	11.1	111.3	338.0	338.4	672.2	31.1	7.4	227.5
INDUSTRY 3471, PLATING AND POLISHING														
United States	E2	3 451	1 043	71.1	1 335.5	55.9	112.0	884.7	2 633.6	1 235.3	3 866.9	140.2	61.9	1 693.9
Alabama	E4	35	11	.8	13.2	.6	1.2	9.1	23.8	16.2	39.9	1.1	.7	21.3
Arizona	E3	32	11	.7	12.3	.6	1.1	8.0	19.8	11.3	31.0	1.0	.4	12.6
Arkansas	E1	15	6	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
California	E1	597	184	12.7	227.0	10.1	20.3	152.5	458.2	188.3	643.7	17.8	11.7	300.2
Colorado	E3	30	7	.4	6.4	.3	.6	4.3	11.0	5.8	17.1	.3	.3	6.3
Connecticut	E1	91	40	2.6	60.7	2.0	3.9	37.9	114.4	68.7	186.2	7.7	2.5	83.6
Florida	E4	86	21	1.1	20.9	.9	1.7	13.3	40.3	14.2	53.6	2.1	1.1	23.4
Georgia	E5	30	5	.5	8.6	.4	.8	5.7	13.5	7.3	20.6	1.5	.4	10.4
Illinois	E1	279	88	5.5	106.3	4.3	8.7	70.4	205.2	99.2	304.4	9.1	5.9	159.5
Indiana	E2	93	41	2.6	48.1	2.1	4.3	34.1	98.2	42.1	140.7	7.4	2.2	50.0
Kansas	E1	17	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Kentucky	-	22	9	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	9.5
Louisiana	E3	16	3	.2	2.7	.1	.2	1.3	4.5	4.5	9.1	.4	.3	6.4
Maryland	E6	25	4	.3	5.2	.2	.4	3.7	10.3	2.8	13.1	.3	.3	6.5
Massachusetts	E1	106	47	2.6	51.3	1.9	3.8	32.6	94.4	47.0	141.2	5.8	2.5	70.6
Michigan	E1	290	100	7.0	139.0	5.5	11.2	94.0	289.3	144.5	434.8	14.6	5.4	174.1
Minnesota	E2	64	30	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.5	45.5
Missouri	E1	68	12	2.2	47.5	1.8	3.6	27.9	94.2	41.5	135.0	10.1	1.5	44.8
Nebraska	-	7	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
New Hampshire	E7	14	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
New Jersey	E2	138	34	2.2	43.7	1.6	3.4	26.7	91.0	42.9	133.2	3.0	2.3	67.9
New York	E3	228	64	4.3	72.4	3.5	6.9	51.0	148.8	68.7	217.5	7.5	4.9	127.6
North Carolina	E3	61	18	1.2	22.0	1.0	1.9	14.5	41.2	28.3	69.0	2.4	.8	24.1
Ohio	E1	298	89	6.2	121.7	4.9	10.1	82.6	239.8	115.2	355.3	14.1	4.8	142.9
Oklahoma	E3	30	7	.4	7.0	.3	.6	4.3	14.3	7.1	20.9	.4	.5	10.1

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1987 and 1982—Con.

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1987											1982		
	All establishments		All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees ² (1,000)	Value added by manufacture (million dollars)	
	Total (no.)	With 20 employees or more (no.)	Number ² (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)							
INDUSTRY 3471, PLATING AND POLISHING—Con.														
Oregon	E1	28	5	.3	6.3	.3	5	4.5	9.7	5.6	15.3	.3	4	11.0
Pennsylvania	E1	154	37	2.6	50.6	1.9	3.7	29.8	93.4	48.1	140.9	7.3	1.9	50.9
Rhode Island	E2	120	39	2.8	46.8	2.2	4.4	31.9	79.8	42.6	123.7	3.9	2.0	38.3
South Carolina	E5	23	6	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Tennessee	-	49	22	2.0	33.9	1.7	3.4	24.0	77.4	46.6	123.8	6.9	1.4	32.7
Texas	E2	169	38	2.4	43.6	1.8	3.7	27.9	90.5	31.4	121.4	4.0	2.3	67.7
Virginia	E1	20	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	7.1
Washington	E2	42	8	.7	14.7	.5	1.1	9.2	29.5	8.4	37.8	1.1	6	19.6
West Virginia	-	10	5	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Wisconsin	E1	90	27	1.8	30.2	1.4	2.8	20.3	58.2	21.7	79.7	2.8	EE	(D)
INDUSTRY 3479, METAL COATING AND ALLIED SERVICES														
United States	E1	1 814	616	41.5	831.5	32.3	65.0	558.8	1 995.4	1 936.9	3 922.6	105.3	35.0	1 202.6
Alabama	E1	16	6	.4	7.4	.3	.6	5.1	15.4	13.2	28.6	.7	.2	7.9
Arizona	E3	19	3	.2	3.2	.1	.3	2.4	6.8	3.6	10.4	.4	(NA)	(NA)
California	E2	292	101	5.9	119.4	4.6	9.4	78.2	261.4	244.5	500.9	10.6	5.6	177.8
Colorado	E5	21	4	.2	3.4	.2	.4	2.4	7.3	5.5	12.6	.3	.2	6.3
Connecticut	E1	45	12	1.3	29.7	1.1	2.1	21.9	59.2	19.7	78.2	3.8	.8	29.4
Florida	E2	56	13	.8	13.0	.6	1.2	8.7	30.1	31.2	61.0	2.1	.6	16.7
Georgia	-	10	3	.2	3.6	.1	.3	2.5	9.0	5.0	14.1	.4	.3	8.6
Illinois	E1	110	39	3.1	75.0	2.3	4.8	47.3	207.6	170.0	376.3	9.7	2.7	101.0
Indiana	E1	48	26	2.3	41.5	1.8	3.4	28.6	110.3	88.2	198.1	5.2	1.5	65.5
Kansas	-	9	5	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Kentucky	-	12	4	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	4.6
Louisiana	E3	20	9	.4	9.2	.3	.7	6.4	22.8	14.4	37.1	.7	.6	26.3
Maryland	E3	20	5	.5	11.1	.4	.7	7.6	25.2	19.5	43.9	2.7	.4	17.7
Massachusetts	E4	83	28	1.5	29.1	1.1	2.2	18.3	56.7	28.3	85.1	3.9	1.7	38.9
Michigan	E2	157	73	4.6	79.4	3.6	7.1	51.9	172.3	101.5	274.2	(D)	2.4	65.4
Minnesota	E1	45	18	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.8	22.7
Missouri	E1	38	12	.7	15.9	.6	1.1	11.1	33.0	14.9	47.3	3.8	.5	14.0
New Jersey	E2	62	21	1.2	26.8	1.0	2.0	16.8	52.9	40.3	93.0	2.2	1.4	44.8
New York	E3	105	28	1.9	36.1	1.5	2.9	24.8	73.3	50.6	124.1	5.2	1.7	43.0
North Carolina	-	15	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.4	15.9
Ohio	-	126	52	4.9	108.3	3.9	7.9	78.2	348.6	541.3	892.3	16.5	3.1	129.8
Oklahoma	E2	26	9	.4	7.3	.3	.7	5.2	14.9	12.1	26.8	1.0	.6	25.0
Oregon	E4	21	8	.3	6.7	.3	.5	4.8	12.0	9.0	20.9	.5	(NA)	(NA)
Pennsylvania	E2	99	35	2.1	47.2	1.6	3.1	30.8	119.8	185.7	305.4	7.3	2.0	72.4
Rhode Island	E8	41	8	.5	5.4	.4	.7	3.7	10.0	7.8	17.8	.4	.5	19.5
South Carolina	-	11	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Tennessee	E1	25	9	.5	8.5	.4	.9	5.9	22.3	17.2	39.3	1.5	(NA)	(NA)
Texas	E2	139	41	2.9	61.5	2.2	4.8	39.7	140.0	116.9	255.8	4.7	3.9	153.6
Washington	E2	25	6	.4	7.1	.3	.7	5.6	15.8	7.4	22.9	.6	.3	10.6
Wisconsin	E2	46	22	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	31.0

Note: For qualifications of data, see footnotes on table 1a.

¹Payroll and sales data for some small single-unit 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 the items shown 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 for those States where estimated value of shipments data based on administrative-record data account for 10 percent or more of figure shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

²Statistics for some producing States have been withheld to avoid disclosing data for individual companies. However, for States with 150 employees or more, number of establishments is shown and employment-size range is indicated by one of the following symbols: AA—150 to 249 employees; BB—250 to 499 employees; CC—500 to 999 employees; EE—1,000 to 2,499 employees; FF—2,500 employees or more.

Table 3a. Summary Statistics for the Industry: 1987

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

Item	Screw machine products (SIC 3451)	Bolts, nuts, rivets, and washers (SIC 3452)	Iron and steel forgings (SIC 3462)	Nonferrous forgings (SIC 3463)	Automotive stampings (SIC 3465)	Crowns and closures (SIC 3466)	Metal stampings, n.e.c. (SIC 3469)	Plating and polishing (SIC 3471)	Metal coating and allied services (SIC 3479)
Companies	1 608	828	379	72	597	44	2 707	3 351	1 699
All establishments	1 635	937	406	79	713	57	2 815	3 451	1 814
With 1 to 19 employees	1 000	466	204	38	211	23	1 653	2 408	1 198
With 20 to 99 employees	567	342	131	24	303	14	954	952	550
With 100 employees or more	68	129	71	17	199	20	208	91	66
Employment and labor costs:									
Employees	42.7	52.0	26.6	7.3	119.8	6.1	95.5	71.1	41.5
Compensation, total	1 146.3	1 634.7	974.0	285.7	5 231.7	210.6	2 619.5	1 608.9	1 018.1
Annual payroll	945.3	1 325.0	746.5	218.1	3 976.9	161.6	2 131.9	1 335.5	831.5
Fringe benefits	200.9	309.7	227.6	67.6	1 254.8	49.0	487.5	273.3	186.7
Social Security and other legally required payments	90.0	136.7	89.2	24.6	378.5	18.4	218.5	139.7	85.6
Employer payments and other programs	110.9	173.0	138.4	43.0	876.3	30.6	269.0	133.7	101.1

See footnotes at end of table.

Table 3a. Summary Statistics for the Industry: 1987—Con.

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

Item	Screw machine products (SIC 3451)	Bolts, nuts, rivets, and washers (SIC 3452)	Iron and steel forgings (SIC 3462)	Nonferrous forgings (SIC 3463)	Automotive stampings (SIC 3465)	Crowns and closures (SIC 3466)	Metal stampings, n.e.c. (SIC 3469)	Plating and polishing (SIC 3471)	Metal coating and allied services (SIC 3479)
Production workers:									
Average for year ----- 1,000..	34.1	38.7	19.1	5.4	99.9	4.9	73.2	55.9	32.3
March ----- do..	33.9	38.7	19.0	5.4	103.7	4.9	72.4	55.2	31.6
May ----- do..	33.8	38.4	19.0	5.5	101.5	5.0	72.5	55.4	32.2
August ----- do..	33.8	38.3	19.2	5.4	94.1	4.9	72.8	55.6	32.2
November ----- do..	34.4	38.7	19.2	5.3	99.8	4.7	73.9	56.5	32.5
Hours ----- millions..									
January to March ----- do..	72.9	80.5	37.8	11.4	213.3	10.3	146.2	112.0	65.0
April to June ----- do..	18.1	20.0	9.4	2.9	56.0	2.6	36.0	27.6	15.7
July to September ----- do..	18.2	20.4	9.6	2.9	54.2	2.7	36.6	27.8	16.3
October to December ----- do..	17.9	19.9	9.2	2.8	50.0	2.6	36.0	27.7	16.3
Wages ----- mil dol..	666.1	886.9	484.3	145.4	3 157.5	119.8	1 402.0	884.7	558.8
Value added by manufacture ----- do..	1 770.5	2 995.8	1 394.0	428.2	6 659.3	382.1	4 311.4	2 633.6	1 995.4
Cost of materials ¹ ----- do..									
Materials, parts, containers, etc., consumed ² ----- do..	1 048.9	2 115.7	1 553.5	565.6	8 582.2	443.1	4 034.4	1 235.3	1 936.9
Resales ----- do..	810.0	1 629.6	1 273.2	456.3	8 018.4	412.4	3 461.8	906.8	1 719.5
Fuels ----- do..	30.4	133.1	18.8	2.9	72.3	3.0	125.1	51.7	43.5
Purchased electricity ----- do..	9.2	29.8	76.3	19.0	67.6	9.5	49.2	70.0	64.0
Contract work ----- do..	35.4	71.4	81.9	20.8	184.9	11.2	93.6	119.3	67.9
Quantity of electric energy used for heat and power:									
Purchased ----- mil kWh..	604.5	1 126.5	1 545.1	334.1	3 454.6	200.5	1 557.9	2 096.2	1 389.8
Generated less sold ----- do..	-	(S)	-	-	(D)	(S)	(D)	(D)	-
Total value of shipments ----- mil dol..									
Primary products ----- do..	2 806.2	5 084.0	3 003.6	1 003.7	15 251.6	819.8	8 331.1	3 866.9	3 922.6
Secondary products ----- do..	2 578.5	4 592.7	2 670.4	808.5	13 963.1	772.7	7 214.9	3 609.5	3 495.6
Miscellaneous receipts, total ----- do..	137.1	253.3	267.9	136.5	765.4	35.2	825.4	106.1	271.8
Value of resales ----- do..	90.7	238.0	65.3	58.7	523.2	11.9	290.8	151.2	155.1
Contract receipts ----- do..	39.2	190.1	20.0	3.7	79.7	3.3	163.0	63.2	57.9
Other miscellaneous receipts ----- do..	24.8	17.5	11.4	3.6	32.0	(D)	49.5	72.9	53.8
Inventories by stage of fabrication:									
Beginning of 1987 ----- mil dol..	330.7	929.4	687.6	292.6	1 105.4	136.9	1 091.7	213.3	372.6
Finished goods ----- do..	106.4	413.3	85.7	33.1	135.8	55.3	339.5	37.7	96.3
Work in process ----- do..	127.4	257.9	327.0	180.9	522.8	30.0	302.7	48.5	42.4
Materials and supplies ----- do..	96.8	258.3	274.9	78.5	446.8	51.5	449.5	127.1	233.9
End of 1987 ----- do..	355.5	955.5	610.8	278.7	1 153.9	151.9	1 145.3	226.9	417.3
Finished goods ----- do..	108.0	432.5	56.4	29.3	130.8	60.0	340.8	40.1	91.8
Work in process ----- do..	139.0	266.2	300.1	174.8	517.7	30.7	316.1	48.0	56.6
Materials and supplies ----- do..	108.5	256.8	254.3	74.5	505.4	61.1	488.4	138.8	269.0
Primary product specialization ratio ----- percent..	95	95	91	86	95	96	90	(³)	(³)
Coverage ratio ----- do..	93	96	92	76	93	95	91	(³)	(³)

Note: For qualifications of data, see footnotes on table 1a.

¹Data on purchased services for the repair of buildings and machinery and for communication services are not included in cost of materials, etc., but are shown in table 3c.

²Data on materials consumed by type are shown in table 7. Data on amount purchased or transferred from foreign sources are shown in table 3c.

³See table 1a, footnote 9.

Table 3b. Gross Book Value of Depreciable Assets, Capital Expenditures, Retirements, Depreciation, and Rental Payments: 1987

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

Item	Screw machine products (SIC 3451)	Bolts, nuts, rivets, and washers (SIC 3452)	Iron and steel forgings (SIC 3462)	Nonferrous forgings (SIC 3463)	Automotive stampings (SIC 3465)	Crowns and closures (SIC 3466)	Metal stampings, n.e.c. (SIC 3469)	Plating and polishing (SIC 3471)	Metal coating and allied services (SIC 3479)
Gross book value of depreciable assets:									
Total:									
Beginning of year -----	1 201.0	1 886.3	2 170.3	572.5	7 411.9	303.2	2 860.5	1 492.8	1 380.4
New capital expenditures ¹ -----	99.7	150.4	108.2	29.8	1 285.0	26.5	268.9	140.2	105.3
Used capital expenditures -----	22.3	33.7	21.1	.8	47.4	5.1	40.0	21.5	13.6
Retirements -----	18.3	64.0	38.2	11.9	227.7	23.2	109.2	29.2	45.6
End of year -----	1 304.8	2 006.4	2 261.4	591.2	8 516.6	311.5	3 060.3	1 625.3	1 453.7
Buildings and other structures:									
Beginning of year -----	187.5	385.8	406.4	84.9	1 408.0	52.8	726.0	346.1	330.7
New capital expenditures -----	17.2	25.5	13.6	4.0	119.6	2.5	46.0	22.5	18.8
Used capital expenditures -----	6.2	10.5	3.4	.2	7.1	.2	12.3	6.9	4.7
Retirements -----	1.1	5.9	4.3	.2	7.8	5.5	20.3	2.0	6.4
End of year -----	209.8	415.9	419.1	88.8	1 527.0	50.0	764.0	373.5	347.9
Machinery and equipment:									
Beginning of year -----	1 013.5	500.5	1 763.8	487.6	6 003.9	250.4	2 134.5	1 146.7	1 049.7
New capital expenditures ¹ -----	82.4	124.9	94.6	25.8	1 165.4	24.0	222.9	117.8	86.5
Used capital expenditures -----	16.1	23.2	17.7	.6	40.3	4.8	27.7	14.5	8.9
Retirements -----	17.1	58.1	33.9	11.6	220.0	17.7	88.9	27.2	39.2
End of year -----	1 095.0	1 590.5	1 842.3	502.4	6 989.6	261.5	2 296.3	1 251.8	1 105.8
Depreciation charges during 1987:									
Total -----	93.4	137.0	130.8	35.6	489.7	19.9	236.7	140.6	100.4
Buildings and other structures -----	9.4	16.5	15.5	3.8	37.7	1.9	34.5	18.3	14.6
Machinery and equipment -----	84.0	120.5	115.3	31.8	452.0	18.1	202.2	122.4	85.8
Rental payments:									
Total -----	32.6	44.7	9.3	3.9	51.0	2.3	80.8	61.2	65.6
Buildings and other structures -----	14.6	20.4	3.0	1.9	19.6	1.4	38.9	30.3	28.8
Machinery and equipment -----	18.0	24.3	6.4	2.0	31.4	.9	41.9	30.8	36.8

Note: Retirements and depreciation data for establishments not included in the ASM sample were extrapolated from the historical ratio of retirements or depreciation to assets. These ratios were developed at the industry level.

¹Data on new machinery and equipment expenditures by type are provided in table 3c.

Table 3c. Supplemental Industry Statistics Based on Sample Estimates: 1987

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

Item	Screw machine products (SIC 3451)		Bolts, nuts, rivets, and washers (SIC 3452)		Iron and steel forgings (SIC 3462)		Nonferrous forgings (SIC 3463)	
	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)
Purchased services:								
Cost of purchased services for the repair of—								
Buildings and other structures	4.9	(X)	8.4	(X)	6.0	(X)	2.5	(X)
Response coverage ratio (percent) ²	53.1	(X)	66.2	(X)	65.7	(X)	74.9	(X)
Machinery	19.4	(X)	40.8	(X)	36.5	(X)	18.2	(X)
Response coverage ratio (percent) ²	60.8	(X)	68.5	(X)	68.5	(X)	76.1	(X)
Cost of purchased communication services	4.2	(X)	10.9	(X)	5.1	(X)	1.3	(X)
Response coverage ratio (percent) ²	53.2	(X)	59.0	(X)	68.6	(X)	73.2	(X)
New machinery and equipment expenditures	82.4	(X)	124.9	(X)	94.6	(X)	25.8	(X)
Automobiles, trucks, etc., for highway use	4.3	19	3.4	14	1.0	13	.5	22
Computers and peripheral data processing equipment	4.3	17	7.2	12	6.3	5	.9	11
All other	73.9	3	114.2	1	87.3	1	24.4	1
Adjustment ratio ³	1.4	(X)	1.3	(X)	1.3	(X)	1.2	(X)
Cost of materials, components, parts, etc., used	810.0	(X)	1 629.6	(X)	1 273.2	(X)	456.3	(X)
Materials purchased or transferred from foreign sources ⁴	47.3	20	232.9	9	65.6	6	4.1	24
Materials purchased or transferred from domestic sources	762.7	2	1 396.6	2	1 207.6	1	452.2	1
Adjustment ratio ³	1.6	(X)	1.3	(X)	1.4	(X)	1.2	(X)

Item	Automotive stampings (SIC 3465)		Crowns and closures (SIC 3466)		Metal stampings, n.e.c. (SIC 3469)		Plating and polishing (SIC 3471)		Metal coating and allied services (SIC 3479)	
	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)	Amount (million dollars)	Relative standard error of estimate ¹ (percent)
Purchased services:										
Cost of purchased services for the repair of—										
Buildings and other structures	42.2	(X)	1.1	(X)	11.1	(X)	6.6	(X)	7.3	(X)
Response coverage ratio (percent) ²	87.4	(X)	61.1	(X)	53.6	(X)	55.7	(X)	71.9	(X)
Machinery	330.2	(X)	8.3	(X)	37.0	(X)	35.6	(X)	33.3	(X)
Response coverage ratio (percent) ²	89.3	(X)	61.5	(X)	59.7	(X)	60.4	(X)	77.5	(X)
Cost of purchased communication services	19.8	(X)	1.3	(X)	14.7	(X)	8.1	(X)	6.9	(X)
Response coverage ratio (percent) ²	82.3	(X)	70.1	(X)	56.3	(X)	54.9	(X)	74.0	(X)
New machinery and equipment expenditures	1 165.4	(X)	24.0	(X)	222.9	(X)	117.8	(X)	86.5	(X)
Automobiles, trucks, etc., for highway use	7.9	26	.3	8	15.3	18	10.1	12	3.8	27
Computers and peripheral data processing equipment	11.6	4	.3	12	20.2	10	6.7	17	3.6	22
All other	1 145.9	1	23.4	1	187.5	3	101.0	3	79.0	3
Adjustment ratio ³	1.0	(X)	1.1	(X)	1.5	(X)	1.3	(X)	1.3	(X)
Cost of materials, components, parts, etc., used	8 018.4	(X)	412.4	(X)	3 461.8	(X)	906.8	(X)	1 719.5	(X)
Materials purchased or transferred from foreign sources ⁴	385.1	4	2.3	49	136.9	30	48.1	16	212.1	14
Materials purchased or transferred from domestic sources	7 633.4	1	410.1	1	3 324.9	2	858.7	1	1 507.4	3
Adjustment ratio ³	1.5	(X)	1.8	(X)	1.7	(X)	1.5	(X)	1.6	(X)

¹For description of relative standard error of estimate, see Qualifications of the Data in appendixes.

