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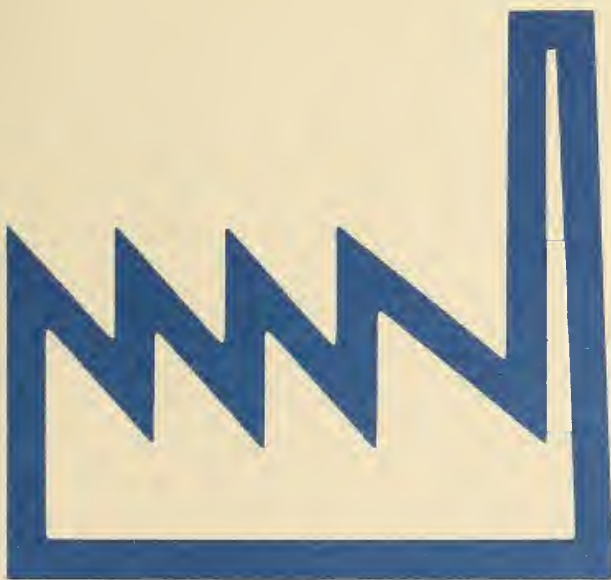
Census of Manufactures

no. 8
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MC82-S-8

SUBJECT SERIES

Selected Metalworking Operations



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The publications
from the 1982 Economic and
Agriculture Censuses are dedicated
to the memory of Shirley Kallek,
Associate Director for Economic Fields.
During her career at the Bureau of the
Census (1955 to 1983), she continually
directed efforts to improve
the timeliness and accuracy of
economic statistics.

1982 Census of Manufactures

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Issued September 1985



U.S. Department of Commerce
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Clarence J. Brown, Deputy Secretary
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Gaylord E. Worden, Chief

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INTRODUCTION

ECONOMIC CENSUSES OVER TIME

The early beginnings of America's industrial output were first measured in the United States in the 1810 Decennial Census and again in 1820, when questions on manufacturing were included with those for population. Beginning with the 1840 Decennial Census, there were enumerations of manufactures and mineral industries at 10-year intervals up to and including the year 1900 for manufactures and 1940 for mineral industries. The latter census was again taken for 1954, 1958, 1963, and 1967.

Because of the increasing dominance of manufacturing in the early 20th century, Congress directed that quinquennial censuses of manufactures be taken beginning in 1905. However, from 1919 through 1939, these censuses were conducted every 2 years. The need for war-related current surveys in the early 1940's postponed the next census of manufactures until 1948 (for 1947). That census was again taken for 1954, 1958, 1963, and 1967.

Retail and wholesale trade data were first collected in 1930, and in 1933 information on selected service industries was added to the data-collection operation. These business censuses, as they were called, were again taken for 1935, 1939 (as part of the 1940 decennial program), 1948, 1954, 1958, 1963, and 1967.

Information on construction industries was obtained first in 1930 and again for 1935 and 1939. Data for the full spectrum of construction industries were not gathered again until 1968 (for 1967).

The need for transportation data to supplement information available from existing governmental or private sources was recognized by Congress in the late 1950's and early 1960's. The census of transportation (consisting of several surveys) was taken first for 1963 and again for 1967.

Since 1967, all of the above censuses have been taken quinquennially as part of the Census Bureau's economic census program. (For the 1977 censuses, the coverage of the service industries was broadened from "selected services" to "all services, except religious organizations and private households." A total of 41 additional four-digit standard industrial classifications¹ (SIC's) in 7 SIC major groups was added to the scope of the census. While most of the industries included for the first time for 1977 were covered again for 1982, some were not, i.e., hospitals; elementary and secondary schools; colleges, universities, and professional schools; junior colleges and technical institutes; labor unions and similar labor organizations; and political organizations.)

The first manufacturing census for an outlying area was conducted in Puerto Rico for the year 1909. Thereafter, with the exception of 1929, a census was taken at 10-year intervals through 1949. The first censuses of retail trade, wholesale trade, and selected service industries in Puerto Rico were conducted for 1939. These censuses also were taken for the years 1949, 1954, 1958, 1963, and 1967. A census of construction industries was introduced first in Puerto Rico for 1967. These censuses of Puerto Rico have been taken since then for the years 1972, 1977, and 1982.

Censuses of manufactures, retail trade, wholesale trade, and selected service industries were conducted in Guam and the

Virgin Islands of the United States for 1958, 1963, 1967, 1972, 1977, and 1982. Censuses of mineral industries were taken in the Virgin Islands of the United States for the years 1958, 1963, and 1967 but not since that time. A census of construction industries was also undertaken in these areas for 1972, 1977, and 1982.

Retail trade, wholesale trade, selected service industries, manufacturing, and construction industries were canvassed for the first time in the Northern Mariana Islands in 1983 (for 1982).

For 1982, the economic censuses and agriculture censuses were conducted concurrently.

USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source for facts about the structure and functioning of the Nation's economy and provide essential information for government, business, industry, and the general public. They provide an important part of the framework for such composite measures as the gross national product, input-output measures, indexes of industrial production, and indexes measuring productivity and price levels. Information from the censuses is used to establish sampling frames and as benchmarks for current surveys of business activity, which are essential for measuring short-term economic conditions.

State and local governments use census data to assess business activities within their jurisdictions. The private sector uses the data to forecast general economic conditions; analyze sales performance; lay out sales territories; allocate funds for advertising; decide on locations for new plants, warehouses, or stores; and measure potential markets in terms of size, geographic areas, kinds of business, and kinds of products made or sold.

Following every census, thousands of businesses and other users purchase reports. Likewise, census facts are disseminated widely by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. All 1982 data are available on microfiche from the U.S. Government Printing Office and most data on computer tape from the Census Bureau. Finally, the more than 50 State Data Centers also are suppliers of economic census statistics.

AUTHORITY AND SCOPE OF THE ECONOMIC CENSUSES

The economic censuses are required by law under title 13 of the United States Code, sections 131, 191, and 224, which directs that they be taken at 5-year intervals for the years ending in 2 and 7. The 1982 Economic Censuses covered manufacturing, mining, construction industries, retail trade, wholesale trade, service industries, and selected transportation activities. Special programs also cover minority-owned and women-owned businesses. The next economic censuses are scheduled to be taken in 1988 for the year 1987.

¹Standard Industrial Classification Manual: 1972. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. 1977 Supplement. Stock No. 003-00500176-0.

CENSUS OF MANUFACTURES

General

The 1982 Census of Manufactures is the 31st census of manufactures of the United States. For 1982, it was conducted jointly with the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses.

This report, from the 1982 Census of Manufactures, is one of a series of 82 industry reports, each of which provides statistics for groups of related industries. Additional separate reports will be issued for each State and on special subjects, such as size of establishments, legal form of organization, and fuels and electric energy consumed.

These separate reports will subsequently be issued as portions of the final census volumes. Volume I, Subject Statistics, will show comparative statistics for industries, States, and standard metropolitan statistical areas. It also will show selected subjects, such as concentration ratios in manufacturing, selected materials consumed, manufacturing activity in government establishments, and water use in manufacturing. Volume II, Industry Statistics, will be a consolidation of reports for the 82 groups of industries showing the same information that is shown in this report. Volume III, Geographic Area Statistics, will contain establishment-based data (number of establishments, employment, payroll, value added by manufacture, and capital expenditures) for each State and its important standard metropolitan statistical areas, counties, and places, by industry groups and important individual industries. Totals for "all manufacturing" will be shown for counties and places with more than 450 manufacturing employees. The introduction to the final volumes will discuss, at greater length, many of the subjects described in this introduction. For example, the volume text will discuss the relationship of value added by manufacture to National income by industry of origin, the changes in statistical concepts over the history of the censuses, and the valuation problems arising from intracompany transfers between manufacturing plants of a company and between manufacturing plants and sales offices and sales branches of a company.

Scope of Census and Definition of Manufacturing Industries

The 1982 Census of Manufactures covers all establishments employing one person or more primarily engaged in manufacturing as defined in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 Supplement.¹ This is the system of industrial classification developed over a period of years by experts on classification in government and private industry under the guidance of the Office of Management and Budget. This system of classification is in general use among government agencies as well as organizations outside the government.

The SIC manual defines manufacturing as the mechanical or chemical transformation of inorganic or organic substances into new products. The assembly of component parts of products is also considered to be manufacturing if the resulting product is neither a structure nor other fixed improvement. These activities are usually carried on in plants, factories, or mills that characteristically use power-driven machines and materials handling equipment.

¹Standard Industrial Classification Manual: 1972. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. 1977 Supplement. Stock No. 003-00500176-0.

Manufacturing production is usually carried on for the wholesale market, for transfers to other plants of the same company, or to the order of industrial users rather than for direct sale to the household consumer. Some manufacturers in a few industries sell chiefly at retail to household consumers through the mail, through house-to-house routes, or through salespersons. Some activities of a service nature (enameling, engraving, etc.) are included in manufacturing when they are performed primarily for the trade. They are considered nonmanufacturing when they are performed primarily to the order of the household consumer.

Relationship Between Annual Survey of Manufactures and Census of Manufactures

The Bureau of the Census conducts the annual survey of manufactures (ASM) in each of the 4 years between the censuses of manufactures. The ASM is based on a scientifically selected sample of approximately 55,000 establishments and collects the same industry statistics (employment, payroll, value of shipments, etc.) as the census of manufactures. In addition to collecting the information normally requested on the census form, the establishments in the ASM sample are requested to supply detailed information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services.

Establishment Basis of Reporting

The census of manufactures and the annual survey of manufactures are conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1982, as in earlier years, a minimum size limit was set for including establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company (see Auxiliaries).

Manufacturing Universe and Census Report Forms

The 1982 Census of Manufactures universe includes approximately 345,000 establishments. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures. The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in this publication are described below.

1. Small Single-Unit Companies Not Sent a Report Form

In the 1982 Census of Manufactures, approximately 140,000 small single-establishment companies were excluded from filing reports. Selection of these small

establishments was done on an industry-by-industry basis and was based on annual payroll and total shipments data as well as on the industry classification codes contained in the administrative records of other Federal agencies. The cutoffs were selected so that these administrative records cases would account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed report forms.

Information on the physical location of the establishment, as well as information on payrolls, receipts (shipments), and industry classification, was obtained from the administrative records of other Federal agencies under special arrangements, which safeguarded their confidentiality. Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (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 to 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 given only a two- or three-digit SIC group. For the 1982 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 misclassifications have no significant effect on the statistics other than on the number of 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 205,000 establishments covered in the mail canvass were divided into three groups:

a. ASM sample establishments—This group consisted of approximately 55,000 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. Results of the ASM inquiries are included in tables 3c and 3d of this report.

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 this many forms to canvass the approximately 450 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 was also provided for the respondent to describe products not specifically identified on the form.

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

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 100,000 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-unit establishments (non-ASM)**—This group consisted of approximately 50,000 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 as well as the long form. However, detailed information on materials consumed was not collected on the short form; thus its use would increase the values 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 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 paperbound geographic area series, the bound volumes of the census of manufactures, and in a report issued as part of the 1982 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 or more establishments. 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, tax accounting, company sales and profit reports, and personnel 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 one of approximately 450 manufacturing industries in accordance with the industry definitions in the SIC system. Under this system of classification, an industry is generally defined as a group of establishments producing a single 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 plants must be significant in terms of its number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively became narrower with successive additions of numerical digits. There are 20 major groups (two-digit SIC), 143 industry groups (three-digit SIC), and approximately 450

industries (four-digit SIC). The product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 1,500 classes of products, identified by a five-digit code, and 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 making those products. For example, establishments engaged in blast furnace 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 two 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 true particularly 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 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 tables 6a through 6c 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 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 transfer 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.

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 item may be given 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 has been 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.

MICROFICHE AND COMPUTER TAPES

All the data in this report are available on microfiche. Selected data are also available on computer tape.

In addition to selected published data being on computer tape, one major data series, the location of manufacturing plants, will be available only on computer tape. This series presents the number of establishments by employment size class by four-digit SIC industry codes for States, counties, and places of 2,500 inhabitants or more. These data are available for both State and county by industry, and State and place by industry.

Microfiche reports are sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Computer tapes are sold by the Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

SPECIAL TABULATIONS

Special tabulations of data collected in the 1982 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, D.C. 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 on the basis of either the response rate or a consistency review.
- (X) Not applicable.
- (Z) Less than half the unit shown.
- n.e.c. Not elsewhere classified.
- pt. Part.
- SIC Standard Industrial Classification.



Selected Metalworking Operations

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EXPLANATORY TEXT

The 1982 Census of Manufactures included a special inquiry on "selected metalworking and related operations" to provide a measurement of employment in certain metalworking and related facilities in manufacturing. The following operations were included in this inquiry: Foundry (iron or steel); foundry (nonferrous, except die casting); die casting (nonferrous metal only); forging—presses, hammers, or upsetters (excluding manufacture of nuts, bolts, etc.); electroplating and other plating; galvanizing and other hot-dip coating; heat treating of metals for production purposes; automatic screw machine department; machine shop; tool and die shop (if separate from machine shop) for jigs, fixtures, dies and other special tooling; pattern shop (foundry patterns only—metal, wood, etc.); plate or structural fabrication; stamping, blanking, and forming of metals; painting, lacquering, and enameling on metals; plastics molding; assembly of product; shipping department (including packing and crating); hot forging—presses, hammers, or upsetters (excluding manufacture of nuts, bolts, etc.); cold forging; and powder metallurgy.

Information on selected metalworking and related operations was obtained for practically all industries where such operations are important. For individual industries or groups of industries, the inquiry on metalworking and related operations was tailored to fit the principal operations that were characteristic of those industries. The information obtained in each inquiry included the number of production workers engaged in the specified operation.

Production workers are defined to include workers (up through the working-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), record-keeping, and other services closely associated with these production operations at the establishment covered by the report. Supervisory employees above the working-supervisor level are excluded from this category.

Table 1 gives an approximation of the coverage for each industry. The coverage is generally highest in industries in which larger establishments have predominance. Similar percentages are not available for States.

Since establishments with less than 5 employees were typically excused from filing reports, these establishments are not included in the metalworking and related operations data. (See the introduction for further explanation.)

In addition, for selected industries, short forms which did not contain metalworking inquiries were mailed to small establishments (typically those with 5 to 20 employees). The special inquiry industries with short forms were:

3361	3469	3599
3362	3496	3645
3369	3498	3679
3441	3499	3699
3442	3544	3713
3444	3549	3732
3446	3552	3751
3448	3559	3792
3449	3565	3799
3451	3569	3811
3452	3589	3829

Also, a few larger establishments that filed standard forms did not report their metalworking and related operations. This has resulted in an understatement of the number of establishments performing specific operations, primarily in the smallest size class, and, to a much smaller degree, in an understatement of the number of production workers in the operation.

Data on the number of establishments and the number of production workers engaged in specific metalworking and related operations are shown in table 2 for each of the 145 industries included in this special inquiry. The size distribution data in table 2 are based on the number of production workers usually employed in the operation. The number of production workers engaged in these operations is shown for 18 selected operations by industry in table 3, and for 19 selected operations by State in table 4.

For the forging industries (SIC's 3462 and 3463), table 2 contains separate data for hot forging—presses, hammers, or upsetters (excluding manufacture of nuts, bolts, etc.) and cold forging. These data are included with operation entitled "forging—presses, hammers, or upsetters" in tables 3 and 4.

Since the report form used by respondents in Industry 3471, Plating and Polishing, did not include the metalworking and related operations inquiry, the total number of production workers for establishments classified in industry 3471 are shown separately in table 4. Plating and polishing operations performed by establishments classified in industry 3471 are excluded from tables 1, 2, and 3.

Table 1. Coverage of Selected Metalworking Operations by Industry: 1982

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

SIC code	Industry	All establishments		Total employees in industry (1,000)	Percent of total employees in industry—		
		Total	Received metalworking inquiry ¹		Reporting 1 specified operation or more	Reporting no applicable operations	Completing inquiry
3321	Gray iron foundries ²	925	768	97.3	95-100	0-4	95-100
3322	Malleable iron foundries ²	50	38	6.5	95-100	0-4	95-100
3324	Steel investment foundries ²	132	120	16.8	90-94	0-4	90-94
3325	Steel foundries, n.e.c. ²	331	271	36.9	95-100	0-4	95-100
3341	Secondary nonferrous metals ²	458	343	19.2	5-9	5-9	15-19
3361	Aluminum foundries ²	1 052	611	49.2	90-94	0-4	90-94
3362	Brass, bronze, and copper foundries ²	499	242	11.8	75-79	0-4	75-79
3369	Nonferrous foundries, n.e.c. ²	356	205	14.4	80-84	0-4	80-84
3411	Metal cans.....	397	333	49.0	85-89	0-4	85-89
3412	Metal barrels, drums, and pails.....	169	143	9.9	70-74	0-4	70-74
3421	Cutlery.....	132	80	13.0	85-89	0-4	85-89
3423	Hand and edge tools, n.e.c.....	786	491	40.4	70-74	0-4	70-74
3425	Hand saws and saw blades.....	135	84	7.4	65-69	0-4	65-69
3429	Hardware, n.e.c.....	1 185	669	80.1	70-74	0-4	70-74
3431	Metal sanitary ware.....	86	43	7.5	75-79	0-4	75-79
3432	Plumbing fittings and brass goods.....	186	118	14.4	75-79	0-4	75-79
3433	Heating equipment, except electric.....	905	541	26.0	60-64	0-4	60-64
3441	Fabricated structural metal ²	2 740	1 569	103.6	60-64	0-4	60-64
3442	Metal doors, sash, and trim.....	1 738	924	66.3	35-39	0-4	40-44
3443	Fabricated plate work (boiler shops) ²	1 929	1 337	102.9	65-69	0-4	65-69
3444	Sheet metal work.....	3 795	1 721	81.1	40-44	0-4	40-44
3446	Architectural metal work.....	1 417	359	22.8	45-49	0-4	50-54
3448	Prefabricated metal buildings.....	570	365	23.7	50-54	0-4	55-59
3449	Miscellaneous metal work.....	492	407	21.5	45-49	0-4	45-49
3451	Screw machine products ²	1 787	790	41.8	60-64	0-4	60-64
3452	Bolts, nuts, rivets, and washers.....	903	606	52.2	75-79	0-4	75-79
3462	Iron and steel forgings ²	380	276	30.7	85-89	0-4	85-89
3463	Nonferrous forgings ²	64	55	7.9	90-94	0-4	90-94
3465	Automotive stampings ²	668	512	90.5	85-89	0-4	85-89
3466	Crowns and closures.....	64	40	6.7	75-79	0-4	75-79
3469	Metal stampings, n.e.c. ²	2 843	1 544	100.4	65-69	0-4	65-69
3482	Small arms ammunition.....	66	30	10.1	70-74	0-4	70-74
3483	Ammunition, except small arms, n.e.c.....	74	60	24.4	65-69	0-4	65-69
3484	Small arms.....	144	74	17.4	75-79	0-4	75-79
3489	Ordnance and accessories, n.e.c.....	65	44	27.5	40-44	0-4	40-44
3493	Steel springs, except wire.....	137	89	5.2	75-79	0-4	75-79
3494	Valves and pipe fittings.....	1 161	903	115.2	75-79	0-4	75-79
3495	Wire springs.....	432	315	17.9	50-54	0-4	55-59
3496	Miscellaneous fabricated wire products.....	1 182	622	36.8	45-49	0-4	50-54
3497	Metal foil and leaf.....	97	87	10.8	45-49	0-4	45-49
3498	Fabricated pipe and fittings.....	779	483	32.7	50-54	0-4	50-54
3499	Fabricated metal products, n.e.c. ²	2 982	1 581	65.0	50-54	0-4	50-54
3511	Turbines and turbine generator sets.....	88	88	32.4	90-94	0-4	90-94
3519	Internal combustion engines, n.e.c.....	253	198	79.6	90-94	0-4	90-94
3523	Farm machinery and equipment.....	1 903	897	96.1	75-79	0-4	75-79
3524	Lawn and garden equipment.....	175	112	17.8	80-84	0-4	80-84
3531	Construction machinery.....	939	617	115.5	85-89	0-4	85-89
3532	Mining machinery.....	369	238	24.6	75-79	0-4	75-79
3533	Oil field machinery.....	1 015	693	98.5	80-84	0-4	80-84
3534	Elevators and moving stairways.....	165	114	13.0	60-64	0-4	60-64
3535	Conveyors and conveying equipment.....	699	524	36.6	70-74	0-4	70-74
3536	Hoists, cranes, and monorails.....	276	191	13.7	70-74	0-4	75-79
3537	Industrial trucks and tractors.....	489	302	24.0	80-84	0-4	80-84
3541	Machine tools, metal cutting types.....	942	395	58.3	75-79	0-4	75-79
3542	Machine tools, metal forming types.....	452	257	19.5	75-79	0-4	75-79
3544	Special dies, tools, jigs, and fixtures.....	7 255	1 964	102.9	45-49	0-4	45-49
3545	Machine tool accessories.....	1 620	1 096	55.1	70-74	0-4	70-74
3546	Power driven hand tools.....	203	119	21.6	85-89	0-4	85-89
3547	Rolling mill machinery.....	63	45	5.1	80-84	0-4	80-84
3549	Metalworking machinery, n.e.c.....	446	337	20.7	60-64	0-4	60-64
3551	Food products machinery.....	748	507	32.7	65-69	0-4	65-69
3552	Textile machinery.....	551	286	19.4	60-64	0-4	60-64
3553	Woodworking machinery.....	279	195	9.7	60-64	0-4	65-69
3554	Paper industries machinery.....	253	175	17.8	80-84	0-4	80-84
3555	Printing trades machinery.....	571	388	28.3	60-64	0-4	60-64
3559	Special industry machinery, n.e.c.....	1 824	1 014	74.5	65-69	0-4	65-69
3561	Pumps and pumping equipment.....	626	464	68.4	80-84	0-4	80-84
3562	Ball and roller bearings.....	162	132	43.8	90-94	0-4	90-94
3563	Air and gas compressors.....	282	206	31.8	80-84	0-4	80-84
3564	Blowers and fans.....	502	348	29.8	55-59	0-4	55-59
3565	Industrial patterns.....	996	375	9.8	30-34	0-4	30-34
3566	Speed changers, drives, and gears.....	309	227	24.1	80-84	0-4	80-84
3567	Industrial furnaces and ovens.....	353	252	16.1	60-64	0-4	60-64
3568	Power transmission equipment, n.e.c.....	293	235	26.9	85-89	0-4	85-89
3569	General industrial machinery, n.e.c.....	1 458	738	62.7	55-59	0-4	60-64
3573	Electronic computing equipment.....	1 739	1 069	337.9	70-74	0-4	70-74
3574	Calculating and accounting machines.....	70	52	15.4	70-74	0-4	75-79
3576	Scales and balances, except laboratory.....	128	82	7.0	75-79	0-4	75-79
3579	Office machines, n.e.c., and typewriters.....	232	166	43.7	80-84	0-4	80-84
3581	Automatic merchandising machines.....	92	54	7.4	60-64	0-4	60-64
3582	Commercial laundry equipment.....	87	55	4.7	70-74	0-4	70-74
3585	Refrigeration and heating equipment.....	865	627	120.5	80-84	0-4	80-84
3586	Measuring and dispensing pumps.....	61	47	8.1	85-89	0-4	85-89
3589	Service industry machinery, n.e.c.....	832	357	31.0	60-64	0-4	60-64
3592	Carburetors, pistons, rings, valves.....	171	105	31.2	80-84	0-4	80-84
3599	Machinery, except electrical, n.e.c.....	22 076	5 380	250.9	40-44	0-4	40-44
3612	Transformers.....	293	206	39.0	75-79	0-4	75-79
3613	Switchgear and switchboard apparatus.....	649	494	66.3	80-84	0-4	80-84
3621	Motors and generators.....	472	376	84.2	75-79	0-4	75-79
3622	Industrial controls.....	913	584	64.0	60-64	0-4	60-64

See footnotes at end of table.

