

# CURRENT INDUSTRIAL REPORTS SERIES

2011

## MQ333W — METALWORKING MACHINERY

### DEFINITIONS AND SPECIAL INSTRUCTIONS

#### 1. Scope of survey

This survey covers all United States companies engaged in the manufacture of new and remanufactured industrial type metal cutting/removal and metal forming types of metalworking machinery, including numerical control type (Sections I and II). Rebuilt machines are not collected on this survey.

#### 2. Figures to be reported

Companies with more than one establishment manufacturing the products covered by this survey are requested to complete a separate report form for each location. If you have not received a separate form for each of your establishments, call the contact shown on the report form or write to the U.S. Census Bureau for additional forms.

#### QUANTITY AND VALUE OF SHIPMENTS

The figures on quantity and value of shipment should include the physical shipments of all products sold, transferred to other establishments within your company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Assign shipments to your own branches the same value as comparable sales to unaffiliated customers, i.e., the value includes an appropriate allocation of company overhead and profit. Do not include in shipments products bought and resold without further manufacture.

#### VALUE OF EXPORT SHIPMENTS

For purposes of this report, domestic includes shipments to destinations within the 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands, as well as to the U.S. Armed Forces abroad for their own use. All other shipments are exports. Report the value of export shipments by type of machine.

#### VALUE OF UNFILLED ORDERS

Report the dollar value of orders received (for domestic and export) which have not passed through your sales accounts at the end of each quarter. Unfilled orders at the end of the quarter are equal to unfilled orders at the beginning of the quarter, plus net new orders received during the quarter, minus net sales.

#### BY VALUE OF MACHINE

Separate machines which are valued at less than \$3,025 each from machines valued at \$3,025 or more.

#### EXAMPLE:

Report all drilling machines valued at less than \$3,025 each with item code 1205, "All drilling machines valued under \$3,025 each."

Report drilling machines valued at \$3,025 or more each by the specific type of machine designated under item codes 1215 through 1265.

See Reference List, page 3. Do not combine machines valued at less than \$3,025 with machines valued at \$3,025 or more.

#### SHIPMENTS OF MACHINES EQUIPPED WITH NUMERICAL CONTROLS (NC)

In addition to including the shipments of metalworking machines equipped with numerical controls with total machines shipped, also report data on numerical control type machines separately in columns 4 and 5 immediately following the total for each type of machine. The value of machine tools equipped with numerical controls should include the value of the controls.

#### LEASED MACHINES

For products leased or rented by your company, report the number and estimated values. The estimate should approximate the value of the products sold outright. If no such prices exist, base the value on the assessment placed on these items for tax, insurance, or similar purposes.

#### SUBCONTRACT WORK

Include in the report complete products manufactured for you by others on a subcontract basis. Exclude complete machines produced by you for others on a subcontract basis, unless manufactured for an affiliated company.

#### IMPORTED OR ASSEMBLED COMPONENTS

Do not report on this survey if:

- a. The products you shipped were imported complete or machined for assembly.
- b. The products you shipped were imported as subassemblies purchased and not machined further or large parts which required minimal assembly with hand tools and no metalworking.

Report on this survey if:

- a. Parts for your products were imported and the assembly and fabrication consisted of metal working or further machining.
- b. Your establishment possesses the complete product design and performs in-house machining.

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## DEFINITIONS AND SPECIAL INSTRUCTIONS — Continued

### 3. Definitions

#### MACHINE TYPES

*Metal cutting/removal type machine tools* — These are defined as new, power driven, complete machine tools, not supported in the hands of an operator when in use. They are used for removing metal in the form of chips, vapor, or slag. Also included are honing machines, lapping machines, grinders, and machines which cut using electrical, laser, or waterjet techniques.

*Exclude* small, low-priced, machine tools of light construction such as lathes; drilling, grinding, and milling machines; and polishing and buffing machines designed primarily for home workshops, etc. Also exclude all woodworking or primarily woodworking type machines.