²Measure of extent to which respondents reported each item. Derived for each item by calculating the ratio of weighted employment for those sample establishments that reported the specific inquiry to total employment for all establishments classified in industry. (See appendixes for explanation of sample weight.)

³Detail has been adjusted upwards to account for nonresponse. Inverse of the ratio shown represents a measure of the response to the inquiry. (See appendixes for further explanation.)

⁴Data may understate the true cost of imported parts, components, and supplies since some respondents do not know the origin of these materials. Includes cases where materials were purchased from secondary suppliers or where they were transferred from company-operated warehouses or other distribution points. Direct purchases from foreign suppliers and importers by domestic manufacturing establishments are believed to be reported accurately.

Table 4. Industry Statistics by Employment Size of Establishment: 1987

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

Industry and employment size class	E ¹	All establishments (no.)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3451, SCREW MACHINE PRODUCTS												
Total	E1	1 635	42.7	945.3	34.1	72.9	666.1	1 770.5	1 048.9	2 806.2	99.7	355.5
Establishments with an average of—												
1 to 4 employees	E9	318	.7	12.9	.6	1.1	9.1	26.3	16.0	42.1	1.2	4.6
5 to 9 employees	E5	318	2.2	43.2	1.8	3.8	31.7	81.8	43.7	125.3	3.4	12.0
10 to 19 employees	E1	364	5.1	101.6	4.0	8.6	73.2	191.1	107.0	297.5	17.1	28.9
20 to 49 employees	-	416	12.6	275.8	10.3	21.7	196.1	507.8	298.9	801.5	25.2	64.0
50 to 99 employees	-	151	10.3	234.5	8.3	17.7	165.7	438.3	270.5	706.0	24.4	88.4
100 to 249 employees	-	60	9.0	207.8	7.3	15.6	150.2	376.8	241.5	615.1	24.0	99.3
250 to 499 employees	-	8	2.7	69.6	1.9	4.4	40.1	148.5	71.4	218.6	4.4	38.4
Covered by administrative records ²	E9	522	2.4	36.1	1.9	3.8	25.9	70.4	41.4	111.8	3.2	11.5

See footnotes at end of table.

Table 4. Industry Statistics by Employment Size of Establishment: 1987—Con.

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

Industry and employment size class	E ¹	All establishments (no.)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS												
Total	E1	937	52.0	1 325.0	38.7	80.5	886.9	2 995.8	2 115.7	5 084.0	150.4	955.5
Establishments with an average of—												
1 to 4 employees	E9	135	.3	5.5	.2	.4	3.7	12.7	8.5	21.2	.6	3.9
5 to 9 employees	E7	132	.9	18.1	.7	1.4	12.7	40.4	28.9	70.0	1.8	11.1
10 to 19 employees	E6	199	2.8	56.1	2.1	4.3	37.9	119.0	91.5	210.5	6.2	36.0
20 to 49 employees	E2	216	6.9	159.1	5.1	10.7	102.6	362.7	298.9	664.7	18.6	103.9
50 to 99 employees	E1	126	8.5	209.0	6.3	13.2	139.1	484.3	476.1	955.7	22.6	154.6
100 to 249 employees	-	90	13.3	345.4	9.8	20.1	230.5	840.7	659.3	1 491.0	42.6	297.3
250 to 499 employees	-	28	10.2	264.5	7.5	15.6	171.7	615.5	333.5	936.0	31.8	191.9
500 to 999 employees	-	9	9.2	267.3	7.0	14.8	188.8	520.6	219.0	734.9	26.2	156.8
1,000 to 2,499 employees	-	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	361	3.1	56.7	2.4	4.8	39.0	126.6	84.4	211.0	6.5	38.2
INDUSTRY 3462, IRON AND STEEL FORGINGS												
Total	E1	406	26.6	746.5	19.1	37.8	484.3	1 394.0	1 553.5	3 003.6	108.2	610.8
Establishments with an average of—												
1 to 4 employees	E8	88	.2	3.5	.1	.2	2.3	7.9	8.0	16.4	.4	3.1
5 to 9 employees	E9	45	.3	7.2	.2	.4	4.6	14.2	13.2	27.5	.6	4.7
10 to 19 employees	E7	71	1.0	21.2	.7	1.3	13.6	42.1	44.2	86.8	2.4	16.1
20 to 49 employees	E2	70	2.1	52.9	1.6	3.1	34.1	120.8	115.7	233.1	3.8	40.1
50 to 99 employees	E2	61	4.4	110.3	3.3	6.7	73.5	225.8	259.3	483.6	9.5	95.0
100 to 249 employees	E1	53	8.5	237.3	6.2	12.6	159.4	548.2	563.4	1 120.7	51.3	189.8
250 to 499 employees	-	14	4.9	142.5	3.9	7.8	102.5	214.7	315.1	525.2	15.9	103.3
500 to 999 employees	-	2	5.2	171.5	3.1	5.6	94.4	220.4	234.5	510.2	24.3	158.7
1,000 to 2,499 employees	-	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	181	1.4	27.8	1.0	1.8	18.1	57.6	54.0	111.6	2.6	19.0
INDUSTRY 3463, NONFERROUS FORGINGS												
Total	-	79	7.3	218.1	5.4	11.4	145.4	428.2	565.6	1 003.7	29.8	278.7
Establishments with an average of—												
1 to 4 employees	E9	20	.1	1.2	(Z)	.1	.8	2.3	2.9	5.2	.2	1.6
5 to 9 employees	E6	9	.1	1.3	(Z)	.1	.8	3.4	3.4	6.8	.2	1.7
10 to 19 employees	E6	9	.1	2.6	.1	.2	1.7	5.9	7.4	13.9	.3	3.8
20 to 49 employees	-	11	.4	8.6	.3	.6	5.0	16.3	24.6	40.9	.7	6.4
50 to 99 employees	E1	13	.9	25.4	.7	1.4	16.1	48.0	55.8	109.0	3.9	15.1
100 to 249 employees	E1	12	2.3	62.7	1.7	3.8	41.5	111.2	131.7	246.8	5.8	53.4
250 to 499 employees	-	3	3.5	116.3	2.6	5.3	79.4	241.1	339.9	581.1	18.6	196.7
500 to 999 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
1,000 to 2,499 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	30	.2	3.5	.1	.2	2.3	7.6	9.3	16.9	.6	5.3
INDUSTRY 3465, AUTOMOTIVE STAMPINGS												
Total	-	713	119.8	3 976.9	99.9	213.3	3 157.5	6 659.3	8 582.2	15 251.6	1 285.0	1 153.9
Establishments with an average of—												
1 to 4 employees	E9	37	.1	1.6	.1	.1	1.2	2.5	3.3	5.8	.2	.4
5 to 9 employees	E8	51	.4	7.3	.3	.6	5.6	12.9	15.7	28.6	1.0	2.0
10 to 19 employees	E6	123	1.7	42.4	1.4	2.9	31.1	81.5	85.9	166.2	6.6	14.1
20 to 49 employees	E2	158	5.2	128.4	4.1	8.4	84.2	259.6	288.4	548.7	18.4	48.7
50 to 99 employees	E1	145	10.3	241.0	8.0	16.8	159.3	527.6	671.6	1 196.2	43.2	118.0
100 to 249 employees	E1	122	18.6	416.2	14.8	30.5	292.6	918.3	1 142.9	2 056.1	80.5	213.3
250 to 499 employees	E1	43	15.1	339.0	12.3	24.3	248.3	717.2	897.0	1 621.1	26.6	140.8
500 to 999 employees	E1	11	8.2	220.6	7.1	14.7	174.5	377.4	529.5	909.4	41.5	78.2
1,000 to 2,499 employees	-	10	17.7	735.4	14.9	32.3	591.6	1 292.9	1 341.5	2 660.0	98.8	148.1
2,500 employees or more	-	13	42.5	1 845.0	37.0	82.7	1 569.0	2 469.4	3 606.5	6 059.7	968.2	390.1
Covered by administrative records ²	E9	180	2.2	45.6	1.9	4.0	36.2	75.5	96.8	172.3	6.5	12.1
INDUSTRY 3466, CROWNS AND CLOSURES												
Total	E1	57	6.1	161.6	4.9	10.3	119.8	382.1	443.1	819.8	26.5	151.9
Establishments with an average of—												
1 to 4 employees	E9	4	(Z)	.3	(Z)	(Z)	.2	.5	.9	1.4	(Z)	.2
5 to 9 employees	E8	7	(Z)	1.0	(Z)	.1	.7	.8	2.6	3.4	.1	.7
10 to 19 employees	E5	12	.2	3.1	.1	.3	2.4	3.4	8.9	15.8	.2	2.4
20 to 49 employees	E2	9	.3	6.5	.2	.4	3.9	9.6	11.8	23.0	.4	5.3
50 to 99 employees	-	5	.4	9.4	.3	.6	7.1	27.1	32.1	58.4	1.8	14.1
100 to 249 employees	-	11	1.6	43.5	1.2	2.6	32.0	109.4	133.4	237.2	7.4	44.9
250 to 499 employees	-	8	3.7	97.9	3.0	6.3	73.5	231.4	253.4	480.7	16.5	84.3
500 to 999 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	14	.1	2.2	.1	.2	1.6	3.4	6.4	9.8	.3	1.6

See footnotes at end of table.

Table 4. Industry Statistics by Employment Size of Establishment: 1987—Con.

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

Industry and employment size class	E ¹	All establishments (no.)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3469, METAL STAMPINGS, N.E.C.												
Total	E1	2 815	95.5	2 131.9	73.2	146.2	1 402.0	4 311.4	4 034.4	8 331.1	268.9	1 145.3
Establishments with an average of—												
1 to 4 employees	E8	633	1.3	23.9	1.0	2.0	15.7	50.7	42.4	94.5	2.6	12.2
5 to 9 employees	E6	459	3.1	56.7	2.4	4.6	37.5	112.5	87.1	199.6	5.4	22.2
10 to 19 employees	E2	561	7.8	160.1	6.0	11.6	105.6	319.7	242.5	559.0	18.4	65.1
20 to 49 employees	E2	658	20.6	458.5	15.7	31.7	298.0	886.2	690.3	1 569.2	45.7	194.1
50 to 99 employees	E1	296	20.0	460.7	15.2	30.9	294.0	901.9	828.5	1 721.5	48.1	210.9
100 to 249 employees	E1	163	23.8	527.5	18.3	36.8	349.9	1 107.2	1 238.7	2 338.4	65.2	329.6
250 to 499 employees	-	35	11.5	259.0	9.0	17.9	169.4	588.0	501.1	1 090.9	43.6	154.6
500 to 999 employees	-	9	7.2	185.6	5.5	10.6	131.9	345.3	403.8	758.0	39.9	156.7
1,000 to 2,499 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	1 015	4.9	74.2	3.9	7.4	48.7	147.9	124.5	272.4	7.0	33.8
INDUSTRY 3471, PLATING AND POLISHING												
Total	E2	3 451	71.1	1 335.5	55.9	112.0	884.7	2 633.6	1 235.3	3 866.9	140.2	226.9
Establishments with an average of—												
1 to 4 employees	E8	943	2.0	32.6	1.6	3.0	21.7	68.6	31.9	100.6	2.8	4.9
5 to 9 employees	E4	706	4.8	83.7	3.8	7.4	57.0	164.1	63.9	228.1	9.0	11.0
10 to 19 employees	E2	759	10.5	189.3	8.2	16.2	127.5	356.2	144.5	500.6	16.8	23.0
20 to 49 employees	E1	719	22.0	410.5	17.0	34.6	269.2	774.3	327.8	1 100.2	40.8	62.5
50 to 99 employees	E1	233	15.6	307.8	12.0	24.4	199.2	621.3	300.9	924.6	29.2	55.7
100 to 249 employees	E2	80	11.3	217.2	9.0	17.9	147.4	462.6	270.2	732.0	23.0	49.5
250 to 499 employees	-	8	4.9	94.4	4.1	8.4	62.9	186.5	96.0	280.7	18.7	20.2
500 to 999 employees	-	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	1 184	4.3	55.4	3.5	6.3	37.0	112.4	46.3	158.7	4.3	6.7
INDUSTRY 3479, METAL COATING AND ALLIED SERVICES												
Total	E1	1 814	41.5	831.5	32.3	65.0	558.8	1 995.4	1 936.9	3 922.6	105.3	417.3
Establishments with an average of—												
1 to 4 employees	E9	500	1.0	16.7	.8	1.6	11.1	38.8	33.8	72.6	1.9	6.0
5 to 9 employees	E6	332	2.3	40.7	1.7	3.4	27.6	84.1	64.0	148.1	3.4	12.6
10 to 19 employees	E3	366	5.0	91.3	3.8	7.5	60.9	194.1	123.9	317.0	8.8	27.2
20 to 49 employees	E2	418	12.9	243.5	10.1	20.7	164.8	539.4	354.8	891.6	31.1	79.8
50 to 99 employees	E1	132	8.9	185.9	6.9	14.0	122.1	426.0	435.3	857.1	25.5	93.1
100 to 249 employees	-	57	8.0	172.2	6.2	12.8	116.9	437.5	585.5	1 019.5	24.3	139.7
250 to 499 employees	-	6	3.5	81.1	2.6	5.1	55.4	275.5	339.4	616.6	10.4	59.0
500 to 999 employees	-	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records ²	E9	680	2.7	36.8	2.1	3.9	24.3	79.4	73.6	153.1	3.8	12.3

Note: For qualifications of data, see footnotes on table 1a. Data shown as a (D) are included in underscored figures above.

¹Payroll and sales data for some small single unit 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 the items shown 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 for those employment-size classes where estimated data based on administrative-record data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

²Report forms were not mailed to small single unit companies with up to 20 employees (cutoff varied by industry). Payroll and sales data for 1987 were obtained from administrative records supplied by other agencies of the Federal Government. Those data were then used in conjunction with industry averages to estimate the items shown. Data are also included in respective employment-size classes shown.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1987

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry or product class code	Industry or primary product class	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3451	Screw machine products: All establishments in industry	1 635	42.7	945.3	34.1	72.9	666.1	1 770.5	1 048.9	2 806.2	99.7
34511	Establishments with this product class primary: Automotive screw machine products	242	10.2	235.7	7.9	17.1	161.9	460.7	368.1	826.6	23.8
34512	Other screw machine products	665	26.9	608.0	21.6	46.3	430.7	1 116.0	570.6	1 676.5	66.8

See footnotes at end of table.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1987—
Con.

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry or product class code	Industry or primary product class	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3452	Bolts, nuts, rivets, and washers: All establishments in industry -----	937	52.0	1 325.0	38.7	80.5	886.9	2 995.8	2 115.7	5 084.0	150.4
	Establishments with this product class primary:										
34524	Externally threaded fasteners (except aircraft) -----	216	16.2	409.8	12.2	25.2	275.5	969.9	943.0	1 901.4	55.0
34525	Internally threaded fasteners (except aircraft) -----	61	5.1	137.9	3.9	8.4	98.1	309.1	213.1	527.1	13.2
34526	Nonthreaded fasteners (except aircraft) -----	72	6.3	155.3	4.2	8.3	87.3	338.4	230.1	568.3	12.8
34527	Aircraft aerospace fasteners -----	57	12.2	348.4	9.1	19.5	240.2	771.3	282.6	1 030.8	39.2
34528	Other formed parts -----	47	4.7	121.2	3.5	7.7	81.1	259.4	216.3	479.8	13.2
3462	Iron and steel forgings: All establishments in industry -----	406	26.6	746.5	19.1	37.8	484.3	1 394.0	1 553.5	3 003.6	108.2
	Establishments with this product class primary:										
34625	Hot impression die impact, press, and upset steel forgings -----	122	19.2	569.4	13.7	26.9	369.3	996.4	1 094.2	2 149.4	85.2
34626	Cold impression die impact, press, and upset steel forgings -----	19	1.5	33.7	1.1	2.4	23.4	83.4	107.9	191.2	5.7
34627	Seamless rolled ring forgings (ferrous) (see also code 3312a) -----	10	.8	22.1	.5	1.1	13.8	59.6	69.2	127.9	6.8
34628	Open die or smith forgings (hammer or press) (ferrous) (see also code 3312b) -----	34	2.1	56.1	1.5	3.2	35.2	118.5	154.8	271.2	4.5
3463	Nonferrous forgings: All establishments in industry -----	79	7.3	218.1	5.4	11.4	145.4	428.2	565.6	1 003.7	29.8
	Establishments with this product class primary:										
34635	Hot impression die impact, press, and upset nonferrous forgings -----	35	6.3	192.7	4.8	10.1	130.5	378.7	484.8	866.2	27.0
34639	Other nonferrous forgings -----	7	.5	14.5	.3	.6	7.8	26.0	51.9	85.1	.8
3465	Automotive stampings: All establishments in industry -----	713	119.8	3 976.9	99.9	213.3	3 157.5	6 659.3	8 582.2	15 251.6	1 285.0
3466	Crowns and closures: All establishments in industry -----	57	6.1	161.6	4.9	10.3	119.8	382.1	443.1	819.8	26.5
	Establishments with this product class primary:										
34661	Metal commercial closures and metal home canning closures -----	36	4.8	128.6	3.9	8.2	97.3	315.5	330.1	639.7	19.2
34662	Metal crowns -----	7	1.2	30.8	.9	1.9	20.9	63.2	106.5	170.3	7.0
3469	Metal stampings, n.e.c.: All establishments in industry -----	2 815	95.5	2 131.9	73.2	146.2	1 402.0	4 311.4	4 034.4	8 331.1	268.9
	Establishments with this product class primary:										
34692	Job stampings, except automotive -----	900	48.7	1 137.0	37.6	75.9	765.5	2 277.1	2 217.0	4 480.5	140.7
34694	Stamped and spun utensils, cooking and kitchen, aluminum -----	29	5.0	106.9	3.9	7.9	76.2	220.0	321.3	550.9	27.4
34695	Stamped and spun utensils, cooking and kitchen, except aluminum -----	15	2.7	71.0	1.8	3.4	36.7	174.8	136.7	312.0	8.1
34696	Metal spinning products -----	38	.9	18.1	.7	1.4	13.0	32.7	16.8	48.9	1.3
34699	Other stamped and pressed metal end products -----	271	16.5	371.5	12.4	24.2	228.2	756.8	656.3	1 403.1	51.5
3471	Plating and polishing: All establishments in industry -----	3 451	71.1	1 335.5	55.9	112.0	884.7	2 633.6	1 235.3	3 866.9	140.2
3479	Metal coating and allied services: All establishments in industry -----	1 814	41.5	831.5	32.3	65.0	558.8	1 995.4	1 936.9	3 922.6	105.3

Note: For qualifications of data, see footnotes on table 1a.

Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments and Specialization and Coverage Ratios for the Industry: 1987 and Earlier Census Years

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and product group code	Industry and census year	Value of shipments					Value of primary product shipments			
		Total (million dollars)	Primary products (million dollars)	Secondary products (million dollars)	Miscellaneous receipts (million dollars)	Primary product specialization ratio col. B ÷ col. B+C (percent)	Total made in all industries (million dollars)	Made in this industry (million dollars)	Made in other industries (million dollars)	Coverage ratio col. B ÷ col. F (percent)
		A	B	C	D	E	F	G	H	I
3451	Screw machine products -----	1987-- 2 806.2	2 578.5	137.1	90.7	95	2 763.3	2 578.5	184.8	93
		1982-- 2 173.1	2 029.0	79.0	65.1	96	2 159.7	2 029.0	130.8	94
		1977-- 1 771.7	1 629.0	67.1	75.6	96	1 771.4	1 629.0	142.4	92

See footnotes at end of table.

Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments and Specialization and Coverage Ratios for the Industry: 1987 and Earlier Census Years—Con.

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and product group code	Industry and census year	Value of shipments					Value of primary product shipments				
		Total (million dollars)	Primary products (million dollars)	Secondary products (million dollars)	Miscellaneous receipts (million dollars)	Primary product specialization ratio col. B ÷ col. B + C (percent)	Total made in all industries (million dollars)	Made in this industry (million dollars)	Made in other industries (million dollars)	Coverage ratio col. B ÷ col. F (percent)	
		A	B	C	D	E	F	G	H	I	
3452	Bolts, nuts, rivets, and washers -----	1987..	5 084.0	4 592.7	253.3	238.0	95	4 793.1	4 592.7	200.4	96
		1982..	3 661.3	3 239.9	243.9	177.6	93	3 401.0	3 239.9	161.1	95
		1977..	3 319.5	2 936.0	195.9	187.5	94	3 130.3	2 936.0	194.3	94
3462	Iron and steel forgings -----	1987..	3 003.6	2 670.4	267.9	65.3	91	2 903.2	2 670.4	232.8	92
		1982..	2 952.5	2 557.2	312.8	82.5	89	3 161.3	2 557.2	604.1	81
		1977..	2 795.7	2 495.8	218.9	81.0	92	2 966.7	2 495.8	470.9	84
3463	Nonferrous forgings -----	1987..	1 003.7	808.5	136.5	58.7	86	1 061.4	808.5	252.9	76
		1982..	1 093.8	886.3	162.7	44.7	84	1 210.9	886.3	324.6	73
		1977..	456.7	361.5	54.1	41.1	87	540.4	361.5	178.9	67
3465	Automotive stampings -----	1987..	15 251.6	13 963.1	765.4	523.2	95	14 961.0	13 963.1	998.0	93
		1982..	8 777.4	7 957.0	654.7	165.7	92	9 041.2	7 957.0	1 084.3	88
		1977..	9 739.2	8 779.9	753.7	205.7	92	9 599.8	8 779.9	819.9	91
3466	Crowns and closures -----	1987..	819.8	772.7	35.2	11.9	96	811.4	772.7	38.7	95
		1982..	804.8	728.6	63.7	12.5	92	790.2	728.6	61.6	92
		1977..	536.9	497.3	26.6	12.9	95	581.0	497.3	83.7	86
3469	Metal stampings, n.e.c. -----	1987..	8 331.1	7 214.9	825.4	290.8	90	7 970.0	7 214.9	755.1	91
		1982..	6 437.7	5 453.8	732.0	251.9	88	6 172.3	5 453.8	718.5	88
		1977..	4 735.7	3 990.1	552.7	192.9	88	4 554.5	3 990.1	564.4	88
3471	Plating and polishing -----	1987..	3 866.9	3 609.5	106.1	151.2	(1)	3 828.4	3 609.5	218.8	(1)
		1982..	2 731.4	2 600.4	88.8	42.2	(1)	2 680.3	2 600.4	79.9	(1)
		1977..	1 848.5	1 728.4	50.5	69.7	(1)	1 775.1	1 728.4	46.7	(1)
3479	Metal coating and allied services -----	1987..	3 922.6	3 495.6	271.8	155.1	(1)	3 800.2	3 495.6	304.5	(1)
		1982..	2 393.4	2 238.9	95.4	59.1	(1)	2 405.2	2 238.9	166.3	(1)
		1977..	1 607.7	1 368.1	114.0	125.6	(1)	1 520.5	1 368.1	152.4	(1)

¹See table 1a, footnote 9.

Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982

[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 further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987		1982	
		Number of companies with shipments of \$100,000 or more	Value of product shipments ¹ (million dollars)	Number of companies with shipments of \$100,000 or more	Value of product shipments ¹ (million dollars)
3451- --	SCREW MACHINE PRODUCTS				
	Total -----	(NA)	2 763.3	(NA)	2 159.7
34511 --	Automotive screw machine products (nonstandard items made from rod, bar, or tube stock on automatic or hand-operated screw machines):				
34511 00	Automotive screw machine products (nonstandard items made from rod, bar, or tube stock on automatic or hand-operated screw machines) -----	367	881.3	391	686.7
34512 --	Other screw machine products -----	(NA)	1 595.3	(NA)	1 245.3
	Nonstandard items made from rod, bar, or tube stock on automatic or hand-operated screw machines on basis of end product in which to be incorporated:				
34512 31	Aircraft -----	126	182.9	95	92.1
34512 39	Ordnance -----	96	85.5	81	54.0
34512 42	Household appliances, including radio and television -----	146	144.4	153	106.2
34512 52	Electric and electronic equipment, except household appliances -----	255	261.6	257	194.2
34512 62	Machinery -----	245	279.7	255	266.7
34512 99	All other end uses -----	377	588.8	478	507.4
34512 00	Other screw machine products, n.s.k. -----	(NA)	52.4	(NA)	24.6
34510 --	Screw machine products, n.s.k. -----	(NA)	286.7	(NA)	227.8
34510 00	Screw machine products, n.s.k., typically for establishments with 5 employees or more (see note) -----	(NA)	175.5	(NA)	174.2
34510 02	Screw machine products, n.s.k., typically for establishments with less than 5 employees (see note) -----	(NA)	111.1	(NA)	53.6

See footnotes at end of table.

Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[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 further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text.]

1987 product code	Product	1987				1982			
		Number of companies with shipments of \$100,000 or more	Product shipments ¹			Number of companies with shipments of \$100,000 or more	Product shipments ¹		
			Quantity ²		Value (million dollars)		Quantity ²		Value (million dollars)
			Million pieces	Million pounds			Million pieces	Million pounds	
3452- --	BOLTS, NUTS, RIVETS, AND WASHERS								
	Total -----	(NA)	(X)	(X)	4 793.1	(NA)	(X)	(X)	3 401.0
34524 --	Externally threaded fasteners (except aircraft) -----	(NA)	(X)	(X)	1 775.1	(NA)	(X)	(X)	1 451.0
	Bolts (except nonmetallic):								
34524 11	Mine roof bolts -----	13	(S)	(S)	180.2	15	(S)	(S)	165.2
34524 12	Hex bolts, including heavy, tap and joint, excluding high strength structural -----	56	(S)	(S)	168.7	62	(S)	**170.9	176.3
34524 19	Other metal bolts, including square, round, plow, high strength structural, and bent bolts -----	97	(X)	(X)	276.2	110	(S)	(S)	367.3
	Screws (except nonmetallic):								
34524 39	Cap, set, machine, lag, flange, and self-locking -----	75	6 171.3	(S)	379.1	80	5 333.2	(S)	246.6
34524 45	Tapping, including fillister, flat, hex, oval, pan and truss, and wood, including flat, oval, and round -----	59	(S)	(S)	309.3	67	(S)	(S)	178.9
34524 89	Other externally threaded metal fasteners not mentioned above, including studs and all nonmetallic externally threaded fasteners -----	85	(X)	(X)	434.7	114	3 574.5	(S)	315.6
34524 00	Externally threaded fasteners (except aircraft), n.s.k. -----	(NA)	(X)	(X)	27.0	(NA)	(X)	(X)	1.1
34525 --	Internally threaded fasteners (except aircraft) -----	(NA)	(X)	(X)	534.0	(NA)	(X)	(X)	408.6
	Nuts (except nonmetallic):								
34525 04	Hex, including flanges, double chamfered, washer face, flat, jam, slotted, thick, castle, heavy, machine, and locking -----	59	(S)	**223.7	268.5	78	2 763.1	(S)	234.2
34525 29	Square, including flat, washer, crowned, heavy, track, sleeve, and machine; sheet metal; weld; wing; and cage, anchor, and nut retainers -----	24	(S)	(S)	98.9	23	(S)	(S)	41.5
34525 89	Other internally threaded metal fasteners not mentioned above, including flanged nuts (all types, except hex) and locknuts (all types, except hex) and all nonmetallic internally threaded fasteners -----	59	(X)	(X)	156.8	53	(X)	(X)	132.4
34525 00	Internally threaded fasteners (except aircraft), n.s.k. -----	(NA)	(X)	(X)	9.9	(NA)	(X)	(X)	.5
34526 --	Nonthreaded fasteners (except aircraft) -----	(NA)	(X)	(X)	574.5	(NA)	(X)	(X)	526.2
	Rivets (except nonmetallic):								
34526 09	Solid -----	37	(S)	**69.9	77.4	36	1 247.8	(S)	80.0
34526 15	Tubular, split (including rivet caps) and blind -----	22	(S)	(S)	126.4	33	(S)	(S)	114.0
34526 35	Washers (except nonmetallic) -----	46	(S)	**124.9	138.6	51	3 402.7	(S)	116.0
34526 79	Other nonthreaded metal fasteners not mentioned above, including pins (all types), and all nonmetallic nonthreaded products -----	78	(X)	(X)	205.7	70	(X)	(X)	215.4
34526 00	Nonthreaded fasteners (except aircraft), n.s.k. -----	(NA)	(X)	(X)	26.4	(NA)	(X)	(X)	.8
34527 --	Aircraft aerospace fasteners (meet specifications for flying vehicles) -----	(NA)	(X)	(X)	873.1	(NA)	(X)	(X)	516.7
	Externally threaded:								
	Bolts:								
34527 01	Less than 161 KSI tensile -----	18	(S)	(S)	163.1	16	29.5	(S)	34.6
34527 06	161 KSI tensile or more -----	15	(S)	(S)	169.9	15	24.6	(S)	58.7
34527 15	Screws, all types; and studs, all types -----	24	(S)	(S)	65.3	20	(S)	(S)	131.6
	Internally threaded:								
34527 45	Locknuts, including flanged locknuts -----	15	(S)	(S)	167.6	12	(S)	(S)	79.2
34527 59	Other, including flanged nuts (all types, except flanged locknuts), hex square nuts (all types), and sheet metal fasteners -----	25	(S)	(S)	138.1	13	33.9	(S)	137.6
	Nonthreaded:								
34527 61	Washers, all types -----	13	(S)	(S)	10.3	5	(S)	(S)	6.0
34527 62	Rivets, all types -----	13	(S)	(S)	117.1	12	347.9	(S)	46.4
34527 63	Pins, all types -----	13	(S)	(S)	37.7	11	50.4	(S)	20.5
34527 00	Aircraft aerospace fasteners (meet specifications for flying vehicles), n.s.k. -----	(NA)	(X)	(X)	4.0	(NA)	(X)	(X)	2.1
34528 --	Other formed parts (made on fastener machines) -----	(NA)	(X)	(X)	481.7	(NA)	(X)	(X)	329.9
34528 11	Automotive -----	43	(S)	**206.8	265.5	37	610.7	(S)	124.7
34528 21	Household appliances, including radio and television -----	13	(S)	(S)	30.6	16	(S)	(S)	24.8
34528 31	Aircraft -----	16	(S)	(S)	41.7	19	(S)	(S)	40.4
34528 98	All other, including ordnance -----	64	(S)	(S)	135.4	63	(S)	(S)	139.3
34528 00	Other formed parts (made on fastener machines), n.s.k. -----	(NA)	(X)	(X)	8.4	(NA)	(X)	(X)	.8
34520 --	Bolts, nuts, rivets, and washers, n.s.k. -----	(NA)	(X)	(X)	554.7	(NA)	(X)	(X)	168.5
34520 00	Bolts, nuts, rivets, and washers, n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	(X)	349.9	(NA)	(X)	(X)	105.4
34520 02	Bolts, nuts, rivets, and washers, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	(X)	204.8	(NA)	(X)	(X)	63.1

See footnotes at end of table.

Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[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 further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3466--	CROWNS AND CLOSURES						
	Total	(NA)	(X)	811.4	(NA)	(X)	790.2
34661 --	Metal commercial closures and metal home canning closures, except crowns:						
34661 00	Metal commercial closures and metal home canning closures, including milk bottle closures (for additional detail, see Current Industrial Report MQ-34H, Closures for Containers).....	43	(X)	686.2	27	(X)	627.1
34662 --	Metal crowns:						
34662 00	Metal crowns for glass and metal containers (for additional detail, see Current Industrial Report MQ-34H, Closures for Containers).....	7	(X)	115.4	8	(X)	145.0
34660 --	Crowns and closures, n.s.k.	(NA)	(X)	9.8	(NA)	(X)	18.1
34660 00	Crowns and closures, n.s.k., typically for establishments with 5 employees or more (see note)	(NA)	(X)	.1	(NA)	(X)	4.4
34660 02	Crowns and closures, n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	9.7	(NA)	(X)	13.7
3469--	METAL STAMPINGS, N.E.C.						
	Total	(NA)	(X)	7 970.0	(NA)	(X)	6 172.3
34692 --	Job stampings, except automotive	(NA)	(X)	4 252.7	(NA)	(X)	2 908.9
34692 01	Recreational vehicle stampings (motor homes, travel trailers, etc.).....	48	(X)	40.7	34	(X)	23.3
34692 05	Motor and generator stampings	81	(X)	90.3	71	(X)	80.9
34692 11	Aviation stampings	83	(X)	216.3	80	(X)	198.4
34692 15	Agricultural equipment stampings, including tractor	92	(X)	96.3	95	(X)	94.6
34692 20	Computer stampings	158	(X)	292.7	(NA)	(X)	(NA)
34692 25	Electrical appliance stampings, except refrigeration and laundry equipment	158	(X)	286.0	165	(X)	157.9
34692 31	Furniture stampings	88	(X)	186.9	59	(X)	54.3
34692 41	Office machine stampings, excluding computer	82	(X)	110.1	129	(X)	162.6
34692 52	Radio and phonograph stampings	34	(X)	28.5	38	(X)	27.9
34692 53	Television stampings	33	(X)	63.3	46	(X)	56.4
34692 61	Refrigerator stampings (residential, commercial, and industrial)	57	(X)	195.1	36	(X)	88.6
34692 71	Stove, heater, and air-conditioner stampings (residential, commercial, and industrial).....	80	(X)	74.5	74	(X)	74.1
34692 84	Laundry equipment stampings (residential, commercial, and industrial)	42	(X)	76.6	31	(X)	62.7
34692 88	Other industrial equipment stampings	263	(X)	346.1	233	(X)	323.3
34692 98	Other job stampings.....	544	(X)	1 755.7	552	(X)	1 407.6
34692 00	Job stampings, except automotive, n.s.k.....	(NA)	(X)	393.6	(NA)	(X)	96.4
34694 --	Stamped and spun utensils, cooking and kitchen, aluminum	(NA)	(X)	501.2	(NA)	(X)	508.2
34694 11	Top of range household utensils (items generally used directly on top of source of heat), including pressure cookers	13	(S)	267.3	23	*82.5	327.7
34694 14	Bakeware, pantryware, and miscellaneous household utensils	18	(S)	133.9	28	(S)	143.8
34694 17	Camping and outdoor cooking equipment	3	(S)	3.1	10	(S)	8.7
34694 29	Other, including commercial and hospital	13	(S)	53.9	17	(S)	27.1
34694 00	Stamped and spun utensils, cooking and kitchen, aluminum, n.s.k.....	(NA)	(X)	43.0	(NA)	(X)	.8
34695 --	Stamped and spun utensils, cooking and kitchen, except aluminum	(NA)	(X)	288.6	(NA)	(X)	367.7
34695 07	Stainless steel:						
	Top of range household utensils (items generally used directly on top of source of heat)	17	(S)	153.6	15	(S)	153.5
34695 09	Bakeware, pantryware, and miscellaneous household utensils	8	(S)	15.9	13	(S)	17.2
34695 15	Other, including commercial, hospital, and outdoor cooking equipment	18	(S)	66.4	25	(S)	47.0
34695 21	Tinware:						
	Household	9	(S)	18.0	6		
34695 24	Other, including commercial, hospital, and outdoor cooking equipment	4	(D)	(D)	4	(S)	69.9
34695 27	Vitreous enameled cooking and kitchen utensils.....	1	(X)	(D)	2		
34695 98	Other stamped and spun cooking and kitchen utensils, including copper	9	(X)	(D)	11	(X)	76.2
34695 00	Stamped and spun utensils, cooking and kitchen, except aluminum, n.s.k.....	(NA)	(X)	7.8	(NA)	(X)	4.0
34696 --	Metal spinning products (excluding cooking and kitchen utensils):						
34696 00	Metal spinning products, excluding cooking and kitchen utensils	45	(X)	46.5	(NA)	(X)	(NA)

See footnotes at end of table.

Table 6a-2. Related Products From Current Industrial Reports Series—Value of Shipments by All Producers: 1987 and 1982

[Additional detail is provided in the Current Industrial Report series. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987 product shipments		1982 product shipments	
		Quantity	Value (million dollars)	Quantity	Value (million dollars)
	MQ34H, CLOSURES FOR CONTAINERS				
34661--	Metal commercial closures and metal home-canning closures, except crowns.....	(X)	(D)	(X)	(D)
34661 01	Metal and metal-composite closures..... millions.....	15 746.6	443.5	(NA)	(NA)
34661 82	Metal and metal-composite home-canning closures..... mil gross.....	(D)	(D)	(D)	(D)
34661 83	All other closures, including roll-ons..... do.....	113.3	148.4	(NA)	126.2
34661 84	Soft drinks..... do.....	85.9	115.8	(NA)	(NA)
34661 85	Beer and all other..... do.....	27.4	32.6	(NA)	(NA)
34662 --	Metal crowns..... do.....	243.1	102.9	(X)	144.3
34662 15	Soft drink..... do.....	89.4	32.5	86.1	52.1
34662 25	Beer and all other..... do.....	153.7	70.4	148.6	92.2

Table 6a-3. Selected Products Primary to More Than One Industry—Quantity and Value of Shipments by Industry: 1987 and 1982

[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) also are included. For further explanation, see Value Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3312A	Seamless rolled ring forgings, ferrous.....	(NA)	(X)	(D)	22	(X)	254.3
34627	Made in steel mills.....	(NA)	(X)	(D)	2	(X)	(D)
	Not made in steel mills.....	(NA)	(X)	181.2	20	(X)	(D)
	Seamless rolled ring iron and steel forgings:						
	Carbon steel..... 1,000 s tons.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312A 11	Made in steel mills.....	2	(D)	(D)	(NA)	(NA)	(NA)
34627 11	Not made in steel mills.....	18	20.5	30.9	(NA)	(NA)	(NA)
	Alloy steel, excluding stainless and hi-temp..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312A 23	Made in steel mills..... do.....	2	(D)	(D)	(NA)	(NA)	(NA)
34627 13	Not made in steel mills..... do.....	17	**7.5	59.3	(NA)	(NA)	(NA)
	Stainless..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312A 25	Made in steel mills..... do.....	1	(D)	(D)	(NA)	(NA)	(NA)
34627 15	Not made in steel mills..... do.....	15	**2.5	16.1	(NA)	(NA)	(NA)
	Hi-temp (iron, nickel, or cobalt-base alloy)..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312A 27	Made in steel mills..... do.....	1	(D)	(D)	(NA)	(NA)	(NA)
34627 17	Not made in steel mills..... do.....	11	(S)	72.6	(NA)	(NA)	(NA)
	Seamless rolled ring, ferrous, n.s.k..... do.....	(NA)	(X)	33.5	(NA)	(X)	(NA)
3312A 00	Made in steel mills..... do.....	(NA)	(X)	31.3	(NA)	(X)	(NA)
34627 00	Not made in steel mills..... do.....	(NA)	(X)	2.4	(NA)	(X)	(NA)
	Open die or smith forgings, (hammer or press), ferrous..... do.....	(NA)	(X)	(D)	79	(X)	747.5
3312B	Made in steel mills..... do.....	(NA)	(X)	(D)	10	(X)	(D)
3462B	Not made in steel mills..... do.....	(NA)	(X)	271.8	69	(X)	(D)
	Carbon steel..... do.....	(NA)	106.2	116.7	(NA)	(NA)	(NA)
3312B 61	Made in steel mills..... do.....	6	11.7	14.4	(NA)	(NA)	(NA)
34628 11	Not made in steel mills..... do.....	33	*94.5	102.3	(NA)	(NA)	(NA)
	Alloy steel, excluding stainless and hi-temp..... do.....	(NA)	84.3	208.7	(NA)	(NA)	(NA)
3312B 63	Made in steel mills..... do.....	5	47.1	101.1	(NA)	(NA)	(NA)
34628 13	Not made in steel mills..... do.....	26	37.2	107.6	(NA)	(NA)	(NA)
	Stainless..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312B 65	Made in steel mills..... do.....	4	(D)	(D)	(NA)	(NA)	(NA)
34628 15	Not made in steel mills..... do.....	22	*5.0	25.0	(NA)	(NA)	(NA)
	Hi-temp (iron, nickel, or cobalt-base alloy)..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312B 67	Made in steel mills..... do.....	-	(D)	(D)	(NA)	(NA)	(NA)
34628 17	Not made in steel mills..... do.....	11	**7	15.2	(NA)	(NA)	(NA)
	Open die or smith forgings, (hammer or press), ferrous, n.s.k..... do.....	(NA)	(X)	21.7	(NA)	(X)	(NA)
3312B 00	Made in steel mills..... do.....	(NA)	(X)	-	(NA)	(X)	(NA)
34628 00	Not made in steel mills..... do.....	(NA)	(X)	21.7	(NA)	(X)	(NA)

¹Data reported by all producers, not just those with shipments of \$100,000 or more.

²For 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: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1987 and 1982

(Million dollars. 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 type" 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 1987. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendixes)

Product class and geographic area	1987 value of product shipments	1982 value of product shipments	Product class and geographic area	1987 value of product shipments	1982 value of product shipments
34511, AUTOMOTIVE SCREW MACHINE PRODUCTS			34526, NONTHREADED FASTENERS (EXCEPT AIRCRAFT)		
United States	881.3	686.7	United States	574.5	526.2
California	29.9	26.2	California	46.5	33.6
Connecticut	16.3	26.5	Connecticut	69.6	60.9
Florida	8.4	(NA)	Illinois	80.2	62.8
Illinois	138.4	102.4	Indiana	11.1	3.7
Indiana	23.4	19.2	Massachusetts	14.0	26.9
Michigan	393.9	283.2	Michigan	32.2	23.0
Minnesota	19.3	(NA)	Minnesota	10.4	11.1
Missouri	24.1	18.1	New Jersey	48.2	44.7
New Jersey	5.7	10.4	New York	54.8	63.5
New York	56.8	26.2	Ohio	40.8	40.1
Ohio	113.0	67.5	Pennsylvania	37.4	41.9
Pennsylvania	7.2	21.5	Wisconsin	56.5	41.3
Texas	2.8	3.8			
Wisconsin	16.3	10.6	34527, AIRCRAFT AEROSPACE FASTENERS		
34512, OTHER SCREW MACHINE PRODUCTS			United States	873.1	516.7
United States	1 595.3	1 245.3	California	660.2	402.7
Arizona	18.3	4.7	Connecticut	15.5	13.0
California	163.6	91.0	Illinois	3.5	(NA)
Connecticut	134.1	99.8	Indiana	4.9	(NA)
Florida	9.3	13.5	Ohio	6.4	(NA)
Illinois	160.3	190.7	Texas	4.3	3.3
Indiana	75.4	51.6	34528, OTHER FORMED PARTS		
Iowa	10.5	8.8	United States	481.7	329.9
Kentucky	5.6	5.6	California	51.3	36.3
Massachusetts	74.1	59.7	Illinois	97.0	30.7
Michigan	151.9	119.4	Indiana	11.3	(NA)
Minnesota	49.2	38.9	Michigan	150.5	78.9
Missouri	37.9	30.7	New Jersey	11.0	7.5
Nebraska	9.5	6.1	Ohio	37.0	41.5
New Hampshire	6.4	6.6	Pennsylvania	33.9	29.4
New Jersey	66.8	73.0			
New York	136.6	103.6	34625, HOT IMPRESSION DIE IMPACT, PRESS, AND UPSET STEEL FORGINGS		
North Carolina	8.3	3.5	United States	2 004.7	2 265.5
Ohio	195.8	146.6	California	79.7	83.4
Oregon	11.8	12.4	Connecticut	28.5	22.0
Pennsylvania	70.7	51.0	Illinois	191.9	267.5
Rhode Island	13.1	15.1	Indiana	76.9	77.6
South Carolina	7.0	14.1	Michigan	221.7	190.0
Tennessee	42.9	3.5	Ohio	405.3	410.2
Texas	17.7	20.9	Pennsylvania	203.8	195.0
Washington	13.2	14.1	Tennessee	38.0	30.7
Wisconsin	59.3	39.2	Texas	193.1	275.1
			Wisconsin	191.9	175.6
34524, EXTERNALLY THREADED FASTENERS (EXCEPT AIRCRAFT)			34626, COLD IMPRESSION DIE IMPACT, PRESS, AND UPSET STEEL FORGINGS		
United States	1 775.1	1 451.0	United States	189.8	219.8
Alabama	43.8	33.0	Michigan	38.4	94.9
California	38.6	41.6	Ohio	82.2	83.3
Connecticut	47.1	46.4			
Illinois	539.7	412.3	34627, SEAMLESS ROLLED RING FORGINGS (FERROUS) (SEE ALSO CODE 3312A)		
Indiana	52.3	22.7	United States	181.2	(NA)
Iowa	39.7	(NA)	California	40.9	(NA)
Kentucky	54.6	75.3			
Maryland	3.9	(NA)	34628, OPEN DIE OR SMITH FORGINGS (HAMMER OR PRESS) (FERROUS) (SEE ALSO CODE 3312B)		
Massachusetts	37.9	51.1	United States	271.8	(NA)
Michigan	300.9	141.7	California	13.4	(NA)
Mississippi	5.8	(NA)	New York	19.6	(NA)
New Jersey	12.8	21.2	Pennsylvania	86.8	(NA)
New York	42.8	22.2	Texas	36.2	(NA)
North Carolina	49.0	(NA)	Wisconsin	16.4	(NA)
Ohio	217.4	181.3			
Pennsylvania	106.7	155.8	34635, HOT IMPRESSION DIE IMPACT, PRESS, AND UPSET NONFERROUS FORGINGS		
Rhode Island	10.2	28.4	United States	884.7	1 011.2
Texas	39.6	52.7	California	247.8	268.5
Virginia	71.8	34.5	Connecticut	23.5	35.7
			Illinois	14.5	11.4
34525, INTERNALLY THREADED FASTENERS (EXCEPT AIRCRAFT)			Michigan	38.8	(NA)
United States	534.0	408.6	Texas	28.7	(NA)
California	83.1	33.3			
Connecticut	25.3	17.1			
Illinois	26.8	44.9			
Indiana	37.2	26.7			
Massachusetts	14.4	10.7			
Michigan	96.6	71.6			
Missouri	3.3	(NA)			
New York	6.1	5.8			
Ohio	57.4	51.7			
Pennsylvania	78.5	57.5			
Rhode Island	3.8	4.5			
Wisconsin	13.9	5.8			

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1987 and 1982—Con.