Table 1. Coverage of Selected Metalworking Operations by Industry: 1982—Con.

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

SIC code	Industry	All establishments		Total employees in industry (1,000)	Percent of total employees in industry—		
		Total	Received metalworking inquiry ¹		Reporting 1 specified operation or more	Reporting no applicable operations	Completing inquiry
3623	Welding apparatus, electric	182	139	15.0	75-79	0-4	75-79
3631	Household cooking equipment	88	76	23.7	80-84	0-4	80-84
3632	Household refrigerators and freezers	50	40	22.4	95-100	0-4	95-100
3633	Household laundry equipment	25	22	16.5	95-100	0-4	95-100
3634	Electric housewares and fans	262	180	38.7	75-79	0-4	75-79
3635	Household vacuum cleaners	31	20	8.4	90-94	0-4	90-94
3636	Sewing machines	91	37	5.5	80-84	0-4	80-84
3639	Household appliances, n.e.c.	83	58	14.2	65-69	0-4	65-69
3641	Electric lamps	149	63	22.4	75-79	0-4	75-79
3643	Current-carrying wiring devices	415	291	44.5	75-79	0-4	75-79
3644	Noncurrent-carrying wiring devices	226	179	26.3	75-79	0-4	75-79
3645	Residential lighting fixtures	643	342	22.2	40-44	0-4	40-44
3646	Commercial lighting fixtures	243	197	18.9	60-64	0-4	60-64
3647	Vehicular lighting equipment	84	63	12.9	75-79	0-4	75-79
3648	Lighting equipment, n.e.c.	233	160	12.2	60-64	0-4	60-64
3651	Radio and TV receiving sets	458	261	48.4	70-74	0-4	70-74
3661	Telephone and telegraph apparatus	333	247	136.5	70-74	0-4	70-74
3662	Radio and TV communication equipment	2 388	1 620	464.1	65-69	0-4	65-69
3671	Electron tubes, all types	102	67	35.5	70-74	0-4	70-74
3674	Semiconductors and related devices	766	438	166.5	50-54	0-4	50-54
3675	Electronic capacitors	130	110	28.9	70-74	0-4	70-74
3676	Electronic resistors	103	97	18.3	70-74	0-4	70-74
3677	Electronic coils and transformers	386	292	23.7	45-49	0-4	50-54
3678	Electronic connectors	198	171	39.7	70-74	0-4	70-74
3679	Electronic components, n.e.c.	3 770	1 734	203.2	50-54	0-4	50-54
3691	Storage batteries	201	151	22.9	30-34	0-4	35-39
3692	Primary batteries, dry and wet	55	46	11.7	75-79	0-4	75-79
3693	X-ray, electromedical, and electrotherapeutic apparatus	262	198	47.9	45-49	0-4	45-49
3694	Engine electrical equipment	433	260	42.9	65-69	0-4	70-74
3699	Electrical equipment and supplies, n.e.c.	749	413	21.6	35-39	0-4	40-44
3711	Motor vehicles and car bodies	355	222	240.1	80-84	0-4	80-84
3713	Truck and bus bodies	680	403	28.1	55-59	0-4	60-64
3714	Motor vehicle parts and accessories	2 420	1 427	321.4	75-79	0-4	75-79
3715	Truck trailers	325	221	18.8	55-59	0-4	60-64
3716	Motor homes produced on purchased chassis	87	77	7.2	30-34	5-9	40-44
3721	Aircraft	165	144	275.1	85-89	0-4	85-89
3724	Aircraft engines and engine parts	340	260	130.7	90-94	0-4	90-94
3728	Aircraft equipment, n.e.c.	966	580	132.8	75-79	0-4	75-79
3731	Ship building and repairing	689	496	166.7	75-79	0-4	75-79
3732	Boat building and repairing	1 877	623	38.3	30-34	0-4	35-39
3743	Railroad equipment	200	157	34.5	85-89	0-4	85-89
3751	Motorcycles, bicycles, and parts	273	109	13.0	65-69	0-4	65-69
3761	Guided missiles and space vehicles	29	17	99.6	80-84	0-4	80-84
3764	Space propulsion units and parts	27	24	25.3	70-74	5-9	75-79
3769	Space vehicle equipment, n.e.c.	49	35	21.4	40-44	30-34	70-74
3792	Travel trailers and campers	492	224	13.8	30-34	5-9	40-44
3795	Tanks and tank components	44	41	18.2	80-84	0-4	80-84
3799	Transportation equipment, n.e.c.	425	224	10.9	55-59	0-4	55-59
3811	Engineering and scientific instruments	771	373	42.8	50-54	0-4	50-54
3822	Environmental controls	245	148	28.8	75-79	0-4	75-79
3823	Process control instruments	627	396	60.3	55-59	0-4	55-59
3824	Fluid meters and counting devices	145	96	11.1	80-84	0-4	80-84
3825	Instruments to measure electricity	749	503	89.7	60-64	0-4	65-69
3829	Measuring and controlling devices, n.e.c.	717	355	37.8	60-64	0-4	60-64
3873	Watches, clocks, and watchcases	237	141	16.8	50-54	0-4	55-59

¹Excludes establishments with less than 5 employees, which were typically not sent Census forms. For selected industries, excludes small establishments (typically between 5 to 20 employees). See introduction for further explanation.

²Specific operation basically represents the major activity of the particular industry. A few respondents incorrectly reported the item did not apply.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982

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

SIC code	Industry and operation	Establishments ¹				Production workers in specified operation ¹
		Number	Number of production workers ²			
			1 to 4	5 to 19	20 or more	
3321	GRAY IRON FOUNDRIES					
	Ferrous foundry ³	727	52	130	545	65 750
	Nonferrous foundry (except die casting)	57	26	22	9	892
	Nonferrous die casting	3	-	1	2	(D)
	Machine shop	124	48	38	38	3 926
	Foundry pattern shop	213	142	60	11	1 846
3322	MALLEABLE IRON FOUNDRIES					
	Ferrous foundry ³	32	-	3	29	4 074
	Nonferrous foundry (except die casting)	2	-	1	1	(D)
	Nonferrous die casting	-	-	-	-	-
	Machine shop	7	-	5	2	109
	Foundry pattern shop	12	7	4	1	78

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3324	STEEL INVESTMENT FOUNDRIES					
	Ferrous foundry ³	87	5	19	63	7 997
	Nonferrous foundry (except die casting)	31	13	11	7	1 246
	Nonferrous die casting	2	-	2	-	(D)
	Machine shop	30	9	13	8	381
	Foundry pattern shop	23	11	8	4	455
3325	STEEL FOUNDRIES, N.E.C.					
	Ferrous foundry ³	225	5	27	193	23 401
	Nonferrous foundry (except die casting)	22	8	8	6	(D)
	Nonferrous die casting	2	1	-	1	(D)
	Machine shop	56	18	16	22	1 475
	Foundry pattern shop	82	41	35	6	608
3341	SECONDARY NONFERROUS METALS					
	Nonferrous foundry (except die casting) ³	21	3	6	12	1 065
	Nonferrous die casting ³	2	-	2	-	(D)
3361	ALUMINUM FOUNDRIES					
	Ferrous foundry	14	3	4	7	292
	Nonferrous foundry (except die casting) ³	499	60	219	220	16 561
	Nonferrous die casting ³	242	17	53	172	15 279
	Machine shop	139	59	49	31	2 601
	Foundry pattern shop	93	68	23	2	353
3362	BRASS, BRONZE, AND COPPER FOUNDRIES					
	Ferrous foundry	12	5	6	1	(D)
	Nonferrous foundry (except die casting) ³	257	35	130	92	5 256
	Nonferrous die casting ³	10	5	2	3	130
	Machine shop	53	23	21	9	707
	Foundry pattern shop	34	31	3	-	71
3369	NONFERROUS FOUNDRIES, N.E.C.					
	Ferrous foundry	3	1	-	2	(D)
	Nonferrous foundry (except die casting) ³	42	5	12	25	1 465
	Nonferrous die casting ³	127	10	41	76	6 069
	Machine shop	38	19	17	2	267
	Foundry pattern shop	12	9	3	-	50
3411	METAL CANS					
	Machine shop	214	60	103	51	2 926
	Tool and die shop	70	52	14	4	416
	Plate or structural fabrication	22	6	8	8	(D)
	Stamping, blanking, and forming of metals	202	16	47	139	12 685
	Painting, lacquering, and enameling of metals	150	16	59	75	5 100
3412	METAL BARRELS, DRUMS, AND PAILS					
	Machine shop	37	19	15	3	247
	Tool and die shop	9	7	1	1	50
	Plate or structural fabrication	3	1	1	1	(D)
	Stamping, blanking, and forming of metals	77	26	31	20	1 176
	Painting, lacquering, and enameling of metals	74	37	29	8	606
3421	CUTLERY					
	Forging—presses, hammers, or upsetters	20	12	6	2	149
	Electroplating and other plating	17	9	6	2	153
	Heat treating of metals	45	28	15	2	244
	Automatic screw machine department	3	2	1	-	18
	Machine shop	33	14	13	6	446
	Tool and die shop	29	17	9	3	193
	Stamping, blanking, and forming of metals	40	20	13	7	611
	Painting, lacquering, and enameling of metals	16	12	3	1	87

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3423	HAND AND EDGE TOOLS, N.E.C.					
	Forging—presses, hammers, or upsetters	92	30	38	24	1 357
	Electroplating and other plating	50	21	26	3	366
	Heat treating of metals	136	99	29	8	630
	Automatic screw machine department	70	39	23	8	490
	Machine shop	184	63	70	51	3 738
	Tool and die shop	147	66	57	24	1 538
	Stamping, blanking, and forming of metals	146	86	44	16	1 625
	Painting, lacquering, and enameling of metals	123	93	22	8	547
3425	HAND SAWS AND SAW BLADES					
	Forging—presses, hammers, or upsetters	6	4	1	1	67
	Electroplating and other plating	11	7	3	1	79
	Heat treating of metals	32	20	9	3	273
	Automatic screw machine department	2	1	1	-	(D)
	Machine shop	33	19	9	5	238
	Tool and die shop	15	6	6	3	226
	Stamping, blanking, and forming of metals	29	19	7	3	366
	Painting, lacquering, and enameling of metals	17	11	6	-	79
3429	HARDWARE, N.E.C.					
	Ferrous foundry	7	1	5	1	95
	Nonferrous foundry (except die casting)	35	10	12	13	456
	Nonferrous die casting	47	13	19	15	790
	Forging—presses, hammers, or upsetters	22	14	7	1	190
	Electroplating and other plating	109	39	45	25	1 780
	Galvanizing and other hot-dip coating	14	13	1	-	32
	Heat treating of metals	43	33	7	3	231
	Automatic screw machine department	86	40	33	13	768
	Machine shop	226	96	77	53	3 078
	Tool and die shop	202	96	85	21	2 293
	Foundry pattern shop	11	11	-	-	22
	Plate or structural fabrication	35	22	10	3	210
	Stamping, blanking, and forming of metals	289	102	106	81	6 849
	Painting, lacquering, and enameling of metals	192	132	46	14	1 376
3431	METAL SANITARY WARE					
	Ferrous foundry	3	-	-	3	(D)
	Nonferrous foundry (except die casting)	1	-	-	1	(D)
	Nonferrous die casting	2	1	-	1	(U)
	Electroplating and other plating	3	1	-	2	(D)
	Heat treating of metals	5	4	1	-	27
	Automatic screw machine department	3	2	1	-	13
	Machine shop	7	1	4	2	269
	Tool and die shop	8	7	1	-	20
	Foundry pattern shop	2	-	2	-	(D)
	Stamping, blanking, and forming of metals	19	3	9	7	315
	Painting, lacquering, and enameling of metals	9	1	2	6	720
3432	PLUMBING FITTINGS AND BRASS GOODS					
	Ferrous foundry	1	-	-	1	(D)
	Nonferrous foundry (except die casting)	11	-	7	4	(D)
	Nonferrous die casting	7	3	3	1	(D)
	Electroplating and other plating	27	9	10	8	(D)
	Heat treating of metals	8	8	-	-	14
	Automatic screw machine department	31	9	12	10	467
	Machine shop	42	10	17	15	1 058
	Tool and die shop	33	16	13	4	293
	Foundry pattern shop	7	4	3	-	(D)
	Stamping, blanking, and forming of metals	25	9	11	5	341
	Painting, lacquering, and enameling of metals	9	8	-	1	34
3433	HEATING EQUIPMENT, EXCEPT ELECTRIC					
	Ferrous foundry	11	2	3	6	659
	Automatic screw machine department	11	7	4	-	44
	Machine shop	87	40	28	19	1 352
	Tool and die shop	42	31	11	-	139
	Foundry pattern shop	9	5	3	1	62
	Plate or structural fabrication	89	30	43	16	1 093
	Stamping, blanking, and forming of metals	116	55	40	21	1 250
	Painting, lacquering, and enameling of metals	156	127	25	4	524

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹				Production workers in specified operation ²
		Number	Number of production workers ²			
			1 to 4	5 to 19	20 or more	
3441	FABRICATED STRUCTURAL METAL					
	Ferrous foundry	14	4	6	4	321
	Nonferrous foundry (except die casting)	2	2	—	—	(D)
	Forging—presses, hammers, or upsetters	21	12	7	2	187
	Galvanizing and other hot-dip coating	15	2	4	9	396
	Heat treating of metals	19	17	2	—	39
	Machine shop	187	112	60	15	1 451
	Tool and die shop	37	25	8	4	352
	Plate or structural fabrication ³	756	96	277	383	33 730
	Stamping, blanking, and forming of metals	187	95	67	25	1 975
	Painting, lacquering, and enameling of metals	534	413	100	21	2 464
3442	METAL DOORS, SASH, AND TRIM					
	Ferrous foundry	2	1	—	1	(D)
	Nonferrous foundry (except die casting)	7	1	5	1	78
	Nonferrous die casting	4	2	2	—	(D)
	Forging—presses, hammers, or upsetters	11	2	7	2	156
	Electroplating and other plating	9	2	4	3	121
	Galvanizing and other hot-dip coating	2	2	—	—	(D)
	Heat treating of metals	14	6	6	2	124
	Machine shop	79	54	22	3	416
	Tool and die shop	52	38	14	—	183
	Plate or structural fabrication	40	10	20	10	772
	Stamping, blanking, and forming of metals	156	60	54	42	3 331
	Painting, lacquering, and enameling of metals	124	65	49	10	902
3443	FABRICATED PLATE WORK (BOILER SHOPS)					
	Ferrous foundry	6	1	1	4	319
	Nonferrous foundry (except die casting)	2	2	—	—	(D)
	Forging—presses, hammers, or upsetters	22	7	9	6	339
	Galvanizing and other hot-dip coating	9	6	3	—	(D)
	Heat treating of metals	99	84	11	4	468
	Machine shop	342	168	119	55	5 088
	Tool and die shop	80	59	16	5	540
	Plate or structural fabrication ³	621	104	227	290	23 326
	Stamping, blanking, and forming of metals	326	186	88	52	3 330
	Painting, lacquering, and enameling of metals	466	388	66	12	1 657
3444	SHEET METAL WORK					
	Ferrous foundry	5	1	4	—	(D)
	Nonferrous foundry (except die casting)	4	3	1	—	15
	Nonferrous die casting	2	1	—	—	(D)
	Electroplating and other plating	14	12	2	—	40
	Galvanizing and other hot-dip coating	37	31	4	2	245
	Heat treating of metals	14	11	2	1	81
	Machine shop	227	158	56	13	1 309
	Tool and die shop	107	88	18	1	343
	Plate or structural fabrication	252	87	120	45	3 081
	Stamping, blanking, and forming of metals	585	144	291	150	10 038
	Painting, lacquering, and enameling of metals	308	234	63	11	1 355
3446	ARCHITECTURAL METAL WORK					
	Ferrous foundry	1	—	1	—	(D)
	Nonferrous foundry (except die casting)	2	1	1	—	(D)
	Nonferrous die casting	3	—	2	1	31
	Forging—presses, hammers, or upsetters	7	5	1	1	43
	Machine shop	41	20	18	3	336
	Tool and die shop	29	23	5	1	173
	Plate or structural fabrication	97	29	45	23	1 393
	Stamping, blanking, and forming of metals	95	50	24	21	1 520
	Painting, lacquering, and enameling of metals	131	108	19	4	455
3448	PREFABRICATED METAL BUILDINGS					
	Ferrous foundry	—	—	—	—	—
	Nonferrous foundry (except die casting)	—	—	—	—	—
	Nonferrous die casting	—	—	—	—	—
	Forging—presses, hammers, or upsetters	4	3	1	—	(D)
	Machine shop	29	13	13	3	337
	Tool and die shop	9	5	2	—	125
	Plate or structural fabrication	102	21	30	51	3 271
	Stamping, blanking, and forming of metals	78	25	29	24	1 662
	Painting, lacquering, and enameling of metals	94	67	17	10	769

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3449	MISCELLANEOUS METAL WORK					
	Ferrous foundry -----	1	-	-	1 (D)	
	Nonferrous foundry (except die casting) -----	-	-	-	-	
	Nonferrous die casting -----	-	-	-	-	
	Forging—presses, hammers, or upsetters -----	2	1	1	2 (D)	
	Machine shop -----	40	23	15	278	
	Tool and die shop -----	31	23	8	124	
	Plate or structural fabrication -----	75	18	34	1 615	
	Stamping, blanking, and forming of metals -----	107	32	45	1 887	
	Painting, lacquering, and enameling of metals -----	47	33	12	209	
3451	SCREW MACHINE PRODUCTS					
	Ferrous foundry -----	2	1	-	1 (D)	
	Nonferrous foundry (except die casting) -----	-	-	-	-	
	Nonferrous die casting -----	-	-	-	-	
	Forging—presses, hammers, or upsetters -----	3	3	-	6	
	Electroplating and other plating -----	18	12	5	82	
	Galvanizing and other hot-dip coating -----	-	-	-	-	
	Heat treating of metals -----	28	23	5	92	
	Automatic screw machine department ³ -----	555	100	270	185 359	
	Machine shop -----	296	88	137	4 643	
	Tool and die shop -----	126	98	28	433	
	Stamping, blanking, and forming of metals -----	52	35	12	351	
	Painting, lacquering, and enameling of metals -----	19	17	1	67	
3452	BOLTS, NUTS, RIVETS, AND WASHERS					
	Ferrous foundry -----	-	-	-	-	
	Nonferrous foundry (except die casting) -----	1	1	-	1 (D)	
	Nonferrous die casting -----	7	3	4	43	
	Forging—presses, hammers, or upsetters -----	40	15	19	505	
	Electroplating and other plating -----	88	51	29	685	
	Galvanizing and other hot-dip coating -----	13	8	4	81	
	Heat treating of metals -----	129	92	30	679	
	Automatic screw machine department -----	124	47	44	33 776	
	Machine shop -----	205	89	70	3 289	
	Tool and die shop -----	186	90	68	1 997	
	Stamping, blanking, and forming of metals -----	214	63	72	5 725	
	Painting, lacquering, and enameling of metals -----	38	30	7	160	
3462	IRON AND STEEL FORGINGS					
	Cold forging ³ -----	19	5	6	8 658	
	Hot forging—presses, hammers, or upsetters ³ -----	168	11	52	105 6 907	
	Machine shop -----	116	34	48	34 2 368	
	Tool and die shop -----	106	26	48	32 2 005	
3463	NONFERROUS FORGINGS					
	Cold forging ³ -----	4	2	2	- 28	
	Hot forging—presses, hammers, or upsetters ³ -----	39	3	13	23 2 047	
	Machine shop -----	27	11	6	10 480	
	Tool and die shop -----	21	8	6	7 450	
3465	AUTOMOTIVE STAMPINGS					
	Ferrous foundry -----	1	1	-	- (D)	
	Nonferrous foundry (except die casting) -----	4	2	2	- 29	
	Nonferrous die casting -----	3	2	1	- 18	
	Electroplating and other plating -----	22	7	10	5 342	
	Heat treating of metals -----	21	12	6	1 114	
	Automatic screw machine department -----	7	5	2	- 23	
	Machine shop -----	90	38	28	24 3 778	
	Tool and die shop -----	221	81	99	41 7 500	
	Foundry pattern shop -----	15	2	4	9 463	
	Plate or structural fabrication -----	12	5	5	2 111	
	Stamping, blanking, and forming of metals ³ -----	337	35	102	200 29 990	
	Painting, lacquering, and enameling of metals -----	79	38	31	10 703	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3466	CROWNS AND CLOSURES					
	Ferrous foundry	1	-	1	-	(D)
	Nonferrous foundry (except die casting).....	-	-	-	-	-
	Nonferrous die casting	-	-	-	-	-
	Electroplating and other plating	-	-	-	-	-
	Heat treating of metals	2	2	-	-	(D)
	Automatic screw machine department	-	-	-	-	-
	Machine shop	18	5	9	4	362
	Tool and die shop	7	1	6	-	66
	Foundry pattern shop	-	-	-	-	-
	Plate or structural fabrication	-	-	-	-	-
	Stamping, blanking, and forming of metals	25	2	3	20	2 341
	Painting, lacquering, and enameling of metals	18	-	7	11	559
3469	METAL STAMPINGS, N.E.C.					
	Ferrous foundry	6	2	1	3	133
	Nonferrous foundry (except die casting).....	8	3	5	-	54
	Nonferrous die casting	6	6	-	-	11
	Electroplating and other plating	67	37	26	4	408
	Heat treating of metals	91	75	13	3	(D)
	Automatic screw machine department	33	20	11	2	161
	Machine shop	303	169	106	28	2 808
	Tool and die shop	570	303	231	36	4 017
	Foundry pattern shop	9	7	-	-	37
	Plate or structural fabrication	77	34	30	-	952
	Stamping, blanking, and forming of metals ³	934	147	409	378	23 681
	Painting, lacquering, and enameling of metals	271	157	75	39	2 590
3482	SMALL ARMS AMMUNITION					
	Electroplating and other plating	5	2	3	-	(D)
	Galvanizing and other hot-dip coating	1	-	1	-	(D)
	Heat treating of metals	8	4	3	1	(D)
	Automatic screw machine department	4	1	2	1	86
	Machine shop	10	2	2	6	430
	Tool and die shop	7	3	1	3	(D)
	Stamping, blanking, and forming of metals	10	1	2	7	527
	Painting, lacquering, and enameling of metals	3	1	1	1	(D)
3483	AMMUNITION, EXCEPT FOR SMALL ARMS, N.E.C.					
	Electroplating and other plating	7	3	3	1	58
	Galvanizing and other hot-dip coating	3	2	1	-	(D)
	Heat treating of metals	17	9	7	1	113
	Automatic screw machine department	11	4	2	5	172
	Machine shop	29	7	9	13	1 231
	Tool and die shop	12	4	5	3	155
	Stamping, blanking, and forming of metals	19	5	7	7	568
	Painting, lacquering, and enameling of metals	17	5	9	3	181
3484	SMALL ARMS					
	Electroplating and other plating	5	1	2	2	103
	Galvanizing and other hot-dip coating	5	5	-	-	8
	Heat treating of metals	16	7	7	2	135
	Automatic screw machine department	7	-	6	1	115
	Machine shop	27	3	11	13	2 503
	Tool and die shop	16	2	7	7	362
	Stamping, blanking, and forming of metals	8	4	-	4	118
	Painting, lacquering, and enameling of metals	8	5	2	1	(D)
3489	ORDNANCE AND ACCESSORIES, N.E.C.					
	Electroplating and other plating	4	2	1	1	(D)
	Galvanizing and other hot-dip coating	1	1	-	-	(D)
	Heat treating of metals	4	3	-	1	(D)
	Automatic screw machine department	10	6	3	1	62
	Machine shop	24	6	10	8	1 363
	Tool and die shop	9	5	3	1	(D)
	Stamping, blanking, and forming of metals	6	-	6	-	65
	Painting, lacquering, and enameling of metals	9	2	7	-	78
3493	STEEL SPRINGS, EXCEPT WIRE					
	Galvanizing and other hot-dip coating	1	-	1	-	(D)
	Heat treating of metals	42	19	14	9	503
	Machine shop	26	15	10	1	160
	Tool and die shop	23	13	8	2	155
	Stamping, blanking, and forming of metals	36	11	11	14	811
	Painting, lacquering, and enameling of metals	28	24	3	1	(D)