*Metal forming type machine tools* — These are defined as new, power driven, complete machine tools, not supported in the hands of an operator when in use. They are used to press, forge, emboss, hammer, extrude, blank, spin, shear, die cast, bend metal, compacting powdered metal, tape laying, and printing metal.

#### "ALL OTHER" CLASSIFICATIONS

The last item of most major product categories is an "all other" or "miscellaneous" group. Whenever possible, classify your products under the more specific heading which most nearly describes them. Classify them as "all other" only when a more specific description does not apply. Describe the products that you classify as "all other" in sufficient detail to permit identification. This may be done on a separate sheet of paper.

#### TYPES OF NUMERICALLY CONTROLLED MACHINES

*Positioning* — These are defined as machines equipped with "positioning" numerical control systems activated by direct data input (DNC) or manual data input (MDI).

Report in this group all machines that have been equipped with control systems in which point-to-point positioning and cutting or forming (regardless of the number of movement "axes" or auxiliary functions) are controlled automatically by means of numerical programs inserted into the systems.

Classify as "continuous path," machines equipped with a control system that permits "positioning" and "continuous path" operations.

*Continuous path or computer numerical control* — These are defined as machines equipped with "continuous path" numerical program control systems activated by direct data input (CNC) or manual data input (MDI).

Report in this group all machines equipped with control systems in which, in addition to point-to-point positioning, the path of cutting is also automatically controlled by means of numerical programs inserted into the systems.

Classify as "continuous path," machines equipped with a control system that permits "positioning" and "continuous path" operations.

*Digital readout systems including dial or plugboard* — These are defined as machines equipped with digital readout systems or dial or plugboard type of prerecorded motion programs control systems.

Report in this group all machines equipped with control systems in which "positioning" or "continuous path" are automatically commanded by numerical programs fed into the system by an operator through dials, plugs, switches, or any other numerical method.

#### REMANUFACTURED MACHINE TOOLS

The basic machine carcass is reused with most of the iron retained. All possible modern improvements are incorporated. Ball screws and servo drives replace gear boxes and lead screws. Headstocks are driven by AC vector drive motors, and gears and range changes are reduced or eliminated. Position feedback may be added, as may CNC or PC controls. All of the electrics are replaced. The end product is superior to the original product when it left the factory as new.

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## DEFINITIONS AND SPECIAL INSTRUCTIONS — Continued

### 4. Comparability

If you also report in the Annual Survey of Manufactures (Form MA-10000), the sum of values for item codes shown in column (a) should correspond to the dollar values reported under product class codes indicated in column (b) below:

Current Industrial Reports (Form MQ333W)  Item code (a)	Annual Survey of Manufactures  Product class code (b)
1125 through 1265	333512A pt
1991	3335121 pt
2010 through 2740	3335122
2801 through 2812	3335123
2920 through 3102	
3309 through 3500	3335124
3721 through 3736	3335127
3821 through 3825	3335128
3840 through 4630	3335129
5009 through 5270	3335131
5409 through 6305	3335133
6625 through 7173	3335135
4700	3335126
7200	3335137