[Million dollars. 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 type" 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 1987. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendixes]

Product class and geographic area	1987 value of product shipments	1982 value of product shipments	Product class and geographic area	1987 value of product shipments	1982 value of product shipments
34639, OTHER NONFERROUS FORGINGS			34694, STAMPED AND SPUN UTENSILS, COOKING AND KITCHEN, ALUMINUM		
United States	124.4	193.7	United States	501.2	508.2
California	69.3	93.6	California	5.1	(NA)
			Ohio	117.9	115.6
34661, METAL COMMERCIAL CLOSURES AND METAL HOME CANNING CLOSURES			34695, STAMPED AND SPUN UTENSILS, COOKING AND KITCHEN, EXCEPT ALUMINUM		
United States	686.2	627.1	United States	288.6	367.7
California	63.5	60.8	California	6.8	(NA)
Connecticut	65.4	(NA)	Illinois	123.8	107.9
Indiana	110.3	104.7	Ohio	8.9	(NA)
New York	38.2	23.6	Wisconsin	102.8	100.9
Pennsylvania	159.6	160.7			
34692, JOB STAMPINGS, EXCEPT AUTOMOTIVE			34696, METAL SPINNING PRODUCTS		
United States	4 252.7	2 908.9	United States	46.5	(NA)
Alabama	49.8	36.3	California	4.9	(NA)
Arizona	38.6	10.8	Illinois	9.1	(NA)
Arkansas	3.5	(NA)	Ohio	2.8	(NA)
California	240.6	179.5	Pennsylvania	3.5	(NA)
Colorado	11.3	4.7	Wisconsin	4.7	(NA)
Connecticut	241.9	173.3	34699, OTHER STAMPED AND PRESSED METAL END PRODUCTS		
Florida	25.9	21.4	United States	1 390.8	1 584.8
Georgia	25.4	16.9	Alabama	2.6	13.2
Illinois	785.4	517.9	Arizona	6.9	17.7
Indiana	169.5	64.1	California	184.2	223.9
Iowa	23.3	17.4	Colorado	6.0	16.5
Kentucky	102.4	35.6	Connecticut	76.0	73.3
Maryland	21.9	(NA)	Florida	36.1	25.8
Massachusetts	122.2	233.8	Georgia	18.1	25.0
Michigan	376.2	111.7	Illinois	154.7	141.9
Minnesota	206.0	115.1	Indiana	43.8	25.9
Mississippi	11.0	6.1	Kentucky	43.0	19.4
Missouri	50.2	44.0	Massachusetts	57.0	68.1
New Hampshire	11.8	8.7	Michigan	25.8	34.6
New Jersey	190.9	148.4	Minnesota	42.5	33.4
New York	214.3	157.4	Mississippi	16.0	(NA)
North Carolina	64.0	40.6	Missouri	55.3	57.6
Ohio	513.2	388.6	New Jersey	34.4	79.0
Oregon	7.2	8.7	New York	44.0	116.3
Pennsylvania	265.9	206.5	North Carolina	9.1	18.9
Rhode Island	15.5	15.0	Ohio	117.5	119.8
South Carolina	8.2	3.3	Oregon	12.8	9.6
Tennessee	39.3	26.2	Pennsylvania	88.3	151.2
Texas	64.9	37.7	Texas	36.1	29.0
Washington	50.6	(NA)	Washington	3.8	(NA)
West Virginia	8.0	(NA)	Wisconsin	30.0	31.1
Wisconsin	270.8	207.1			

Table 6c. Historical Statistics for Product Classes—Value Shipped by All Producers: 1987 and Earlier Years

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendixes]

1987 product code	Product class	1987	1986 ¹	1985 ¹	1984 ¹	1983 ¹	1982	1977	1972
3451-	Screw machine products	2 763.3	2 949.4	2 955.2	2 840.7	2 292.0	2 159.7	1 771.4	1 083.1
34511	Automotive screw machine products	881.3	1 193.9	1 152.1	1 128.3	829.8	686.7	598.4	245.7
34512	Other screw machine products	1 595.3	1 665.6	1 736.3	1 624.6	1 258.1	1 245.3	958.6	638.7
34510	Screw machine products, n.s.k.	286.7	89.9	66.8	87.7	204.1	227.8	214.4	198.7
3452-	Bolts, nuts, rivets, and washers	4 793.1	4 233.2	4 294.0	4 290.0	3 655.7	3 401.0	3 130.3	1 988.4
34524	Externally threaded fasteners (except aircraft)	1 775.1	1 609.3	1 783.6	1 798.1	1 505.1	1 451.0	1 451.2	979.5
34525	Internally threaded fasteners (except aircraft)	534.0	512.5	545.1	561.4	484.0	408.6	412.6	248.5
34526	Nonthreaded fasteners (except aircraft)	574.5	708.4	692.4	754.3	660.9	526.2	517.2	353.2
34527	Aircraft aerospace fasteners	873.1	839.6	702.2	579.0	487.7	516.7	237.9	157.8
34528	Other formed parts	481.7	415.1	431.0	475.5	377.1	329.9	284.6	140.3
34520	Bolts, nuts, rivets, and washers, n.s.k.	554.7	148.3	139.7	121.8	140.9	168.5	226.8	109.1
3462-	Iron and steel forgings	2 903.2	2 560.1	2 808.9	3 175.1	2 706.9	3 161.3	2 966.7	1 572.6
34625	Hot impression die impact, press, and upset steel forgings	2 004.7	1 805.2	2 028.7	2 347.0	2 265.5	2 265.5	2 155.4	(NA)
34626	Cold impression die impact, press, and upset steel forgings	189.8	260.6	242.3	277.4	239.9	219.8	215.7	(NA)
34627	Seamless rolled ring forgings (ferrous) (see also code 3312a)	181.2						113.8	(NA)
34628	Open die or smith forgings (hammer or press) (ferrous) (see also code 3312b)	271.8	416.2	449.3	468.8	415.1	591.9	384.7	(NA)
34620	Iron and steel forgings, n.s.k.	255.7	78.1	88.6	81.9	87.6	84.1	97.1	(NA)

See footnotes at end of table.

Table 6c. Historical Statistics for Product Classes—Value Shipped by All Producers: 1987 and Earlier Years—Con.

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendices]

1987 product code	Product class	1987	1986 ¹	1985 ¹	1984 ¹	1983 ¹	1982	1977	1972
3463-	Nonferrous forgings	1 061.4	1 134.5	1 221.3	1 242.1	1 187.3	1 210.9	540.4	280.8
34635	Hot impression die impact, press, and upset nonferrous forgings	884.7	938.2	1 053.0	1 061.0	979.3	1 011.2	468.1	(NA)
34639	Other nonferrous forgings	124.4	187.8	161.9	179.1	202.4	193.7	61.2	(NA)
34630	Nonferrous forgings, n.s.k.	52.3	8.6	6.4	2.0	5.5	6.0	11.1	(NA)
3465-	Automotive stampings	14 961.0	15 697.7	15 835.0	14 695.6	11 467.4	9 041.2	9 599.8	5 155.8
34650	Job stampings, automotive	14 961.0	15 697.7	15 835.0	14 695.6	11 467.4	9 041.2	9 599.8	5 155.8
3466-	Crowns and closures	811.4	861.2	817.9	799.8	811.0	790.2	581.0	339.4
34661	Metal commercial closures and metal home canning closures	686.2	710.1	662.1	639.1	642.3	627.1	470.7	274.6
34662	Metal crowns	115.4	132.8	138.8	141.5	154.8	145.0	104.8	64.8
34660	Crowns and closures, n.s.k.	9.8	18.3	17.0	19.2	13.9	18.1	5.6	-
3469-	Metal stampings, n.e.c.	7 970.0	7 199.9	7 510.4	7 942.8	7 000.5	6 172.3	4 554.5	2 614.9
34692	Job stampings, except automotive	4 252.7	3 801.1	3 901.7	4 010.2	3 279.2	2 908.9	2 199.3	1 283.1
34694	Stamped and spun utensils, cooking and kitchen, aluminum	501.2	493.3	537.0	575.2	585.9	508.2	330.1	205.0
34695	Stamped and spun utensils, cooking and kitchen, except aluminum	288.6	302.7	378.8	419.6	397.7	367.7	385.4	184.4
34696	Metal spinning products	46.5	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
34699	Other stamped and pressed metal end products	1 390.8	2 184.7	2 294.6	2 490.1	2 013.1	1 584.8	1 073.0	588.4
34690	Metal stampings, n.e.c., n.s.k.	1 490.2	418.0	398.2	447.7	724.6	802.6	566.7	354.0
3471-	Plating and polishing	3 828.4	3 389.9	3 402.7	3 385.6	2 807.8	2 680.3	1 775.1	993.4
34710	Electroplating, plating, and polishing	3 828.4	3 389.9	3 402.7	3 385.6	2 807.8	2 680.3	1 775.1	993.4
3479-	Metal coating and allied services	3 800.2	3 574.7	3 312.8	3 014.4	2 402.2	2 405.2	1 520.5	682.0
34790	Etching, engraving, coating, and allied services	3 800.2	3 574.7	3 312.8	3 014.4	2 402.2	2 405.2	1 520.5	682.0

¹Figures are estimates derived from a representative sample of manufacturing establishments. Standard errors associated with estimates are published in annual survey of manufactures publications for this period.

Table 7. Materials Consumed by Kind: 1987 and 1982

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

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
INDUSTRY 3451, SCREW MACHINE PRODUCTS					
Materials, parts, containers, and supplies		(X)	810.0	(X)	671.4
Mill shapes and forms, except castings:					
Carbon steel:					
331011	Bar and bar shapes	1,000 s tons..	191.3	**191.5	190.1
331012	Sheet and strip	do..	9.8	*7.8	4.9
331013	Plates	do..	(D)	(³)	(³)
331017	Wire and wire products	do..	(S)	(S)	45.4
331019	All other carbon steel mill shapes and forms	do..	(S)	(NA)	(NA)
331058	All other	do..	-	*1.9	*3.3
Alloy steel, except stainless:					
331021	Bar and bar shapes	1,000 s tons..	(S)	(S)	25.4
331029	All other	do..	(S)	*5.7	11.3
Stainless steel mill shapes and forms:					
331049	Bars and bar shapes	1,000 s tons..	(S)	(S)	26.6
331033	Sheet and strip	do..	(S)	**2	1.1
331052	All other	do..	(S)	*1.9	4.5
Copper and copper-base alloy:					
335728	Bare wire (for electrical conduction only)	mil lb..	(S)	(S)	3.0
335103	Rod, bar, and bar shapes	do..	**143.8	74.3	57.7
335104	Mechanical wire (including extruded and/or drawn shapes)	do..	(S)	(S)	.9
335143	Plate, sheet, and strip, including military cups and discs	do..	(D)	(D)	.3
335152	Pipe and tube	do..	**7	.3	.3
Aluminum and aluminum-base alloy:					
335301	Sheet, plate, and foil	mil lb..	(S)	(S)	.9
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc.	do..	(S)	(S)	14.2
335008	All other (wire, rolled rod and bar, powder, welded tubing, etc.)	do..	(S)	(S)	5.7
335616	Nickel and nickel-base alloy	do..	(S)	(S)	.4
Castings (rough and semifinished):					
332011	Iron (gray and malleable)	1,000 s tons..	(S)	7.9	2.3
332045	Steel	do..	(S)	1.4	*.3
336005	Aluminum and aluminum-base alloy	mil lb..	(S)	2.6	**1.5
336006	Copper and copper-base alloy	do..	(S)	.1	(S)
336008	Other nonferrous	do..	(S)	.9	(S)
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes	do..	(S)	5	(S)
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes	do..	(X)	2.2	(X)
265001	Paperboard boxes, containers, and corrugated paperboard	do..	(X)	6.0	(X)
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools	do..	(X)	12.4	(X)
970099	All other materials and components, parts, containers, and supplies	do..	(X)	94.8	(X)
971000	Materials, parts, containers, and supplies, n.s.k. ²	do..	(X)	199.8	(X)

See footnotes at end of table.

Table 7. **Materials Consumed by Kind: 1987 and 1982—Con.**

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

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS					
Materials, parts, containers, and supplies -----		(X)	1 629.6	(X)	1 262.2
Mill shapes and forms, except castings:					
Carbon steel:					
331011	Bars and bar shapes ----- 1,000 s tons..	**457.1	212.0	**401.8	251.0
331012	Sheet and strip ----- do..	*206.4	97.4	190.5	92.2
331013	Plates ----- do..	*6.4	2.3	4.1	1.5
331017	Wire and wire products ----- do..	**505.6	317.6	**381.3	249.5
331019	All other carbon steel mill shapes and forms ----- do..	(S)	21.3	61.8	24.1
Alloy steel, except stainless:					
331021	Bars and bar shapes ----- 1,000 s tons..	**77.1	51.0	**63.9	43.3
331029	All other ----- do..	**68.2	54.3	*53.0	54.4
Stainless steel mill shapes and forms:					
331049	Bars and bar shapes ----- 1,000 s tons..	(S)	37.3	(S)	21.5
331033	Sheet and strip ----- do..	**4.6	12.4	**6.3	13.4
331052	All other ----- do..	**21.8	57.8	**13.7	34.1
Copper and copper-base alloy:					
335728	Bar wire (for electrical conduction only) ----- mil lb..	(D)	(D)	*101.9	2.2
335103	Rod, bar, and bar shapes ----- do..	(S)	18.8	18.3	11.3
335104	Mechanical wire (including extruded and/or drawn shapes) ----- do..	*8.0	11.5	(S)	9.7
335143	Plate, sheet, and strip, including military cups and discs ----- do..	10.2	13.3	17.6	25.6
335152	Pipe and tube ----- do..	(D)	(D)	(Z)	(Z)
Aluminum and aluminum-base alloy:					
335301	Sheet, plate, and foil ----- mil lb..	**1.6	2.0	(S)	2.8
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(S)	3.7	*7.1	7.6
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	(S)	23.2	(S)	24.9
335616	Nickel and nickel-base alloy ----- do..	(S)	11.1	4.4	13.3
Castings (rough and semifinished):					
332011	Iron (gray and malleable) ----- 1,000 s tons..	(S)	13.9	*1.9	2.0
332045	Steel ----- do..	(S)	4.4	.3	1.3
336005	Aluminum and aluminum-base alloy ----- mil lb..	.1	1.2	(S)	1.2
336006	Copper and copper-base alloy ----- do..	(D)	(D)	(S)	.2
336008	Other nonferrous ----- do..	(S)	3.0	(S)	4.9
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes ----- do..	*2.9	5.5	**4.7	6.3
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes ----- do..	(X)	4.3	(X)	4.5
265001	Paperboard boxes, containers, and corrugated paperboard ----- do..	(X)	18.3	(X)	10.8
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools ----- do..	(X)	75.8	(X)	39.2
970099	All other materials and components, parts, containers, and supplies ----- do..	(X)	310.1	(X)	*221.3
971000	Materials, parts, containers, and supplies, n.s.k. ² ----- do..	(X)	245.1	(X)	88.1
INDUSTRY 3462, IRON AND STEEL FORGINGS					
Materials, parts, containers, and supplies -----		(X)	1 273.2	(X)	1 245.1
Mill shapes and forms, except castings and forgings:					
Carbon steel:					
331041	Ingots ----- 1,000 s tons..	48.8	31.3	(S)	49.1
331042	Blooms, billets, and slabs ----- do..	114.0	55.9	*206.4	98.2
331043	Bars ----- do..	502.8	249.5	486.5	291.0
Alloy steel, except stainless:					
331044	Ingots ----- 1,000 s tons..	83.1	49.3	**30.8	25.1
331045	Blooms, billets, and slabs ----- do..	94.0	102.3	203.0	166.0
331046	Bars ----- do..	339.9	183.0	373.1	225.3
Stainless steel:					
331047	Ingots ----- 1,000 s tons..	4.9	8.2	(D)	(D)
331048	Blooms, billets, and slabs ----- do..	5.5	15.7	13.0	21.4
331049	Bars ----- do..	*7.0	21.9	*8.2	19.4
Aluminum and aluminum-base alloy:					
333471	Ingots ----- 1,000 s tons..	(S)	6.7	.2	.4
335001	Mill shapes ----- mil lb..	(S)	3.2	(S)	.6
Titanium and titanium-base alloy:					
335627	Ingots ----- mil lb..	4 171.7	38.6	(S)	80.3
335628	Mill shapes ----- do..	**2 766.2	24.9		
Nonferrous forging stock:					
335107	Copper and copper-base alloy ----- mil lb..	(S)	.5	1.2	2.7
335690	Nickel and nickel-base alloy (including nickel-copper alloys) ----- do..	**4.2	18.6	*1.8	7.3
335618	Other nonferrous ----- do..	(D)	(D)	3.2	1.6
Iron and steel forgings:					
346201	Cold ----- 1,000 s tons..	83.9	117.6	(S)	3.2
346209	Other ----- do..			**174.0	13.4
346310	Aluminum forgings, including impact extrusions ----- do..	(D)	(D)	(D)	(D)
354411	Forging dies ----- mil lb..	(S)	10.1	(S)	12.7
970099	All other materials and components, parts, containers, and supplies ----- do..	(X)	124.7	(X)	126.6
971000	Materials, parts, containers, and supplies, n.s.k. ² ----- do..	(X)	172.1	(X)	98.2

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1987 and 1982—Con.

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

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
INDUSTRY 3463, NONFERROUS FORGINGS					
Materials, parts, containers, and supplies		(X)	456.3	(X)	477.4
Mill shapes and forms, except castings and forgings:					
Carbon steel:					
331041	Ingots 1,000 s tons..	5	.4	(S)	8.7
331042	Blooms, billets, and slabs				
331043	Bars				
Alloy steel, except stainless:					
331044	Ingots 1,000 s tons..	23.8	31.0	(D)	(D)
331045	Blooms, billets, and slabs				
331046	Bars				
Stainless steel:					
331047	Ingots 1,000 s tons..	1.7	4.1	-	-
331048	Blooms, billets, and slabs				
331049	Bars				
Aluminum and aluminum-base alloy:					
333471	Ingots 1,000 s tons..	(D)	(⁵)	(D)	(D)
335001	Mill shapes	70.2	78.9	24.8	26.9
Titanium and titanium-base alloy:					
335627	Ingots	(S)	85.6	6.8	81.3
335628	Mill shapes				
Nonferrous forging stock:					
335107	Copper and copper-base	*24.0	26.6	36.6	32.0
335690	Nickel and nickel-base alloy (including nickel-copper alloy)	4.7	23.9	3.8	29.8
335618	Other nonferrous	(S)	7.3	(S)	8.1
Iron and steel forgings:					
346201	Cold 1,000 s tons..	-	-	-	-
346209	Other	-	-	(D)	(D)
346310	Aluminum forgings, including impact extrusions	(D)	(⁵)	(D)	(D)
354411	Forging dies	(S)	5.8	*.9	.8
970099	All other materials and components, parts, containers, and supplies	(X)	5163.8	(X)	64.0
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	28.9	(X)	6.5
INDUSTRY 3465, AUTOMOTIVE STAMPINGS					
Materials, parts, containers, and supplies		(X)	8 018.4	(X)	4 276.1
Mill shapes and forms, except castings:					
Carbon steel:					
331011	Bars and bar shapes 1,000 s tons..	**140.9	76.7	*254.7	157.7
331012	Sheet and strip	8 654.4	4 862.5	*4 790.9	2 704.0
331013	Plates	23.1	11.0	**17.8	7.8
331015	Structural shapes	(S)	1.5	(S)	5.1
331017	Wire and wire products	*20.5	11.3	30.3	10.0
331018	Tin plate, tin free steel, terneplate, and blackplate	13.4	10.2	13.9	12.5
331083	All other	(S)	75.8	55.2	37.1
Alloy steel, except stainless:					
331021	Bars and bar shapes 1,000 s tons..	*5.7	5.2	(S)	11.5
331029	All other	(S)	64.4	(S)	140.9
Stainless steel:					
331033	Sheet and strip 1,000 s tons..	**65.7	147.9	41.9	92.8
331050	All other				
335107	Copper and copper-base alloy	*6.2	13.4	(S)	*12.8
Aluminum and aluminum-base alloy:					
335301	Sheet, plate, and foil	**77.0	95.4	(S)	98.7
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc.	(S)	30.1	(S)	27.5
335008	All other wire, rolled rod and bar, powder, welded tubing, etc.	(S)	12.5	**3.7	2.1
Castings (rough and semifinished):					
332011	Iron (gray and malleable) 1,000 s tons..	(S)	5.2	(D)	(⁷)
332045	Steel	(S)	56.3	(S)	.8
336005	Aluminum and aluminum-base alloy			*.6	1.0
336006	Copper and copper-base alloy	(S)	16.0	(D)	(⁷)
336008	Other nonferrous			**8.5	8.4
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes	12.3	16.4	*28.9	13.3
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes	(X)	23.6	(X)	36.5
265001	Paperboard boxes, containers, and corrugated paperboard	(X)	39.5	(X)	26.8
260003	Paper and paperboard products, except paperboard boxes, containers, and corrugated paperboard	(X)	5.4	(X)	6.8
285101	Paints, varnishes, lacquers, shellacs, japans, enamels, and allied products 1,000 gal..	(S)	27.8	(S)	21.7
345001	Bolts, nuts, screws, rivets, washers, and screw machine products	(X)	148.7	(X)	69.5
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools	(X)	584.8	(X)	55.7
970099	All other materials and components, parts, containers, and supplies	(X)	1 051.6	(X)	7554.6
971000	Materials, parts, containers, and supplies, n.s.k. ²	(X)	625.2	(X)	160.5

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1987 and 1982—Con.