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3494 VALVES AND PIPE FITTINGS						
	Ferrous foundry -----	37	5	9	23	2 038
	Nonferrous foundry (except die casting) -----	38	8	8	22	1 792
	Nonferrous die casting -----	10	3	6	1	145
	Forging—presses, hammers, or upsetters -----	36	12	19	5	565
	Electroplating and other plating -----	46	31	12	3	259
	Galvanizing and other hot-dip coating -----	14	9	4	1	95
	Heat treating of metals -----	77	64	10	3	315
	Automatic screw machine department -----	182	75	70	37	2 560
	Machine shop -----	477	78	151	248	20 387
	Tool and die shop -----	214	115	82	17	1 681
	Foundry pattern shop -----	37	12	23	2	272
	Plate or structural fabrication -----	48	17	14	17	1 514
	Stamping, blanking, and forming of metals -----	97	50	26	21	1 368
	Painting, lacquering, and enameling of metals -----	205	179	21	5	655
3495 WIRE SPRINGS						
	Galvanizing and other hot-dip coating -----	3	3	—	—	(D)
	Heat treating of metals -----	88	73	12	3	334
	Machine shop -----	71	50	17	4	378
	Tool and die shop -----	69	43	23	3	384
	Stamping, blanking, and forming of metals -----	105	36	40	29	1 889
	Painting, lacquering, and enameling of metals -----	55	49	3	3	213
3496 MISCELLANEOUS FABRICATED WIRE PRODUCTS						
	Ferrous foundry -----	3	1	—	2	(D)
	Galvanizing and other hot-dip coating -----	18	5	12	1	139
	Heat treating of metals -----	28	21	4	3	238
	Automatic screw machine department -----	11	9	2	—	31
	Machine shop -----	123	79	39	5	780
	Tool and die shop -----	103	78	23	2	417
	Plate or structural fabrication -----	17	10	3	4	298
	Stamping, blanking, and forming of metals -----	165	54	72	39	2 262
	Painting, lacquering, and enameling of metals -----	103	80	18	5	483
3497 METAL FOIL AND LEAF						
	Machine shop -----	21	10	5	6	395
	Stamping, blanking, and forming of metals -----	10	3	5	2	185
	Painting, lacquering, and enameling of metals -----	8	—	4	4	(D)
3498 FABRICATED PIPE AND FITTINGS						
	Ferrous foundry -----	2	—	2	—	(D)
	Nonferrous foundry (except die casting) -----	1	1	—	—	(D)
	Nonferrous die casting -----	1	—	1	—	(D)
	Forging—presses, hammers, or upsetters -----	23	8	10	5	290
	Electroplating and other plating -----	8	5	3	—	33
	Galvanizing and other hot-dip coating -----	11	9	2	—	42
	Heat treating of metals -----	43	35	7	1	134
	Automatic screw machine department -----	15	12	3	—	66
	Machine shop -----	119	41	47	31	1 913
	Tool and die shop -----	46	34	9	3	256
	Foundry pattern shop -----	5	4	1	—	16
	Plate or structural fabrication -----	66	22	24	20	1 784
	Stamping, blanking, and forming of metals -----	69	33	17	19	1 818
	Painting, lacquering, and enameling of metals -----	68	57	10	1	197
3499 FABRICATED METAL PRODUCTS, N.E.C.						
	Ferrous foundry -----	11	1	8	2	(D)
	Nonferrous foundry (except die casting) -----	14	10	3	1	(D)
	Nonferrous die casting -----	9	4	4	1	(D)
	Forging—presses, hammers, or upsetters -----	14	8	2	4	225
	Electroplating and other plating -----	28	16	10	2	190
	Galvanizing and other hot-dip coating -----	5	4	1	—	18
	Heat treating of metals -----	48	39	7	2	199
	Automatic screw machine department -----	36	26	10	—	151
	Machine shop -----	331	177	107	47	3 028
	Tool and die shop -----	131	90	33	8	723
	Foundry pattern shop -----	13	12	1	—	29
	Plate or structural fabrication -----	241	83	111	47	2 837
	Stamping, blanking, and forming of metals -----	348	135	146	67	4 315
	Painting, lacquering, and enameling of metals -----	273	218	44	11	1 214

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3511	TURBINES AND TURBINE GENERATOR SETS					
	Ferrous foundry	1	-	1	-	(D)
	Nonferrous foundry (except die casting)	2	1	-	1	(D)
	Nonferrous die casting	1	-	-	-	(D)
	Electroplating and other plating	3	3	-	-	5
	Heat treating of metals	15	8	5	2	187
	Automatic screw machine department	2	-	-	2	(D)
	Machine shop	39	5	10	24	5 485
	Tool and die shop	19	3	8	8	527
	Plate or structural fabrication	22	7	3	12	1 385
	Stamping, blanking, and forming of metals	11	2	7	2	(D)
	Painting, lacquering, and enameling of metals	21	11	6	4	212
	Assembly of product	35	7	12	16	2 815
3519	INTERNAL COMBUSTION ENGINES, N.E.C.					
	Ferrous foundry	5	1	-	4	(D)
	Nonferrous foundry (except die casting)	3	1	-	2	(D)
	Nonferrous die casting	3	-	1	2	(D)
	Electroplating and other plating	19	9	6	4	186
	Heat treating of metals	38	15	14	9	459
	Automatic screw machine department	26	13	6	7	(D)
	Machine shop	95	11	22	62	15 396
	Tool and die shop	57	19	19	19	1 200
	Plate or structural fabrication	18	8	6	4	362
	Stamping, blanking, and forming of metals	31	11	8	12	(D)
	Painting, lacquering, and enameling of metals	61	38	15	8	657
	Assembly of product	84	13	15	56	9 244
3523	FARM MACHINERY AND EQUIPMENT					
	Ferrous foundry	14	1	5	8	(D)
	Nonferrous foundry (except die casting)	7	5	-	2	(D)
	Nonferrous die casting	3	3	-	-	8
	Forging—presses, hammers, or upsetters	49	27	11	11	686
	Heat treating of metals	68	43	16	9	731
	Automatic screw machine department	39	30	7	2	267
	Machine shop	347	190	107	50	7 751
	Tool and die shop	188	134	30	24	2 085
	Foundry pattern shop	19	13	5	1	104
	Plate or structural fabrication	217	87	104	26	2 415
	Stamping, blanking, and forming of metals	319	142	135	42	3 982
	Painting, lacquering, and enameling of metals	418	329	71	18	2 190
	Assembly of product	439	168	177	94	10 920
	Shipping department, including packing and crating	420	297	96	27	2 779
	Powder metallurgy	4	4	-	-	8
3524	LAWN AND GARDEN EQUIPMENT					
	Ferrous foundry	2	-	1	1	(D)
	Nonferrous foundry (except die casting)	1	-	1	-	(D)
	Nonferrous die casting	4	-	4	-	44
	Forging—presses, hammers, or upsetters	8	3	4	1	84
	Heat treating of metals	16	12	3	1	90
	Automatic screw machine department	8	4	2	2	112
	Machine shop	42	14	10	18	1 145
	Tool and die shop	36	11	22	3	340
	Foundry pattern shop	3	2	1	-	19
	Plate or structural fabrication	15	6	8	1	126
	Stamping, blanking, and forming of metals	49	11	17	21	1 277
	Painting, lacquering, and enameling of metals	58	21	30	7	579
	Assembly of product	66	8	13	45	4 811
	Shipping department, including packing and crating	62	27	28	7	550
	Powder metallurgy	1	1	-	-	(D)
3531	CONSTRUCTION MACHINERY					
	Ferrous foundry	17	1	4	12	1 506
	Nonferrous foundry (except die casting)	2	1	-	1	(D)
	Nonferrous die casting	-	-	-	-	-
	Forging—presses, hammers, or upsetters	20	7	11	2	230
	Heat treating of metals	66	42	14	10	897
	Automatic screw machine department	19	13	4	2	121
	Machine shop	293	96	92	105	11 672
	Tool and die shop	104	56	33	15	1 526
	Foundry pattern shop	20	11	9	-	107
	Plate or structural fabrication	241	57	88	96	10 073
	Stamping, blanking, and forming of metals	132	60	51	21	1 662
	Painting, lacquering, and enameling of metals	297	212	66	19	1 789
	Assembly of product	273	72	86	115	10 015

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3532	MINING MACHINERY					
	Ferrous foundry	7	-	2	5	251
	Nonferrous foundry (except die casting)	-	-	-	-	-
	Nonferrous die casting	1	1	-	-	(D)
	Forging—presses, hammers, or upsetters	11	8	3	-	54
	Heat treating of metals	39	27	11	1	196
	Automatic screw machine department	11	6	4	1	101
	Machine shop	120	38	39	43	3 345
	Tool and die shop	23	11	11	1	153
	Foundry pattern shop	10	7	2	1	79
	Plate or structural fabrication	80	20	37	23	1 372
	Stamping, blanking, and forming of metals	23	17	4	2	136
	Painting, lacquering, and enameling of metals	93	79	12	2	291
	Assembly of product	93	26	42	25	1 682
3533	OIL FIELD MACHINERY					
	Ferrous foundry	7	-	3	4	396
	Nonferrous foundry (except die casting)	3	1	2	-	(D)
	Nonferrous die casting	-	-	-	-	-
	Forging—presses, hammers, or upsetters	23	6	9	8	1 450
	Heat treating of metals	88	47	29	12	889
	Automatic screw machine department	10	4	3	3	118
	Machine shop	270	54	78	138	18 805
	Tool and die shop	76	37	26	13	1 112
	Plate or structural fabrication	132	30	41	61	4 945
	Stamping, blanking, and forming of metals	46	21	18	7	533
	Painting, lacquering, and enameling of metals	193	135	51	7	871
3534	ELEVATORS AND MOVING STAIRWAYS					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	-	-	-	-	-
	Nonferrous die casting	-	-	-	-	-
	Heat treating of metals	-	-	-	-	-
	Automatic screw machine department	4	3	1	-	12
	Machine shop	40	18	11	11	768
	Tool and die shop	17	12	5	-	63
	Plate or structural fabrication	34	11	12	11	1 022
	Stamping, blanking, and forming of metals	30	14	8	8	601
	Painting, lacquering, and enameling of metals	46	34	7	5	265
3535	CONVEYORS AND CONVEYING EQUIPMENT					
	Ferrous foundry	4	-	2	2	(D)
	Nonferrous foundry (except die casting)	1	-	1	-	(D)
	Nonferrous die casting	-	-	-	-	-
	Heat treating of metals	14	14	-	-	27
	Automatic screw machine department	8	7	1	-	17
	Machine shop	220	119	75	26	2 113
	Tool and die shop	39	23	14	2	212
	Plate or structural fabrication	224	65	98	61	3 323
	Stamping, blanking, and forming of metals	142	75	55	12	1 086
	Painting, lacquering, and enameling of metals	237	209	27	1	586
3536	HOISTS, CRANES, AND MONORAILS					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	-	-	-	-	-
	Nonferrous die casting	-	-	-	-	-
	Machine shop	92	40	32	20	1 289
	Tool and die shop	20	11	9	-	94
	Plate or structural fabrication	80	27	35	18	1 174
	Stamping, blanking, and forming of metals	21	17	3	1	113
	Painting, lacquering, and enameling of metals	89	78	11	-	210
	Assembly of product	89	32	40	17	1 481
3537	INDUSTRIAL TRUCKS AND TRACTORS					
	Ferrous foundry	1	-	1	-	(D)
	Nonferrous foundry (except die casting)	2	1	1	-	(D)
	Nonferrous die casting	-	-	-	-	-
	Heat treating of metals	12	11	1	-	27
	Automatic screw machine department	6	4	2	-	22
	Machine shop	101	34	43	24	1 965
	Tool and die shop	36	18	15	3	212
	Plate or structural fabrication	107	29	51	27	1 790
	Stamping, blanking, and forming of metals	75	38	31	6	545
	Painting, lacquering, and enameling of metals	136	101	31	4	534

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹				Production workers in specified operation ¹
		Number	Number of production workers ²			
			1 to 4	5 to 19	20 or more	
3541	MACHINE TOOLS, METAL CUTTING TYPES					
	Ferrous foundry	7	-	2	5	460
	Nonferrous foundry (except die casting)	3	1	2	-	(D)
	Nonferrous die casting	1	-	1	-	(D)
	Electroplating and other plating	10	7	3	-	33
	Heat treating of metals	53	38	15	-	251
	Automatic screw machine department	27	16	9	2	174
	Machine shop	206	36	75	95	10 105
	Tool and die shop	56	27	23	6	509
	Foundry pattern shop	14	8	5	1	88
	Plate or structural fabrication	49	28	15	6	422
	Stamping, blanking, and forming of metals	35	19	11	5	288
	Painting, lacquering, and enameling of metals	140	108	31	1	510
3542	MACHINE TOOLS, METAL FORMING TYPES					
	Ferrous foundry	3	-	-	3	180
	Nonferrous foundry (except die casting)	1	1	-	-	(D)
	Nonferrous die casting	2	1	1	-	(D)
	Electroplating and other plating	5	5	-	-	7
	Heat treating of metals	28	23	4	1	95
	Automatic screw machine department	13	8	5	-	68
	Machine shop	122	20	38	64	4 914
	Tool and die shop	39	28	8	3	229
	Foundry pattern shop	10	8	2	-	29
	Plate or structural fabrication	52	25	18	9	568
	Stamping, blanking, and forming of metals	16	15	-	1	51
	Painting, lacquering, and enameling of metals	64	62	2	-	118
3544	SPECIAL DIES, TOOLS, JIGS, AND FIXTURES					
	Ferrous foundry	7	2	1	4	147
	Nonferrous foundry (except die casting)	21	13	6	2	149
	Nonferrous die casting	8	4	2	2	85
	Electroplating and other plating	17	14	2	1	64
	Heat treating of metals	133	123	7	3	335
	Automatic screw machine department	40	25	13	2	215
	Machine shop	593	166	264	163	10 664
	Tool and die shop	973	151	482	340	19 885
	Foundry pattern shop	54	30	18	6	757
	Plate or structural fabrication	82	57	16	9	682
	Stamping, blanking, and forming of metals	207	118	75	14	1 433
	Painting, lacquering, and enameling of metals	65	60	4	1	149
	Powder metallurgy	6	5	1	-	23
3545	MACHINE TOOL ACCESSORIES					
	Ferrous foundry	2	-	2	-	(D)
	Nonferrous foundry (except die casting)	3	2	1	-	10
	Nonferrous die casting	6	2	3	1	57
	Electroplating and other plating	37	31	6	-	119
	Heat treating of metals	142	99	36	7	752
	Automatic screw machine department	87	52	26	9	792
	Machine shop	439	128	170	141	10 512
	Tool and die shop	165	67	74	24	1 657
	Foundry pattern shop	2	1	1	-	(D)
	Plate or structural fabrication	17	11	5	1	112
	Stamping, blanking, and forming of metals	50	30	15	5	476
	Painting, lacquering, and enameling of metals	61	55	5	1	176
	Powder metallurgy	32	17	8	7	564
3546	POWER DRIVEN HAND TOOLS					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	1	-	-	1	(D)
	Nonferrous die casting	3	1	-	2	(D)
	Electroplating and other plating	10	4	6	-	51
	Heat treating of metals	31	21	9	1	217
	Automatic screw machine department	37	15	13	9	458
	Machine shop	59	13	18	28	2 946
	Tool and die shop	36	15	14	7	454
	Stamping, blanking, and forming of metals	21	13	3	5	287
	Painting, lacquering, and enameling of metals	24	13	9	2	175

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3547	ROLLING MILL MACHINERY					
	Ferrous foundry	3	-	1	2	(D)
	Nonferrous foundry (except die casting)	-	-	-	-	-
	Nonferrous die casting	-	-	-	-	-
	Electroplating and other plating	1	1	-	-	(D)
	Heat treating of metals	5	3	2	-	32
	Automatic screw machine department	1	-	1	-	(D)
	Machine shop	24	4	6	14	1 526
	Tool and die shop	10	4	6	-	80
	Foundry pattern shop	2	-	2	-	(D)
	Plate or structural fabrication	10	2	2	6	327
	Stamping, blanking, and forming of metals	2	2	-	-	(D)
	Painting, lacquering, and enameling of metals	11	10	1	-	34
3549	METALWORKING MACHINERY, N.E.C.					
	Ferrous foundry	1	-	1	-	(D)
	Nonferrous foundry (except die casting)	1	1	-	-	(D)
	Nonferrous die casting	1	1	-	-	(D)
	Electroplating and other plating	4	4	-	-	(D)
	Heat treating of metals	12	10	2	-	25
	Automatic screw machine department	26	12	13	1	(D)
	Machine shop	137	29	64	44	2 534
	Tool and die shop	52	29	15	8	1 042
	Foundry pattern shop	3	3	-	-	3
	Plate or structural fabrication	44	27	14	3	336
	Stamping, blanking, and forming of metals	28	20	6	2	(D)
	Painting, lacquering, and enameling of metals	83	71	12	-	184
3551	FOOD PRODUCTS MACHINERY					
	Ferrous foundry	4	-	3	1	(D)
	Nonferrous foundry (except die casting)	4	4	-	-	11
	Nonferrous die casting	2	1	1	-	(D)
	Heat treating of metals	29	27	2	-	59
	Automatic screw machine department	26	17	9	-	113
	Machine shop	260	95	104	61	4 382
	Tool and die shop	55	39	15	1	251
	Foundry pattern shop	13	10	1	2	69
	Plate or structural fabrication	141	62	51	28	1 757
	Stamping, blanking, and forming of metals	130	72	46	12	921
	Painting, lacquering, and enameling of metals	172	156	14	2	444
3552	TEXTILE MACHINERY					
	Ferrous foundry	6	-	-	6	294
	Nonferrous foundry (except die casting)	3	2	-	1	(D)
	Nonferrous die casting	2	2	-	-	(D)
	Heat treating of metals	33	27	6	-	102
	Automatic screw machine department	26	18	8	-	104
	Machine shop	143	39	65	39	2 862
	Tool and die shop	32	19	11	2	182
	Foundry pattern shop	12	11	1	-	(D)
	Plate or structural fabrication	58	30	24	4	434
	Stamping, blanking, and forming of metals	54	30	19	5	555
	Painting, lacquering, and enameling of metals	83	75	8	-	167
3553	WOODWORKING MACHINERY					
	Ferrous foundry	3	1	-	2	(D)
	Nonferrous foundry (except die casting)	-	-	-	-	-
	Nonferrous die casting	4	1	2	1	46
	Machine shop	79	30	27	22	1 380
	Plate or structural fabrication	50	26	20	4	429
	Stamping, blanking, and forming of metals	23	14	7	2	162
	Painting, lacquering, and enameling of metals	57	49	7	1	196
3554	PAPER INDUSTRIES MACHINERY					
	Ferrous foundry	8	-	3	5	210
	Nonferrous foundry (except die casting)	-	-	-	-	-
	Nonferrous die casting	-	-	-	-	-
	Machine shop	105	29	31	45	3 630
	Tool and die shop	16	9	6	1	104
	Foundry pattern shop	12	10	2	-	37
	Plate or structural fabrication	46	19	19	8	641
	Painting, lacquering, and enameling of metals	60	57	2	1	139