pt = part

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## REFERENCE LIST

FORM <b>MQ333W</b>		
<b>METALWORKING MACHINERY</b>		
Product code	Item code	Item description
		<p><b>SECTION I – METAL CUTTING/REMOVAL TYPE MACHINE TOOLS</b></p> <p><b>BORING MACHINES (excluding Machining Centers) and DRILLING MACHINES (excluding Machining Centers)</b></p> <p><b>Machines valued at \$3,025 each or more (excluding laser type)</b></p>
333512A103	<b>1125</b>	Horizontal boring, drilling, and milling machines. Includes floor, table and rail mounted, and all other boring machines (excluding boring lathes)
333512A105	<b>1140</b>	Precision and jig boring machines (including horizontal and vertical boring machines)
333512A111	<b>1205</b>	<p><b>All drilling machines valued under \$3,025 each</b></p> <p><b>Machines valued at \$3,025 each or more (excluding laser type)</b></p>
333512A113	<b>1215</b>	Vertical – (upright) drilling machines (including plain-upright and heavy duty)
333512A117	<b>1235</b>	Deep hole drilling machines
333512A120	<b>1250</b>	Multiple spindle drilling machines (cluster of spindles driven from one central power unit)
333512A123	<b>1265</b>	All other drilling machines (including sensitive, vertical and radial)
<b>XXX</b>	<b>1295</b>	<b>Total boring and drilling machines (Sum of item codes 1125–1265)</b>
		<p><b>GEAR CUTTING MACHINES</b></p>
3335121200	<b>1991</b>	Gear cutting machines includes: gear hobbbers, shapers, teeth finishing, bevel gear generators, and all other gear cutting machines
		<p><b>GRINDING, POLISHING, BUFFING, HONING, AND LAPPING MACHINERY (excluding gear-tooth grinding, lapping, polishing, honing, and buffing machines)</b></p>
3335122101	<b>2010</b>	<p><b>All grinding, polishing, buffing, honing, and lapping machines valued under \$3,025 each</b></p> <p><b>Machines valued at \$3,025 each or more</b></p>
3335122110	<b>2050</b>	External cylindrical grinding machines
3335122120	<b>2100</b>	Internal cylindrical grinding machines
3335122122	<b>2146</b>	Surface grinding machines
3335122136	<b>2225</b>	All other disc grinders, bench, floor, snag, double spindle grinders, and abrasive belt grinders
3335122142	<b>2328</b>	Tool, cutter, and drill point grinding machines (including universal and special)

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## REFERENCE LIST — Continued

FORM MQ333W		
Product code	Item code	Item description
<b>Section I — METAL CUTTING/REMOVAL TYPE MACHINE TOOLS — Continued</b>		
<b>GRINDING, POLISHING, BUFFING, HONING, AND LAPPING MACHINERY (excluding gear-tooth grinding, lapping, polishing, honing, and buffing machines)— Continued</b>		
<b>Machines valued at \$3,025 each or more – Continued</b>		
3335122151	<b>2430</b>	All other grinding machines (including planer type, thread grinding, and deburring machines)  Honing and lapping machines except gear-tooth honing and lapping
3335122156	<b>2530</b>	Internal (including combination bore-hone and external) (excluding flat surface lapping machines)
3335122161	<b>2579</b>	Flat surface lapping machines (excluding gear lapping)
3335122166	<b>2740</b>	Polishing and buffing machines including speed lathes and multi-station type
XXX	<b>2790</b>	<b>Total grinding, polishing, buffing, honing, and lapping machines (excluding gear-tooth, grinding, lapping, polishing, and buffing machines) (Sum of item codes 2010–2740)</b>
<b>LATHES (TURNING MACHINES)</b>		
3335123131	<b>2801</b>	<b>All lathes valued under \$3,025 each</b>  <b>Machines valued at \$3,025 each or more</b>  NUMERICALLY CONTROLLED TURNING MACHINES:  <b>Horizontal Spindle</b>  <b>Single spindle:</b>  <i>PLEASE NOTE: Each machine may not conform to all the criteria of any one subgroup. The criteria are ranked in order of importance to help indicate the proper subgroup classification. Determine horsepower by name plate listing.</i>
3335123107	<b>2807</b>	Chuck size: Less than 10" Horsepower: 25 and under Swing: 18" and under Spindle nose: A-8" and under
3335123116	<b>2809</b>	Chuck size: 10" to less than 15" Horsepower: 25–50 Swing: 18"–25" Spindle nose: A-8"–11"
3335123127	<b>2812</b>	Chuck size: 15" and over Horsepower: 50 and over Swing: 25" and over Spindle nose: 15" and over And all multiple spindle NC turning machines (excluding those with opposing powered subspindles) (classified as single spindle)

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## REFERENCE LIST — Continued