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

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
INDUSTRY 3466, CROWNS AND CLOSURES					
	Materials, parts, containers, and supplies	(X)	412.4	(X)	419.3
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes 1,000 s tons..	(D)	(D)	(S)	31.1
331012	Sheet and strip do..	*5.7	3.2	-	-
331013	Plates do..	-	-	-	-
331015	Structural shapes do..	-	-	-	-
331017	Wire and wire products do..	(D)	(D)	-	-
331018	Tin plate, tin free steel, terneplate, blackplate do..	**113.3	107.9	192.6	126.3
331083	All other do..	-	-	-	-
	Alloy steel, except stainless:				
331021	Bars and bar shapes 1,000 s tons..	(D)	(D)	-	-
331029	All other do..	-	-	-	-
	Stainless steel:				
331033	Sheet and strip 1,000 s tons..	(D)	(D)	-	-
331050	All other do..	(D)	(D)	(D)	(⁵)
335107	Copper and copper-base alloy mil lb..	(D)	(D)	(Z)	(⁶ Z)
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil mil lb..	*55.9	68.7	71.3	106.5
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. do..	(D)	(D)	(Z)	(Z)
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. do..	-	-	-	-
	Castings (rough and semifinished):				
332011	Iron (gray and malleable) 1,000 s tons..	(D)	(D)	(D)	(⁵)
332045	Steel do..	(X)	-	-	-
336005	Aluminum and aluminum-base alloy mil lb..	-	-	-	-
336006	Copper and copper-base alloy do..	-	-	-	-
336008	Other nonferrous do..	-	-	-	-
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes do..	**43.5	20.9	33.9	19.8
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes do..	(X)	13.5	(X)	8.8
265001	Paperboard boxes, containers, and corrugated paperboard do..	(X)	5.6	(X)	9.6
260003	Paper and paperboard products, except paperboard boxes, containers, and corrugated paperboard do..	(X)	8.2	(X)	9.5
285101	Paints, varnishes, lacquers, shellacs, japans, enamels, and allied products 1,000 gal..	(S)	22.0	(X)	23.2
345001	Bolts, nuts, screws, rivets, and screw machine products do..	(X)	1.1	(X)	(Z)
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools do..	(X)	3.7	(X)	4.0
970099	All other materials and components, parts, containers, and supplies do..	(X)	86.6	(X)	565.3
971000	Materials, parts, containers, and supplies, n.s.k. ² do..	(X)	63.4	(X)	15.1
INDUSTRY 3469, METAL STAMPINGS, N.E.C.					
	Materials, parts, containers and supplies	(X)	3 461.8	(X)	2 572.6
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes 1,000 s tons..	(S)	40.1	(S)	28.2
331012	Sheet and strip do..	**1 446.1	917.4	**1 203.5	654.2
331013	Plates do..	(S)	32.0	**45.9	20.2
331015	Structural shapes do..	(S)	5.4	(S)	10.8
331017	Wire and wire products do..	(S)	18.9	(S)	12.2
331018	Tin plate, tin free steel, terneplate, and blackplate do..	(S)	65.8	*129.7	109.8
331083	All other do..	(S)	55.5	53.5	44.6
	Alloy steel, except stainless:				
331021	Bars and bar shapes 1,000 s tons..	*28.6	25.9	(S)	9.6
331029	All other do..	(S)	40.0	(S)	75.4
	Stainless steel:				
331033	Sheet and strip 1,000 s tons..	**123.7	157.8	(S)	117.2
331050	All other do..	9.4	26.4	(S)	28.8
335107	Copper and copper-base alloy mil lb..	(S)	77.4	(S)	105.3
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil mil lb..	*278.7	294.1	(S)	207.2
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. do..	(S)	15.4	(S)	10.2
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. do..	(S)	12.8	(S)	10.4
	Castings (rough and semifinished):				
332011	Iron (gray and malleable) 1,000 s tons..	(S)	3.4	(S)	4.9
332045	Steel do..	(S)	25.3	(S)	10.3
336005	Aluminum and aluminum-base alloy mil lb..	(S)	12.4	(S)	15.5
336006	Copper and copper-base alloy do..	11.6	14.8	(D)	(⁷)
336008	Other nonferrous do..	(S)	2.6	(S)	11.2
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes do..	(S)	5.3	(S)	11.7
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes do..	(X)	21.7	(X)	34.7
265001	Paperboard boxes and containers do..	(X)	48.1	(X)	42.1
260003	Paper and paperboard products, except paperboard boxes, and containers do..	(X)	3.9	(X)	5.7
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels 1,000 gal..	(S)	27.2	(X)	33.9
345001	Bolts, nuts, screws, rivets, and screw machine products do..	(X)	50.2	(X)	28.6
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools do..	(X)	24.9	(X)	18.6
970099	All other materials and components, parts, containers, and supplies do..	(X)	520.1	(X)	7392.2
971000	Materials, parts, containers, and supplies, n.s.k. ² do..	(X)	917.0	(X)	516.1

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1987 and 1982—Con.

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

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
INDUSTRY 3471, PLATING AND POLISHING					
	Materials, parts, containers, and supplies -----	(X)	906.8	(X)	822.7
289900	Foundry chemicals, metal treating compounds, and plating compounds -----	(X)	216.2	(X)	322.0
329101	Grinding wheels and other abrasive products, except industrial diamonds -----	(X)	13.5	(X)	12.0
331000	Steel mill shapes and forms, except castings ----- 1,000 s tons..	(S)	66.7	** 46.4	17.9
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels ----- 1,000 gal..	(S)	26.5	(NA)	(NA)
970099	All other materials and compounds, parts, containers, and supplies -----	(X)	230.5	(X)	199.0
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	353.4	(X)	271.8
INDUSTRY 3479, METAL COATING AND ALLIED SERVICES					
	Materials, parts, containers, and supplies -----	(X)	1 719.5	(X)	1 045.2
289900	Foundry chemicals, metal treating compounds, and plating compounds -----	(X)	84.9	(X)	221.1
329101	Grinding wheels and other abrasive products, except industrial diamonds -----	(X)	7.1	(X)	4.1
331000	Steel mill shapes and forms, except castings ----- 1,000 s tons..	(S)	556.8	(S)	212.2
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels ----- 1,000 gal..	(S)	228.8	(NA)	(NA)
970099	All other materials and compounds, parts, containers, and supplies -----	(X)	431.0	(X)	499.2
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	410.9	(X)	108.6

¹For some establishments, data have been estimated from central unit values which are based on quantity-cost 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: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

²Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

³For 1982, material code 331013 was included with material code 3310158.

⁴For 1982, material codes 346201 and 346209 were included in material code 970099 and are not shown separately for 1987.

⁵Data are combined with material code 970099 to avoid disclosing data for individual companies.

⁶For 1982, data for material code 335107 were reported separately as materials codes 335728, 335102, 335143, and 335152.

⁷For 1982, material codes 333348 and 341151 were included in material code 970099 and are not shown separately for 1987; material codes 332041 and 336006 are combined with material code 970099 to avoid disclosing data for individual companies.

APPENDIX A.

Explanation of Terms

This appendix is in two sections. Section 1 includes items requested of all establishments mailed census of manufactures forms including annual survey of manufactures (ASM) forms. Note that this section also includes several items (number of establishments and companies, value added, classes of products, and specialization and coverage ratios) not included on the report forms but derived from information collected on the forms. Section 2 covers supplementary items requested only from establishments included in the ASM sample. Results of the supplementary ASM inquiries are included in table 3c of this report.

SECTION 1. ITEMS COLLECTED OR DERIVED BASED ON ALL CENSUS OF MANUFACTURES (INCLUDING ASM) REPORT FORMS

Number of establishments and companies—As discussed in the Introduction, 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.

In this report, data are shown for establishments in operation at any time during the year. A comparison with the number of establishments in operation at the end of the year will be provided in the Introduction of the General Summary subject report.

Employment and related items—The report forms requested separate information on production workers for a specific payroll period within each quarter of the year and on other employees as of the payroll period which included the 12th of March.

All 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 function, 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 to the plant and utilized as a separate work force.

In addition to reports sent to operating manufacturing establishments, information on employment during the payroll period which included March 12 and annual payrolls also was requested of auxiliary units (e.g., administrative offices, warehouses, and research and development laboratories) of multiestablishment companies. However, these figures are not included in the totals for individual

industries shown in this report. They are included in the general summary and geographic area reports as a separate category.

Payroll—This item includes the gross earnings of all employees on the payroll of operating manufacturing establishments paid in the calendar year 1987. 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 payroll 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' supplemental labor costs, both those required by Federal and State laws and those incurred voluntarily or as part of collective bargaining agreements. (Supplemental labor costs are explained later in this appendix.)

As in the case of employment figures, the payrolls of separate auxiliary units of multiestablishment companies are not included in the totals for individual industries or industry groups.

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.

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.

The important components of this cost item are (1) 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) electric energy purchased, (3) fuels consumed for heat, power, or the generation of electricity, (4) work done by

others on materials or parts furnished by manufacturing establishments (contract work), and (5) products bought and resold in the same condition. (See discussion of duplication of data below.)

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. Information on the establishments consuming less than a specified amount (usually \$10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which either administrative records or short forms were used was imputed as "not specified by kind." (See the introduction for the importance of administrative records in the industry.)

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 resold without further processing. Included are all items made by or for the establishments from materials 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. (See discussion of duplication of data below.)

Individual products—As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1987 census program, information was collected on the output of approximately 11,000 individual product items. The term "product", as used in the census of manufactures, represents the finest level of detail for which output information was requested. Consequently, it is not necessarily synonymous with the term "product" as used in the marketing sense. In some cases, it may be much more detailed and, in other cases, it is more aggregative. For example, "pharmaceutical preparations" was distributed into over 100 terms; whereas, "motor gasoline" was reported as a single item.

Approximately 6,600 of the product items were listed separately on the 1987 census report forms. Data for

about 4,400 products were obtained in the monthly, quarterly, or annual surveys comprising the Current Industrial Reports series of the Census Bureau. Totals for the year 1987 for these items, as derived from the commodity surveys, are shown in the "products shipped" table (table 6a-2).

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 1982 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 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.

Classes of products—To summarize the product information, the separate products were aggregated into classes of products that, in turn, were grouped into all primary products of each industry. The code structure used is a seven-digit number for the individual product, a five-digit number for the class of product, and a four-digit number for the total primary products in an industry. (See Introduction, Industry Classification of Establishments, for application of the coding structure to the assignment of SIC codes for establishments.)

In the 1987 census, the 11,000 products were grouped into approximately 1,500 separate classes on the basis of general similarity of manufacturing processes, types of materials used, and the like. However, the grouping of products was affected by the economic significance of the class and, in some cases, dissimilar products were grouped because the products were not sufficiently significant to warrant separate classes.

Duplication in cost of materials and value of shipments—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 United States level and beginning in 1964, for all geographic levels.

Value added by manufacture—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 (see footnote in table 1a), 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.

New and used capital expenditures—For establishments in operation and any known plants under construction, manufacturers were asked to report their new 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.

The totals for new expenditures include expenditures 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. Also excluded are expenditures for used plant and equipment (although reported in the census), expenditures for land, and cost of maintenance and repairs charged as current operating expenses.

Manufacturers also were requested to report the value of all used buildings and equipment purchased during the year at the purchase price. 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. Furthermore, if the establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported under used capital expenditures.

Total expenditures for used plant and equipment is a universe figure; it is collected on all census forms. However, the breakdown of this figure between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. The data for total new capital expenditures, new building expenditures, and new machinery expenditures, as well as the data for total used expenditures, are shown in table 3b.

End-of-year inventories—Respondents were asked to report their 1986 and 1987 end-of-year inventories at cost or market. Effective with the 1982 Economic Censuses, 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). 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.

SECTION 2. ITEMS COLLECTED ONLY ON ASM REPORT FORMS

The following items were collected only from establishments included in the ASM sample:

1. **Supplemental labor costs**—Supplemental labor costs 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

Because of this change in reporting instructions, the 1982 through 1987 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown in table 1a of this report and in historical census of manufactures and annual survey of manufactures publications.

In using inventory data by stage of fabrication for "all industries" and at the two-digit industry 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 another 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 individual industries, industry groups, and "all manufacturing", which are aggregates of figures reported by establishments in specified industries.

Specialization and coverage ratios—These items are not collected on the report forms but are derived from the data shown in table 5b. 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.

As noted in the introduction, 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 5a and data on product shipments shown in tables 6a through 6c.

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.

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. While the excluded items do benefit employees and all or part of their cost generally is similar to the items covered in the ASM labor costs statistics, accounting records generally do not provide reliable figures on net employee benefits of these types.

2. **Retirements of depreciable assets**—Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during 1987. 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.
3. **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.
4. **Rental payments**—Total rental payments is 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.

5. **Depreciable assets**—Total value of gross depreciable assets is collected on all census forms.

However, the detail for depreciable assets is collected only on the ASM forms. The data encompass all fixed depreciable assets on the books of establishments at the beginning and end of the year. 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 new and used capital expenditures, less retirements, equalled assets at the end of the year.

6. **New and used capital expenditures**—The data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used capital expenditures are collected on all census forms. However, the breakdown between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. (See further explanation on capital expenditures in section 1.)
7. **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 ASM forms. 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.
8. **Breakdown of new capital expenditures for machinery and equipment**—ASM establishments were requested to separate their capital expenditures for new machinery and equipment into (1) automobiles, trucks, etc., for highway use, (2) computers and peripheral data processing equipment, and (3) all other.

The category "automobiles, trucks, etc., for highway use" is intended to measure expenditures for vehicles designed for highway use that were acquired through a purchase or lease-purchase agreement.

Vehicles normally operating off public highways (vehicles specifically designed to transport materials, property, or equipment on mining, construction, logging, and petroleum development projects) are excluded from this item.

9. **Foreign content of cost of materials**—Establishments included in the ASM sample panel were requested to provide information on foreign-made materials purchased or transferred from foreign sources. This includes materials acquired from a central warehouse or other domestic establishment of the same company but made in an operation outside of the 50 States, District of Columbia, Puerto Rico, or U.S. territories.
10. **Cost of purchased services**—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, and communication 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, such as painting, roof repairs, replacing parts, and overhauling equipment. Such 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 were capitalized are considered capital expenditures for used buildings and machinery and are, 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.

Three basic approaches were utilized to produce these statistics.

1. For items 1 through 6, data were estimated (imputed) for all non-ASM establishments using the available data in the establishment record and industry-based parameters. The statistics were then generated by simply tabulating all census records including the imputed value for non-ASM establishments and the unweighted value for ASM establishments. Separate imputation rates were developed and are shown in the table. For quantity of purchased electricity for heat and power (item 7), a similar procedure was used; however, the imputation parameters were geographically-based instead of industry-based. For quantities of generated less sold electricity, no imputation was performed for non-ASM establishments. The estimates for these items are simply tabulations of unweighted ASM values.

Since the published statistics for these items were developed from the complete census universe and not just the ASM establishments, there are no sampling variances associated with these statistics. However, there is an unknown level of bias for each of the items due to the imputation of the non-ASM establishments. This bias is felt to be small due to the strong correlation between the items being imputed and the collected items that were used to generate the impute values.

2. For items 8 and 9, the estimates were developed using a ratio estimation methodology. For item 8, an estimate of the breakout of new capital expenditures for machinery and equipment into the three categories was made from ASM establishments reporting these categories. The estimated proportions were then applied to the corresponding Census value for new capital expenditures for machinery and equipment to produce the estimates.

The estimates for item 9, foreign content of cost of materials, were developed in a similar manner based on costs of parts, supplies, and components (item 5a) as the control total for the three categories.

For items 8 and 9, an adjustment ratio of the following form was computed.

$$R_j = \frac{NM_c}{TME_{asm}}$$

where:

NM_c = the census value of new capital expenditures for machinery and equipment

TME_{asm} = the weighted ASM value of new capital expenditures for machinery and equipment from reporters of the detailed breakout data.

3. For item 10, cost of purchased services, the estimates were made by simply tabulating weighted data for all the ASM records that reported the item. A response coverage ratio (a measure of the extent to which respondents reported for each item) is shown in table 3c for the three types of services. It is derived for each item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight, see appendix B) for those ASM establishments that reported the specific inquiry to the weighted total employment for all ASM establishments classified in the industry.

APPENDIX B.

Annual Survey of Manufactures (ASM) Sampling and Estimating Methodologies

DESCRIPTION OF SURVEY SAMPLE

The Annual Survey of Manufactures (ASM) contains two components. The mail portion of the survey is a probability sample of about 56,000 manufacturing establishments selected from a total of about 220,000 establishments. These 220,000 establishments represent all manufacturing establishments of multiunit companies and all single establishment companies mailed schedules in the 1982 Census of Manufactures. This mail portion is supplemented annually by a Social Security Administration list of new manufacturing establishments opened after 1982 and a list of new multiunit manufacturing establishments identified from the Census Bureau's Company Organization Survey.

The 1984 through 1988 ASM sample differs slightly from the previous sample. For the current panel, all establishments of companies with 1982 shipments in manufacturing in excess of \$500 million were included in the survey panel with certainty. There are approximately 500 such companies collectively accounting for approximately 18,000 establishments. For the remaining portion of the mail survey, the establishment was defined as the sampling unit. For this portion, all establishments with 250 employees or more and establishments with a very large value of shipments also were included in the survey panel with certainty. A total of 12,100 establishments were selected from this portion of the universe with certainty. Therefore, of the 56,000 manufacturing establishments included in the ASM panel, approximately 31,000 are selected with certainty. These certainty establishments collectively account for approximately 80 percent of the total value of shipments in the 1982 census.

Smaller establishments in the remaining portion of the mail survey were sampled with probabilities ranging from 0.999 to 0.005 in accordance with mathematical theory for optimum allocation of a sample. The probabilities of selection assigned to the smaller establishments were proportional to measures of size determined for each establishment. The measures of size depend directly upon each establishment's 1982 product class values and the historic variability of the year-to-year shipments of each product class. Product classes displaying more volatile year-to-year change in shipments at the establishment level were sampled at a heavier rate.

This method of assigning measures of size was used in order to maximize the precision (that is, minimize the variance of estimates of the year-to-year change) in the value of product class shipments. Implicitly, it also gave weight differences in employment, value added, and other

general statistics, since these are highly correlated with value of shipments. Individual sample selection probabilities were obtained by multiplying each establishment's final measure of size by an overall sampling fraction coefficient calculated to yield a total expected sample size.

The sample selection procedure gave each establishment in the sampling frame an independent chance of selection. This method of independent selection permits the rotation of small establishments out of a given sample panel without introducing a bias into the survey estimates.

The nonmail portion of the survey includes all single-establishment companies that were tabulated as administrative records in the 1982 Census of Manufactures. Although this portion contained approximately 130,000 establishments, it accounted for less than 2 percent of the estimate for total value of shipments at the total manufacturing level. This portion was not sampled; rather, the data for every establishment in this group were estimated based on selected information obtained annually from the administrative records of the Internal Revenue Service and the Social Security Administration. This administrative-record information, which includes payroll, total employment, industry classification, and physical location of the establishment, was obtained under conditions which safeguard the confidentiality of both tax and census records. Estimates of data other than payroll and employment for these small establishments were developed from industry averages.

The corresponding estimates for the mail and nonmail establishments were added together, along with the base-year differences, as defined in the Description of Estimating Procedure section, to produce the figures shown in this publication.

DESCRIPTION OF ESTIMATING PROCEDURES

Most of the ASM estimates for the years 1983-1986 were computed using a difference estimation procedure. For each item, a base-year difference was developed. This base-year difference is equal to the difference between the 1982 census published number for an item total and the linear ASM estimate of the total for 1982. The ASM linear estimate was obtained by multiplying each sample establishment's data by its sample weight (the reciprocal of its probability of selection) and summing the weighted values.

These base-year differences were then added to the corresponding current-year linear estimates, which include the sum of the estimates for the mail and nonmail establishments, to produce the estimates for the years 1983-1986. Estimates developed by this procedure usually are far more reliable than comparable linear estimates developed from the current sample data alone.

The 1987 sample estimates for the purchased service items, shown in table 3c, are strictly ASM linear estimates, however, developed only from ASM establishments that reported the specific item.

The remaining estimates in table 3c, showing the breakdown of expenditures for new machinery and equipment and costs of parts (separated into purchases from foreign sources and purchases from domestic sources), were computed as ratio estimates. To do this, linear estimates of the new machinery detail items were developed from the ASM establishments and were ratio adjusted to the corresponding census total for new machinery. In a similar fashion, the ASM linear estimates of the detailed purchased materials items were ratio adjusted to the corresponding census total for cost of parts.

QUALIFICATIONS OF THE DATA

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

The particular sample selected for the ASM is one of a large number of 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 theoretical, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected statistics in this report. They are presented 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:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
2. From two standard errors below to two standard errors above the derived estimate for about 19 of 20 of all possible samples.
3. 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 as 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 in the course of the 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 only moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown.

The concept of complete coverage under the conditions prevailing for the ASM is not identical to the complete coverage of the census of manufactures, as the censuses have been conducted. Nearly all types of operational errors that affect the ASM also occur in the censuses. The ASM and the censuses, are conducted under quite different conditions, and operational errors can be better controlled in the ASM than in the censuses. As a result, for many of the census figures, the errors are of the same order of size as the total errors of the corresponding annual survey estimates. The differences between the census and ASM operating conditions also disturb, to some degree, the comparability of the ASM and census data.

Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be of limited reliability. However, the figure may be combined with higher-level totals, creating a broader aggregate, which then may be of acceptable reliability.

APPENDIX C.