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3555	PRINTING TRADES MACHINERY					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	3	3	-	(D)	
	Nonferrous die casting	4	4	-	7	
	Heat treating of metals	17	15	2	39	
	Automatic screw machine department	12	9	2	84	
	Machine shop	138	44	58	3 550	
	Tool and die shop	24	16	8	89	
	Foundry pattern shop	2	2	-	(D)	
	Plate or structural fabrication	38	24	11	266	
	Stamping, blanking, and forming of metals	26	19	6	134	
	Painting, lacquering, and enameling of metals	76	65	10	213	
3559	SPECIAL INDUSTRY MACHINERY, N.E.C.					
	Ferrous foundry	7	-	3	302	
	Nonferrous foundry (except die casting)	6	4	2	21	
	Nonferrous die casting	2	2	-	(D)	
	Electroplating and other plating	19	12	7	98	
	Heat treating of metals	51	42	7	278	
	Automatic screw machine department	25	15	8	184	
	Machine shop	444	138	170	9 423	
	Tool and die shop	102	61	30	768	
	Foundry pattern shop	22	16	5	87	
	Plate or structural fabrication	251	114	87	3 400	
	Stamping, blanking, and forming of metals	130	88	32	948	
	Painting, lacquering, and enameling of metals	275	255	18	592	
3561	PUMPS AND PUMPING EQUIPMENT					
	Ferrous foundry	22	1	5	1 075	
	Nonferrous foundry (except die casting)	7	2	2	166	
	Nonferrous die casting	5	3	1	38	
	Heat treating of metals	53	38	11	356	
	Automatic screw machine department	37	19	14	280	
	Machine shop	265	49	72	13 483	
	Tool and die shop	93	46	37	792	
	Foundry pattern shop	35	17	17	181	
	Plate or structural fabrication	85	42	30	808	
	Stamping, blanking, and forming of metals	37	28	7	250	
	Painting, lacquering, and enameling of metals	180	158	19	787	
	Assembly of product	228	72	88	5 240	
	Powder metallurgy	15	8	4	279	
3562	BALL AND ROLLER BEARINGS					
	Ferrous foundry	5	2	2	(D)	
	Nonferrous foundry (except die casting)	2	1	1	(D)	
	Nonferrous die casting	1	1	-	(D)	
	Electroplating and other plating	12	7	5	66	
	Heat treating of metals	75	27	32	1 023	
	Automatic screw machine department	61	11	11	1 994	
	Machine shop	73	17	23	2 751	
	Tool and die shop	49	12	19	1 403	
	Foundry pattern shop	5	4	1	18	
	Plate or structural fabrication	2	1	-	(D)	
	Stamping, blanking, and forming of metals	49	10	25	1 092	
	Painting, lacquering, and enameling of metals	17	14	3	58	
	Assembly of product	88	13	18	3 384	
	Powder metallurgy	2	1	-	(D)	
3563	AIR AND GAS COMPRESSORS					
	Ferrous foundry	5	-	-	352	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	1	-	-	(D)	
	Heat treating of metals	13	9	3	67	
	Automatic screw machine department	10	6	3	90	
	Machine shop	94	21	28	4 061	
	Tool and die shop	26	13	8	290	
	Foundry pattern shop	5	2	3	33	
	Plate or structural fabrication	32	12	9	686	
	Stamping, blanking, and forming of metals	25	14	8	227	
	Painting, lacquering, and enameling of metals	66	50	12	316	
	Assembly of product	84	20	17	3 433	
	Powder metallurgy	-	-	-	-	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3564	BLOWERS AND FANS					
	Ferrous foundry	1	-	-	1 (D)	
	Nonferrous foundry (except die casting)	5	1	3	1 76	
	Nonferrous die casting	1	-	-	1 (D)	
	Machine shop	77	41	26	10 403	
	Tool and die shop	27	17	8	2 142	
	Plate or structural fabrication	84	27	27	30 2 111	
	Stamping, blanking, and forming of metals	105	46	28	31 1 552	
	Painting, lacquering, and enameling of metals	118	97	18	3 428	
3535	INDUSTRIAL PATTERNS					
	Ferrous foundry	3	1	-	2 (D)	
	Nonferrous foundry (except die casting)	22	13	6	3 243	
	Nonferrous die casting	1	-	-	1 (D)	
	Machine shop	25	11	11	3 227	
	Foundry pattern shop	133	15	96	22 1 839	
3566	SPEED CHANGERS, DRIVES, AND GEARS					
	Ferrous foundry	3	1	1	1 (D)	
	Nonferrous foundry (except die casting)	1	1	-	1 (D)	
	Nonferrous die casting	2	1	1	1 (D)	
	Electroplating and other plating	5	5	-	14	
	Heat treating of metals	39	26	11	2 273	
	Automatic screw machine department	39	23	15	1 221	
	Machine shop	147	26	31	9 6 770	
	Tool and die shop	50	36	10	4 298	
	Foundry pattern shop	4	3	1	1 20	
	Plate or structural fabrication	6	3	1	2 110	
	Stamping, blanking, and forming of metals	13	9	4	- 52	
	Painting, lacquering, and enameling of metals	51	48	3	- 96	
	Assembly of product	83	34	33	16 1 124	
	Powder metallurgy	-	-	-	-	
3567	INDUSTRIAL FURNACES AND OVENS					
	Machine shop	89	57	27	5 496	
	Plate or structural fabrication	96	42	36	18 968	
	Stamping, blanking, and forming of metals	63	36	22	5 404	
	Painting, lacquering, and enameling of metals	86	82	4	- 168	
3568	POWER TRANSMISSION EQUIPMENT, N.E.C.					
	Ferrous foundry	5	1	2	2 (D)	
	Nonferrous foundry (except die casting)	15	4	7	4 236	
	Nonferrous die casting	1	-	-	1 (D)	
	Electroplating and other plating	10	8	2	- 24	
	Heat treating of metals	55	39	13	3 248	
	Automatic screw machine department	48	25	18	5 395	
	Machine shop	152	26	49	77 5 174	
	Tool and die shop	62	34	22	6 516	
	Foundry pattern shop	9	8	1	- 18	
	Plate or structural fabrication	15	8	6	1 (D)	
	Stamping, blanking, and forming of metals	40	14	14	12 640	
	Painting, lacquering, and enameling of metals	52	44	6	2 223	
	Assembly of product	109	39	39	31 2 167	
	Powder metallurgy	9	-	7	2 106	
3569	GENERAL INDUSTRIAL MACHINERY, N.E.C.					
	Ferrous foundry	3	1	2	- (D)	
	Nonferrous foundry (except die casting)	6	4	-	2 (D)	
	Nonferrous die casting	3	-	3	- 30	
	Electroplating and other plating	10	6	4	- 47	
	Heat treating of metals	29	23	6	- 83	
	Automatic screw machine department	31	19	9	3 262	
	Machine shop	325	102	136	87 5 389	
	Tool and die shop	73	43	24	6 519	
	Foundry pattern shop	13	10	3	- 32	
	Plate or structural fabrication	177	85	51	41 2 266	
	Stamping, blanking, and forming of metals	121	78	31	12 928	
	Painting, lacquering, and enameling of metals	237	218	15	4 602	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3573	ELECTRONIC COMPUTING EQUIPMENT					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	1	-	-	(D)	
	Nonferrous die casting	2	2	-	(D)	
	Electroplating and other plating	47	19	16	603	
	Heat treating of metals	22	16	5	98	
	Automatic screw machine department	20	10	10	105	
	Machine shop	160	56	60	3 086	
	Tool and die shop	61	28	21	994	
	Plate or structural fabrication	12	5	2	362	
	Stamping, blanking, and forming of metals	64	25	19	1 366	
	Painting, lacquering, and enameling of metals	68	40	15	642	
	Plastics molding	29	16	5	770	
	Assembly of product	371	66	76	48 800	
	Shipping department, including packing and crating	315	187	98	2 953	
3574	CALCULATING AND ACCOUNTING MACHINES					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	1	-	1	(D)	
	Nonferrous die casting	-	-	-	-	
	Electroplating and other plating	5	2	1	(D)	
	Heat treating of metals	1	-	-	(D)	
	Automatic screw machine department	2	-	1	(D)	
	Machine shop	15	9	5	106	
	Tool and die shop	9	5	2	179	
	Plate or structural fabrication	2	1	-	(D)	
	Stamping, blanking, and forming of metals	9	7	2	33	
	Painting, lacquering, and enameling of metals	9	8	1	14	
	Plastics molding	3	1	-	(D)	
	Assembly of product	27	3	8	2 727	
	Shipping department, including packing and crating	25	19	5	143	
3576	SCALES AND BALANCES, EXCEPT LABORATORY					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	-	-	-	-	
	Electroplating and other plating	2	2	-	(D)	
	Heat treating of metals	7	7	-	12	
	Automatic screw machine department	5	2	3	(D)	
	Machine shop	37	12	16	536	
	Tool and die shop	12	8	3	132	
	Plate or structural fabrication	19	11	4	256	
	Stamping, blanking, and forming of metals	16	8	6	134	
	Painting, lacquering, and enameling of metals	37	31	5	193	
	Plastics molding	1	1	-	(D)	
	Assembly of product	44	10	14	1 346	
	Shipping department, including packing and crating	45	37	7	206	
3579	OFFICE MACHINES, N.E.C., AND TYPEWRITERS					
	Ferrous foundry	1	-	-	(D)	
	Nonferrous foundry (except die casting)	1	-	1	(D)	
	Nonferrous die casting	6	3	1	(D)	
	Electroplating and other plating	16	9	5	(D)	
	Heat treating of metals	12	7	4	(D)	
	Automatic screw machine department	16	6	4	312	
	Machine shop	48	20	13	1 134	
	Tool and die shop	32	14	14	411	
	Plate or structural fabrication	11	6	3	(D)	
	Stamping, blanking, and forming of metals	34	13	15	530	
	Painting, lacquering, and enameling of metals	32	16	14	238	
	Plastics molding	12	3	5	(D)	
	Assembly of product	77	9	20	7 429	
	Shipping department, including packing and crating	71	44	22	459	
3581	AUTOMATIC MERCHANDISING MACHINES					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	1	1	-	(D)	
	Machine shop	12	6	4	92	
	Tool and die shop	16	9	5	139	
	Plate or structural fabrication	3	1	-	(D)	
	Stamping, blanking, and forming of metals	20	6	5	739	
	Painting, lacquering, and enameling of metals	18	8	6	269	
	Powder metallurgy	-	-	-	-	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹				Production workers in specified operation ¹
		Number	Number of production workers ²			
			1 to 4	5 to 19	20 or more	
3582	COMMERCIAL LAUNDRY EQUIPMENT					
	Ferrous foundry	1	-	-	1	(D)
	Nonferrous foundry (except die casting)	-	-	-	-	-
	Nonferrous die casting	-	-	-	-	-
	Machine shop	23	8	8	7	298
	Tool and die shop	7	3	4	-	43
	Plate or structural fabrication	17	8	8	1	137
	Stamping, blanking, and forming of metals	12	9	1	2	77
	Painting, lacquering, and enameling of metals	25	20	5	-	90
	Powder metallurgy	-	-	-	-	-
3585	REFRIGERATION AND HEATING EQUIPMENT					
	Ferrous foundry	4	1	1	2	(D)
	Nonferrous foundry (except die casting)	3	-	2	1	(D)
	Nonferrous die casting	5	4	-	1	35
	Heat treating of metals	22	15	6	1	(D)
	Automatic screw machine department	21	9	6	6	362
	Machine shop	137	51	49	37	4 959
	Tool and die shop	124	57	53	14	1 767
	Foundry pattern shop	13	12	-	1	(D)
	Plate or structural fabrication	90	38	28	24	2 680
	Stamping, blanking, and forming of metals	244	51	102	91	7 103
	Painting, lacquering, and enameling of metals	245	146	69	30	1 940
	Assembly of product	317	41	69	207	31 066
	Shipping department, including packing and crating	297	148	124	25	2 260
3586	MEASURING AND DISPENSING PUMPS					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	-	-	-	-	-
	Nonferrous die casting	3	2	-	1	(D)
	Heat treating of metals	2	2	-	-	(D)
	Automatic screw machine department	9	3	6	-	80
	Machine shop	22	5	8	9	828
	Tool and die shop	10	3	5	2	133
	Foundry pattern shop	1	1	-	-	(D)
	Plate or structural fabrication	1	-	-	1	(D)
	Stamping, blanking, and forming of metals	14	5	6	3	246
	Painting, lacquering, and enameling of metals	18	11	4	3	139
	Assembly of product	25	5	6	14	1 449
	Powder metallurgy	1	-	-	1	(D)
3589	SERVICE INDUSTRY MACHINERY, N.E.C.					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	3	2	1	-	(D)
	Nonferrous die casting	1	1	-	-	(D)
	Machine shop	123	65	47	11	1 055
	Tool and die shop	41	28	12	1	175
	Plate or structural fabrication	64	29	24	11	712
	Stamping, blanking, and forming of metals	96	41	33	22	1 297
	Painting, lacquering, and enameling of metals	119	103	15	1	326
	Powder metallurgy	1	1	-	-	(D)
3592	CARBURETORS, PISTONS, RINGS, VALVES					
	Ferrous foundry	4	-	-	4	397
	Nonferrous foundry (except die casting)	4	1	-	3	398
	Nonferrous die casting	5	2	-	3	315
	Forging—presses, hammers, or upsetters	9	1	4	4	233
	Electroplating and other plating	18	6	6	6	310
	Machine shop	39	5	11	23	2 703
	Tool and die shop	27	10	6	11	954
	Stamping, blanking, and forming of metals	15	5	5	5	940
3599	MACHINERY, EXCEPT ELECTRICAL, N.E.C.					
	Ferrous foundry	17	6	6	5	250
	Nonferrous foundry (except die casting)	16	10	5	1	88
	Nonferrous die casting	8	7	-	1	55
	Forging—presses, hammers, or upsetters	13	11	2	-	30
	Electroplating and other plating	84	59	22	3	373
	Heat treating of metals	142	126	13	3	390
	Automatic screw machine department	257	155	84	18	1 621
	Machine shop ³	2 818	439	1 399	980	54 640
	Tool and die shop	430	258	137	35	3 079
	Foundry pattern shop	27	20	7	-	107
	Plate or structural fabrication	509	287	177	45	3 561
	Stamping, blanking, and forming of metals	309	189	89	31	2 267
	Painting, lacquering, and enameling of metals	400	374	22	4	848
	Powder metallurgy	28	23	3	2	137

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3612	TRANSFORMERS					
	Heat treating of metals	28	15	10	3	200
	Machine shop	51	33	8	10	787
	Tool and die shop	29	15	13	1	195
	Plate or structural fabrication	43	17	13	13	1 063
	Stamping, blanking, and forming of metals	73	30	23	20	1 286
	Painting, lacquering, and enameling of metals	85	57	21	7	655
3613	SWITCHGEAR AND SWITCHBOARD APPARATUS					
	Ferrous foundry	2	-	2	-	(D)
	Nonferrous foundry (except die casting)	7	1	2	4	123
	Nonferrous die casting	2	2	-	-	(D)
	Electroplating and other plating	77	46	27	4	512
	Heat treating of metals	33	28	5	-	95
	Automatic screw machine department	33	16	12	5	270
	Machine shop	116	50	32	34	2 011
	Tool and die shop	91	37	43	11	880
	Foundry pattern shop	11	9	2	-	(D)
	Plate or structural fabrication	75	26	33	16	1 144
	Stamping, blanking, and forming of metals	165	67	55	43	2 911
	Painting, lacquering, and enameling of metals	173	129	43	1	689
	Plastics molding	46	13	20	13	753
3621	MOTORS AND GENERATORS					
	Ferrous foundry	4	-	-	4	263
	Nonferrous foundry (except die casting)	8	4	1	3	(D)
	Nonferrous die casting	64	23	30	11	712
	Electroplating and other plating	27	22	5	-	89
	Galvanizing and other hot-dip coating	18	16	2	-	50
	Heat treating of metals	51	40	9	2	215
	Automatic screw machine department	54	35	14	5	388
	Machine shop	181	60	52	69	5 854
	Tool and die shop	136	68	53	15	1 426
	Plate or structural fabrication	48	16	13	19	1 164
	Stamping, blanking, and forming of metals	94	40	36	18	1 306
	Painting, lacquering, and enameling of metals	158	107	48	3	766
3622	INDUSTRIAL CONTROLS					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	1	-	1	-	(D)
	Nonferrous die casting	7	4	3	-	25
	Electroplating and other plating	30	22	4	4	233
	Heat treating of metals	16	12	4	-	56
	Automatic screw machine department	25	14	9	2	153
	Machine shop	129	67	37	25	1 633
	Tool and die shop	56	34	15	7	498
	Foundry pattern shop	3	3	-	-	(D)
	Plate or structural fabrication	31	15	11	5	276
	Stamping, blanking, and forming of metals	91	44	33	14	1 023
	Painting, lacquering, and enameling of metals	127	105	18	4	443
	Plastics molding	33	15	9	9	544
3623	WELDING APPARATUS, ELECTRIC					
	Machine shop	72	25	27	20	1 387
	Tool and die shop	19	10	5	4	284
	Plate or structural fabrication	37	20	14	3	281
	Stamping, blanking, and forming of metals	17	9	5	3	372
	Painting, lacquering, and enameling of metals	41	37	4	-	100
3631	HOUSEHOLD COOKING EQUIPMENT					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	2	-	-	2	(D)
	Nonferrous die casting	1	-	1	-	(D)
	Heat treating of metals	4	2	2	-	22
	Automatic screw machine department	2	-	1	1	(D)
	Machine shop	12	5	5	2	160
	Tool and die shop	32	9	17	6	365
	Stamping, blanking, and forming of metals	43	9	7	27	2 103
	Painting, lacquering, and enameling of metals	35	5	5	25	1 896
	Plastics molding	4	3	-	1	(D)

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3632	HOUSEHOLD REFRIGERATORS AND FREEZERS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	1	-	1	(D)	
	Heat treating of metals	2	2	-	(D)	
	Automatic screw machine department	1	1	-	(D)	
	Machine shop	7	4	2	(D)	
	Tool and die shop	15	4	5	6	
	Foundry pattern shop	-	-	-	-	
	Plate or structural fabrication	3	-	2	1	
	Stamping, blanking, and forming of metals	24	6	4	14	
	Painting, lacquering, and enameling of metals	23	6	4	13	
	Assembly of product	24	-	2	22	
	Shipping department, including packing and crating	24	5	9	10	
					1 786	
					1 189	
					10 367	
					601	
3633	HOUSEHOLD LAUNDRY EQUIPMENT					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	2	-	-	2	
	Heat treating of metals	5	3	2	26	
	Automatic screw machine department	7	-	5	2	
	Machine shop	9	-	1	8	
	Tool and die shop	13	1	5	7	
	Stamping, blanking, and forming of metals	17	-	5	12	
	Painting, lacquering, and enameling of metals	14	1	1	12	
	Plastics molding	10	1	4	5	
					828	
					371	
					1 381	
					1 594	
					445	
3634	ELECTRIC HOUSEWARES AND FANS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	1	-	-	1	
	Nonferrous die casting	13	1	10	2	
	Heat treating of metals	11	7	3	1	
	Automatic screw machine department	9	5	2	2	
	Machine shop	38	19	11	8	
	Tool and die shop	45	13	29	3	
	Stamping, blanking, and forming of metals	72	21	24	27	
	Painting, lacquering, and enameling of metals	54	19	21	14	
	Plastics molding	33	3	10	20	
					448	
					415	
					1 753	
					680	
					1 548	
3635	HOUSEHOLD VACUUM CLEANERS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	4	-	1	3	
	Heat treating of metals	2	2	-	-	
	Automatic screw machine department	3	-	2	1	
	Machine shop	7	4	3	-	
	Tool and die shop	9	5	1	3	
	Stamping, blanking, and forming of metals	5	-	2	3	
	Painting, lacquering, and enameling of metals	7	4	1	2	
	Plastics molding	5	1	-	4	
					32	
					210	
					193	
					124	
					446	
3636	SEWING MACHINES					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	-	-	-	-	
	Heat treating of metals	5	4	1	-	
	Automatic screw machine department	5	2	1	2	
	Machine shop	14	4	3	7	
	Tool and die shop	6	2	3	1	
	Stamping, blanking, and forming of metals	9	3	4	2	
	Painting, lacquering, and enameling of metals	9	5	4	-	
	Plastics molding	2	1	-	1	
					770	
					66	
					110	
					48	
					(D)	
3639	HOUSEHOLD APPLIANCES, N.E.C.					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	2	1	-	1	
	Heat treating of metals	4	2	2	-	
	Automatic screw machine department	1	-	1	-	
	Machine shop	12	5	6	1	
	Tool and die shop	10	3	6	1	
	Stamping, blanking, and forming of metals	19	2	8	9	
	Painting, lacquering, and enameling of metals	21	7	8	6	
	Plastics molding	8	3	2	3	
					(D)	
					120	
					603	
					344	
					(D)	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3641	ELECTRIC LAMPS					
	Machine shop	40	10	16	14	861
3643	CURRENT-CARRYING WIRING DEVICES					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	8	1	3	4	227
	Nonferrous die casting	1	1	-	-	(D)
	Electroplating and other plating	36	19	10	7	319
	Automatic screw machine department	32	19	8	5	297
	Machine shop	87	37	33	17	1 088
	Tool and die shop	93	47	34	12	1 058
	Stamping, blanking, and forming of metals	113	50	41	22	1 863
	Plastics molding	50	13	18	19	1 226
3644	NONCURRENT-CARRYING WIRING DEVICES					
	Ferrous foundry	7	-	-	7	(D)
	Nonferrous foundry (except die casting)	10	1	5	4	259
	Nonferrous die casting	15	3	5	7	427
	Electroplating and other plating	26	7	9	10	492
	Automatic screw machine department	13	9	2	2	178
	Machine shop	59	12	24	23	1 429
	Tool and die shop	41	14	16	11	524
	Stamping, blanking, and forming of metals	66	17	23	26	1 975
	Plastics molding	15	3	8	4	332
3645	RESIDENTIAL LIGHTING FIXTURES					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	3	2	-	1	(D)
	Nonferrous die casting	6	5	-	1	31
	Electroplating and other plating	26	13	11	2	172
	Machine shop	41	21	17	3	281
	Tool and die shop	17	13	3	1	105
	Plate or structural fabrication	6	3	2	1	52
	Stamping, blanking, and forming of metals	55	27	20	8	724
	Painting, lacquering, and enameling of metals	91	52	34	5	521
3646	COMMERCIAL LIGHTING FIXTURES					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	2	1	1	-	(D)
	Nonferrous die casting	2	-	1	1	(D)
	Electroplating and other plating	5	2	3	-	(D)
	Machine shop	34	17	14	3	296
	Tool and die shop	31	18	11	2	221
	Plate or structural fabrication	9	5	4	-	48
	Stamping, blanking, and forming of metals	71	13	31	27	1 717
	Painting, lacquering, and enameling of metals	70	35	25	10	633
3647	VEHICULAR LIGHTING EQUIPMENT					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting)	1	1	-	-	(D)
	Nonferrous die casting	2	-	2	-	(D)
	Electroplating and other plating	7	2	4	1	51
	Machine shop	16	7	4	5	422
	Tool and die shop	15	11	2	2	164
	Plate or structural fabrication	5	3	2	-	32
	Stamping, blanking, and forming of metals	21	7	8	6	358
	Painting, lacquering, and enameling of metals	17	7	10	-	104
3648	LIGHTING EQUIPMENT, N.E.C.					
	Ferrous foundry	1	-	-	1	(D)
	Nonferrous foundry (except die casting)	2	1	1	-	(D)
	Nonferrous die casting	5	2	2	1	67
	Electroplating and other plating	4	2	2	-	(D)
	Machine shop	39	22	13	4	451
	Tool and die shop	25	17	5	3	193
	Plate or structural fabrication	26	12	7	7	304
	Stamping, blanking, and forming of metals	43	18	18	7	441
	Painting, lacquering, and enameling of metals	47	37	6	4	204

