



Major

Tool & Machine, Inc.

Equipment Identification



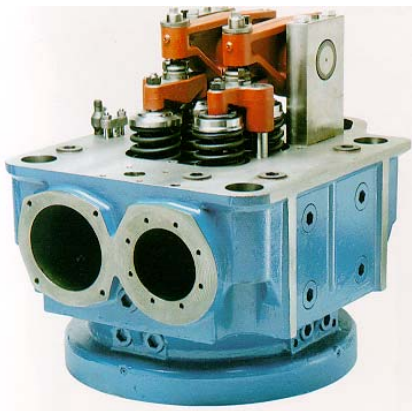
Major Tool & Machine, Inc. prides itself in providing unique solutions to our customers challenges. To better meet the low and medium production requirements of our customers, Major Tool & Machine, Inc. maintains a 40,000 sq. ft. Production Facility (Plant #3). This facility specializes in repeat runs of lot sizes from 5 to 100 units. It offers multi-axis equipment, 5 ton lift capacity, and expertise in part sizes up to 60" cubed. Our Production Facility maintains a full compliment of services, including engineering support, material acquisition, machining, welding, press forming, non-destructive testing, assembly, and CMM inspection.



The *Major* Difference in Fabricating and Machining



Production Facilities – cont'd





Production Facilities – cont'd

Partial Equipment List

HORIZONTAL MACHINING

- 2 - T35 N 5 Axis, twin pallet
- 2 - T35 N 5 Axis, twin pallet
- 1 - T30 4 Axis, pallet changer
- 1 - 10HC 1500
- 1 - Cincinnati Cinturn
- 1 - Okuma MacTurn 50, 4 Axis Turning, 3 Axis Milling
Twin Turret

TRAVELS

- 60" X, 60" Y, 62" Z
150°A, 360°B
- 60" X, 70" Y, 62" Z
150°A, 360°B
- 40" X, 40" Y, 42" Z
360°B
- 60" X, 60" Y, 30" Z
- 6" X, 10" Z
- 24" X, 9" Y, 65" Z, 360° C
(.001° increments),
360° B (1° increments)

VERTICAL MACHINING

- 1 - Schiess Vertimaster 20 DSC 160 - live spindle
- 1 - TMD-16 Toshiba VTL, twin pallet- live spindle
- 1 - Dorries VTL- live spindle
- 2 - Cincinnati Milacron Saber
- 2 - Bridgeport CNC Knee Mill

TRAVELS

- 78" dia x 76" ht.
- 78" dia x 53" ht.
- 72" dia. x 53" ht.
- 30" X, 20" Y, 22" Z
- 30" X, 12" Y, 16" Z

PRESSES

- 1 - Pacific 750 ton hydraulic straight-side with split
210 ton cushions
- 1 - Verson 500 ton hydraulic straight-side with
250 ton cushion
- 1 - Demoss 250 ton hydraulic

TRAVELS

- 60" FB x 124" LR
- 60" FB x 96" LR



Machining

Small/Medium Machining

Our small/medium machining facility (Plant #1) provides multi-axis equipment, 15 ton lift capacity, and expertise in machining ranges from 6" to 100+".

Cincinnati Milacron 30V 5-Axis Profiler
35" Maximum part height,
144"X,60"Y,24"Z
56 deg. Spindle Tilt in A and B Axis.
30 H.P.



Sera Mill Vertical Gantry Machining
Center
315"X, 84"Y, 40"Z
270 deg Head rotation programmable
Machine Accuracy +/- .002"
Repeatability +/- .001"

Complimenting our large part machining capabilities are over 50 smaller CNC machines, all with DNC connection to our CAD.CAM area. All equipment is operated by fully skilled toolmakers, craftsmen to insure the highest quality.





Machining – cont'd

Partial Equipment List

HORIZONTAL MACHINING

- 1 - Cincinnati Milacron TC-30-5000
- 1 - Cincinnati Milacron TC-30-3500
- 1 - Cincinnati Milacron TC-30-3000
- 1 - Cincinnati Milacron 10HC-2500
- 1 - Cincinnati Milacron 10H-2500
- 2 - Cincinnati Milacron 10HC-1500
- 2 - T35 N 5 Axis, twin pallet

- 2 - T35 N 5 Axis, twin pallet

- 1 - T30 4 Axis, pallet changer

- 1 - 10HC 1500
- 1 - Cincinnati Cinturn

TRAVELS

- 196" X, 60" Y, 40" Z
- 140" X, 60" Y, 40" Z
- 118" X, 60" Y, 40" Z
- 100" X, 60" Y, 30" Z
- 100" X, 60" Y, 25" Z
- 60" X, 60" Y, 30" Z
- 60" X, 60" Y, 62" Z
- 1500A, 3600B
- 60" X, 70" Y, 62" Z
- 1500A, 3600B
- 40" X, 40" Y, 42"Z
- 3600B
- 60" X, 60" Y, 30" Z
- 6" X, 10" Z