Changes in Census of Manufactures Product Classes for 1987

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product classes were revised for 1987. Listed below are the revisions to the product classes]

1987	1982	1987	1982	1987	1982	1987	1982
30521	30411	30899 3089A	3079K pt	34919	34948	35483	36233
30522	30412			34921	3494B	35484	35496
30523	30413	32295	32291 pt	34922	3494C	35485	35495 pt 35497
30524	30414	32296	32292 pt	34923	3494D	35533	35531 pt
30525	30415	32297	32294 pt	34924	3494E	35534	35532 pt
30526	30416	32298	32291 pt 32292 pt 32294 pt	34925	3494F	35543	35541 35542 pt
30534	32934			34926	3494G		
30535	32935	32311	32317	34927	3494H	35544	35542 pt
30536	32936	32312	32317	3523C	35234 pt 35237 35238 pt	35558	35557 pt
30537	32937	32927	32928 32929			35561	35511
30538	32938	32961	32963 32965	3523E	35234 pt 35238 pt	35562	35512
30539	32939			3523F	3523A 3523B	35563	35513 pt
30611	3069A pt	32962	32964 32966	3523G	35234 pt 35237 35238 pt	35591	35591 35699 pt
30612	3069A pt	33152	33152 34967	35246	35243 35245	35596	35595 pt
30613	3069A pt			3531A	35311	35597	35494
30614	3069B pt	33391	33331	3531B	35312	35599	35595 pt 36360 36362
30615	3069B pt	33392	33334	3531C	35317		
30616	3069B pt	33398	33321 33323 33399	3531E	35314 pt	35616	3561C
30617	3069B pt			3531F	35316	35631	35631 pt
3069C	3069C 35557 pt	33561 33562 33563	33569	3531G	35318 pt	35651	35513 pt 35514 pt 35691 pt
3069E	30310	33630	33611	3531H	35313 pt 35318 pt 35319 pt	35652	35513 pt 35514 pt 35691 pt
30810	30792	33640	33620 pt 33691 pt 33692 pt 33693 pt	3531K	35319 pt 35361 pt 35371 pt	35676	35672
30820	3079K pt						
30830	3079K pt	33650	33612				
30840	30794	33660	33620 pt	3531M	35313 pt 35314 pt 35319 pt 35372 pt	35692	35694 35695 35696
30850	30795	33690	33691 pt 33692 pt 33693 pt			35697 35698	35699 pt
30861 30862 30863 30864 30865 30866	30797			35337	35331 35332 pt	35711	35731 36629 pt
		34234	34232 pt	35338	35332 pt		
		34235	34232 pt 35531 pt 35532 pt	35339	35333	35712	35734 pt 35735 pt
30870	3079K pt			3533A	35335	35721	35732 pt
30880	3079J pt 3079K pt	34236	34233	3533B	35336	35722	35734 pt 35735 pt
30891	3079J pt 3079K pt	34441 34443 34447 34448 34449	34446	35363	35361 pt	35751	35732 pt 36612 pt
30892	3079J pt 3079K pt			35364	35362 pt		
30893	3079J pt 3079K pt	34461 34462 34463 34464 34465	34460	35373	35362 pt 35371 pt	35752	35734 pt 35735 pt
30894	3079J pt 3079K pt	34696 34699	34699	35374	35362 pt 35372 pt	35771	35732 pt
30895	3079J pt			3541D	35411 35412	35772	35734 pt 35735 pt
30896	2499A pt 3079J pt 3079K pt	34911 34912 34913 34914 34915 34916	3494A	35430	35650	35781	35743
30897	3079J pt 3079K pt			35454	35453	35782	35744
30898	3079J pt 3079K pt	34917	34949	35455	35452	35783	35745
		34918	34947	35481	36231	3585C	3585A 36993
				35482	36232	3585D	3585B 36994 pt

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product classes were revised for 1987. Listed below are the revisions to the product classes]

1987	1982	1987	1982	1987	1982	1987	1982
35931	35996 35997	36411	36410	36991—Con. 36995	36629 pt—Con.	38731—Con.	38734—Con. 38736 38737
35932	35998	36412	36994 pt	36997	35497 pt 36629 pt	39113 39114	39112
35933	35999	36520	36521 pt	36998	36994 pt	39153 39154	39151
35941	35617 35618 35631 pt	36613	35732 pt 36612 pt	3714A	37143	39447	36629 pt 39447
35942	3561A 3561B 35631 pt	36614	36612 pt	37999	37994 37998	39493	39494 pt
35961 35962 35963	35760	36631	36621 36629 pt	38121	38111	39495	3079k pt
36123 36126	36125	36632	36622	38122	36625 pt 36629	39496	39494 pt
36251	36138 pt 36794	36691	36624	38210	38112 38113 pt	39523	39521 39522 pt
36252	36221	36692	36626	38260	38320 38326	39524	39522 pt
36253	36222	36693	36628	38271	38324	39651	39630
36254	36138 pt 36223	36714	36711 36712	38272 38273	38325	39654	39641
36330	36331 36333	36715	36799 pt	38295	36625 pt 38293	39656	39642
36395	36361 36394 36399	36720	36797	38296	38113 pt	39998	39620
		36799	36629 pt 36799 pt	38440	36931	39999	39995
		36950	35732 pt 36792	38450	36930 36933	97372	36522
		36991 36992	36629 pt	38731	38734	97819	36521 pt

APPENDIX D.

Changes in Census of Manufactures Product Codes for 1987

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product codes were revised for 1987. Listed below are the revisions to the product codes. The terms published and collected are defined as follows: (1) published refers to the code used in the published reports for 1987 and 1982, and (2) collected refers to the code appearing on the report forms for 1987]

1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published
30118 00	30118 00	30118 19 30118 20	30539 77	32939 77	32939 77	30830 11 30830 13 30830 19	30793 01 30793 03 30793 09	3079K 90	30892 20— Con.	3079D 33— Con.	3079J 61 pt —Con. 3079J 66 pt 3079K 93 pt
3011A 39	3011A 39	3011A 33 3011A 35	30539 79	32939 79	32939 79						
3011C 29	3011C 29	3011C 24 3011C 26 3011C 27	30539 81	32939 81	32939 81	30840 11	30794 21	30794 21			
30521 00	30411 00	30411 00	30611 00	3069A 00	3069A 11	30840 12	30794 22	30794 22	30892 30	3079D 35	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 93 pt
30522 00	30412 00	30412 00	30612 00	3069A 00	3069A 12 3069A 15	30840 13	30794 23	30794 23			
30523 00	30413 00	30413 00	30613 00	3069A 00	3069A 13 3069A 14 3069A 16	30840 14	30794 24	30794 24			
30524 00	30414 00	30414 00	30614 00	3069B 00	3069B 11	30840 15	30794 25	30794 25	30892 90	3079D 39	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 93 pt
30525 00	30415 00	30415 00	30615 00	3069B 00	3069B 12 3069B 13 3069B 14 3069B19	30840 19	30794 26	30794 26			
30526 00	30416 00	30416 00	30616 00	3069B 00	3069B 21	30850 00	30795 00	30795 00			
30534 11	32934 11	32934 11	30617 00	3069B 00	3069B 29	30861 00	30797 41	30797 41			
30534 13	32934 13	32934 13	30618 00	3069B 00	3069B 29	30862 10 30862 20 30862 90	30797 51 30797 53 30797 59	30797 42	30893 00	3079F 22	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30534 15	32934 15	32934 15	30619 00	3069B 00	3069B 29	30863 10 30863 90	30797 61 30797 69	30797 44			
30534 17	32934 17	32934 17	30620 00	3069B 00	3069B 29	30864 10 30864 20 30864 30 30864 90	30797 71 30797 73 30797 75 30797 79	30797 45	30894 01	30798 01	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30535 11	32935 11	32935 11	30621 00	3069B 00	3069B 29	30865 10 30865 20 30865 30 30865 40 30865 90	30797 81 30797 83 30797 85 30797 86 30797 89	30797 46			
30535 13	32935 13	32935 13	30622 00	3069D 20	3069D 17 3069D 19	30866 10	30797 43	30797 43	30894 02	30798 02	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30535 15	32935 15	32935 15	30623 00	3069D 42	3069D 55 3069D 58	30866 90	30797 47	30797 47			
30535 17	32935 17	32935 17	30624 00	3069E 20	30310 00	30870 12 30870 13	30791 01 30791 02	3079K 99	30894 03	30798 03	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30535 19	32935 19	32935 19	30625 00	30310 00	30310 00	30880 00	3079F 20	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt			
30535 21	32935 21	32935 21	30626 00	30810 10	30792 11	30891 01	3079C 11	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30894 04	30798 04	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30535 23	32935 23	32935 23	30627 00	30810 20	30792 12	30891 03	3079C 13	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30894 05	30798 05	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30535 29	32935 29	32935 29	30628 00	30810 30	30792 13	30891 09	3079C 19	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30894 06	30798 06	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30536 21	32936 21	32936 21	30629 00	30810 40	30792 14	30892 10	3079D 31	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30894 07	30798 07	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30536 22	32936 22	32936 22	30630 00	30810 50	30792 19	30892 20	3079D 33	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30894 09	30798 09	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30536 25	32936 25	32936 25	30631 00	30820 10	30796 01	30892 20	3079D 33	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt			
30536 26	32936 26	32936 26	30632 00	30820 20	30796 02						
30536 30	32936 30	32936 30	30633 00	30820 30	30796 03						
30536 35	32936 35	32936 35	30634 00	30820 40	30796 04						
30537 29	32937 29	32937 29	30635 00	30820 50	30796 05						
30537 39	32937 39	32937 39	30636 00	30820 60	30796 06						
30537 41	32937 41	32937 41	30637 00	30820 70	30796 07						
30537 43	32937 43	32937 43	30638 00	30820 80	30796 08						
30537 49	32937 49	32937 49	30639 00	30820 90	30796 19						
30538 10	32938 10	32938 10									
30538 13	32938 13	32938 13									
30538 15	32938 15	32938 15									
30538 17	32938 17	32938 17									
30538 19	32938 19	32938 19									
30539 70	32939 70	32939 70									
30539 73	32939 73	32939 73									
30539 75	32939 75	32939 75									
									30895 01	30799 01	3079J 61 pt

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30895 01— Con.	30799 01— Con.	3079J 61 pt —Con. 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt	30896 22— Con.	3079A 21— Con.	3079J 61 pt —Con. 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 05— Con.	3079B 25— Con.	3079J 61 pt —Con. 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32927 15	32927 15	32929 11 32929 21
30895 02	30799 02	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt	30896 23	3079A 23	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 06	3079B 26	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32927 34	32927 34	32929 34
30895 03	30799 03	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt	30896 24	3079A 25	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 07	3079B 27	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32927 78	32927 78	32929 51 32929 73 32929 75
30896 11	3079A 11	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30896 25	3079A 27	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 08	3079B 28	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32961 11	32961 11	32963 11 32965 11
30896 12	3079A 12	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30896 26	3079A 28	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 09	3079B 29	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3179K 99	32961 38	32961 38	32963 38 32965 38
30896 13	3079A 13	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30896 27	2499A 94 3079A 29	2499A 94 3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079K 95 pt	30899 00	3079F 31	3079K 88	32961 98	32961 98	32963 98 32965 98
30896 14	3079A 14	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30897 01	3079F 25	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 95 pt	3089A 11	3079F 41	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32962 31	32962 31	32964 31 32966 31
30896 15	3079A 15	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30897 09	3079F 27	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 95 pt	3089A 12	3079F 43	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32962 36	32962 36	32964 36 32966 36
30896 16	3079A 16	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 01	3079B 21	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 95 pt	3089A 14	3079F 47	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32962 45	32962 45	32964 45 32966 45
30896 17	3079A 17	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 02	3079B 22	3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	3089A 18	3079F 49	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32962 51	32 62 51	32964 51 32966 51
30896 18	3079A 18	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	32295 00	32295 00	32291 00 pt	32296 00	32296 00	32292 00 pt	32962 83	32962 83	32964 83 32966 83
30896 19	3079A 19	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	32297 00	32297 00	32294 00 pt	32298 00	32298 00	32291 00 pt 32292 00 pt 32294 00 pt	32962 98	32962 98	32964 98 32966 98
30896 20	3079A 20	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	32311 00	32311 00	32317 00	32620 15	32620 15	32620 14 32620 52 pt	33121 98	33121 98	33121 79 33121 85 33121 98
30896 21	3079A 21	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	32620 15	32620 15	32620 14 32620 52 pt	32620 19	32620 19	32620 18 32620 52 pt	3312A 11 3312A 23 3312A 25 3312A 27	3312A 11 3312A 23 3312A 25 3312A 27	3312A 00
30896 22	3079A 22	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	32630 15	32630 15	32630 14 32630 52 pt	32630 19	32630 19	32630 18 32630 52 pt	3312B 61 3312B 63 3312B 65 3312B 67	3312B 61 3312B 63 3312B 65 3312B 67	3312B 00
			32630 19	32630 19	32630 18 32630 52 pt	32752 11	32752 11	32752 00	33151 22 33151 23	33151 22 33151 23	33151 21
			32752 11	32752 11	32752 00	32917 23	32917 23	32917 22 32917 24	33152 01	33152 01	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt
			32917 23	32917 23	32917 22 32917 24	32917 40	32917 40	32917 26 32917 28 32917 39	33152 03	33152 03	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 17 pt
			32917 40	32917 40	32917 26 32917 28 32917 39	32927 14	32927 14	32928 15 32928 17			
			32927 14	32927 14	32928 15 32928 17						

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1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published
33152 03— Con.	33152 03— Con.	33152 11 pt — 34967 19 pt	33157 42— Con.	33157 42— Con.	33157 31 pt — 33157 71 pt	33561 66— Con. 33562 78 33563 91 33569 91	33561 66— Con. 33562 78 33563 91 33569 91	33569 92— Con.	34236 21	34236 21	34233 21
33152 05	33152 05	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 13 pt 34967 17 pt 34967 19 pt	33157 43	33157 43	33157 31 pt 33157 61 pt 33157 71 pt	33630 00	33611 00	33611 00	34236 31	34236 31	34233 31
			33159 44 33159 45 33159 48	33159 44 33159 45 33159 48	33159 49	33640 11	33620 42	33620 42	34236 41	34236 41	34233 41
						33640 21	33691 51	33691 51	34236 61	34236 61	34238 61
						33640 31	33692 31	33692 31	34236 81	34236 81	34233 81
33152 07	33152 07	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33159 99	33159 99	33159 77 33159 98	33640 41	33693 71	33693 71	34292 12 34298 99	34292 12 34298 99	34298 98
			33211 21	33211 21	33211 22 pt 33211 24 pt 33211 27 pt 33211 30 pt	33640 51	33693 91	33693 91	34320 01 34320 03	34320 01 34320 03	34320 04
						33650 11	33612 11	33612 11	34320 05 34320 07	34320 05 34320 07	34320 06
33152 09	33152 09	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33211 23	33211 23	33211 22 pt 33211 24 pt 33211 27 pt 33211 30 pt	33650 31	33612 31	33612 31	34320 09 34320 11	34320 09 34320 11	34320 08
						33650 51	33612 51	33612 51	34320 14 34320 25 34320 35	34320 14 34320 25 34320 35	34320 98
			33211 25	33211 25	33211 33 pt 33211 36 pt 33211 39 pt 33211 42 pt	33650 61	33612 61	33612 61	34320 47 34320 48	34320 47 34320 48	34320 79
33152 10	33152 10	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33211 26	33211 26	33211 33 pt 33211 36 pt 33211 39 pt 33211 42 pt	33660 20	33620 20	33620 20	34320 67 34320 69	34320 67 34320 69	34320 65
			33217 31	33217 31	33217 32 pt 33217 34 pt 33217 37 pt 33217 40 pt	33660 21	33620 21	33620 21	34320 71 34320 74 34320 75	34320 71 34320 74 34320 75	34320 98
						33660 22	33620 22	33620 22	34320 76 34320 78	34320 76 34320 78	34320 77
33152 12	33152 12	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33217 33	33217 33	33217 32 pt 33217 34 pt 33217 37 pt 33217 40 pt	33660 23	33620 23	33620 23	34320 80 34320 82	34320 80 34320 82	34320 55
						33660 31	33620 31	33620 31	34320 84 34320 86	34320 84 34320 86	34320 56
			33217 35	33217 35	33217 43 pt 33217 46 pt 33217 49 pt 33217 52 pt	33660 41	33620 52	33620 61 pt	34320 87 34320 88	34320 87 34320 88	34320 98 pt
33152 14	33152 14	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33217 36	33217 36	33217 43 pt 33217 46 pt 33217 49 pt 33217 52 pt	33660 51	33620 51	33620 51	34320 90 34320 91	34320 90 34320 91	34320 40
						33660 61	33620 61 pt	33620 61 pt	34320 92 34320 93	34320 92 34320 93	34320 42
						33660 72	33620 72	33620 72	34320 94 34320 95	34320 94 34320 95	34320 43
			33252 11	33252 11	33252 12 33252 13	33690 15	33692 11	33692 11	34320 96 34320 97	34320 96 34320 97	34320 44
33152 16	33152 16	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33391 00	33331 00	33331 00	33690 21	33692 33	33692 33	34320 99	34320 99	34320 98 pt
			33392 31	33334 31	33334 31	33690 25	33692 41	33692 41	34432 44 34432 48	34432 44 34432 48	34432 45
			33392 37	33334 37	33334 35 pt	33690 91 33690 98	33693 94 33693 99	33693 99	34432 52 34432 54 34432 56 34432 98	34432 52 34432 54 34432 56 34432 98	34432 99
33152 22	33152 22	33152 33 pt 34967 23 pt	33392 39	33334 39	33334 38 pt	33991 91 33991 98	33991 91 33991 98	33991 99	34433 13 34433 17	34433 13 34433 17	34433 12 34433 14 34433 48 pt
			33392 41	33334 41	33334 41	34234 11	34234 11	34232 31	34433 17 34433 18	34433 17 34433 18	34433 16 34433 48 pt
			33392 43	33334 43	33334 45 pt	34234 22	34234 22	34232 83	34433 22 34433 23	34433 22 34433 23	34433 21 34433 48 pt
33152 25	33152 25	33152 25 34967 21	33392 49	33334 49	33334 48 pt	34234 33	34234 33	34232 85	34433 25 34433 26 34432 98	34433 25 34433 26 34432 98	34432 99
			33392 51	33334 51	33334 35 pt 33334 38 pt 33334 45 pt 33334 48 pt	34234 44 34234 98	34234 44 34234 98	34232 99	34433 32 34433 33	34433 32 34433 33	34433 31 34433 48 pt
33156 15 33156 17	33156 15 33156 17	33156 13	33392 55	33334 55	33334 55	34235 11	34235 11	34232 53	34433 38 34433 39 34433 50	34433 38 34433 39 34433 50	34433 45
33156 22 33156 24	33156 22 33156 24	33156 21	33398 01	33321 00	33321 00	34235 12	34235 12	34232 54	34433 39 34433 49 34433 50	34433 39 34433 49 34433 50	34433 48 pt
33157 21	33157 21	33157 31 pt 33157 61 pt 33157 71 pt	33398 05	33323 00	33323 00	34235 21	34235 21	34232 56	34434 13 34434 15	34434 13 34434 15	34434 12 pt
			33398 73	33398 73	33399 85	34235 22	34235 22	34232 58	34434 15 34434 18	34434 15 34434 18	34434 18 pt
33157 22	33157 22	33157 31 pt 33157 61 pt 33157 71 pt	33398 99	33398 99	33398 23 33398 98 33399 81	34235 31	34235 31 35533 81	34232 99 pt 35531 85 pt 35532 81 pt	34434 13 34434 15	34434 13 34434 15	34434 12 pt
33157 23	33157 23	33157 31 pt 33157 61 pt 33157 71 pt	33416 99	33416 99	33416 51 33416 98	34235 33	34235 33 35533 83	34232 99 pt 35531 85 pt 35532 81 pt	34434 15 34434 18	34434 15 34434 18	34434 18 pt
			33542 61	33542 61	33542 51 pt 33542 53 pt	34235 39	34235 39 35533 84	34232 99 pt 35531 85 pt 35532 81 pt	34434 15 34434 18	34434 15 34434 18	34434 18 pt
33157 41	33157 41	33157 31 pt 33157 61 pt 33157 71 pt	33542 63	33542 63	33542 51 pt 33542 53 pt	34236 11	34236 11	34233 11	34434 15 34434 18	34434 15 34434 18	34434 18 pt
33157 42	33157 42	33157 31 pt 33157 61 pt	33561 66	33561 66	33569 92						