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3651	RADIO AND TV RECEIVING SETS					
	Nonferrous foundry (except die casting).....	-	-	-	-	
	Nonferrous die casting.....	1	-	-	(D)	
	Machine shop.....	29	17	8	225	
	Tool and die shop.....	21	12	8	387	
	Stamping, blanking, and forming of metals.....	21	9	7	350	
	Painting, lacquering, and enameling of metals.....	24	12	10	166	
	Assembly of product.....	95	17	23	14 625	
3661	TELEPHONE AND TELEGRAPH APPARATUS					
	Ferrous foundry.....	-	-	-	-	
	Nonferrous foundry (except die casting).....	-	-	-	-	
	Nonferrous die casting.....	4	1	2	(D)	
	Electroplating and other plating.....	24	7	9	668	
	Heat treating of metals.....	15	9	4	110	
	Automatic screw machine department.....	14	4	5	235	
	Machine shop.....	53	17	18	2 092	
	Tool and die shop.....	32	12	8	905	
	Plate or structural fabrication.....	13	5	4	292	
	Stamping, blanking, and forming of metals.....	40	11	14	1 106	
	Painting, lacquering, and enameling of metals.....	30	19	9	199	
	Plastics molding.....	25	4	9	1 575	
3662	RADIO AND TV COMMUNICATION EQUIPMENT					
	Ferrous foundry.....	4	1	2	(D)	
	Nonferrous foundry (except die casting).....	4	3	1	(D)	
	Nonferrous die casting.....	6	2	2	95	
	Electroplating and other plating.....	98	55	37	765	
	Galvanizing and other hot-dip coating.....	12	11	1	31	
	Heat treating of metals.....	57	21	5	174	
	Automatic screw machine department.....	38	56	11	179	
	Machine shop.....	429	174	151	9 217	
	Tool and die shop.....	113	51	43	1 130	
	Plate or structural fabrication.....	81	39	25	1 107	
	Stamping, blanking, and forming of metals.....	183	97	59	1 944	
	Painting, lacquering, and enameling of metals.....	248	188	44	1 263	
	Plastics molding.....	67	40	16	598	
	Assembly of product.....	550	91	144	55 724	
3671	ELECTRON TUBES, ALL TYPES					
	Ferrous foundry.....	-	-	-	-	
	Nonferrous foundry (except die casting).....	-	-	-	-	
	Nonferrous die casting.....	-	-	-	-	
	Electroplating and other plating.....	13	3	9	131	
	Galvanizing and other hot-dip coating.....	1	1	-	(D)	
	Heat treating of metals.....	13	8	4	83	
	Automatic screw machine department.....	1	1	-	(D)	
	Machine shop.....	30	8	10	843	
	Tool and die shop.....	13	4	5	207	
	Plate or structural fabrication.....	2	1	-	(D)	
	Stamping, blanking, and forming of metals.....	16	5	9	152	
	Painting, lacquering, and enameling of metals.....	9	6	2	(D)	
	Plastics molding.....	2	1	1	(D)	
	Assembly of product.....	21	1	3	5 641	
3674	SEMICONDUCTORS AND RELATED DEVICES					
	Ferrous foundry.....	-	-	-	-	
	Nonferrous foundry (except die casting).....	-	-	-	-	
	Nonferrous die casting.....	-	-	-	-	
	Electroplating and other plating.....	44	21	17	(D)	
	Galvanizing and other hot-dip coating.....	3	2	1	14	
	Heat treating of metals.....	10	6	3	74	
	Automatic screw machine department.....	3	1	2	24	
	Machine shop.....	49	23	18	514	
	Tool and die shop.....	15	7	4	361	
	Plate or structural fabrication.....	3	2	-	(D)	
	Stamping, blanking, and forming of metals.....	13	4	7	146	
	Painting, lacquering, and enameling of metals.....	10	9	1	24	
	Plastics molding.....	16	5	6	236	
	Assembly of product.....	108	10	19	23 324	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3675	ELECTRONIC CAPACITORS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	-	-	-	-	
	Electroplating and other plating	11	6	3	89	
	Galvanizing and other hot-dip coating	3	1	1	(D)	
	Heat treating of metals	-	-	-	-	
	Automatic screw machine department	2	1	1	(D)	
	Machine shop	39	17	21	264	
	Tool and die shop	7	3	4	40	
	Plate or structural fabrication	2	2	-	(D)	
	Stamping, blanking, and forming of metals	8	5	3	50	
	Painting, lacquering, and enameling of metals	10	10	-	22	
	Plastics molding	10	2	4	184	
	Assembly of product	41	8	5	9 375	
3676	ELECTRONIC RESISTORS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	1	1	-	(D)	
	Electroplating and other plating	11	10	1	29	
	Galvanizing and other hot-dip coating	8	6	1	(D)	
	Heat treating of metals	1	1	-	(D)	
	Automatic screw machine department	5	1	4	40	
	Machine shop	33	17	12	313	
	Tool and die shop	9	3	5	84	
	Plate or structural fabrication	1	1	-	(D)	
	Stamping, blanking, and forming of metals	7	4	3	36	
	Painting, lacquering, and enameling of metals	4	4	-	8	
	Plastics molding	11	4	6	(D)	
	Assembly of product	36	2	5	4 128	
3677	ELECTRONIC COILS AND TRANSFORMERS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	1	-	-	(D)	
	Nonferrous die casting	-	-	-	-	
	Electroplating and other plating	2	2	-	(D)	
	Galvanizing and other hot-dip coating	8	6	-	62	
	Heat treating of metals	2	2	-	(D)	
	Automatic screw machine department	-	-	-	-	
	Machine shop	60	41	16	279	
	Tool and die shop	16	15	1	30	
	Plate or structural fabrication	9	6	2	45	
	Stamping, blanking, and forming of metals	18	16	2	51	
	Painting, lacquering, and enameling of metals	44	42	2	78	
	Plastics molding	23	16	6	105	
	Assembly of product	89	7	24	4 785	
3678	ELECTRONIC CONNECTORS					
	Ferrous foundry	1	-	1	(D)	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	2	-	1	(D)	
	Electroplating and other plating	47	21	15	(D)	
	Galvanizing and other hot-dip coating	1	1	-	(D)	
	Heat treating of metals	21	18	2	82	
	Automatic screw machine department	34	6	16	1 316	
	Machine shop	66	22	18	1 774	
	Tool and die shop	58	22	18	1 264	
	Plate or structural fabrication	3	2	1	(D)	
	Stamping, blanking, and forming of metals	40	14	14	653	
	Painting, lacquering, and enameling of metals	4	4	-	(D)	
	Plastics molding	39	10	12	1 146	
	Assembly of product	73	5	13	6 367	
3679	ELECTRONIC COMPONENTS, N.E.C.					
	Ferrous foundry	1	-	-	(D)	
	Nonferrous foundry (except die casting)	3	2	-	(D)	
	Nonferrous die casting	3	2	-	(D)	
	Electroplating and other plating	268	99	127	2 980	
	Galvanizing and other hot-dip coating	13	11	2	39	
	Heat treating of metals	46	37	6	222	
	Automatic screw machine department	34	22	9	305	
	Machine shop	309	145	126	3 011	
	Tool and die shop	126	85	34	778	
	Plate or structural fabrication	26	16	7	239	
	Stamping, blanking, and forming of metals	129	81	40	811	
	Painting, lacquering, and enameling of metals	119	100	15	386	
	Plastics molding	73	39	24	872	
	Assembly of product	328	50	83	25 032	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹				Production workers in specified operation ¹
		Number	Number of production workers ²			
			1 to 4	5 to 19	20 or more	
3691	STORAGE BATTERIES					
	Nonferrous foundry (except die casting).....	7	4	2	1	(D)
	Nonferrous die casting	13	5	5	3	116
	Machine shop	17	6	3	8	424
3692	PRIMARY BATTERIES, DRY AND WET					
	Nonferrous foundry (except die casting).....	2	1	1	-	(D)
	Nonferrous die casting	-	-	-	-	-
	Machine shop	22	6	12	4	328
3693	X-RAY, ELECTROMEDICAL, AND ELECTROTHERAPEUTIC APPARATUS					
	Machine shop	70	29	28	13	1 043
	Tool and die shop	16	6	8	2	153
	Plate or structural fabrication	15	8	6	1	146
	Stamping, blanking, and forming of metals	30	16	9	5	302
	Painting, lacquering, and enameling of metals	34	22	8	4	276
3694	ENGINE ELECTRICAL EQUIPMENT					
	Ferrous foundry	1	-	-	1	(D)
	Nonferrous foundry (except die casting).....	-	-	-	-	-
	Nonferrous die casting	8	1	5	2	173
	Machine shop	45	22	17	6	578
	Tool and die shop	30	8	14	8	974
	Stamping, blanking, and forming of metals	39	15	16	8	730
	Painting, lacquering, and enameling of metals	42	38	4	-	107
3699	ELECTRICAL EQUIPMENT AND SUPPLIES, N.E.C.					
	Machine shop	51	27	16	8	549
	Stamping, blanking, and forming of metals	37	20	11	6	343
	Painting, lacquering, and enameling of metals	38	34	4	-	100
3711	MOTOR VEHICLES AND CAR BODIES					
	Ferrous foundry	1	-	-	1	(D)
	Nonferrous foundry (except die casting).....	-	-	-	-	-
	Nonferrous die casting	1	-	-	1	(D)
	Machine shop	44	2	18	24	4 792
	Tool and die shop	37	4	7	26	(D)
	Plate or structural fabrication	24	4	10	10	1 624
	Stamping, blanking, and forming of metals	26	1	6	19	5 309
	Painting, lacquering, and enameling of metals	71	11	7	53	13 456
3713	TRUCK AND BUS BODIES					
	Ferrous foundry	-	-	-	-	-
	Nonferrous foundry (except die casting).....	1	-	-	-	(D)
	Nonferrous die casting	1	-	1	-	(D)
	Machine shop	68	41	21	6	549
	Tool and die shop	25	14	11	-	122
	Plate or structural fabrication	110	49	37	24	1 852
	Stamping, blanking, and forming of metals	96	59	24	13	843
	Painting, lacquering, and enameling of metals	175	125	37	13	923
	Plastics molding	12	7	4	1	91
	Powder metallurgy	-	-	-	-	-
3714	MOTOR VEHICLE PARTS AND ACCESSORIES					
	Ferrous foundry	22	5	3	14	(D)
	Nonferrous foundry (except die casting).....	7	2	2	3	(D)
	Nonferrous die casting	29	12	7	10	(D)
	Forging—presses, hammers, or upsetters	34	10	13	11	1 508
	Electroplating and other plating	76	34	27	15	1 463
	Galvanizing and other hot-dip coating	23	14	6	3	220
	Heat treating of metals	149	66	55	28	1 894
	Automatic screw machine department	109	32	39	38	2 268
	Machine shop	386	120	101	165	20 545
	Tool and die shop	265	89	112	64	(D)
	Foundry pattern shop	13	8	4	1	91
	Plate or structural fabrication	64	25	15	24	2 258
	Stamping, blanking, and forming of metals	335	87	115	133	21 964
	Painting, lacquering, and enameling of metals	296	221	52	23	2 303
	Plastics molding	48	26	4	18	2 181
	Powder metallurgy	17	7	5	5	753

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3715	TRUCK TRAILERS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	-	-	-	-	
	Machine shop	40	26	12	2 (D)	
	Tool and die shop	15	14	1	37	
	Plate or structural fabrication	65	25	21	19 377	
	Stamping, blanking, and forming of metals	50	23	15	12 (D)	
	Painting, lacquering, and enameling of metals	87	61	22	4 397	
	Plastics molding	-	-	-	-	
	Powder metallurgy	-	-	-	-	
3716	MOTOR HOMES PRODUCED ON PURCHASED CHASSIS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	-	-	-	-	
	Machine shop	2	2	-	(D)	
	Tool and die shop	2	1	1	(D)	
	Plate or structural fabrication	6	4	2	27	
	Stamping, blanking, and forming of metals	3	1	1	(D)	
	Painting, lacquering, and enameling of metals	11	8	3	49	
	Plastics molding	-	-	-	-	
	Powder metallurgy	-	-	-	-	
3721	AIRCRAFT					
	Ferrous foundry	1	-	-	1 (D)	
	Nonferrous foundry (except die casting)	9	4	3	2 (D)	
	Nonferrous die casting	10	6	1	3 (D)	
	Forging—presses, hammers, or upsetters	5	-	-	5 427	
	Electroplating and other plating	19	8	8	3 289	
	Galvanizing and other hot-dip coating	7	4	2	1 66	
	Heat treating of metals	32	16	9	7 373	
	Automatic screw machine department	8	5	2	1 61	
	Machine shop	47	9	10	28 7 443	
	Tool and die shop	34	6	3	25 5 010	
	Foundry pattern shop	18	4	9	5 515	
	Plate or structural fabrication	22	2	6	14 6 157	
	Stamping, blanking, and forming of metals	37	10	6	21 3 619	
3724	AIRCRAFT ENGINES AND ENGINE PARTS					
	Ferrous foundry	3	-	1	2 (D)	
	Nonferrous foundry (except die casting)	2	1	-	1 (D)	
	Nonferrous die casting	1	-	-	1 (D)	
	Forging—presses, hammers, or upsetters	8	-	4	4 511	
	Electroplating and other plating	28	9	11	8 422	
	Galvanizing and other hot-dip coating	3	1	1	1 (D)	
	Heat treating of metals	64	26	24	14 886	
	Automatic screw machine department	17	9	6	2 131	
	Machine shop	152	22	30	100 23 405	
	Tool and die shop	72	24	23	25 2 334	
	Foundry pattern shop	3	1	2	- (D)	
	Plate or structural fabrication	17	2	6	9 912	
	Stamping, blanking, and forming of metals	37	9	17	11 1 192	
3728	AIRCRAFT EQUIPMENT, N.E.C.					
	Ferrous foundry	2	2	-	- (D)	
	Nonferrous foundry (except die casting)	5	4	1	- 19	
	Nonferrous die casting	8	8	-	- 15	
	Forging—presses, hammers, or upsetters	10	5	5	- 58	
	Electroplating and other plating	35	19	11	5 290	
	Galvanizing and other hot-dip coating	10	7	3	- (D)	
	Heat treating of metals	65	38	24	3 474	
	Automatic screw machine department	34	21	11	2 307	
	Machine shop	275	64	83	128 14 912	
	Tool and die shop	113	58	35	20 2 009	
	Foundry pattern shop	17	9	3	5 177	
	Plate or structural fabrication	42	11	15	16 1 659	
	Stamping, blanking, and forming of metals	97	38	32	27 1 713	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3731	SHIP BUILDING AND REPAIRING					
	Ferrous foundry	2	-	-	2 (D)	
	Nonferrous foundry (except die casting)	1	-	-	1 (D)	
	Nonferrous die casting	1	-	-	1 (D)	
	Forging—presses, hammers, or upsetters	12	8	2	2 (D)	
	Heat treating of metals	21	9	6	6 372	
	Machine shop	143	45	57	41 4 487	
	Tool and die shop	10	5	5	- 67	
	Foundry pattern shop	12	2	8	2 232	
	Plate or structural fabrication	144	21	34	89 21 130	
	Stamping, blanking, and forming of metals	33	11	12	10 1 182	
	Painting, lacquering, and enameling of metals	140	53	46	41 5 254	
3732	BOAT BUILDING AND REPAIRING					
	Ferrous foundry	1	-	1	- (D)	
	Nonferrous foundry (except die casting)	2	2	-	- (D)	
	Nonferrous die casting	-	-	-	-	
	Machine shop	68	54	9	5 317	
	Tool and die shop	17	9	3	5 166	
	Foundry pattern shop	11	8	3	- 45	
	Plate or structural fabrication	66	26	31	9 733	
	Stamping, blanking, and forming of metals	33	20	8	5 259	
	Painting, lacquering, and enameling of metals	69	53	15	1 240	
	Plastics molding	54	18	24	12 765	
3743	RAILROAD EQUIPMENT					
	Ferrous foundry	4	1	1	2 (D)	
	Nonferrous foundry (except die casting)	1	-	-	1 (D)	
	Nonferrous die casting	1	-	1	- (D)	
	Forging—presses, hammers, or upsetters	12	5	4	3 311	
	Machine shop	62	23	26	13 3 481	
	Tool and die shop	30	13	9	8 740	
	Plate or structural fabrication	48	17	9	22 3 158	
	Stamping, blanking, and forming of metals	34	10	12	12 967	
	Painting, lacquering, and enameling of metals	75	45	23	7 709	
3751	MOTORCYCLES, BICYCLES, AND PARTS					
	Electroplating and other plating	11	5	3	3 253	
	Machine shop	37	20	14	3 565	
	Tool and die shop	27	19	6	2 265	
	Stamping, blanking, and forming of metals	40	24	9	7 738	
	Painting, lacquering, and enameling of metals	21	15	1	5 292	
3761	GUIDED MISSILES AND SPACE VEHICLES					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	-	-	-	-	
	Forging—presses, hammers, or upsetters	-	-	-	-	
	Electroplating and other plating	8	3	3	2 202	
	Galvanizing and other hot-dip coating	2	1	-	1 (D)	
	Heat treating of metals	10	6	3	1 124	
	Automatic screw machine department	1	-	1	- (D)	
	Machine shop	19	1	5	13 1 608	
	Tool and die shop	11	1	5	5 545	
	Foundry pattern shop	2	1	-	1 (D)	
	Plate or structural fabrication	10	1	3	6 776	
	Stamping, blanking, and forming of metals	13	5	4	4 241	
3764	SPACE PROPULSION UNITS AND PARTS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	-	-	-	-	
	Forging—presses, hammers, or upsetters	1	-	1	- (D)	
	Electroplating and other plating	5	1	3	1 69	
	Galvanizing and other hot-dip coating	1	1	-	- (D)	
	Heat treating of metals	8	6	1	1 51	
	Automatic screw machine department	1	1	-	- (D)	
	Machine shop	18	1	7	10 1 036	
	Tool and die shop	9	1	5	3 155	
	Foundry pattern shop	1	-	1	- (D)	
	Plate or structural fabrication	7	3	3	1 71	
	Stamping, blanking, and forming of metals	8	4	4	- 61	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3769	SPACE VEHICLE EQUIPMENT, N.E.C.					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	-	-	-	-	
	Forging—presses, hammers, or upsetters	-	-	-	-	
	Electroplating and other plating	2	2	-	(D)	
	Galvanizing and other hot-dip coating	-	-	-	-	
	Heat treating of metals	5	4	1	10	
	Automatic screw machine department	-	-	-	-	
	Machine shop	19	3	5	735	
	Tool and die shop	4	3	1	15	
	Foundry pattern shop	-	-	-	-	
	Plate or structural fabrication	5	2	2	38	
	Stamping, blanking, and forming of metals	7	4	3	38	
3792	TRAVEL TRAILERS AND CAMPERS					
	Plate or structural fabrication	10	3	5	99	
	Stamping, blanking, and forming of metals	12	3	6	143	
	Painting, lacquering, and enameling of metals	38	33	5	107	
3795	TANKS AND TANK COMPONENTS					
	Electroplating and other plating	2	1	1	(D)	
	Galvanizing and other hot-dip coating	2	1	1	(D)	
	Heat treating of metals	7	2	2	113	
	Automatic screw machine department	4	2	1	(D)	
	Machine shop	26	-	8	1 405	
	Tool and die shop	14	6	6	164	
	Stamping, blanking, and forming of metals	10	2	4	175	
	Painting, lacquering, and enameling of metals	11	5	2	133	
3799	TRANSPORTATION EQUIPMENT, N.E.C.					
	Electroplating and other plating	1	1	-	(D)	
	Machine shop	33	15	12	417	
	Tool and die shop	20	14	6	86	
	Stamping, blanking, and forming of metals	59	33	20	421	
	Painting, lacquering, and enameling of metals	75	58	12	322	
3811	ENGINEERING AND SCIENTIFIC INSTRUMENTS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	1	1	-	(D)	
	Nonferrous die casting	2	2	-	(D)	
	Electroplating and other plating	9	8	1	21	
	Heat treating of metals	15	12	3	34	
	Automatic screw machine department	22	14	8	90	
	Machine shop	134	52	57	1 687	
	Tool and die shop	31	23	8	109	
	Stamping, blanking, and forming of metals	53	32	12	482	
	Painting, lacquering, and enameling of metals	68	50	15	389	
	Plastics molding	18	15	3	49	
3822	ENVIRONMENTAL CONTROLS					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	8	3	1	140	
	Electroplating and other plating	16	6	8	167	
	Heat treating of metals	11	6	4	83	
	Automatic screw machine department	23	5	13	339	
	Machine shop	35	15	10	676	
	Tool and die shop	31	8	15	616	
	Stamping, blanking, and forming of metals	34	11	14	518	
	Painting, lacquering, and enameling of metals	11	8	3	43	
	Plastics molding	16	6	6	264	
3823	PROCESS CONTROL INSTRUMENTS					
	Ferrous foundry	1	-	1	(D)	
	Nonferrous foundry (except die casting)	2	-	2	(D)	
	Nonferrous die casting	1	1	-	(D)	
	Electroplating and other plating	11	7	4	45	
	Heat treating of metals	20	15	4	124	
	Automatic screw machine department	22	13	7	196	
	Machine shop	122	44	48	2 290	
	Tool and die shop	35	20	11	254	
	Stamping, blanking, and forming of metals	39	23	11	249	
	Painting, lacquering, and enameling of metals	63	54	8	229	
	Plastics molding	6	2	4	55	

See footnotes at end of table.

Table 2. Selected Statistics for Establishments Completing Metalworking Inquiry for Industry by Operation: 1982—Con.

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

SIC code	Industry and operation	Establishments ¹			Production workers in specified operation ¹	
		Number	Number of production workers ²			
			1 to 4	5 to 19		20 or more
3824	FLUID METERS AND COUNTING DEVICES					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	2	-	-	(D)	
	Nonferrous die casting	3	-	2	(D)	
	Electroplating and other plating	4	3	1	14	
	Heat treating of metals	2	2	-	(D)	
	Automatic screw machine department	13	8	5	62	
	Machine shop	43	9	22	1 431	
	Tool and die shop	21	12	8	127	
	Stamping, blanking, and forming of metals	13	12	1	47	
	Painting, lacquering, and enameling of metals	23	18	5	56	
	Plastics molding	14	8	3	178	
3825	INSTRUMENTS TO MEASURE ELECTRICITY					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	6	1	4	84	
	Electroplating and other plating	25	13	8	407	
	Heat treating of metals	18	12	5	105	
	Automatic screw machine department	26	14	7	300	
	Machine shop	113	47	45	1 652	
	Tool and die shop	35	20	10	393	
	Stamping, blanking, and forming of metals	54	25	17	738	
	Painting, lacquering, and enameling of metals	65	51	8	412	
	Plastics molding	22	11	7	291	
3829	MEASURING AND CONTROLLING DEVICES, N.E.C.					
	Ferrous foundry	-	-	-	-	
	Nonferrous foundry (except die casting)	-	-	-	-	
	Nonferrous die casting	1	1	-	(D)	
	Electroplating and other plating	9	7	2	29	
	Heat treating of metals	14	14	-	(D)	
	Automatic screw machine department	12	6	6	65	
	Machine shop	137	55	56	1 725	
	Tool and die shop	22	14	6	157	
	Stamping, blanking, and forming of metals	40	24	16	198	
	Painting, lacquering, and enameling of metals	55	51	4	109	
	Plastics molding	9	5	4	46	
3873	WATCHES, CLOCKS, AND WATCHCASES					
	Electroplating and other plating	15	9	5	118	
	Heat treating of metals	8	7	1	25	
	Automatic screw machine department	12	7	5	70	
	Machine shop	20	10	7	169	
	Tool and die shop	20	11	6	198	
	Stamping, blanking, and forming of metals	24	13	7	378	

¹Establishments with less than 5 employees were typically excluded from the mail portion of the 1982 Census of Manufactures. Small establishments (typically between 5 to 20 employees) were mailed short forms for the 1982 Census of Manufactures for selected industries. These short forms did not contain a metalworking and related operations inquiry. See the explanatory text for a list of industries that received short forms. In some instances, a few larger establishments failed to report data for metalworking and related operations. The result is an understatement of the number of establishments performing specific operations, primarily in the smallest size class. This understatement exists to a much smaller degree in the number of production workers in the operation. The significance of the undercoverage is shown in table 1 in terms of total plant employment.

²These size groups are based on the number of employees engaged in each size specific operation, not on the total employment in the establishment.

³Specific operation basically represents the major activity of the particular industry. A few respondents incorrectly reported that the item did not apply.