VERTICAL MACHINING

- 1 - Cincinnati Milacron 30V - 5 axis profiler
- 1 - Webster-Bennet VTL - live spindle
- 2 - Bullard VTL's
- 1 - Berthiez TFM 200M VTL
- 1- Cincinnati Milacron Lancer 1250
- 1 - Webster-Bennett VTL
- 1 - Schiess Vertimaster 20 DSC 160 - live spindle
- 1 - TMD-16 Toshiba VTL, twin pallet - live spindle
- 1 - Dorries VTL - live spindle 72" dia. x 53" ht.
- 2 - Cincinnati Milacron Saber
- 1 - Bridgeport CNC Knee Mills

TRAVELS

- 144" X, 60" Y, 24" Z
- 72" dia. x 48" ht.
- 76" dia. x 48" ht.
- 80" dia. x 71" ht.
- 50" X, 25" Y, 25" Z
- 64" dia. x 86" ht.
- 78" dia x 76" ht.
- 78" dia. x 53" ht.

- 30" X, 20" Y, 22" Z
- 30" X, 12" Y, 16" Z



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Machining – cont'd

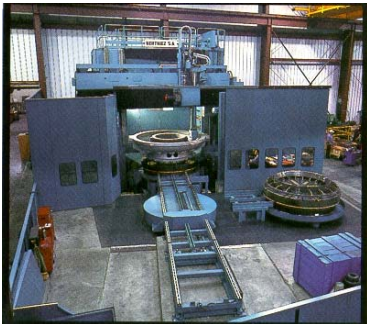
Large Machining

Major Tool & Machine, Inc. maintains a vast array of machine tools, tooling and accessories to accommodate your most demanding machining requirements. Our large machining facility (Plant #2) provides multi-axis equipment, 50 ton lift capacity, and extraordinary range.



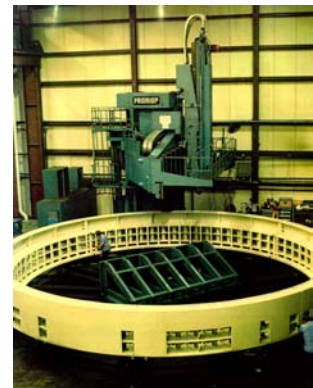
DORRIES SCHARMANN Traversing Gantry milling and boring Center Maximum part length 20 meters (65.5 ft.), maximum part width 6.6 meters (21.6 ft), maximum part height 5 meters (196 inches), VTL table 6 meters (19.6 feet),

table 150 H.P., milling heads 135 H.P., full 5-axis contouring head, 90 deg. head, straight milling head, offset head, turning heads, part probe, G.E. fanuc 15 control, 1995 machine.



Berthiez TDM 250 - Maximum part diameter of 168", maximum part height of 127", pallet changer, 2 live spindles, grinding attachment, swiveling indexing head, tool probe, part probe, G.E. Fanuc 15, 135 HP table motor.

Froriep Spheromill 40/25 - 43' maximum part diameter, 11' maximum part height, 32' table travel, 10' ram travel, 32'X, 11'Y, 10'Z, live spindle, 240 degree tilt spindle, 77 ton table load, full 5-axis control, 100 HP table motor, G.E. FANUC 15 Control.



The **Major** Difference in Fabricating and Machining



Machining – cont'd

Partial Equipment List

HORIZONTAL MACHINING

- 1 - 40' Mitsubishi
- 1 - 30' Mitsubishi
- 1 - Lucas 40T
- 1 - Lucas 30T

TRAVELS

- 472" X, 157" Y, 62" Z
- 325" X, 98" Y, 62" Z
- 320" X, 84" Y, 40" Z
- 132" X, 84" Y, 36" Z

VERTICAL MACHINING

- 1 - Dorries Scharmann VMC/VTL - 5 axis profiler
- 1 - Froriep Spheromill 40/25 - 5 axis - live spindle
- 1 - Forest-Line Seramill 240
- 1 - Farrel
- 1 - Berthiez TDM 250 - 2 live spindles - 2 x 110" dia. Pallets
- 1 - Berthiez LGM - live spindle
- 1 - Rafamet Supermill KCF 400
- 1 - TMC 4518 Thermal Machining Center - Plasma/Oxy Fuel Compound Skew Axis

TRAVELS

- 787" X, 315" Y, 196" Z
- 238" dia, VTL table
- 384" X, 132" Y, 120" Z
- 526" dia.
- 315" X, 98" Y, 40" Z
- 204" dia. x120" ht.
- 168" dia. x127" ht.
- 158" dia. x78" ht.
- 157" dia. x 120" ht.
- 600" X, 228" Y, 8" Z



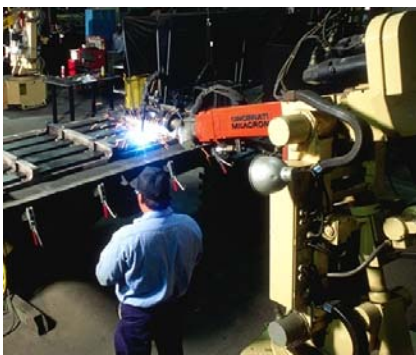
With over 60 certified welders, 7 AWS certified welding inspectors (CWIs), and 3 welding engineers, our Welding Department's expertise meets or exceeds many industry standards: ASME, AWS, Military, DIN. Standard welding processes such as gas metal arc (GMAW), gas tungsten arc (GTAW), submerged arc (SAW), Plasma arc (PAW), and shielded metal arc (SMAW) are performed manually, semi-automatically, and automatically.