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34434 17	34434 17	34434 12 pt	34463 12	34463 12	34460 46	34913 35	3494A 45	3494A 45	34931 57	34931 57	34931 56 34931 58
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34435 21 34435 23	34435 21 34435 23	34435 20	34464 10	34464 10	34460 54 pt 34460 56 pt	34913 59	3494A 47	3494A 47	34932 10 34932 20	34932 10 34932 20	34932 00
34435 31 34435 33	34435 31 34435 33	34435 35				34913 61	3494A 49	3494A 49			
34435 37 34435 39	34435 37 34435 39	34435 38	34464 13	34464 13	34460 54 pt 34460 56 pt	34914 11	3494A 51	3494A 51	34944 21	34944 21	34944 11
34438 03 34438 05	34438 03 34438 05	34438 04				34464 16	34464 16	34460 54 pt 34460 56 pt	34914 13	3494A 52	3494A 52
34438 14 34438 16	34438 14 34438 16	34438 15	34464 18	34464 18	34460 54 pt 34460 56 pt				34914 15	3494A 53	3494A 53
34438 17 34438 19	34438 17 34438 19	34438 18	34465 10	34465 10	34460 54 pt	34914 17	3494A 54	3494A 54			
34439 15 34439 17 34439 19	34439 15 34439 17 34439 19	34439 21	34465 12	34465 12	34460 56 pt	34914 21	3494A 55	3494A 55	34961 22 34961 31	34961 22 34961 31	34961 21
			34465 30	34465 30	34460 62	34914 23	3494A 56	3494A 56			
34439 31 34439 32 34439 33 34439 34	34439 31 34439 32 34439 33 34439 34	34439 30	34482 11	34482 11	34482 17 34482 27	34914 25	3494A 57	3494A 57	34964 41	34964 41	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
			34625 11 34625 13 34625 15 34625 17	34625 11 34625 13 34625 15 34625 17	34625 00	34914 31	3494A 58	3494A 58			
			34625 11 34625 13 34625 15 34625 17	34625 11 34625 13 34625 15 34625 17	34625 00	34914 61	3494A 59	3494A 59			
			34625 11 34625 13 34625 15 34625 17	34625 11 34625 13 34625 15 34625 17	34625 00	34915 11	3494A 61	3494A 61			
34439 51 34439 53	34439 51 34439 53	34439 56	34626 11 34626 13 34626 15 34626 17	34626 11 34626 13 34626 15 34626 17	34626 00	34915 23	3494A 63	3494A 63	34964 43	34964 43	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34441 21	34441 21	34446 37				34915 35	3494A 65	3494A 65			
34441 23	34441 23	34446 36	34627 11 34627 13 34627 15 34627 17	34627 11 34627 13 34627 15 34627 17	34627 00	34915 47	3494A 67	3494A 67	34964 45	34964 45	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34441 27	34441 27	34446 34				34915 61	3494A 69	3494A 69			
34441 29	34441 29	34446 32	34627 11 34627 13 34627 15 34627 17	34627 11 34627 13 34627 15 34627 17	34627 00	34916 11	3494A 31	3494A 31	34964 51	34964 51	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34443 11 34443 13	34443 11 34443 13	34446 21	34628 11 34628 13 34628 15 34628 17	34628 11 34628 13 34628 15 34628 17	34628 00	34916 23	3494A 32	3494A 32	34964 53	34964 53	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34443 21 34443 23	34443 21 34443 23	34446 25	34628 11 34628 13 34628 15 34628 17	34628 11 34628 13 34628 15 34628 17	34628 00	34916 31	3494A 33	3494A 33			
34447 21	34447 21	34446 47	34692 20 34692 88 34692 98	34692 20 34692 88 34692 98	34692 99	34916 33	3494A 34	3494A 34	34964 55	34964 55	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34447 25	34447 25	34446 46	34696 00 34699 98	34696 00 34699 98	34699 99	34916 41	3494A 35	3494A 35			
34447 31	34447 31	34446 11	34696 00 34699 98	34696 00 34699 98	34699 99	34916 53	3494A 36	3494A 36	34966 23 34966 25	34966 23 34966 25	34966 13
34447 41	34447 41	34446 51	34790 10 34790 11 34790 21	34790 10 34790 11 34790 21	34790 19	34916 65	3494A 38	3494A 38			
34448 11	34448 11	34446 62 pt	34790 10 34790 11 34790 21	34790 10 34790 11 34790 21	34790 19	34916 77	3494A 71	3494A 71	34966 27 34966 29	34966 27 34966 29	34966 21
34448 13 34448 19	34448 13 34448 19	34446 64 pt	34790 73 34790 75	34790 73 34790 75	34790 71	34916 79	3494A 75	3494A 75			
34449 31	34449 31	34446 15	34911 11	3494A 11	3494A 11	34916 98	3494A 98	3494A 98	34968 45 34968 46 34968 47	34968 45 34968 46 34968 47	34968 49
34449 41	34449 41	34446 62 pt 34446 64 pt	34911 21	3494A 12	3494A 12	34917 11	34949 11	34949 11			
34449 53	34449 53	34446 44	34911 23	3494A 13	3494A 13	34917 13	34949 13	34949 13	34968 81 34968 83 34968 85	34968 81 34968 83 34968 85	34968 98
34449 55	34449 55	34446 42	34911 34	3494A 14	3494A 14	34917 15	34949 15	34949 15			
34449 62	34449 62	34446 62 pt	34911 38	3494A 15	3494A 15	34917 27	34949 27	34949 21 34949 23 34949 25	34992 13	34992 13	34992 12 34992 19
34449 65	34449 65	34446 64 pt	34911 43	3494A 17	3494A 17	34917 31	34949 31	34949 31	34995 21	34995 21	34995 13 34995 15
34449 98	34449 98	34446 98	34911 52	3494A 19	3494A 19	34917 39	34949 39	34949 39	34995 31 34995 39	34995 31 34995 39	34995 19
34461 10	34461 10	34460 07	34912 01	3494A 21	3494A 21	34917 98	34949 98	34949 98	34998 25 34998 99	34998 25 34998 99	34998 98
34461 12	34461 12	34460 09	34912 11	3494A 22	3494A 22	34918 00	34947 00	34947 00			
34461 15	34461 15	34460 12	34912 21	3494A 23	3494A 23	34919 00	34948 00	34948 00	35111 01 35111 02	35111 01 35111 02	35111 00
34461 17	34461 17	34460 17	34912 23	3494A 24	3494A 24	34921 00	3494B 00	3494B 00			
34462 10	34462 10	34460 31	34912 31	3494A 25	3494A 25	34922 00	3494C 00	3494C 00	35112 00	35112 00	35112 00 pt
34462 12	34462 12	34460 36	34912 35	3494A 26	3494A 26	34923 00	3494D 00	3494D 00			
34462 22	34462 22	34460 22	34912 41	3494A 27	3494A 27	34924 00	3494E 00	3494E 00	35112 21	35112 21	35112 01 pt 35112 15 35112 16
34462 26	34462 26	34460 51	34912 43	3494A 29	3494A 29	34925 00	3494F 00	3494F 00			
34463 10	34463 10	34460 41	34913 11	3494A 39	3494A 39	34926 00	3494G 00	3494G 00	35112 22	35112 22	35112 01 pt 35112 17
			34913 23	3494A 43	3494A 43	34927 00	3494H 00	3494H 00			

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35112 74	35112 74	35112 75 pt	3531E 00	3531E 00	35314 00 pt	35337 22 35337 23	35337 22 35337 23	35331 41	35364 03	35364 03	35362 09 35362 15 pt
35112 76	35112 76	35112 75 pt 35112 77	3531F 00	3531F 00	35316 00	35337 24 35337 25	35337 24 35337 25	35331 46	35364 04	35364 04	35362 11 35362 15 pt
35112 79 35112 83	35112 79 35112 83	35112 00 pt	3531G 00	3531G 00	35318 00 pt	35337 26 35337 27	35337 26 35337 27	35331 43	35364 05	35364 05	35362 13 35362 15 pt
35199 01	35199 01	35199 98 pt	3531H 00	3531H 00	35313 00 pt 35318 00 pt 35319 85	35337 44	35337 44	35331 44	35364 06	35364 06	35362 14 35362 15 pt
35199 33	35199 26	35199 26	3531K 06	3531K 06	35319 06	35337 45	35337 45	35331 45	35364 17	35364 17	35362 55 pt
35199 41 35199 42	35199 41 35199 42	35199 03	3531K 07	3531K 07	35319 07	35337 47	35337 47	35331 47	35364 52	35364 52	35362 52
35199 43 35199 44	35199 43 35199 44	35199 04	3531K 11	3531K 11	35319 11	35337 48	35337 48	35331 48	35364 54	35364 54	35362 55 pt
35199 45 35199 46	35199 45 35199 46	35199 05	3531K 20	3531K 20	35319 20	35337 59	35337 59	35331 59	35373 01 35373 02	35373 01 35373 02	35371 23 pt
35199 47	35199 47	35199 06 pt 35199 07 pt	3531K 22 3531K 24	3531K 22 3531K 24	35319 23	35338 31	35338 31	35332 31	35373 03	35373 03	35371 11 pt
35199 48	35199 48	35199 06 pt 35199 07 pt	3531K 25	3531K 25	35319 25	35338 51 35338 55	35338 51 35338 55	35332 51 35332 55	35373 05	35373 05	35371 36 pt 35371 37 pt 35371 38 pt
35199 51 35199 52	35199 51 35199 52	35199 14	3531K 27	3531K 27	35319 27	35338 98	35338 98	35332 98	35373 06	35373 06	35371 36 pt 35371 37 pt 35371 38 pt
35199 53 35199 54	35199 53 35199 54	35199 15	3531K 53 3531K 55	3531K 53 3531K 55	35319 52	35338 99	35338 99	35332 61 pt	35373 08	35373 08	35371 11 pt
35199 55 35199 56	35199 55 35199 56	35199 16	3531K 61	35363 36	35361 36	35339 12	35339 12	35333 12	35373 12	35373 12	35371 61
35199 57 35199 58	35199 57 35199 58	35199 17	3531K 70	3531K 70	35319 70	35339 14	35339 14	35333 14	35373 15	35373 15	35371 23 pt 35371 41 pt
35199 59 35199 60	35199 59 35199 60	35199 18	3531K 74	3531K 74	35319 72 35319 73	35339 19	35339 19	35333 19	35373 16	35373 16	35371 11 pt
35199 61 35199 62	35199 61 35199 62	35199 19	3531K 77	3531K 77	35319 75 35319 76	35339 21	35339 21	35333 21	35373 17	35373 17	35371 36 pt 35371 37 pt 35371 38 pt 35371 41 pt
35199 91	35199 91	35199 22 pt 35199 23 pt 35199 28 pt 35199 29 pt 35199 98 pt	3531K 82	3531K 82	35319 82	35339 53	35339 53	35333 53	35373 18	35373 18	35371 11 pt
35199 92	35199 92	35199 22 pt 35199 23 pt 35199 28 pt 35199 29 pt 35199 98 pt	3531K 90	3531K 40 35373 90	35319 41 35371 91 35371 93	35339 55	35339 55	35333 55	35373 19	35373 19	35371 65
35239 26	35239 26	35239 21 35239 25	3531K 97	3531K 97	35319 97	35339 61	35339 61	35333 61	35373 21	35373 21	35371 55
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	3531M 01	3531M 01	35313 00 pt	35339 65	35339 65	35333 65	35373 25	35373 25	35371 99 pt
35239 53	35239 53	35239 50 35239 51	3531M 03	3531M 03	35314 00 pt	35339 71	35339 71	35333 71	35373 26	35373 26	35371 75
3523C 00	3523C 00	35234 00 pt 35237 00 35238 00 pt	3531M 05	3531M 05	35319 84 pt 35319 86 pt	35339 82	35339 82	35333 82	35373 28	35373 28	35371 81
3523E 00	3523E 00	35234 00 pt 35238 00 pt	3531M 07	3531M 07	35319 84 pt 35319 86 pt	35339 98	35339 98	35333 98	35373 29	35373 29	35371 83
3523F 00	3523F 00	3523A 00 3523B 00	3531M 09	3531M 09	35319 84 pt 35319 86 pt	3533A 10	3533A 10	35335 10	35373 31	35373 31	35371 71
35246 00	35246 00	35243 00 35245 00	3531M 15	3531M 19	35319 84 pt 35319 86 pt 35372 85 pt	3533A 78	3533A 78	35335 78	35373 32	35373 32	35371 85
3531A 00	3531A 00	35311 00	35329 33	35329 33	35329 31 pt 35329 35 pt	3533B 21	3533B 21	35336 21	35373 35	35364 41	35362 41
3531B 00	3531B 00	35312 00	35329 34	35329 34	35329 31 pt 35329 35 pt	3533B 32 3533B 34	3533B 32 3533B 34	35336 31	35373 39	35373 39	35371 48 35371 99 pt
3531C 00	3531C 00	35317 10 35317 20 35317 30	35329 37 35329 38 35329 41 35329 43	35329 37 35329 38 35329 41 35329 43	35329 39	35363 01 35363 02 35363 03	35363 01 35363 02 35363 03	35361 11	35374 11	35374 11	35372 11
			35329 71 35329 73 35329 75	35329 71 35329 73 35329 75	35329 79	35363 13	35363 13	35361 13	35374 17	35364 57	35362 57
			35329 37 35329 38 35329 41 35329 43	35329 37 35329 38 35329 41 35329 43	35329 39	35363 15	35363 15	35361 14	35374 19	35374 19	35372 85 pt
			35329 71 35329 73 35329 75	35329 71 35329 73 35329 75	35329 79	35363 16	35363 16	35361 16	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
			35337 11	35337 11	35331 11	35363 32	35363 32	35361 33 35361 39 pt	3541D 00	3541D 00	35411 00 35412 00
			35337 12	35337 12	35331 12	35363 34	35363 34	35361 35 35361 39 pt	35421 00	35421 00	35421 10 35421 20
			35337 14	35337 14	35331 14	35363 45	35363 45	35361 45	35424 01 35424 02	35424 01 35424 02	35424 11
			35337 15	35337 15	35331 15	35363 37 35363 38	35363 37 35363 38	35361 39 pt	35424 03 35424 04 35424 05	35424 03 35424 04 35424 05	35424 75
			35337 16	35337 16	35331 16	35364 01	35364 01	35362 07 35362 15 pt	35430 11	35650 11	35650 11
			35337 17	35337 17	35331 17	35364 02	35364 02	35362 08 35362 15 pt			
			35337 21	35337 21	35331 21						

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35430 98	35650 98	35650 98	35462 72	35462 72	35462 73 35462 74	35484 09	35496 19	35496 19	35543 03	35543 03	35541 28 pt 35542 73 pt
35441 23 35441 25	35441 23 35441 25	35441 29			35462 75 35462 76 35462 77 35462 78	35485 01	35497 61	35497 61	35543 04	35543 04	35541 25 35542 73 pt
35441 42 35441 44 35441 83 35441 89	35441 42 35441 44 35441 83 35441 89	35441 91	35463 12 35463 14	35463 12 35463 14	35462 19	35485 02	35497 65	35497 65	35543 05	35543 05	35541 28 pt 35542 73 pt
35442 15	35442 15	35442 21 35442 25 pt	35473 48 35473 51 35473 52	35473 48 35473 51 35473 52	35473 56	35485 03	35497 67	35497 67	35543 09	35543 09	35541 31 35542 73 pt
35442 16	35442 16	35442 25 pt				35485 04	35497 73	35497 73	35543 11	35543 11	35541 49 pt 35542 73 pt
35442 17 35442 18 35442 19 35442 23	35442 17 35442 18 35442 19 35442 23	35442 62 pt	35481 01	36231 14	36231 14	35485 05	35497 74	35497 63 35497 75	35543 12	35543 12	35541 49 pt 35542 73 pt
35442 41 35442 42	35442 41 35442 42	35442 33	35481 02	36231 16	36231 16	35485 07	35495 55	35495 55	35543 13	35543 13	35541 45 35542 73 pt
35442 45 35442 47 35442 67	35442 45 35442 47 35442 67	35442 62 pt	35481 03	36231 31	36231 31	35485 09	35497 81	35497 81	35543 14	35543 14	35541 49 pt 35542 73 pt
35451 53	35451 53	35451 43 35451 44	35481 04	36231 32	36231 32	35492 13 35492 18	35492 13 35492 18	35492 19	35543 15	35543 15	35541 45 35542 73 pt
35451 54	35451 54	35451 48 35451 49	35481 05	36231 33	36231 33	35495 01 35495 02 35495 03	35495 01 35495 02 35495 03	35495 10	35543 14	35543 14	35541 49 pt 35542 73 pt
35454 12	35454 12	35453 12	35481 06	36231 35	36231 35	35495 92 35495 95	35495 92 35495 95	35495 98	35543 15	35543 15	35541 41 35541 43 35541 49 pt 35542 73 pt
35454 14	35454 14	35453 14	35481 07	36231 52	36231 52	35521 38	35521 38	35521 42 35521 47	35543 21	35543 21	35541 59 pt 35542 73 pt
35454 17	35454 17	35453 17	35481 08	36231 53	36231 53	35521 39	35521 39	35521 46 35521 48	35543 22	35543 22	35541 51 35542 73 pt
35454 31	35454 31	35453 31	35481 09	36231 54	36231 54	35521 54 35521 56	35521 54 35521 56	35521 55	35543 23	35543 23	35541 53 35542 73 pt
35454 37	35454 37	35453 37	35481 11	36231 56	36231 56	35521 68 35521 69	35521 68 35521 69	35521 67	35543 24	35543 24	35541 54 pt 35541 59 pt 35542 73 pt
35454 38	35454 38	35453 38	35481 12	36231 57	36231 57	35521 84 35521 85	35521 84 35521 85	35521 86	35543 25	35543 25	35541 54 pt 35541 59 pt 35542 73 pt
35454 41	35454 41	35453 41	35482 01 35482 02	36232 01 36232 02	36232 41	35522 79	35522 79	35522 72 35522 99	35543 26	35543 26	35541 56 35541 59 pt 35542 73 pt
35454 43	35454 43	35453 43	35482 03	36232 11	36232 11	35533 11	35533 11	35531 11	35543 27	35543 27	35541 56 35541 59 pt 35542 73 pt
35454 45	35454 45	35453 45	35482 04	36232 23	36232 23	35533 13	35533 13	35531 13	35544 01	35544 01	35542 89
35454 51	35454 51	35453 51	35482 05	36232 25	36232 25	35533 15	35533 15	35531 15	35544 02	35544 02	35542 83
35454 59	35454 59	35453 59	35482 06	36232 31	36232 31	35533 19	35533 19	35531 19	35544 03	35544 03	35542 85
35454 98	35454 98	35453 98	35482 07	36232 43	36232 59 pt 36232 64 pt	35533 21 35533 23	35533 21 35533 23	35531 73 pt	35544 04	35544 04	35542 87
35455 11	35455 11	35452 11	35482 08	36232 45	36232 59 pt 36232 64 pt 36232 68 pt	35533 25 35533 27	35533 25 35533 27	35531 75 pt	35544 05	35544 05	35542 87
35455 13	35455 13	35452 13	35482 11	36232 52	36232 52	35533 29	35533 29	35531 98 pt	35551 02	35551 02	35551 01 35551 03 35551 05 35551 08
35455 15	35455 15	35452 15	35482 12	36232 54	36232 54	35533 31	35533 31	35531 73 pt	35553 05	35553 05	35553 01 35553 02 35553 04
35455 17	35455 17	35452 17	35482 13	36232 55	36232 55	35533 33	35533 33	35531 75 pt	35553 08	35553 08	35553 11 35553 12
35455 21	35455 21	35452 21	35482 14	36232 58	36232 58	35533 35 35533 37	35533 35 35533 37	35531 98 pt	35553 09	35553 09	35553 45 35553 52 35553 57
35455 61	35455 61	35452 61	35482 15	36232 62	36232 61 36232 65	35533 39	35533 39	35531 17 35531 73 pt 35531 75 pt 35531 98 pt	35558 02	35558 02	35557 01
35455 65	35455 65	35452 65	35482 16	36232 66	36232 64 pt 36232 68 pt	35533 87	35533 87	35531 87	35558 09	35558 09	35557 69
35455 71	35455 71	35452 71	35483 05	36233 13	36233 13	35534 01 35534 02 35534 03	35534 01 35534 02 35534 03	35532 21	35558 83	35558 83	35557 83
35455 81 35455 83	35455 81 35455 83	35452 99 pt	35483 06	36233 23	36233 23	35534 04 35534 05 35534 06 35534 07 35534 08 35534 09	35534 04 35534 05 35534 06 35534 07 35534 08 35534 09	35532 98	35558 85	35558 85	35557 85
35455 91 35455 92	35455 91 35455 92	35452 92	35483 07	36233 31	36233 31	35534 11	35534 11	35532 81 pt	35558 87	35558 87	35557 87
35455 93	35455 93	35452 99 pt	35483 08	36233 52	36233 52	35534 01 35534 11	35534 01 35534 11	35532 81 pt	35558 89	35558 89	35557 89
35455 94	35455 94	35452 94	35483 09	36233 61	36233 61	35543 01	35543 01	35541 11 35542 73 pt	35558 99	35558 99	35557 99
35455 95	35455 95	35452 95	35484 01	35496 01	35496 01	35543 02	35543 02	35541 21 35541 27 35542 73 pt	35561 02	35561 02	35561 41 pt 35561 99 pt
35455 96 35455 97 35455 98	35455 96 35455 97 35455 98	35452 99 pt	35484 02	35496 05	35496 05	35543 01	35543 01	35541 11 35542 73 pt	35561 05	35561 05	35561 41 pt 35561 99 pt
35462 42 35462 44	35462 42 35462 44	35462 43	35484 03	35496 09	35496 09	35543 02	35543 02	35541 21 35541 27 35542 73 pt	35561 06	35561 06	35561 41 pt 35561 99 pt
35462 47	35462 47	35462 45 35462 49	35484 04	35496 15	35496 15	35484 05	35496 17	35496 17	35561 05	35561 05	35561 41 pt 35561 99 pt
			35484 05	35496 17	35496 17				35561 06	35561 06	35561 41 pt 35561 99 pt

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35561 07	35511 07	35511 91	35593 01	35593 11	35593 11	35599 13	35599 13	35595 41 pt 35595 98 pt	35616 00	35616 00	3561C 00
35561 08	35511 08	35511 99 pt	35593 03	35593 31	35593 31	35599 15	35599 15	35595 41 pt 35595 98 pt	35645 46	35645 46	35645 49
35561 09	35511 09	35511 41 pt	35593 05	35593 32	35593 32				35645 47	35645 47	
35561 11	35511 11	35511 99 pt	35593 07	35593 34	35593 34	35599 17	35599 17	35595 41 pt 35595 98 pt	35646 10	35646 10	35646 00
35561 19	35511 19		35593 09	35593 35	35593 35				35646 20	35646 20	
35561 21	35511 21					35599 19	35599 19	35595 41 pt 35595 98 pt	35651 01	35514 15	35514 15
35562 11	35512 11	35512 11	35593 11	35593 52	35593 52				35691 15	35691 15	
35562 21	35512 21	35512 21	35593 13	35593 13	35593 53 35593 54	35599 22	35599 22	35595 41 pt 35595 98 pt	35651 02	35514 22	35514 22
35562 31	35512 31	35512 31							35691 22	35691 22	
35562 41	35512 41	35512 41	35593 15	35593 61	35593 61	35599 25	35599 25	35595 41 pt 35595 98 pt	35651 03	35514 26	35514 26
35562 51	35512 51	35512 51							35691 26	35691 26	
35562 65	35512 65	35512 61 35512 92 pt	35593 17	35593 71	35593 71	35599 27	35599 27	35595 41 pt	35651 04	35514 29	35514 29
35562 71	35512 71	35512 71	35593 19	35593 72	35593 72				35691 29	35691 29	
35562 75	35512 75	35512 75	35593 21	35593 21	35593 79	35599 31	35599 31	35595 45	35651 05	35514 30	35514 30
35562 85	35512 85	35512 92 pt	35593 23	35593 23					35691 30	35691 30	
35562 91	35512 91	35512 87 35512 92 pt	35593 25	35593 25		35599 33	35599 33	35595 49	35651 06	35514 32	35514 32
35563 01	35513 01	35513 59 pt	35593 27	35593 27	35593 81				35691 32	35691 32	
35563 02	35513 02	35513 39	35593 28	35593 28		35599 35	35599 35	35595 43	35651 07	35514 33	35514 33
35563 03	35513 03	35513 59 pt	35593 29	35593 29					35691 33	35691 33	
35563 04	35513 04	35513 59 pt	35594 01	35594 11	35594 11	35599 39	35599 39	35595 52	35651 08	35514 35	35514 35
35563 05	35513 05	35513 23 pt 35513 59 pt	35594 03	35594 31	35594 31				35691 33	35691 33	
35563 06	35513 06	35513 52 35513 59 pt	35594 05	35594 51	35594 51	35599 43	35599 43	35595 73	35651 09	35514 41	35514 41
35563 07	35513 07	35513 59 pt	35594 07	35594 71	35594 71				35691 41	35691 41	
35563 08	35513 08	35513 49	35594 09	35594 09	35594 79	35599 49	35599 49	35595 98 pt	35651 11	35514 52	35514 52
35563 09	35513 09	35513 59 pt	35594 13	35594 13					35691 52	35691 52	
35563 11	35513 11	35513 13	35594 15	35594 15		35599 53	35599 53	35595 92	35651 12	35514 53	35514 53
35563 12	35513 12	35513 23 pt 35513 59 pt	35594 17	35594 17	35594 81				35691 53	35691 53	
35563 14	35513 14	35513 59 pt	35594 19	35594 19		35599 57	35599 57	35595 96	35651 13	35514 54	35514 54
35563 15	35513 15	35513 29 35513 59 pt	35594 21	35594 21					35691 54	35691 54	
35563 21	35513 21	35513 83 pt	35596 01	35596 01	35595 95	35599 61	35599 61	35595 82 pt	35651 14	35514 55	35514 55
35591 01	35591 01	35591 00 pt	35596 03	35596 03					35691 55	35691 55	
35591 03	35591 03		35596 05	35596 05		35599 63	35599 63	35595 82 pt	35651 15	35514 63	35514 63
35591 05	35591 05		35596 07	35596 07					35691 63	35691 63	
35591 07	35591 07	35591 00 pt 35698 33	35596 09	35596 09		35599 65	35599 65	35595 86 pt	35651 16	35514 71	35514 71
35591 09	35591 09	35591 00 pt	35596 11	35596 11					35691 71	35691 71	
35591 11	35591 11	35591 00 pt	35596 13	35596 13		35599 67	35599 67	35595 83 pt 35595 84 pt	35651 17	35514 81	35514 81
35591 13	35591 13	35591 00 pt 35699 97 pt	35596 15	35596 15					35691 81	35691 81	
35591 15	35591 15	35591 00 pt	35596 17	35596 17		35599 71	35599 71	35595 87	35651 18	35514 82	35514 82
35592 01	35592 21	35592 21	35596 19	35596 19					35691 82	35691 82	
35592 03	35592 33	35592 33	35596 21	35596 21		35599 73	35599 73	35595 87	35651 19	35514 83	35514 83
35592 05	35592 35	35592 35	35596 23	35596 23					35691 83	35691 83	
35592 07	35592 54	35592 54	35596 25	35596 25		35599 75	35599 75	35595 94	35651 21	35514 84	35514 84
35592 09	35592 09	35592 98 pt	35596 27	35596 27					35691 84	35691 84	
35592 11	35592 11		35596 29	35596 29		35599 77	35599 77	35595 98 pt	35651 22	35514 85	35513 67
35592 15	35592 15	35592 41 35592 42 35592 98 pt	35596 31	35596 31					35691 85	35691 85	
35592 19	35592 97	35592 97	35596 33	35596 33		35599 80	35599 80	35595 62 pt 35595 98 pt	35652 00	35514 91	35513 83 pt 35514 91 35691 91
			35596 35	35596 35					35691 91	35691 91	
			35596 37	35596 37		35599 82	35599 82	35595 62 pt	35674 01	35674 01	35674 11 pt
			35596 39	35596 39					35691 91	35691 91	
			35597 01	35494 01	35494 01	35599 83	35599 83	35595 98 pt	35674 02	35674 02	35674 17
			35597 02	35494 03	35494 03				35691 91	35691 91	
			35597 03	35494 05	35494 05	35599 85	35599 85	35595 98 pt	35674 03	35674 03	35674 19 pt 35674 31 pt
			35597 04	35494 07	35494 07				35691 91	35691 91	
			35597 05	35494 09	35494 09	35599 86	35599 86	35595 98 pt	35674 04	35674 04	35674 11 pt 35674 19 pt 35674 31 pt
			35597 09	35494 11	35494 17 35494 19 pt				35691 91	35691 91	
			35597 11	35494 13	35494 19 pt	35599 88	35599 88	35595 98 pt	35675 01	35675 01	35675 51
			35599 01	35599 01	35595 11				35691 91	35691 91	
			35599 03	35599 03		35599 92	35599 92	35595 98 pt	35675 02	35675 02	35675 59
			35599 05	35599 05	35595 21				35691 91	35691 91	
			35599 07	35599 07		35599 93	35599 93	35595 98 pt	35675 11	35675 11	35675 91
			35599 09	35599 09	35595 32				35691 91	35691 91	
			35599 11	35599 11		35599 94	35599 94	35595 98 pt	35676 00	35676 00	35672 00 pt
			35599 09	35599 09	35595 32				35691 91	35691 91	
			35599 11	35599 11		35599 95	35599 95	35595 98 pt	35676 01	35676 01	35672 11
			35599 09	35599 09	35595 32				35691 91	35691 91	

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35676 03	35676 03	35672 61	35752 00	35733 40	35734 30 pt 35735 51 pt	35892 99	35892 99	35892 93 pt	35963 05	35763 05	35760 63
35676 04	35676 04	35672 00 pt				35893 01 35893 02	35893 01 35893 02	35893 11	35963 09	35763 09	35760 84
35676 05	35676 05	35672 41 pt	35771 00	35732 30 35732 61	35732 00 pt	35893 08 35893 09	35893 08 35893 09	35893 98	36122 02	36122 02	36122 00
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35697 00	35697 00	35699 97 pt				3585D 40	3585B 40	3585B 40	35941 10	35619 00	35617 00 35618 00
35698 01	35698 01	35699 31	3585D 50	3585B 50	3585B 50				35942 05	35631 50	35631 40 pt
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35698 03	35698 03	35699 32	3585D 70	3585B 70	3585B 70				35942 20	35631 60	35631 40 pt
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1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published
36395 10	36361 21 36395 30	36361 21 36394 00 pt 36399 60	36920 05— Con.	36920 05— Con.	36920 10 pt —Con. 36920 82 pt 36920 92 pt	37112 02— Con.	37112 02— Con.	37112 23 pt —Con. 37112 26 pt	37131 07	37131 07	37131 60 pt
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									37131 15	37131 48	37131 48
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									37131 17	37131 52	37131 52
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									37131 21	37131 37	37131 37
36489 12	36489 12	36489 11 pt 36489 19 pt	36941 02	36941 02	36941 16	37112 06	37112 06	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt	37131 43	37131 30	37131 30
									37131 49	37131 49	37131 12 pt 37131 25
36489 16	36489 16	36489 11 pt	36941 03	36941 03	36941 31	36941 04	36941 04	36941 35	37131 49	37131 49	37131 12 pt 37131 25
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36489 17	36489 17	36489 19 pt	36942 01	36942 01	36942 14 36942 28 pt	36942 02	36942 02	36942 28 pt	37131 55	37131 34	37131 34
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36520 00	36520 00	36521 00 36521 19	36942 03	36942 03	36942 27 36942 28 pt	36942 03	36942 03	36942 27 36942 28 pt	37131 57	37131 54	37131 54
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									38511 19	38511 19	
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[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product codes were revised for 1987. Listed below are the revisions to the product codes. The terms published and collected are defined as follows: (1) published refers to the code used in the published reports for 1987 and 1982, and (2) collected refers to the code appearing on the report forms for 1987]

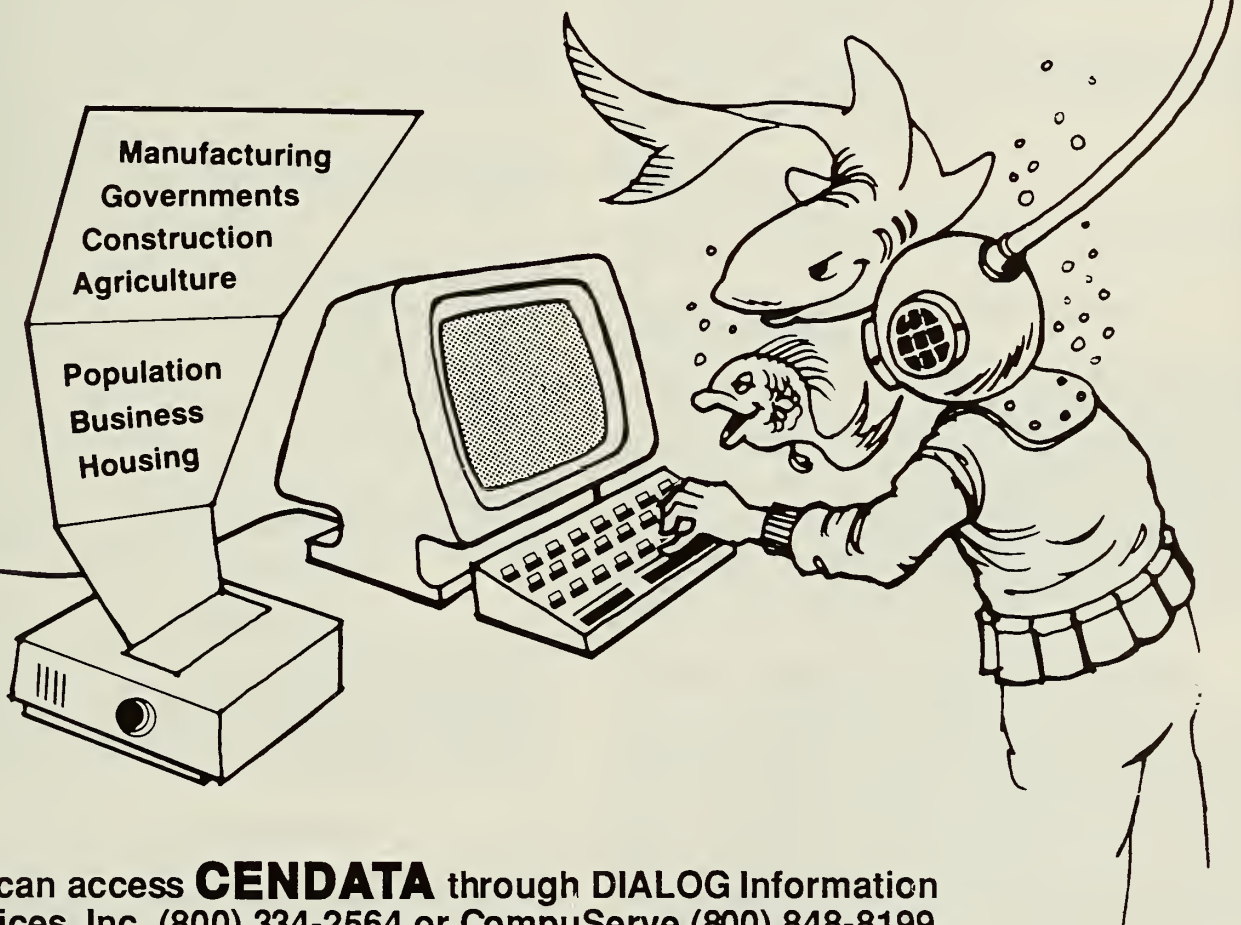
1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published
38517 04— Con.	38517 04— Con.	38517 09— Con.	38731 06	38731 06	38737 01	39153 11	39153 11	39151 13 pt	39610 65— Con.	39610 65— Con.	39610 72— Con.
38517 06	38517 06		38731 07	38731 07	38737 02 38737 03	39153 12	39153 12	39151 31 pt	39610 71	39610 71	
38517 07	38517 07		38731 11	38731 11	38737 19	39153 21 39153 31	39153 21 39153 31	39151 41 39151 51 pt	39610 93 39610 95	39610 93 39610 95	39C10 91
38517 10	38517 10		38731 13	38731 13	38736 39	39154 00	39154 11	39151 13 pt 39151 31 pt 39151 51 pt	39651 01	39630 11	39630 11
38517 11	38517 11		38732 01	38732 01	38732 10 38732 22	39314 24 39314 25	39314 24 39314 25	39314 23	39651 09	39630 15	39630 15
38611 11	38611 11	38611 12 38611 14	38732 02	38732 02	38732 14 38732 24	39443 46	39443 46	39443 44 39443 45	39651 11	39630 41	39630 41
38611 69	38611 69	38611 67 38611 68	38732 03	38732 03	38732 16 38732 26	39443 47 39443 98	39443 47 39443 98	39443 99	39651 19	39630 51	39630 51
38611 91	38611 91	38611 81	38732 09	38732 09	38732 18 38732 20 38732 29 38732 30	39447 16	36629 46	36629 00 pt	39651 21	39630 61	39630 61
38611 98	38611 98	38611 43 38611 99	39113 11	39113 11	39112 11 pt	39493 01	39493 01	39494 62	39651 29	39630 98	39630 98
38613 17	38613 17	38613 27 38613 46	39113 21	39113 21	39112 21 pt	39493 02	39493 02	39494 63	39654 22	39641 22	39641 22
38613 89	38613 89	38613 98	39113 31	39113 31	39112 31 pt	39493 05	39493 05	39495 99 pt	39654 23	39641 23	39641 23
38613 97	38613 97	38613 61	39113 41	39113 41	39112 41 pt	39495 05	39495 05	39495 99 pt	39654 31	39641 31	39641 31
38615 01	38615 01	38615 11 38615 17 38615 32 38615 37	39114 11	39114 11	39112 11 pt	39495 72	39495 72	39495 78 39495 79	39654 33	39641 33	39641 33
38615 02	38615 02	38615 63	39114 21	39114 21	39112 21 pt	39495 81 39495 88 39495 89	39495 81 39495 88 39495 89	39495 99 pt	39654 39	39641 39	39641 39
38615 03	38615 03	38615 73 38615 74	39114 31	39114 31	39112 31 pt	39495 92	39495 92	39495 90 pt	39656 20	39642 20	39642 20
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38615 05	38615 05	38615 57 38615 64 38615 65 38615 76 38615 81	39114 51	39114 51	39112 51 pt	39495 96	39495 96	39495 90 pt 39495 91 pt	39656 32	39642 32	39642 32
38619 00	38619 00	38619 41 38619 43 38619 45	39114 61	39114 61	39112 61 pt	39495 98	39495 98	39495 99 pt	39656 33	39642 33	39642 33
38731 01	38731 01	38734 11 38734 12 38736 11	39114 71	39114 71	39112 71 pt	39496 01	39496 01	39494 65	39656 51	39642 51	39642 51
38731 02	38731 02	38734 22 pt 38736 13 pt	39141 41 39141 43 39141 69	39141 41 39141 43 39141 69	39141 66	39496 02	39496 02	39494 68	39656 71	39642 71	39642 71
38731 03	38731 03	38734 21 38734 22 pt 38736 12 38736 13 pt	39142 35	39142 35	39142 34 39142 36	39496 03 39496 04	39496 03 39496 04	39494 70	39656 81	39642 81	39642 81
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						39524 13	39524 13	39522 13	39997 11 39997 51	39997 11 39997 51	39997 00
						39524 19	39524 19	39522 19	39998 13	39620 13	39620 13
						39610 65	39610 65	39610 72	39998 15	39620 15	39620 15
									39998 17	39620 17	39620 17
									39998 21	39620 21	39620 21

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PUBLICATION PROGRAM

1987 CENSUS OF MANUFACTURES

Publications of the 1987 Census of Manufactures, containing preliminary and final data on manufacturing establishments in the United States, are described below. Publications order forms for the specific reports may be obtained from any Department of Commerce district office or from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233.

Preliminary Reports

Industry series—83 reports (MC87-I-20A(P) to -39D(P))

Preliminary industry data are issued in 83 separate reports covering 459 industries. Preliminary summary data for the U.S. and States are released in one report.

Final Reports

Industry series—83 reports (MC87-1-20A to -39D)

Each of the 83 reports provides information for a group of related industries ("dairy products" includes industries for butter, cheese, milk, etc.). Final figures for the United States are shown for each of the 459 manufacturing industries on quantity and value of products shipped and materials consumed, cost of fuels and electric energy, capital expenditures, assets, rents, inventories, employment, payroll, payroll supplements, hours worked, value added by manufacture, number of establishments, and number of companies. Comparative statistics for earlier years are provided where available.

For each industry, data on value of shipments, value added by manufacture, capital expenditures, employment, and payroll are shown by employment-size class of establishment, State, and degree of primary product specialization.

Geographic area series—51 reports (MC87-A-1 to -51)

A separate report is being published for each State and the District of Columbia. Each report presents data for industry groups and industries on value of shipments, cost of materials, value added by manufacture, employment, payroll, hours worked, new capital expenditures, and number of manufacturing establishments for the State, MSA's, counties, and selected places. Comparative statistics for earlier census years are shown for the State and large MSA's. Manufacturing totals are presented for each county and for places with significant manufacturing activity. Detailed statistics (including inventories, assets, rents, and energy costs) are presented only in statewide totals.

Subject series—7 reports (MC87-S-1 to -7)

Each of the seven reports contains detailed statistics for an individual subject, such as concentration ratios in manufacturing, type of organization, water use in manufacturing, textile machinery in place, distribution of sales by class of customer, manufacturers' shipments to the Federal Government, and a general national-level summary.

Reference series—1 report (MC87-R-1)

The Numerical List of Manufactured and Mineral Products includes a description of the principal products and services published in the 1987 Censuses of Manufactures and Mineral Industries.

Location of Manufacturing Plants—1 report (MC87-LM)

This report includes data for number of establishments by four-digit SIC industry and by employment-size class for counties, incorporated places of 2,500 inhabitants or more, and zip codes for each State. (This report is available only on magnetic tape and CD-ROM.)

Analytical Reports—3 reports (AR87-1 to -3)

Exports From Manufacturing Establishments (AR87-1)

This report presents data on exports by two- and three-digit SIC industry groups for the United States and States. Information is presented on value of direct report shipments and estimates of the employment required to manufacture these products. Included are estimates of employment in manufacturing and nonmanufacturing establishments that supply parts, materials, and services for production of manufactured exports.

Selected Characteristics of Manufacturing Establishments That Export (AR87-2)

This report presents data on the number of manufacturing companies and establishments that export by major group, State, employment size, and ratios of exports to shipments.

Indexes of Production (AR87-3)

The indexes presented in this report are designed to measure the change in physical output of each manufacturing and mineral industry between 1982 and 1987.

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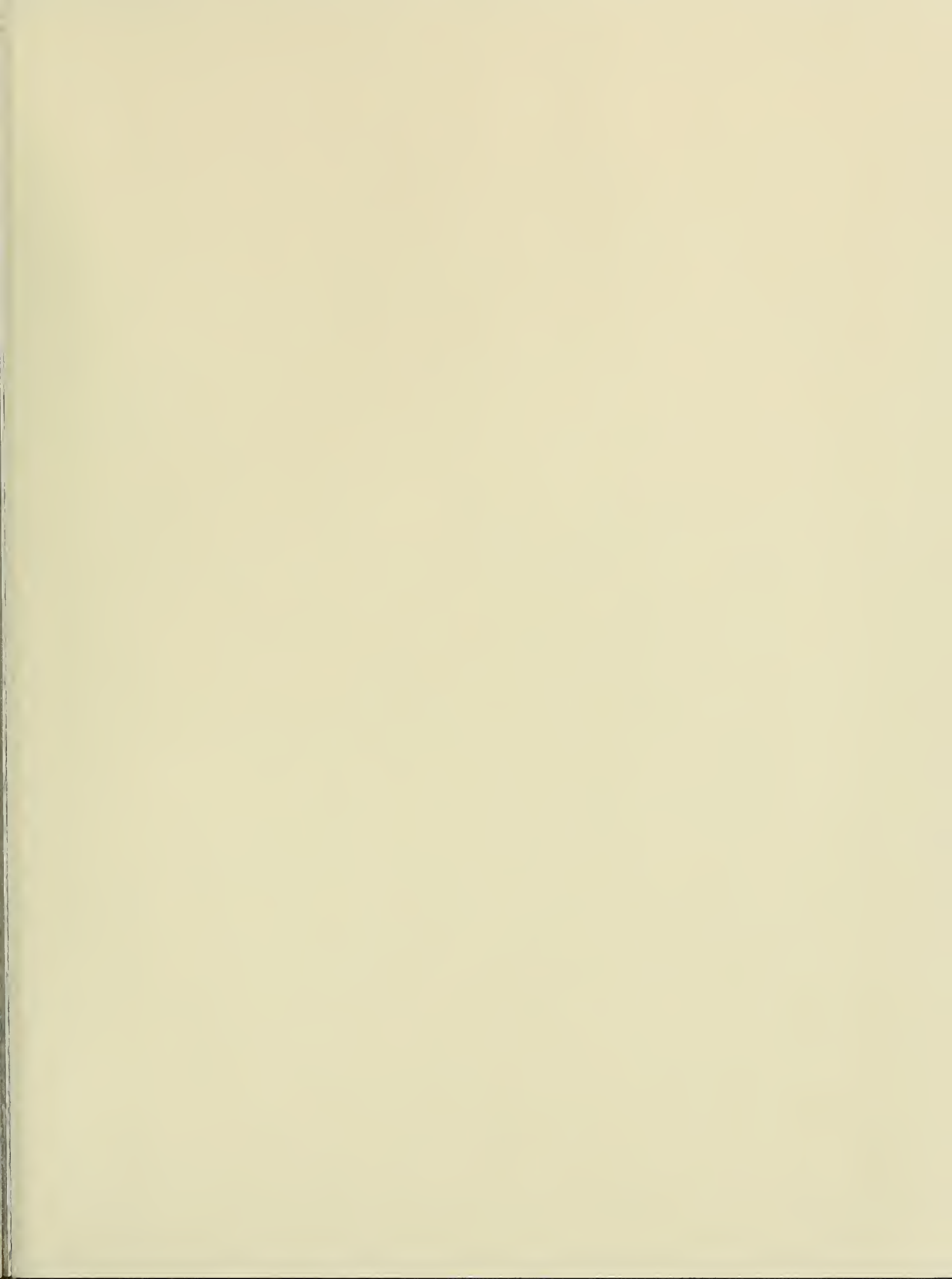
Every final published report in the 1987 Census of Manufactures will be available on microfiche.

PUBLIC-USE COMPUTER TAPES AND COMPACT DISCS

Data from the final industry series, geographic area series, and the Location of Manufacturing Plants report will be available on public-use computer tapes and compact discs-read only memory (CD-ROM). These tapes will provide the same information found in the final reports. Computerized data products are available for users who wish to summarize, rearrange, or process large amounts of data. These products, with corresponding technical documentation, are sold by Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, DC 20233.

OTHER ECONOMIC CENSUSES REPORTS

Data on retail trade, wholesale trade, service industries, construction industries, mineral industries, transportation, enterprise statistics, minority-owned businesses, and women-owned businesses also are available from the 1987 Economic Censuses. A separate series of reports covers the censuses of outlying areas—Puerto Rico, Virgin Islands of the United States, Guam, and the Northern Mariana Islands. Separate announcements describing these reports are available free of charge from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233.



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