Table 3. Number of Establishments and Production Workers Engaged in Selected Metalworking Operations by Industry Group and Industry: 1982

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

SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers
		FERROUS FOUNDRY		NONFERROUS FOUNDRY (EXCEPT DIE CASTING)		NONFERROUS DIE CASTING		FORGING—PRESSES, HAMMERS, OR UPSETTERS ¹		ELECTROPLATING AND OTHER FLATING ²	
	All industries -----	1 455	119 159	1 310	33 872	820	29 339	768	19 299	1 904	22 142
33	Primary metal industries -----	1 100	102 111	931	26 822	388	21 703	(X)	(X)	(X)	(X)
34	Fabricated metal products -----	114	4 713	130	2 952	101	1 313	553	13 741	538	5 258
35	Machinery, except electrical -----	183	8 242	154	2 280	93	1 799	133	2 767	334	2 369
36	Electric and electronic equipment -----	21	(D)	62	1 098	165	2 453	(X)	(X)	756	10 711
37	Transportation equipment -----	36	2 893	28	594	52	1 808	82	2 791	187	3 003
38	Instruments and related products -----	1	(D)	5	126	21	263	(X)	(X)	89	801
33	Primary metal industries -----	1 100	102 111	931	26 822	388	21 703	(X)	(X)	(X)	(X)
332	Iron and steel foundries -----	1 071	101 222	112	2 475	7	(D)	(X)	(X)	(X)	(X)
3321	Gray iron foundries -----	³ 727	³⁶⁵ 750	57	892	3	(D)	(X)	(X)	(X)	(X)
3322	Malleable iron foundries -----	³ 32	³⁴ 074	2	(D)	-	-	(X)	(X)	(X)	(X)
3324	Steel investment foundries -----	³ 87	³⁷ 997	31	1 246	2	(D)	(X)	(X)	(X)	(X)
3325	Steel foundries, n.e.c. -----	³ 225	³²³ 401	22	(D)	2	(D)	(X)	(X)	(X)	(X)
334	Secondary nonferrous metals -----	(X)	(X)	21	1 065	2	(D)	(X)	(X)	(X)	(X)
3341	Secondary nonferrous metals -----	(X)	(X)	21	1 065	2	(D)	(X)	(X)	(X)	(X)
336	Nonferrous foundries -----	29	889	798	23 282	379	21 478	(X)	(X)	(X)	(X)
3361	Aluminum foundries -----	14	292	³ 499	³¹⁶ 561	³ 242	³¹⁵ 279	(X)	(X)	(X)	(X)
3362	Brass, bronze, and copper foundries -----	12	(D)	³ 257	³⁵ 256	³ 10	³ 130	(X)	(X)	(X)	(X)
3369	Nonferrous foundries, n.e.c. -----	3	(D)	³ 42	³¹ 465	³ 127	³⁶ 069	(X)	(X)	(X)	(X)
34	Fabricated metal products -----	114	4 713	130	2 952	101	1 313	553	13 741	538	5 258
342	Cutlery, hand tools, and hardware -----	7	95	35	456	47	790	140	1 763	187	2 378
3421	Cutlery -----	(X)	(X)	(X)	(X)	(X)	(X)	20	149	17	153
3423	Hand and edge tools, n.e.c. -----	(X)	(X)	(X)	(X)	(X)	(X)	92	1 357	50	366
3425	Hand saws and saw blades -----	(X)	(X)	(X)	(X)	(X)	(X)	6	67	11	79
3429	Hardware, n.e.c. -----	7	95	35	456	47	790	22	190	109	1 780
343	Plumbing and heating, except electric -----	15	1 211	12	420	9	145	(X)	(X)	30	489
3431	Metal sanitary ware -----	3	(D)	1	(D)	2	(D)	(X)	(X)	3	(D)
3432	Plumbing fittings and brass goods -----	1	(D)	11	(D)	7	(D)	(X)	(X)	27	(D)
3433	Heating equipment, except electric -----	11	659	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
344	Fabricated structural metal products -----	29	1 008	17	(D)	9	61	67	747	23	161
3441	Fabricated structural metal -----	14	321	2	(D)	(X)	(X)	21	187	(X)	(X)
3442	Metal doors, sash, and trim -----	2	(D)	7	78	4	11	156	9	121	
3443	Fabricated plate work (boiler shops) -----	6	319	2	(D)	(X)	(X)	22	339	(X)	(X)
3444	Sheet metal work -----	5	(D)	4	15	2	(X)	(X)	14	40	
3446	Architectural metal work -----	1	(D)	2	(D)	3	31	7	43	(X)	(X)
3448	Prefabricated metal buildings -----	-	-	-	-	-	-	4	(D)	(X)	(X)
3449	Miscellaneous metal work -----	1	(D)	-	-	-	-	2	(D)	(X)	(X)
345	Screw machine products, bolts, etc. -----	2	(D)	1	(D)	7	43	43	511	106	767
3451	Screw machine products -----	2	(D)	-	-	-	-	3	6	18	82
3452	Bolts, nuts, rivets, and washers -----	-	-	1	(D)	7	43	40	505	88	685
346	Metal forgings and stampings -----	8	(D)	12	83	9	29	230	9 640	89	750
3462	Iron and steel forgings -----	(X)	(X)	(X)	(X)	(X)	(X)	³ 187	³⁷ 565	(X)	(X)
3463	Nonferrous forgings -----	(X)	(X)	(X)	(X)	(X)	(X)	³ 43	³² 075	(X)	(X)
3465	Automotive stampings -----	1	(D)	4	29	3	18	(X)	(X)	22	342
3466	Crowns and closures -----	1	(D)	-	-	-	-	(X)	(X)	-	-
3469	Metal stampings, n.e.c. -----	6	133	8	54	6	11	(X)	(X)	67	408
348	Ordnance and accessories, n.e.c. -----	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	21	231
3482	Small arms ammunition -----	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	5	(D)
3483	Ammunition, except for small arms, n.e.c. -----	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	7	58
3484	Small arms -----	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	5	103
3489	Ordnance and accessories, n.e.c. -----	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	4	(D)
349	Miscellaneous fabricated metal products -----	53	2 229	53	1 879	20	245	73	1 080	82	482
3494	Valves and pipe fittings -----	37	2 038	38	1 792	10	145	36	565	46	259
3496	Miscellaneous fabricated wire products -----	3	(D)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3498	Fabricated pipe and fittings -----	2	(D)	1	(D)	1	(D)	23	290	8	33
3499	Fabricated metal products, n.e.c. -----	11	(D)	14	(D)	9	(D)	14	225	28	190

See footnotes at end of table.

Table 3. Number of Establishments and Production Workers Engaged in Selected Metalworking Operations by Industry Group and Industry: 1982—Con.

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

SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers
		FERROUS FOUNDRY		NONFERROUS FOUNDRY (EXCEPT DIE CASTING)		NONFERROUS DIE CASTING		FORGING—PRESSES, HAMMERS, OR UPSETTERS ¹		ELECTROPLATING AND OTHER PLATING ²	
35	Machinery, except electrical	183	8 242	154	2 280	93	1 799	133	2 767	334	2 369
351	Engines and turbines	6	279	5	(D)	4	(D)	—	—	22	191
3511	Turbines and turbine generator sets	1	(D)	2	(D)	1	(D)	(X)	(X)	3	5
3519	Internal combustion engines, n.e.c.	5	(D)	3	(D)	3	(D)	(X)	(X)	19	186
352	Farm and garden machinery	16	617	8	(D)	7	52	57	770	(X)	(X)
3523	Farm machinery and equipment	14	(D)	7	(D)	3	8	49	686	(X)	(X)
3524	Lawn and garden equipment	2	(D)	1	(D)	4	44	8	84	(X)	(X)
353	Construction and related machinery	36	2 295	8	77	1	(D)	54	1 734	(X)	(X)
3531	Construction machinery	17	1 506	2	(D)	—	—	20	230	(X)	(X)
3532	Mining machinery	7	251	—	—	1	(D)	11	54	(X)	(X)
3533	Oil field machinery	7	396	3	(D)	—	—	23	1 450	(X)	(X)
3534	Elevators and moving stairways	—	—	—	—	—	—	(X)	(X)	(X)	(X)
3535	Conveyors and conveying equipment	4	(D)	1	(D)	—	—	(X)	(X)	(X)	(X)
3536	Hoists, cranes, and monorails	—	—	—	—	—	—	(X)	(X)	(X)	(X)
3537	Industrial trucks and tractors	1	(D)	2	(D)	—	—	(X)	(X)	(X)	(X)
354	Metalworking machinery	23	1 059	30	204	21	(D)	(X)	(X)	84	288
3541	Machine tools, metal cutting types	7	460	3	(D)	1	(D)	(X)	(X)	10	33
3542	Machine tools, metal forming types	3	180	1	(D)	2	(D)	(X)	(X)	5	7
3544	Special dies, tools, jigs, and fixtures	7	147	21	149	8	85	(X)	(X)	17	64
3545	Machine tool accessories	2	(D)	3	10	6	57	(X)	(X)	37	119
3546	Power driven hand tools	—	—	1	(D)	3	(D)	(X)	(X)	10	51
3547	Rolling mill machinery	3	(D)	—	—	—	—	(X)	(X)	1	(D)
3549	Metalworking machinery, n.e.c.	1	(D)	1	(D)	1	(D)	(X)	(X)	4	(D)
355	Special industry machinery	28	991	16	66	14	68	(X)	(X)	19	98
3551	Food products machinery	4	(D)	4	11	2	(D)	(X)	(X)	(X)	(X)
3552	Textile machinery	6	294	3	(D)	2	(D)	(X)	(X)	(X)	(X)
3553	Woodworking machinery	3	(D)	—	—	4	46	(X)	(X)	(X)	(X)
3554	Paper industries machinery	8	210	—	—	—	—	(X)	(X)	(X)	(X)
3555	Printing trades machinery	—	—	3	(D)	4	7	(X)	(X)	(X)	(X)
3559	Special industry machinery, n.e.c.	7	302	6	21	2	(D)	(X)	(X)	19	98
356	General industrial machinery	47	2 111	58	816	15	116	(X)	(X)	37	151
3561	Pumps and pumping equipment	22	1 075	7	166	5	38	(X)	(X)	(X)	(X)
3562	Ball and roller bearings	5	(D)	2	(D)	1	(D)	(X)	(X)	12	66
3563	Air and gas compressors	5	352	—	—	1	(D)	(X)	(X)	(X)	(X)
3564	Blowers and fans	1	(D)	5	76	1	(D)	(X)	(X)	(X)	(X)
3565	Industrial patterns	3	(D)	22	243	1	(D)	(X)	(X)	(X)	(X)
3566	Speed changers, drives, and gears	3	(D)	1	(D)	2	(D)	(X)	(X)	5	14
3568	Power transmission equipment, n.e.c.	5	(D)	15	236	1	(D)	(X)	(X)	10	24
3569	General industrial machinery, n.e.c.	3	(D)	6	(D)	3	30	(X)	(X)	10	47
357	Office and computing machines	1	(D)	3	43	8	210	(X)	(X)	70	958
3573	Electronic computing equipment	—	—	1	(D)	2	(D)	(X)	(X)	47	603
3574	Calculating and accounting machines	—	—	1	(D)	—	—	(X)	(X)	5	(D)
3576	Scales and balances, except laboratory	—	—	—	—	—	—	(X)	(X)	2	(D)
3579	Office machines, n.e.c., and typewriters	1	(D)	1	(D)	6	(D)	(X)	(X)	16	(D)
358	Refrigeration and service machinery	5	(D)	6	81	10	72	(X)	(X)	(X)	(X)
3581	Automatic merchandising machines	—	—	—	—	1	(D)	(X)	(X)	(X)	(X)
3582	Commercial laundry equipment	1	(D)	—	—	—	—	(X)	(X)	(X)	(X)
3585	Refrigeration and heating equipment	4	(D)	3	(D)	5	35	(X)	(X)	(X)	(X)
3586	Measuring and dispensing pumps	—	—	—	—	3	(D)	(X)	(X)	(X)	(X)
3589	Service industry machinery, n.e.c.	—	—	3	(D)	1	(D)	(X)	(X)	(X)	(X)
359	Miscellaneous machinery, except electrical	21	647	20	486	13	370	22	263	102	683
3592	Carburetors, pistons, rings, valves	4	397	4	398	5	315	9	233	18	310
3599	Machinery, except electrical, n.e.c.	17	250	16	88	8	55	13	30	84	373
36	Electric and electronic equipment	21	(D)	62	1 098	165	2 453	—	—	756	10 711
361	Electric distributing equipment	2	(D)	7	123	2	(D)	(X)	(X)	77	512
3613	Switchgear and switchboard apparatus	2	(D)	7	123	2	(D)	(X)	(X)	77	512
362	Electrical industrial apparatus	4	263	9	123	71	737	(X)	(X)	57	322
3621	Motors and generators	4	263	8	(D)	64	712	(X)	(X)	27	89
3622	Industrial controls	—	—	1	(D)	7	25	(X)	(X)	30	233
363	Household appliances	—	—	3	182	23	428	(X)	(X)	(X)	(X)
3631	Household cooking equipment	—	—	2	(D)	1	(D)	(X)	(X)	(X)	(X)
3632	Household refrigerators and freezers	—	—	—	—	1	(D)	(X)	(X)	(X)	(X)
3633	Household laundry equipment	—	—	—	—	2	(D)	(X)	(X)	(X)	(X)
3634	Electric housewares and fans	—	—	1	(D)	13	162	(X)	(X)	(X)	(X)
3635	Household vacuum cleaners	—	—	—	—	4	119	(X)	(X)	(X)	(X)
3636	Sewing machines	—	—	—	—	—	—	(X)	(X)	(X)	(X)
3639	Household appliances, n.e.c.	—	—	—	—	2	(D)	(X)	(X)	(X)	(X)
364	Electric lighting and wiring equipment	8	686	26	543	31	583	(X)	(X)	104	1 081
3643	Current-carrying wiring devices	—	—	8	227	1	(D)	(X)	(X)	36	131
3644	Noncurrent-carrying wiring devices	7	(D)	10	259	15	427	(X)	(X)	26	492
3645	Residential lighting fixtures	—	—	3	(D)	6	31	(X)	(X)	26	172
3646	Commercial lighting fixtures	—	—	2	(D)	2	(D)	(X)	(X)	5	(D)
3647	Vehicular lighting equipment	—	—	1	(D)	2	(D)	(X)	(X)	7	51
3648	Lighting equipment, n.e.c.	1	(D)	2	(D)	5	67	(X)	(X)	4	(D)
365	Radio and TV receiving equipment	(X)	(X)	—	—	1	(D)	(X)	(X)	(X)	(X)
3651	Radio and TV receiving sets	(X)	(X)	—	—	1	(D)	(X)	(X)	(X)	(X)
366	Communication equipment	4	(D)	4	(D)	10	(D)	(X)	(X)	122	1 433
3661	Telephone and telegraph apparatus	—	—	—	—	4	(D)	(X)	(X)	24	668
3662	Radio and TV communication equipment	4	(D)	4	(D)	6	95	(X)	(X)	98	765
367	Electronic components and accessories	2	(D)	4	(D)	6	131	(X)	(X)	396	7 363
3671	Electron tubes, all types	—	—	—	—	—	—	(X)	(X)	13	131
3674	Semiconductors and related devices	—	—	—	—	—	—	(X)	(X)	44	(D)
3675	Electronic capacitors	—	—	—	—	—	—	(X)	(X)	11	89
3676	Electronic resistors	—	—	—	—	1	(D)	(X)	(X)	11	29
3677	Electronic coils and transformers	—	—	1	(D)	—	—	(X)	(X)	2	(D)
3678	Electronic connectors	1	(D)	—	—	2	(D)	(X)	(X)	47	(D)
3679	Electronic components, n.e.c.	1	(D)	3	(D)	3	(D)	(X)	(X)	268	2 980

See footnotes at end of table.

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SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers
		FERROUS FOUNDRY		NONFERROUS FOUNDRY (EXCEPT DIE CASTING)		NONFERROUS DIE CASTING		FORGING—PRESSES, HAMMERS, OR UPSETTERS ¹		ELECTROPLATING AND OTHER PLATING ²	
36	Electric and electronic equipment—Con.										
369	Miscellaneous electrical equipment and supplies	1	(D)	9	60	21	289	(X)	(X)	(X)	(X)
3691	Storage batteries	(X)	(X)	7	(D)	13	116	(X)	(X)	(X)	(X)
3692	Primary batteries, dry and wet	(X)	(X)	2	(D)	-	-	(X)	(X)	(X)	(X)
3694	Engine electrical equipment	1	(D)	-	-	8	173	(X)	(X)	(X)	(X)
37	Transportation equipment	36	2 893	28	594	52	1 808	82	2 791	187	3 003
371	Motor vehicles and equipment	23	1 876	8	164	31	1 519	34	1 308	76	1 463
3711	Motor vehicles and car bodies	1	(D)	-	-	1	(D)	(X)	(X)	(X)	(X)
3713	Truck and bus bodies	-	-	1	(D)	1	(D)	(X)	(X)	(X)	(X)
3714	Motor vehicle parts and accessories	22	(D)	7	(D)	29	(D)	34	1 308	76	1 463
3715	Truck trailers	-	-	-	-	-	-	(X)	(X)	(X)	(X)
3716	Motor homes produced on purchased chassis	-	-	-	-	-	-	(X)	(X)	(X)	(X)
372	Aircraft and parts	6	(D)	16	354	19	277	23	996	82	1 001
3721	Aircraft	1	(D)	9	(D)	10	(D)	5	427	19	289
3724	Aircraft engines and engine parts	3	(D)	2	(D)	1	(D)	8	511	28	422
3728	Aircraft equipment, n.e.c.	2	(D)	5	19	8	15	10	58	35	290
373	Ship and boat building and repairing	3	(D)	3	(D)	1	(D)	12	(D)	(X)	(X)
3731	Ship building and repairing	2	(D)	1	(D)	1	(D)	12	(D)	(X)	(X)
3732	Boat building and repairing	1	(D)	2	(D)	-	-	(X)	(X)	(X)	(X)
374	Railroad equipment	4	(D)	1	(D)	1	(D)	12	311	(X)	(X)
3743	Railroad equipment	4	(D)	1	(D)	1	(D)	12	311	(X)	(X)
375	Motorcycles, bicycles, and parts	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	11	253
3751	Motorcycles, bicycles, and parts	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	11	253
376	Guided missiles, space vehicles, parts	-	-	-	-	-	-	1	(D)	15	(D)
3761	Guided missiles and space vehicles	-	-	-	-	-	-	-	-	8	202
3764	Space propulsion units and parts	-	-	-	-	-	-	1	(D)	5	69
3769	Space vehicle equipment, n.e.c.	-	-	-	-	-	-	-	-	2	(D)
379	Miscellaneous transportation equipment	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	3	(D)
3795	Tanks and tank components	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	2	(D)
3799	Transportation equipment, n.e.c.	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	1	(D)
38	Instruments and related products	1	(D)	5	126	21	263	(X)	(X)	89	801
381	Engineering and scientific instruments	-	-	1	(D)	2	(D)	(X)	(X)	9	21
3811	Engineering and scientific instruments	-	-	1	(D)	2	(D)	(X)	(X)	9	21
382	Measuring and controlling devices	1	(D)	4	(D)	19	(D)	(X)	(X)	65	662
3822	Environmental controls	-	-	-	-	8	140	(X)	(X)	16	167
3823	Process control instruments	1	(D)	2	(D)	1	(D)	(X)	(X)	11	45
3824	Fluid meters and counting devices	-	-	2	(D)	3	(D)	(X)	(X)	4	14
3825	Instruments to measure electricity	-	-	1	-	6	84	(X)	(X)	25	407
3829	Measuring and controlling devices, n.e.c.	-	-	-	-	1	(D)	(X)	(X)	9	29
387	Watches, clocks, and watchcases	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	15	118
3873	Watches, clocks, and watchcases	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	15	118
		GALVANIZING AND OTHER HOT-DIP COATING ¹		HEAT TREATING OF METALS		AUTOMATIC SCREW MACHINE DEPARTMENT		MACHINE SHOP		TOOL AND DIE SHOP	
	All industries	267	1 835	3 194	20 168	2 830	35 000	17 966	466 005	8 130	111 960
33	Primary metal industries	(X)	(X)	(X)	(X)	(X)	(X)	447	9 466	(X)	(X)
34	Fabricated metal products	152	1 133	1 057	5 456	1 201	17 378	4 121	72 863	2 767	27 953
35	Machinery, except electrical	(X)	(X)	1 362	8 540	1 009	9 867	9 089	247 353	3 324	44 740
36	Electric and electronic equipment	67	290	326	1 483	316	3 816	2 266	40 738	1 139	13 733
37	Transportation equipment	48	412	361	4 297	174	2 817	1 439	85 955	705	23 680
38	Instruments and related products	(X)	(X)	88	392	130	1 122	604	9 630	195	1 854
33	Primary metal industries	(X)	(X)	(X)	(X)	(X)	(X)	447	9 466	(X)	(X)
332	Iron and steel foundries	(X)	(X)	(X)	(X)	(X)	(X)	217	5 891	(X)	(X)
3321	Gray iron foundries	(X)	(X)	(X)	(X)	(X)	(X)	124	3 926	(X)	(X)
3322	Malleable iron foundries	(X)	(X)	(X)	(X)	(X)	(X)	7	109	(X)	(X)
3324	Steel investment foundries	(X)	(X)	(X)	(X)	(X)	(X)	30	381	(X)	(X)
3325	Steel foundries, n.e.c.	(X)	(X)	(X)	(X)	(X)	(X)	56	1 475	(X)	(X)
336	Nonferrous foundries	(X)	(X)	(X)	(X)	(X)	(X)	230	3 575	(X)	(X)
3361	Aluminum foundries	(X)	(X)	(X)	(X)	(X)	(X)	139	2 601	(X)	(X)
3362	Brass, bronze, and copper foundries	(X)	(X)	(X)	(X)	(X)	(X)	53	707	(X)	(X)
3369	Nonferrous foundries, n.e.c.	(X)	(X)	(X)	(X)	(X)	(X)	38	267	(X)	(X)

See footnotes at end of table.

Table 3. Number of Establishments and Production Workers Engaged in Selected Metalworking Operations by Industry Group and Industry: 1982—Con.