Both our Welding and Machining Departments have extensive experience with a broad spectrum of materials ranging from high nickel alloys and stainless steel to cast iron, aluminum, titanium, and even some non-metallic materials. Combine this experience with our state-of-the-art equipment and major differences in satisfaction are realized.



The Burnout Table is equipped with a nesting program to maximize material by laying out the best burn pattern for the needed part vs. the available plate material.



Motoman Welding Robots compliment our automated welding abilities. One robot features pulsed metal arc welding and high definition plasma cutting. The features plasma arc welding used in conjunction with automatic seam tracking. Five weld positioners are utilized in conjunction with the two units.



Welding & Fabrication – cont'd

Partial Equipment List

WELDING

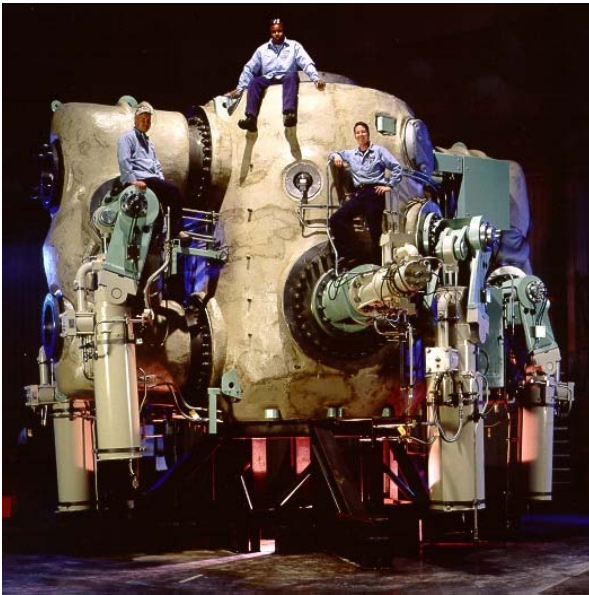
- 1 - Pandjiris weld manipulator, car mounted, power rotation
- 2 - Aronson weld manipulator
- 2 - Cincinnati Milacron T3-746 six axis robot
- 18 - Weld positioner - carrying capacity to 85,000 lbs
- 5 - Weld positioners, up to 6,000lb. capacity with tilt and rotate configuration.
- 3 - Adjustable positioning roll - carrying capacity to 60,000 lbs
- 1 - Jetline 450 amp portable welding machine, seam tracker
- 2 - Arcair 1 to 1,600 amp automatic gougers
- 16 - Pulsed GMAW welding machines
- 37 - GTAW, GMAW/FCAW, SMAW multiple process welding units, with pulsing capability.
- 11 - GTAW, SMAW AC/DC welding units, with pulsing capability
- 2 - GTAW, SMAW AC/DC welding units
- 6 - GMAW/FCAW 650A DC welding units
- 3 - Semi-automatic 600 amp submerged-arc-welding (SAW) machines
- 1 - Jetline plasma arc welding (PAW) cell with automatic seam tracking used in conjunction with two 14,000lb Aronson positioners
- 1 - Jetline gas transfer arc welding (GTAW) cell with dual torch capability used in conjunction with 3 positioners
- 2 - Motoman robotic welding units with MIG and Plasma welding, High Definition Plasma cutting and wire brush capabilities

TRAVELS

- 600" X, 192" Z, 240" boom
- 144" Z, 144" boom
- 84" x 48" dia.
- 120" x 120" Boom
- 72" by 72" Boom
- 101" Reach



Finishing & Assembly



After your project has been milled, drilled, turned or fabricated- it then moves on to our assembly and finishing area. Here, the last touches that make the major difference in your job are applied.

Our sandblasting room is sized to accommodate parts as large as 20' x 40' x 14' high.

Our paint spray booth measures 30' x 20' x 16' high. It provides the perfect controlled, dust-free environment for a flawless painted surface on your finished job.



The final durable finish is cured in our paint oven, measuring 25' x 20' x 10' high.





Quality Assurance



At Major Tool and Machine, your job is constantly monitored throughout the process to assure compliance to your specifications. Major Tool has been certified to ISO 9002 since 1994. We continue to maintain various Military, Aerospace and Commercial standards including: MIL-I-45208A, MIL-STD-1535A, MIL-STD-45662A, ISO-10012-1, ANSI/NCSL Z540-1 and NHB 5300.4(1C).

We have three DEA coordinate measuring machines in operation;

1 - DEA Model 4510 - 320" X, 100" Y, 72" Z

1 - DEA Model 1204 - 80" X, 40" Y, 27" Z

1 - DEA Model 3404 - 72" X, 72" Y, 54" Z *

* Located at our Production Facility



In addition to our coordinate measuring machines, we utilize tool and part probing on our machine tools to take readings during production. Probe data can then be imported directly into our manufacturing system.