FORM <b>MQ333W</b>		
Product code	Item code	Item description
<b>Section I — METAL CUTTING/REMOVAL TYPE MACHINE TOOLS — Continued</b>		
<b>Machines valued at \$3,025 each or more—Continued</b>		
<b>NUMERICALLY CONTROLLED TURNING MACHINES—Continued:</b>		
<b>Horizontal Spindle—Continued</b>		
<b>XXX</b>	<b>2815</b>	<b>Total horizontal NC turning machines (Sum of item codes 2807–2812)</b>
<b>Vertical Spindle</b>		
3335123126	<b>2920</b>	Vertical spindle lathes, boring, and turning machines
3335123134	<b>3102</b>	<b>NON-NUMERICALLY CONTROLLED TURNING MACHINES VALUED AT \$3,025 EACH OR MORE</b>
<b>MILLING MACHINES (excluding "Machining Centers")</b>		
3335124101	<b>3309</b>	All milling machines valued under \$3,025 each
3335124125	<b>3500</b>	All milling machines valued at \$3,025 each or more
<b>XXX</b>	<b>3691</b>	<b>Total milling machines (Sum of item codes 3309–3500)</b>
<b>OTHER METAL CUTTING/REMOVAL MACHINE TOOLS</b>		
<b>Machining Centers (Multi-function NC Machines)</b>		
Drill, Mill, Bore — VERTICAL (Automatic Tool Change)		
3335127101	<b>3721</b>	"Y" axis travel less than 20"
3335127106	<b>3722</b>	"Y" axis travel 20" through 26"
3335127111	<b>3723</b>	"Y" axis travel over 26"
Drill, Mill, Bore — HORIZONTAL (Automatic Tool Change)		
3335127112	<b>3724</b>	Under 500mm pallet
3335127113	<b>3725</b>	500mm-800mm pallet
3335127114	<b>3726</b>	Over 800mm pallet
3335127146	<b>3736</b>	All other machining centers (including special machining centers, special adapting of standard machining centers, and machining centers with indexing turret)
<b>XXX</b>	<b>3737</b>	<b>Total machining centers (Sum of item codes 3721–3736)</b>
<b>Station Type Machines</b>		
3335128101	<b>3821</b>	Dial or rotary, trunnion, and center column
3335128106	<b>3823</b>	Transfer (free, palletized, shuttle)
3335128111	<b>3825</b>	Other station type
<b>XXX</b>	<b>3831</b>	<b>Total station type machines (Sum of item codes 3821–3825)</b>

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## REFERENCE LIST — Continued

FORM <b>MQ333W</b>		
Product code	Item code	Item description
<b>Section I — METAL CUTTING/REMOVAL TYPE MACHINE TOOLS—Continued</b>		
<b>OTHER METAL CUTTING/REMOVAL MACHINE TOOLS—Continued</b>		
3335129101	<b>3840</b>	<b>Other metal cutting machine tools valued under \$3,025</b>
<b>Machines valued at \$3,025 each or more</b>		
3335129106	<b>3850</b>	Broaching machines (including internal surface and all other broaching machines)
Sawing and cut-off machines		
Band saws		
3335129122	<b>4181</b>	Vertical
3335129123	<b>4183</b>	Horizontal
3335129126	<b>4196</b>	All other sawing and cut-off machines (including contour sawing and filing)
Spark erosion, ultrasonic, and electrolytic machines		
3335129131	<b>4619</b>	Water Jet cutting machines
3335129134	<b>4628</b>	Laser cutting machines
3335129135	<b>4629</b>	
3335129136	<b>4630</b>	All Other metal cutting machine tools (including rifling, centering, key-seating, pointing, chamfering, facing, shaving, grooving, counter-sinking, skiving, reaming, screw and nut slotting machines, threading, tapping, planers, shapers, and plasma cutting machines.
<b>XXX</b>	<b>4691</b>	<b>Total other metal cutting machine tools (excluding station type and machining centers) (Sum of item codes 3840–4630)</b>
3335126111	<b>4700</b>	<b>REMANUFACTURED METAL CUTTING MACHINE TOOLS</b>
<b>Section II — METAL FORMING TYPE MACHINE TOOLS</b>		
<b>PUNCHING AND SHEARING MACHINES</b>		
3335131101	<b>5009</b>	<b>All punching and shearing machines valued under \$3,025 each</b>
<b>Machines valued at \$3,025 each or more</b>		
POWER OPERATED ONLY		
3335131106	<b>5019</b>	Punches (including combination punching and shearing machines)
3335131111	<b>5025</b>	Punching machines (fixed position and two axes positioning table)
Plate shearing machines (squaring, slitting, etc.)		
3335131116	<b>5031</b>	Mechanical
3335131121	<b>5032</b>	Hydraulic
3335131126	<b>5085</b>	Other power operated punching and shearing machines