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

SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers
		GALVANIZING AND OTHER HOT-DIP COATING¹		HEAT TREATING OF METALS		AUTOMATIC SCREW MACHINE DEPARTMENT		MACHINE SHOP		TOOL AND DIE SHOP	
35	Machinery, except electrical—Con.										
358	Refrigeration and service machinery	(X)	(X)	24	100	30	442	317	7 232	198	2 257
3581	Automatic merchandising machines	(X)	(X)	(X)	(X)	(X)	(X)	12	92	16	139
3582	Commercial laundry equipment	(X)	(X)	(X)	(X)	(X)	(X)	23	298	7	43
3585	Refrigeration and heating equipment	(X)	(X)	22	(D)	21	362	137	4 959	124	1 767
3586	Measuring and dispensing pumps	(X)	(X)	2	(D)	9	80	22	828	10	133
3589	Service industry machinery, n.e.c.	(X)	(X)	(X)	(X)	(X)	(X)	123	1 055	41	175
359	Miscellaneous machinery, except electrical	(X)	(X)	142	390	257	1 621	2 857	57 343	457	4 033
3592	Carburetors, pistons, rings, valves	(X)	(X)	(X)	(X)	(X)	(X)	39	2 703	27	195
3599	Machinery, except electrical, n.e.c.	(X)	(X)	142	390	257	1 621	32 818	354 640	430	3 079
36	Electric and electronic equipment	67	290	326	1 483	316	3 816	2 266	40 738	1 139	13 733
361	Electric distributing equipment	(X)	(X)	61	295	33	270	167	2 798	120	1 075
3612	Transformers	(X)	(X)	28	200	(X)	(X)	51	787	29	195
3613	Switchgear and switchboard apparatus	(X)	(X)	33	95	33	270	116	2 011	91	880
362	Electrical industrial apparatus	18	50	67	271	79	541	382	8 874	211	2 208
3621	Motors and generators	18	50	51	215	54	388	181	5 854	136	1 426
3622	Industrial controls	(X)	(X)	16	56	25	153	129	1 633	56	498
3623	Welding apparatus, electric	(X)	(X)	(X)	(X)	(X)	(X)	72	1 387	19	284
363	Household appliances	(X)	(X)	33	164	28	423	99	2 784	130	1 872
3631	Household cooking equipment	(X)	(X)	4	22	2	(D)	12	160	32	365
3632	Household refrigerators and freezers	(X)	(X)	2	(D)	1	(D)	7	(D)	15	325
3633	Household laundry equipment	(X)	(X)	5	26	7	139	9	828	13	371
3634	Electric housewares and fans	(X)	(X)	11	59	9	95	38	448	45	415
3635	Household vacuum cleaners	(X)	(X)	5	(D)	3	(D)	7	32	9	210
3636	Sewing machines	(X)	(X)	5	(D)	5	63	14	770	6	66
3639	Household appliances, n.e.c.	(X)	(X)	4	(D)	1	(D)	12	(D)	10	120
364	Electric lighting and wiring equipment	(X)	(X)	(X)	(X)	45	475	316	4 828	222	2 265
3641	Electric lamps	(X)	(X)	(X)	(X)	(X)	(X)	40	861	(X)	(X)
3643	Current-carrying wiring devices	(X)	(X)	(X)	(X)	32	297	87	1 088	93	1 058
3644	Noncurrent-carrying wiring devices	(X)	(X)	(X)	(X)	13	178	59	1 429	41	524
3645	Residential lighting fixtures	(X)	(X)	(X)	(X)	(X)	(X)	41	281	17	105
3646	Commercial lighting fixtures	(X)	(X)	(X)	(X)	(X)	(X)	34	296	31	221
3647	Vehicular lighting equipment	(X)	(X)	(X)	(X)	(X)	(X)	16	422	15	164
3648	Lighting equipment, n.e.c.	(X)	(X)	(X)	(X)	(X)	(X)	39	451	25	193
365	Radio and TV receiving equipment	(X)	(X)	(X)	(X)	(X)	(X)	29	225	21	387
3651	Radio and TV receiving sets	(X)	(X)	(X)	(X)	(X)	(X)	29	225	21	387
366	Communication equipment	12	31	72	284	52	414	482	11 309	145	2 035
3661	Telephone and telegraph apparatus	(X)	(X)	15	110	14	235	53	2 092	32	905
3662	Radio and TV communication equipment	12	31	57	174	38	179	429	9 217	113	1 130
367	Electronic components and accessories	37	209	93	469	79	1 693	586	6 998	244	2 764
3671	Electron tubes, all types	1	(D)	13	83	1	(D)	30	843	13	207
3674	Semiconductors and related devices	3	14	10	74	3	24	49	514	15	361
3675	Electronic capacitors	3	(D)	1	-	2	(D)	39	264	7	40
3676	Electronic resistors	8	(D)	1	(D)	5	40	33	313	9	84
3677	Electronic coils and transformers	8	62	2	(D)	-	-	60	279	16	30
3678	Electronic connectors	1	(D)	21	82	34	1 316	66	1 774	58	1 264
3679	Electronic components, n.e.c.	13	39	46	222	34	305	309	3 011	126	778
369	Miscellaneous electrical equipment and supplies	(X)	(X)	(X)	(X)	(X)	(X)	205	2 922	46	1 127
3691	Storage batteries	(X)	(X)	(X)	(X)	(X)	(X)	17	424	(X)	(X)
3692	Primary batteries, dry and wet	(X)	(X)	(X)	(X)	(X)	(X)	22	328	(X)	(X)
3693	X-ray, electromedical, and electrotherapeutic apparatus	(X)	(X)	(X)	(X)	(X)	(X)	70	1 043	16	153
3694	Engine electrical equipment	(X)	(X)	(X)	(X)	(X)	(X)	45	578	30	974
3699	Electrical equipment and supplies, n.e.c.	(X)	(X)	(X)	(X)	(X)	(X)	51	549	(X)	(X)
37	Transportation equipment	48	412	361	4 297	174	2 817	1 439	85 955	705	23 680
371	Motor vehicles and equipment	23	220	149	1 894	109	2 268	540	26 144	344	12 124
3711	Motor vehicles and car bodies	(X)	(X)	(X)	(X)	(X)	(X)	44	4 792	37	(D)
3713	Truck and bus bodies	(X)	(X)	(X)	(X)	(X)	(X)	68	549	25	122
3714	Motor vehicle parts and accessories	23	220	149	1 894	109	2 268	386	20 545	265	(D)
3715	Truck trailers	(X)	(X)	(X)	(X)	(X)	(X)	40	(D)	15	37
3716	Motor homes produced on purchased chassis	(X)	(X)	(X)	(X)	(X)	(X)	2	(D)	2	(D)
372	Aircraft and parts	20	149	161	1 733	59	499	474	45 760	219	9 353
3721	Aircraft	7	86	32	373	8	61	47	7 443	34	5 010
3724	Aircraft engines and engine parts	3	(D)	84	886	17	131	152	23 405	72	2 334
3728	Aircraft equipment, n.e.c.	10	(D)	65	474	34	307	275	14 912	113	2 009
373	Ship and boat building and repairing	(X)	(X)	21	372	(X)	(X)	211	4 804	27	233
3731	Ship building and repairing	(X)	(X)	21	372	(X)	(X)	143	4 487	10	67
3732	Boat building and repairing	(X)	(X)	(X)	(X)	(X)	(X)	68	317	17	166
374	Railroad equipment	(X)	(X)	(X)	(X)	(X)	(X)	62	3 481	30	740
3743	Railroad equipment	(X)	(X)	(X)	(X)	(X)	(X)	62	3 481	30	740
375	Motorcycles, bicycles, and parts	(X)	(X)	(X)	(X)	(X)	(X)	37	565	27	265
3751	Motorcycles, bicycles, and parts	(X)	(X)	(X)	(X)	(X)	(X)	37	565	27	265
376	Guided missiles, space vehicles, parts	3	(D)	23	185	2	(D)	56	3 379	24	715
3761	Guided missiles and space vehicles	2	(D)	10	124	1	(D)	19	1 608	11	545
3764	Space propulsion units and parts	1	(D)	8	51	1	(D)	18	1 036	9	155
3769	Space vehicle equipment, n.e.c.	-	-	5	10	-	-	19	735	4	15
379	Miscellaneous transportation equipment	2	(D)	7	113	4	(D)	59	1 822	34	250
3795	Tanks and tank components	2	(D)	7	113	4	(D)	26	1 405	14	164
3799	Transportation equipment, n.e.c.	(X)	(X)	(X)	(X)	(X)	(X)	33	417	20	86

See footnotes at end of table.

Table 3. Number of Establishments and Production Workers Engaged in Selected Metalworking Operations by Industry Group and Industry: 1982—Con.

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

SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers
		GALVANIZING AND OTHER HOT-DIP COATING⁴		HEAT TREATING OF METALS		AUTOMATIC SCREW MACHINE DEPARTMENT		MACHINE SHOP		TOOL AND DIE SHOP	
38	Instruments and related products -----	(X)	(X)	88	392	130	1 122	604	9 630	195	1 854
381	Engineering and scientific instruments-----	(X)	(X)	15	34	22	90	134	1 687	31	109
3811	Engineering and scientific instruments-----	(X)	(X)	15	34	22	90	134	1 687	31	109
382	Measuring and controlling devices -----	(X)	(X)	65	333	96	962	450	7 774	144	1 547
3822	Environmental controls -----	(X)	(X)	11	83	23	339	35	676	31	616
3823	Process control instruments -----	(X)	(X)	20	124	22	196	122	2 290	35	254
3824	Fluid meters and counting devices -----	(X)	(X)	2	(D)	13	62	43	1 431	21	127
3825	Instruments to measure electricity -----	(X)	(X)	18	105	26	300	113	1 652	35	393
3829	Measuring and controlling devices, n.e.c.-----	(X)	(X)	14	(D)	12	65	137	1 725	22	157
387	Watches, clocks, and watchcases -----	(X)	(X)	8	25	12	70	20	169	20	198
3873	Watches, clocks, and watchcases -----	(X)	(X)	8	25	12	70	20	169	20	198
		FOUNDRY PATTERN SHOP		PLATE OR STRUCTURAL FABRICATION		STAMPING, BLANKING, AND FORMING OF METALS		PAINTING, LACQUERING, AND ENAMELING OF METALS		PLASTICS MOLDING	
	All industries -----	1 111	9 321	6 864	177 770	10 565	232 299	11 192	81 434	716	15 624
33	Primary metal industries -----	469	3 461	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
34	Fabricated metal products -----	108	968	2 553	76 633	4 912	124 975	3 652	24 652	(X)	(X)
35	Machinery, except electrical -----	443	3 738	3 233	52 681	2 887	36 385	4 598	18 658	45	1 246
36	Electric and electronic equipment -----	14	39	438	6 585	1 579	28 579	1 588	12 701	472	10 458
37	Transportation equipment -----	77	1 115	640	41 871	930	39 750	1 069	24 185	114	3 037
38	Instruments and related products -----	(X)	(X)	(X)	(X)	257	2 610	285	1 238	85	883
33	Primary metal industries -----	469	3 461	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
332	Iron and steel foundries -----	330	2 987	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3321	Gray iron foundries -----	213	1 846	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3322	Malleable iron foundries -----	12	78	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3324	Steel investment foundries -----	23	455	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3325	Steel foundries, n.e.c. -----	82	608	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
336	Nonferrous foundries -----	139	474	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3361	Aluminum foundries -----	93	353	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3362	Brass, bronze, and copper foundries -----	34	71	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3369	Nonferrous foundries, n.e.c. -----	12	50	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
34	Fabricated metal products -----	108	968	2 553	76 633	4 912	124 975	3 652	24 652	(X)	(X)
341	Metal cans and shipping containers -----	(X)	(X)	25	646	279	13 861	224	5 706	(X)	(X)
3411	Metal cans -----	(X)	(X)	22	(D)	202	12 685	150	5 100	(X)	(X)
3412	Metal barrels, drums, and pails -----	(X)	(X)	3	(D)	77	1 176	74	606	(X)	(X)
342	Cutlery, hand tools, and hardware -----	11	22	35	210	504	9 451	348	2 089	(X)	(X)
3421	Cutlery -----	(X)	(X)	(X)	(X)	40	611	16	87	(X)	(X)
3423	Hand and edge tools, n.e.c. -----	(X)	(X)	(X)	(X)	146	1 625	123	547	(X)	(X)
3425	Hand saws and saw blades -----	(X)	(X)	(X)	(X)	29	366	17	79	(X)	(X)
3429	Hardware, n.e.c. -----	11	22	35	210	289	6 849	192	1 376	(X)	(X)
343	Plumbing and heating, except electric -----	18	129	89	1 093	160	1 906	174	1 278	(X)	(X)
3431	Metal sanitary ware -----	2	(D)	(X)	(X)	19	315	9	720	(X)	(X)
3432	Plumbing fittings and brass goods -----	7	(D)	(X)	(X)	25	341	9	34	(X)	(X)
3433	Heating equipment, except electric -----	9	62	89	1 093	116	1 250	156	524	(X)	(X)
344	Fabricated structural metal products -----	(X)	(X)	1 943	67 188	1 534	23 743	1 704	7 811	(X)	(X)
3441	Fabricated structural metal -----	(X)	(X)	3756	333 730	187	1 975	534	2 464	(X)	(X)
3442	Metal doors, sash, and trim -----	(X)	(X)	40	772	156	3 331	124	902	(X)	(X)
3443	Fabricated plate work (boiler shops) -----	(X)	(X)	3621	323 326	326	3 330	466	1 657	(X)	(X)
3444	Sheet metal work -----	(X)	(X)	252	3 081	585	10 038	308	1 355	(X)	(X)
3446	Architectural metal work -----	(X)	(X)	97	1 393	95	1 520	131	455	(X)	(X)
3448	Prefabricated metal buildings -----	(X)	(X)	102	3 271	78	1 662	94	769	(X)	(X)
3449	Miscellaneous metal work -----	(X)	(X)	75	1 615	107	1 887	47	209	(X)	(X)
345	Screw machine products, bolts, etc. -----	(X)	(X)	(X)	(X)	266	6 076	57	227	(X)	(X)
3451	Screw machine products -----	(X)	(X)	(X)	(X)	52	351	19	67	(X)	(X)
3452	Bolts, nuts, rivets, and washers -----	(X)	(X)	(X)	(X)	214	5 725	38	160	(X)	(X)
346	Metal forgings and stampings -----	24	500	89	1 063	1 296	56 012	368	3 852	(X)	(X)
3465	Automotive stampings -----	15	463	12	111	3337	329 990	79	703	(X)	(X)
3466	Crowns and closures -----	-	-	-	-	25	2 341	18	559	(X)	(X)
3469	Metal stampings, n.e.c. -----	9	37	77	952	3934	323 681	271	2 590	(X)	(X)
348	Ordnance and accessories, n.e.c. -----	(X)	(X)	(X)	(X)	43	1 278	37	349	(X)	(X)
3482	Small arms ammunition -----	(X)	(X)	(X)	(X)	10	527	3	(D)	(X)	(X)
3483	Ammunition, except for small arms, n.e.c. -----	(X)	(X)	(X)	(X)	19	568	17	181	(X)	(X)
3484	Small arms -----	(X)	(X)	(X)	(X)	8	118	8	(D)	(X)	(X)
3489	Ordnance and accessories, n.e.c. -----	(X)	(X)	(X)	(X)	6	65	9	78	(X)	(X)
349	Miscellaneous fabricated metal products -----	55	317	372	6 433	830	12 648	740	3 340	(X)	(X)
3493	Steel springs, except wire -----	(X)	(X)	(X)	(X)	36	811	28	(D)	(X)	(X)
3494	Valves and pipe fittings -----	37	272	48	1 514	97	1 368	205	655	(X)	(X)
3495	Wire springs -----	(X)	(X)	(X)	(X)	105	1 889	55	213	(X)	(X)
3496	Miscellaneous fabricated wire products -----	(X)	(X)	17	298	165	2 262	103	483	(X)	(X)
3497	Metal foil and leaf -----	(X)	(X)	(X)	(X)	10	185	8	(D)	(X)	(X)
3498	Fabricated pipe and fittings -----	5	16	66	1 784	69	1 818	68	197	(X)	(X)
3499	Fabricated metal products, n.e.c. -----	13	29	241	2 837	348	4 315	273	1 214	(X)	(X)

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SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers
		FOUNDRY PATTERN SHOP		PLATE OR STRUCTURAL FABRICATION		STAMPING, BLANKING, AND FORMING OF METALS		PAINTING, LACQUERING, AND ENAMELING OF METALS		PLASTICS MOLDING	
35	Machinery, except electrical.....	443	3 738	3 233	52 681	2 887	36 385	4 598	18 658	45	1 246
351	Engines and turbines.....	(X)	(X)	40	1 747	42	1 051	82	869	(X)	(X)
3511	Turbines and turbine generator sets.....	(X)	(X)	22	1 385	11	(D)	21	212	(X)	(X)
3519	Internal combustion engines, n.e.c.....	(X)	(X)	18	362	31	(D)	61	657	(X)	(X)
352	Farm and garden machinery.....	22	123	232	2 541	368	5 259	476	2 769	(X)	(X)
3523	Farm machinery and equipment.....	19	104	217	2 415	319	3 982	418	2 190	(X)	(X)
3524	Lawn and garden equipment.....	3	19	15	126	49	1 277	58	579	(X)	(X)
353	Construction and related machinery.....	30	186	898	23 699	469	4 676	1 091	4 546	(X)	(X)
3531	Construction machinery.....	20	107	241	10 073	132	1 662	297	1 789	(X)	(X)
3532	Mining machinery.....	10	79	80	1 372	23	136	93	291	(X)	(X)
3533	Oil field machinery.....	(X)	(X)	132	4 945	46	533	193	871	(X)	(X)
3534	Elevators and moving stairways.....	(X)	(X)	34	1 022	30	601	46	265	(X)	(X)
3535	Conveyors and conveying equipment.....	(X)	(X)	224	3 323	142	1 086	237	586	(X)	(X)
3536	Hoists, cranes, and monorails.....	(X)	(X)	80	1 174	21	113	89	210	(X)	(X)
3537	Industrial trucks and tractors.....	(X)	(X)	107	1 790	75	545	136	534	(X)	(X)
354	Metalworking machinery.....	85	909	254	2 447	359	2 793	448	1 346	(X)	(X)
3541	Machine tools, metal cutting types.....	14	88	49	422	35	288	140	510	(X)	(X)
3542	Machine tools, metal forming types.....	10	29	52	568	16	51	64	118	(X)	(X)
3544	Machine dies, tools, jigs, and fixtures.....	54	757	82	682	207	1 433	65	149	(X)	(X)
3545	Machine tool accessories.....	2	(D)	17	112	5	476	61	176	(X)	(X)
3546	Power driven hand tools.....	(X)	(X)	(X)	(X)	21	287	24	175	(X)	(X)
3547	Rolling mill machinery.....	2	(D)	10	327	2	(D)	11	34	(X)	(X)
3549	Metalworking machinery, n.e.c.....	3	3	44	336	28	(D)	83	184	(X)	(X)
355	Special industry machinery.....	61	224	584	6 927	363	2 720	723	1 751	(X)	(X)
3551	Food products machinery.....	13	69	141	1 757	130	921	172	444	(X)	(X)
3552	Textile machinery.....	12	(D)	58	434	54	555	83	167	(X)	(X)
3553	Woodworking machinery.....	(X)	(X)	50	429	23	162	57	196	(X)	(X)
3554	Paper industries machinery.....	12	37	46	641	(X)	(X)	60	139	(X)	(X)
3555	Printing trades machinery.....	2	(D)	38	266	26	134	76	213	(X)	(X)
3559	Special industry machinery, n.e.c.....	22	87	251	3 400	130	948	275	592	(X)	(X)
356	General industrial machinery.....	204	2 141	497	7 085	453	5 145	807	2 678	(X)	(X)
3561	Pumps and pumping equipment.....	35	181	85	808	37	250	180	787	(X)	(X)
3562	Ball and roller bearings.....	5	18	2	(D)	49	1 092	17	58	(X)	(X)
3563	Air and gas compressors.....	5	33	32	686	25	227	66	316	(X)	(X)
3564	Blowers and fans.....	(X)	(X)	84	2 111	105	1 552	118	428	(X)	(X)
3565	Industrial patterns.....	133	1 839	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
3566	Speed changers, drives, and gears.....	4	20	6	110	13	52	51	96	(X)	(X)
3567	Industrial furnaces and ovens.....	(X)	(X)	96	968	63	404	86	168	(X)	(X)
3568	Power transmission equipment, n.e.c.....	9	18	15	(D)	40	640	52	223	(X)	(X)
3569	General industrial machinery, n.e.c.....	13	32	177	2 266	121	928	237	602	(X)	(X)
357	Office and computing machines.....	(X)	(X)	44	861	123	2 063	146	1 087	45	1 246
3573	Electronic computing equipment.....	(X)	(X)	12	362	64	1 366	68	642	29	770
3574	Calculating and accounting machines.....	(X)	(X)	2	(D)	9	33	9	14	3	(D)
3576	Scales and balances, except laboratory.....	(X)	(X)	19	256	16	134	37	193	1	(D)
3579	Office machines, n.e.c., and typewriters.....	(X)	(X)	11	(D)	34	530	32	238	12	(D)
358	Refrigeration and service machinery.....	14	48	175	3 813	386	9 462	425	2 764	(X)	(X)
3581	Automatic merchandising machines.....	(X)	(X)	3	(D)	20	739	18	269	(X)	(X)
3582	Commercial laundry equipment.....	(X)	(X)	17	137	12	77	25	90	(X)	(X)
3585	Refrigeration and heating equipment.....	13	(D)	90	2 680	244	7 103	245	1 940	(X)	(X)
3586	Measuring and dispensing pumps.....	1	(D)	1	(D)	14	246	18	139	(X)	(X)
3589	Service industry machinery, n.e.c.....	(X)	(X)	64	712	96	1 297	119	326	(X)	(X)
359	Miscellaneous machinery, except electrical.....	27	107	509	3 561	324	3 216	400	848	(X)	(X)
3592	Carburetors, pistons, rings, valves.....	(X)	(X)	(X)	(X)	15	949	(X)	(X)	(X)	(X)
3599	Machinery, except electrical, n.e.c.....	27	107	509	3 561	309	2 267	400	848	(X)	(X)
36	Electric and electronic equipment.....	14	39	438	6 585	1 579	28 579	1 588	12 701	472	10 458
361	Electric distributing equipment.....	11	(D)	118	2 207	238	4 197	258	1 344	46	753
3612	Transformers.....	(X)	(X)	43	1 063	73	1 286	85	655	(X)	(X)
3613	Switchgear and switchboard apparatus.....	11	(D)	75	1 144	165	2 911	173	689	46	753
362	Electrical industrial apparatus.....	3	(D)	116	1 721	202	2 701	326	1 309	33	544
3621	Motors and generators.....	(X)	(X)	48	1 164	94	1 306	158	766	(X)	(X)
3622	Industrial controls.....	3	(D)	31	276	91	1 023	127	443	33	544
3623	Welding apparatus, electric.....	(X)	(X)	37	281	17	372	41	100	(X)	(X)
363	Household appliances.....	-	-	3	(D)	189	7 929	163	5 875	62	2 783
3631	Household cooking equipment.....	(X)	(X)	(X)	(X)	43	2 103	35	1 896	4	(D)
3632	Household refrigerators and freezers.....	-	-	3	(D)	24	1 786	23	1 189	(X)	(X)
3633	Household laundry equipment.....	(X)	(X)	(X)	(X)	17	1 381	14	1 594	10	445
3634	Electric housewares and fans.....	(X)	(X)	(X)	(X)	72	1 753	54	680	33	1 548
3635	Household vacuum cleaners.....	(X)	(X)	(X)	(X)	5	193	7	124	5	446
3636	Sewing machines.....	(X)	(X)	(X)	(X)	9	110	9	48	2	(D)
3639	Household appliances, n.e.c.....	(X)	(X)	(X)	(X)	19	603	21	344	8	(D)
364	Electric lighting and wiring equipment.....	(X)	(X)	46	436	369	7 078	225	1 462	65	1 558
3643	Current-carrying wiring devices.....	(X)	(X)	(X)	(X)	113	1 863	(X)	(X)	50	1 226
3644	Noncurrent-carrying wiring devices.....	(X)	(X)	(X)	(X)	66	1 975	(X)	(X)	15	332
3645	Residential lighting fixtures.....	(X)	(X)	6	52	55	724	91	521	(X)	(X)
3646	Commercial lighting fixtures.....	(X)	(X)	9	48	71	1 717	70	633	(X)	(X)
3647	Vehicular lighting equipment.....	(X)	(X)	5	32	21	358	17	104	(X)	(X)
3648	Lighting equipment, n.e.c.....	(X)	(X)	26	304	43	441	47	204	(X)	(X)
365	Radio and TV receiving equipment.....	(X)	(X)	(X)	(X)	21	350	24	166	(X)	(X)
3651	Radio and TV receiving sets.....	(X)	(X)	(X)	(X)	21	350	24	166	(X)	(X)
366	Communication equipment.....	(X)	(X)	94	1 399	223	3 050	278	1 462	92	2 173
3661	Telephone and telegraph apparatus.....	(X)	(X)	13	292	40	1 106	30	199	25	1 575
3662	Radio and TV communication equipment.....	(X)	(X)	81	1 107	183	1 944	248	1 263	67	598

See footnotes at end of table.

Table 3. Number of Establishments and Production Workers Engaged in Selected Metalworking Operations by Industry Group and Industry: 1982—Con.

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

SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers
		FOUNDRY PATTERN SHOP		PLATE OR STRUCTURAL FABRICATION		STAMPING, BLANKING, AND FORMING OF METALS		PAINTING, LACQUERING, AND ENAMELING OF METALS		PLASTICS MOLDING	
36	Electric and electronic equipment—Con.										
367	Electronic components and accessories.....	(X)	(X)	46	(D)	231	1 899	200	600	174	2 6
3671	Electron tubes, all types.....	(X)	(X)	2	(D)	16	152	9	(D)	2	(
3674	Semiconductors and related devices.....	(X)	(X)	3	(D)	13	146	10	24	16	2
3675	Electronic capacitors.....	(X)	(X)	2	(D)	8	50	10	22	10	1
3676	Electronic resistors.....	(X)	(X)	1	(D)	7	36	4	8	11	(
3677	Electronic coils and transformers.....	(X)	(X)	9	45	18	51	44	78	23	11
3678	Electronic connectors.....	(X)	(X)	3	(D)	40	653	4	(D)	39	1 1
3679	Electronic components, n.e.c.....	(X)	(X)	26	239	129	811	119	386	73	8
369	Miscellaneous electrical equipment and supplies.....	(X)	(X)	15	146	106	1 375	114	483	(X)	(
3693	X-ray, electromedical, and electrotherapeutic apparatus.....	(X)	(X)	15	146	30	302	34	276	(X)	(
3694	Engine electrical equipment.....	(X)	(X)	(X)	(X)	39	730	42	107	(X)	(
3699	Electrical equipment and supplies, n.e.c.....	(X)	(X)	(X)	(X)	37	343	38	100	(X)	(
37	Transportation equipment.....	77	1 115	640	41 871	930	39 750	1 069	24 185	114	3 02
371	Motor vehicles and equipment.....	13	91	269	7 138	510	29 001	640	17 128	60	2 27
3711	Motor vehicles and car bodies.....	(X)	(X)	24	1 624	26	5 309	71	13 456	(X)	(
3713	Truck and bus bodies.....	(X)	(X)	110	1 852	96	843	175	923	12	9
3714	Motor vehicle parts and accessories.....	13	91	64	2 258	335	21 964	296	2 303	48	2 18
3715	Truck trailers.....	(X)	(X)	65	1 377	50	(D)	87	397	-	-
3716	Motor homes produced on purchased chassis.....	(X)	(X)	6	27	3	(D)	11	49	-	-
372	Aircraft and parts.....	38	(D)	81	8 728	171	6 524	(X)	(X)	(X)	(X)
3721	Aircraft.....	18	515	22	6 157	37	3 619	(X)	(X)	(X)	(X)
3724	Aircraft engines and engine parts.....	3	(D)	17	912	37	1 192	(X)	(X)	(X)	(X)
3728	Aircraft equipment, n.e.c.....	17	177	42	1 659	97	1 713	(X)	(X)	(X)	(X)
373	Ship and boat building and repairing.....	23	277	210	21 863	66	1 441	209	5 494	54	76
3731	Ship building and repairing.....	12	232	144	21 130	33	1 182	140	5 254	(X)	(X)
3732	Boat building and repairing.....	11	45	66	733	33	259	69	240	54	76
374	Railroad equipment.....	(X)	(X)	48	3 158	34	967	75	709	(X)	(X)
3743	Railroad equipment.....	(X)	(X)	48	3 158	34	967	75	709	(X)	(X)
375	Motorcycles, bicycles, and parts.....	(X)	(X)	(X)	(X)	40	738	21	292	(X)	(X)
3751	Motorcycles, bicycles, and parts.....	(X)	(X)	(X)	(X)	40	738	21	292	(X)	(X)
376	Guided missiles, space vehicles, parts.....	3	(D)	22	885	28	340	(X)	(X)	(X)	(X)
3761	Guided missiles and space vehicles.....	2	(D)	10	776	13	241	(X)	(X)	(X)	(X)
3764	Space propulsion units and parts.....	1	(D)	7	71	8	61	(X)	(X)	(X)	(X)
3769	Space vehicle equipment, n.e.c.....	-	-	5	38	7	38	(X)	(X)	(X)	(X)
379	Miscellaneous transportation equipment.....	(X)	(X)	10	99	81	739	124	562	(X)	(X)
3792	Travel trailers and campers.....	(X)	(X)	10	99	12	143	38	107	(X)	(X)
3795	Tanks and tank components.....	(X)	(X)	(X)	(X)	10	175	11	133	(X)	(X)
3799	Transportation equipment, n.e.c.....	(X)	(X)	(X)	(X)	59	421	75	322	(X)	(X)
38	Instruments and related products.....	(X)	(X)	(X)	(X)	257	2 610	285	1 238	85	883
381	Engineering and scientific instruments.....	(X)	(X)	(X)	(X)	53	482	68	389	18	49
3811	Engineering and scientific instruments.....	(X)	(X)	(X)	(X)	53	482	68	389	18	49
382	Measuring and controlling devices.....	(X)	(X)	(X)	(X)	180	1 750	217	849	67	834
3822	Environmental controls.....	(X)	(X)	(X)	(X)	34	518	11	43	16	264
3823	Process control instruments.....	(X)	(X)	(X)	(X)	39	249	63	229	6	55
3824	Fluid meters and counting devices.....	(X)	(X)	(X)	(X)	13	47	23	56	14	178
3825	Instruments to measure electricity.....	(X)	(X)	(X)	(X)	54	738	65	412	22	291
3829	Measuring and controlling devices, n.e.c.....	(X)	(X)	(X)	(X)	40	198	55	109	9	46
387	Watches, clocks, and watchcases.....	(X)	(X)	(X)	(X)	24	373	(X)	(X)	(X)	(X)
3873	Watches, clocks, and watchcases.....	(X)	(X)	(X)	(X)	24	378	(X)	(X)	(X)	(X)
SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers		
		ASSEMBLY OF PRODUCT		SHIPPING DEPARTMENT, INCLUDING PACKING AND CRATING		POWDER METALLURGY					
	All industries.....	3 897	308 501	1 259	9 951	116	1 942				
35	Machinery, except electrical.....	2 532	149 133	1 235	9 350	99	1 189				
36	Electric and electronic equipment.....	1 365	159 368	24	601	(X)	(X)				
37	Transportation equipment.....	(X)	(X)	(X)	(X)	17	753				

See footnotes at end of table.

Table 3. Number of Establishments and Production Workers Engaged in Selected Metalworking Operations by Industry Group and Industry: 1982—Con.

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

SIC code	Industry group and industry	Establishments	Production workers	Establishments	Production workers	Establishments	Production workers
		ASSEMBLY OF PRODUCT		SHIPPING DEPARTMENT, INCLUDING PACKING AND CRATING		POWDER METALLURGY	
35	Machinery, except electrical.....	2 532	149 133	1 235	9 350	99	1 189
351	Engines and turbines.....	119	12 059	(X)	(X)	(X)	(X)
3511	Turbines and turbine generator sets.....	35	2 815	(X)	(X)	(X)	(X)
3519	Internal combustion engines, n.e.c.....	84	9 244	(X)	(X)	(X)	(X)
352	Farm and garden machinery.....	505	15 731	482	3 329	5	(D)
3523	Farm machinery and equipment.....	439	10 920	420	2 779	4	8
3524	Lawn and garden equipment.....	66	4 811	62	550	1	(D)
353	Construction and related machinery.....	455	13 178	(X)	(X)	(X)	(X)
3531	Construction machinery.....	273	10 015	(X)	(X)	(X)	(X)
3532	Mining machinery.....	93	1 682	(X)	(X)	(X)	(X)
3536	Hoists, cranes, and monorails.....	89	1 481	(X)	(X)	(X)	(X)
354	Metalworking machinery.....	(X)	(X)	(X)	(X)	38	587
3544	Special dies, tools, jigs, and fixtures.....	(X)	(X)	(X)	(X)	6	23
3545	Machine tool accessories.....	(X)	(X)	(X)	(X)	32	564
356	General industrial machinery.....	592	15 348	(X)	(X)	26	(D)
3561	Pumps and pumping equipment.....	228	5 240	(X)	(X)	15	279
3562	Ball and roller bearings.....	88	3 384	(X)	(X)	2	(D)
3563	Air and gas compressors.....	84	3 433	(X)	(X)	-	-
3566	Speed changers, drives, and gears.....	83	1 124	(X)	(X)	-	-
3568	Power transmission equipment, n.e.c.....	109	2 167	(X)	(X)	9	106
357	Office and computing machines.....	519	60 302	456	3 761	(X)	(X)
3573	Electronic computing equipment.....	371	48 800	315	2 953	(X)	(X)
3574	Calculating and accounting machines.....	27	2 727	25	143	(X)	(X)
3576	Scales and balances, except laboratory.....	44	1 346	45	206	(X)	(X)
3579	Office machines, n.e.c., and typewriters.....	77	7 429	71	459	(X)	(X)
358	Refrigeration and service machinery.....	342	32 515	297	2 260	2	(D)
3581	Automatic merchandising machines.....	(X)	(X)	(X)	(X)	-	-
3582	Commercial laundry equipment.....	(X)	(X)	(X)	(X)	-	-
3585	Refrigeration and heating equipment.....	317	31 066	297	2 260	(X)	(X)
3586	Measuring and dispensing pumps.....	25	1 449	(X)	(X)	1	(D)
3589	Service industry machinery, n.e.c.....	(X)	(X)	(X)	(X)	1	(D)
359	Miscellaneous machinery, except electrical.....	(X)	(X)	(X)	(X)	28	137
3599	Machinery, except electrical, n.e.c.....	(X)	(X)	(X)	(X)	28	137
36	Electric and electronic equipment.....	1 365	159 368	24	601	(X)	(X)
363	Household appliances.....	24	10 367	24	601	(X)	(X)
3632	Household refrigerators and freezers.....	24	10 367	24	601	(X)	(X)
365	Radio and TV receiving equipment.....	95	14 625	(X)	(X)	(X)	(X)
3651	Radio and TV receiving sets.....	95	14 625	(X)	(X)	(X)	(X)
366	Communication equipment.....	550	55 724	(X)	(X)	(X)	(X)
3662	Radio and TV communication equipment.....	550	55 724	(X)	(X)	(X)	(X)
367	Electronic components and accessories.....	696	78 652	(X)	(X)	(X)	(X)
3671	Electron tubes, all types.....	21	5 641	(X)	(X)	(X)	(X)
3674	Semiconductors and related devices.....	108	23 324	(X)	(X)	(X)	(X)
3675	Electronic capacitors.....	41	9 375	(X)	(X)	(X)	(X)
3676	Electronic resistors.....	36	4 128	(X)	(X)	(X)	(X)
3677	Electronic coils and transformers.....	89	4 785	(X)	(X)	(X)	(X)
3678	Electronic connectors.....	73	6 367	(X)	(X)	(X)	(X)
3679	Electronic components, n.e.c.....	328	25 032	(X)	(X)	(X)	(X)
37	Transportation equipment.....	(X)	(X)	(X)	(X)	17	753
371	Motor vehicles and equipment.....	(X)	(X)	(X)	(X)	17	753
3713	Truck and bus bodies.....	(X)	(X)	(X)	(X)	-	-
3714	Motor vehicle parts and accessories.....	(X)	(X)	(X)	(X)	17	753
3715	Truck trailers.....	(X)	(X)	(X)	(X)	-	-
3716	Motor homes produced on purchased chassis.....	(X)	(X)	(X)	(X)	-	-

¹Excludes data on forging operations used in the manufacture of bolts, nuts, and other related products.

²Excludes data for the 3,450 establishments classified in Industry 3471, Plating and Polishing, which are usually engaged in work on materials owned by others and generally perform electroplating operations.

³Specific operation basically represents the major activity of the particular industry. A few respondents incorrectly reported that the item did not apply.

⁴Excludes data for establishments classified in Industry 3479, Metal Coating and Allied Services, which are primarily engaged in galvanizing and other hot-dip coating, usually on materials owned by others.

Table 4. Number of Production Workers Engaged in Selected Metalworking Operations by

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

Geographic area	Ferrous foundry	Nonferrous foundry (except die casting)	Nonferrous die casting	Forging—presses, hammers, or upsetters	Electroplating and other plating	Plating and polishing industries	Galvanizing and other hot-dip coating	Heat treating of metals	Automatic screw machine department	Machine shop
United States	119 159	33 872	29 339	119 299	22 142	3 49 700	41 835	20 168	35 000	466 005
Alabama	5 454	810	946	124	131	500	61	131	231	5 103
Alaska	—	—	—	—	—	—	—	—	—	36
Arizona	417	129	(D)	—	532	400	(D)	84	(D)	3 712
Arkansas	680	305	391	75	159	—	14	266	190	3 104
California	5 670	4 360	2 311	1 739	4 697	9 300	131	1 322	2 901	45 408
Colorado	428	343	40	101	213	200	(D)	176	143	3 223
Connecticut	1 600	751	474	242	1 367	2 000	18	870	2 072	21 284
Delaware	(D)	—	(D)	—	(D)	—	—	(D)	(D)	418
District of Columbia	—	—	—	—	—	—	—	—	—	22
Florida	499	343	101	85	562	900	40	359	182	5 451
Georgia	1 800	234	279	22	186	300	20	225	246	4 109
Hawaii	—	—	—	—	(D)	—	—	—	—	122
Idaho	26	—	—	(D)	(D)	—	—	26	(D)	333
Illinois	7 150	2 186	3 655	1 783	1 404	4 600	80	1 988	3 889	31 588
Indiana	6 713	1 816	1 699	585	428	1 800	67	983	1 428	20 908
Iowa	2 059	850	250	265	120	—	(D)	298	563	8 024
Kansas	1 302	309	(D)	145	128	(D)	5	187	276	4 675
Kentucky	1 478	27	706	441	198	300	(D)	337	448	4 332
Louisiana	999	69	(D)	112	29	200	10	175	56	3 600
Maine	(D)	(D)	(D)	(D)	64	—	—	115	90	1 783
Maryland	321	142	(D)	49	211	200	32	263	162	4 107
Massachusetts	1 499	520	551	510	704	2 000	33	746	1 645	17 228
Michigan	9 940	1 424	4 439	1 719	1 389	4 300	46	1 405	3 839	34 151
Minnesota	1 504	949	567	167	406	1 200	29	208	606	9 569
Mississippi	504	219	40	107	74	—	9	90	82	3 054
Missouri	1 713	1 148	868	124	313	1 200	25	324	641	7 265
Montana	(D)	—	—	(D)	—	—	—	(D)	—	27
Nebraska	210	96	(D)	(D)	110	(D)	(D)	75	99	1 916
Nevada	(D)	(D)	—	(D)	18	—	—	12	35	500
New Hampshire	478	523	64	(D)	221	—	8	210	491	3 894
New Jersey	2 246	611	707	123	431	1 800	8	319	1 131	12 359
New Mexico	(D)	(D)	(D)	—	(D)	—	—	35	18	1 265
New York	4 582	2 322	1 799	1 122	1 133	4 000	72	988	2 146	26 462
North Carolina	1 026	367	442	35	702	700	16	322	747	7 476
North Dakota	—	(D)	—	(D)	—	—	—	10	5	327
Ohio	16 768	4 120	2 180	3 080	1 377	3 900	406	2 131	3 459	43 531
Oklahoma	1 410	346	92	167	141	400	55	240	210	7 313
Oregon	2 116	213	86	109	318	400	6	135	210	1 939
Pennsylvania	10 578	3 325	2 503	1 494	1 111	1 500	161	1 640	1 453	33 781
Rhode Island	212	254	29	(D)	201	1 700	—	58	209	2 019
South Carolina	362	159	260	136	236	—	(D)	385	877	4 375
South Dakota	77	—	(D)	—	(D)	—	(D)	4	18	303
Tennessee	3 543	362	794	334	425	1 200	(D)	342	829	6 136
Texas	8 128	1 166	555	2 572	648	1 900	165	1 467	837	31 551
Utah	493	67	(D)	(D)	(D)	—	(D)	32	—	1 478
Vermont	(D)	(D)	(D)	(D)	34	—	(D)	104	64	2 304
Virginia	2 487	495	78	283	293	200	(D)	259	581	5 451
Washington	1 587	183	(D)	(D)	102	500	29	71	87	4 767
West Virginia	756	231	(D)	65	28	—	8	26	107	1 785
Wisconsin	9 707	1 969	1 799	909	450	(D)	94	716	1 290	22 212
Wyoming	(D)	—	—	—	—	—	—	3	—	225

Note: Precise measurement of coverage percentages are not available for geographic divisions and States.

¹Excludes data on forging operations used in the manufacture of bolts, nuts, and other related products.

²Excludes data for the 3,450 establishments classified in Industry 3471, Plating and Polishing, which are usually engaged in work on materials owned by others and generally perform electroplating operations.

³Represents the total number of production workers classified in the plating and polishing industry. Figure is rounded to the nearest hundred, as are State totals, to correspond with data shown for this industry in table 2 of report MC82(2)-34D.

⁴Excludes data for establishments classified in Industry 3479, Metal Coating and Allied Services, which are primarily engaged in galvanizing and other hot-dip coating, usually on materials owned by others.

State: 1982

Tool and die shop	Foundry pattern shop	Plate or structural fabrication	Stamping, blanking, and forming of metals	Painting, lacquering, and enameling of metals	Plastics molding	Assembly of product	Shipping department, including packing and crating	Powder metallurgy	Geographic area
111 960	9 321	177 770	232 299	81 434	15 624	308 501	9 951	1 942	United States
575	279	3 982	2 147	908	448	1 811	160	(D)	Alabama
-	-	58	14	5	-	-	-	-	Alaska
552	5	876	1 137	251	178	5 554	159	-	Arizona
669	39	1 418	2 436	1 072	(D)	3 042	130	(D)	Arkansas
7 930	460	12 943	15 517	5 938	1 249	45 406	1 305	60	California
607	30	1 144	1 197	1 531	(D)	3 551	148	-	Colorado
4 463	99	4 645	5 244	1 745	348	4 643	96	(D)	Connecticut
37	(D)	245	157	(D)	(D)	(D)	(D)	-	Delaware
(D)	-	(D)	(D)	5	(D)	(D)	(D)	-	District of Columbia
934	43	3 402	3 473	1 585	130	9 902	143	-	Florida
1 079	79	4 423	4 268	1 830	39	2 987	210	(D)	Georgia
(D)	-	142	(D)	(D)	(D)	(D)	(D)	-	Hawaii
72	(D)	334	245	113	(D)	(D)	44	-	Idaho
9 917	976	7 531	22 115	5 068	1 486	26 120	1 105	19	Illinois
6 274	677	3 523	13 960	3 068	487	15 025	352	47	Indiana
1 715	189	2 497	2 971	1 331	228	4 171	475	-	Iowa
1 304	383	2 502	2 177	1 267	71	3 526	314	-	Kansas
1 273	20	1 920	4 076	1 855	310	5 858	224	-	Kentucky
230	49	6 767	768	864	(D)	214	20	(D)	Louisiana
295	(D)	698	795	667	(D)	2 191	17	(D)	Maine
708	85	2 460	2 156	1 075	152	4 734	59	-	Maryland
2 568	159	2 990	4 477	1 373	418	17 610	332	14	Massachusetts
19 913	1 439	5 283	35 872	8 218	1 817	6 962	251	184	Michigan
1 741	159	2 402	4 783	1 288	172	9 071	563	(D)	Minnesota
628	(D)	5 972	2 115	1 715	191	2 530	110	-	Mississippi
2 901	154	4 106	6 015	2 561	208	8 341	124	(D)	Missouri
(D)	-	138	(D)	16	-	(D)	-	-	Montana
364	11	861	1 519	438	152	1 520	219	(D)	Nebraska
21	-	137	100	42	(D)	(D)	-	-	Nevada
583	23	571	859	260	86	3 103	42	-	New Hampshire
2 043	80	2 556	5 990	2 181	212	7 803	174	31	New Jersey
74	-	443	108	114	(D)	437	-	-	New Mexico
8 047	435	6 487	10 626	2 980	781	24 562	410	(D)	New York
1 739	65	3 198	3 651	1 399	1 017	6 180	185	15	North Carolina
78	-	349	188	125	(D)	325	43	(D)	North Dakota
12 900	932	11 639	24 296	7 044	956	10 519	464	762	Ohio
1 119	51	4 568	2 070	1 452	(D)	3 057	50	40	Oklahoma
307	96	2 203	1 231	499	(D)	1 535	79	(D)	Oregon
6 807	718	15 697	11 650	4 585	765	15 346	399	(D)	Pennsylvania
302	(D)	2 266	779	229	26	1 036	(D)	-	Rhode Island
695	(D)	2 401	1 965	948	279	5 321	110	(D)	South Carolina
30	(D)	250	104	61	-	984	29	-	South Dakota
1 966	81	5 356	4 953	2 103	492	5 475	196	-	Tennessee
2 793	406	16 856	6 908	3 847	371	15 229	479	69	Texas
82	(D)	2 171	396	231	-	2 563	17	-	Utah
144	(D)	223	574	75	(D)	2 794	64	-	Vermont
487	234	4 527	2 307	1 519	290	5 263	76	(D)	Virginia
831	86	4 488	1 611	628	579	1 409	37	-	Washington
96	31	890	766	389	-	219	(D)	(D)	West Virginia
4 041	503	7 071	11 465	4 331	423	9 179	506	(D)	Wisconsin
(D)	-	158	48	(D)	-	(D)	(D)	-	Wyoming



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PUBLICATION PROGRAM

1982 CENSUS OF MANUFACTURES

Publications of the 1982 Census of Manufactures, containing preliminary and final data on manufacturing establishments in the United States, are described below. Publication 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, D.C. 20233

Preliminary Reports

Preliminary industry data are issued in 443 separate reports covering 452 industries (or combinations of industries). Preliminary data for States are grouped and released in reports for each of the nine census geographic divisions.

Final Reports

Final detailed statistics are issued in separate paperbound reports.

Industry series—82 reports (MC82-I-20A to -39D)

Each of the 82 reports provides information for a group of related industries (e.g., "dairy products" includes industries for butter, cheese, milk, etc.). Final figures for the United States are shown for each of the 452 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 and degree of primary product specialization. Statistics are given on production of specific products and consumption of energy and various materials by industry.

Geographic area series—51 reports (MC82-A-1 to -51)

A separate report for each State and the District of Columbia 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, SMSA's, and large industrial counties and places. Comparative statistics for earlier census years are shown for the State and large SMSA'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—10 reports (MC82-S-1 to -10)

Each of the 10 reports contains detailed statistics for an individual subject, such as: selected materials consumed, selected metalworking

operations, manufacturing activity in government establishments, concentration ratios in manufacturing, type of organization, water use in manufacturing, fuels and electric energy consumed (separate publications for industry statistics, and State and SMSA statistics), textile machinery in place, production indexes, and a general National-level summary.

Final Report Volumes

Final paperbound reports subsequently are assembled and reissued in clothbound volumes.

- Volume I. Summary and Subject Statistics—data previously issued in series MC82-S.
- Volume II. Industry Statistics—data previously issued in series MC82-I.
 - Part 1. Major Groups 20 to 26
 - Part 2. Major Groups 27 to 34
 - Part 3. Major Groups 35 to 39
- Volume III. Geographic Area Statistics—data previously issued in series MC82-A.
 - Part 1. Alabama to Montana
 - Part 2. Nebraska to Wyoming

Microfiche

All published data also are available on microfiche.

Computer Tapes

Selected data—generally detailed information by industry and/or geographic area—also are available on public-use computer tapes. For the selected data, these tapes will provide the same information found in the final reports. Public-use computer tapes are available for users who wish to summarize, rearrange, or process large amounts of data. These tapes, with corresponding technical documentation, are sold by Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

OTHER ECONOMIC CENSUSES REPORTS

Data on retail trade, wholesale trade, service industries, construction industries, mineral industries, enterprise statistics, minority-owned businesses, women-owned businesses, and transportation also are issued as part of the 1982 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. All published reports and microfiche are sold by the Superintendent of Documents, U. S. Government Printing Office. Appropriate announcements and order forms describing these products are available free of charge from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, D.C. 20233.

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