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## REFERENCE LIST — Continued

FORM <b>MQ333W</b>		
Product code	Item code	Item description
<b>Section II — METAL FORMING TYPE MACHINE TOOLS—Continued</b>		
<b>BENDING AND FORMING MACHINES — Power operated</b>		
3335131131	<b>5109</b>	<b>All bending and forming machines valued under \$3,025 each</b>
<b>Machines valued at \$3,025 each or more</b>		
3335131136	<b>5112</b>	Press brakes
3335131145	<b>5222</b>	Roll bending machines (including sheet, plate, angles, bars, shapes, and tubes) rotary bending and forming machines
3335131161	<b>5270</b>	Other bending and forming machines (including folders, slide bending machines, and hydroforming machines).
<b>XXX</b>	<b>5291</b>	<b>Total punching, shearing, bending, and forming machines (Sum of item codes 5009–5270)</b>
<b>PRESESSES (excluding forging presses and die stamping presses)</b>		
3335133101	<b>5409</b>	<b>All presses valued under \$3,025 each</b>
<b>Machines valued at \$3,025 each or more</b>		
MECHANICAL PRESSES		
3335133109	<b>5427</b>	Gap or C-frame
3335133136	<b>5830</b>	Presses, strip or coil fed
3335133143	<b>5865</b>	Vertical, automatic, and other mechanical presses (including end wheel type, bulldozer, double and triple action, and transfer fed presses, four point and knuckle joint) (excluding automated lines of standard equipment)
<b>HYDRAULIC PRESSES (metalworking only)</b>		
Vertical single action, all tonnages		
3335133146	<b>5961</b>	Housing or straight side type
3335133151	<b>5962</b>	Column type (open rod)
Gap or C-frame		
3335133156	<b>6131</b>	15 tons and under
3335133161	<b>6132</b>	16 tons–35 tons
3335133166	<b>6133</b>	Over 35 tons
3335133171	<b>6305</b>	Other hydraulic and pneumatic presses (including horizontal)
<b>XXX</b>	<b>6321</b>	<b>Total presses, excluding forging (Sum of item codes 5409–6305)</b>
<b>ALL OTHER METAL FORMING TYPE MACHINE TOOLS</b>		
3335135101	<b>6540</b>	<b>All other metal forming type machine tools valued under \$3,025</b>

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## REFERENCE LIST — Continued

FORM <b>MQ333W</b>		
Product code	Item code	Item description
		<b>Section II – METAL FORMING TYPE MACHINE TOOLS — Continued</b>
		<b>Machines valued at \$3,025 each or more</b>
3335135118	<b>6625</b>	Forging machines (including forging presses and die stamping presses), and die casting machines
3335135121	<b>6779</b>	Riveting machines (excluding hand held portable types)
3335135126	<b>7173</b>	All other metal forming type machine tools (including spin forming, stretch forming, extrusion, compacting powdered metal, tape laying, and printing metal).
<b>XXX</b>	<b>7191</b>	<b>Total all other metal forming type machine tools (<i>Sum of item codes 6540–7173</i>)</b>
3335137121	<b>7200</b>	<b>REMANUFACTURED METAL FORMING MACHINE TOOLS</b>

### NOTES: