



Equipment List

CNC Machining Equipment

Two Spindle Vertical Machining Centers

13 Johnford SV 45 2H (2w/4th axis), 45" X 21" X 25" travel, 40 tools, 17" C/L 8,000 RPM

Vertical Machining Centers

1 Johnford DMC-3100PH Gantry (w/4th axis), 122 X 90.5 X 31.5 travel, 60 tools 10,000 RPM
8 Johnford VMC 1600 HD w/ 2 pallet APC, 63" X 33.5" X 28" travel, 60 tools 10,000 RPM
1 Mighty Viper V1600, 63" X 32" X 24.5" travel, 32 tools 8,000 RPM
3 Johnford SV 48 H w/ 2 pallet APC, 48" X 28" X 24.8" travel, 40 tools 10,000 RPM
1 Fadal 4020 w/ 4th axis, 40" X 20" X 20" travel, 30 tools 10,000 RPM
5 Monarch VMC75B (4 w/2 pallet APC), 40" X 20" X 24" travel, 40 tools 10,000 RPM
1 Monarch VMC45B, 30" X 18" X 18" travel, 40 tools 8,000 RPM
2 Monarch PMC 750 w/ 4th axis, 30" X 18" X 21.7" travel, 40 tools 8,000 RPM
6 Kitamura Mytrunnion 5 axis, 32" X 30.7" X 19.7" travel, 100 tools 20,000 RPM
12 Johnford SV 40 (6 w/ 4th axis), 41.3" X 19.7" X 24" travel, 24 tools 8,000 RPM
7 Johnford SV 32 (2 w/ 4th axis), 31.5" X 19.7" X 24" travel, 24 tools 8,000 RPM

Horizontal Machining Centers

2 Toyoda FA 630, 24 pallet FMS, 25" pallets, 39.4 X 31.5 X 32.3 travel, 422 tools 14,000 RPM
4 Kitamura HX 630i, 2 pallets, 25" pallets, 39.4 X 31.5 X 32.3 travel, 100 tools 12,000 RPM
11 Kitamura HX 630G, 2 pallets, 25" pallets, 39.4 X 31.5 X 32.3 travel, 50 tools 12,000 RPM
2 Toyoda FA 1050 w/ 2 pallets, 40" pallets, 62.99 X 55.11 X 45.27 travel, 120 tools 15,000 RPM
2 Kitamura HX 800 w/ 2 pallets, 32" pallets, 55.1 X 49.2 X 52.2 travel, 100 tools 12,000 RPM

Turning Centers

1 Daewoo Puma 6S, 6" chuck, 6" dia capacity, 12 station turret, tailstock 6,000 RPM
1 Yang ML 25, 10" chuck, 11" dia capacity, 10 station turret, tailstock 3,000 RPM
1 Yang ML 28, 10" chuck, 11" dia capacity, 12 station turret, tailstock 3,000 RPM
1 Yang ML 15, 8" chuck, 8" dia capacity, 12 station turret, tailstock 4,500 RPM
3 Johnford ST40-CX+C, 24" chuck, live tooling, 31.5" dia capacity, 12 station turret, tailstock 1,500 RPM
4 Johnford ST40-CX, 24" chuck, 31.5" dia capacity, 12 station turret, tailstock 1,500 RPM
1 Johnford ST40-BH, 18" chuck, 27.5" dia capacity, 12 station turret, tailstock 2,000 RPM
1 Hardinge Super Precision RS 65, 10" chuck, 12.35" dia capacity, 12 station turret, tailstock 4,000 RPM
1 Hardinge Super Precision RS 51, 8" chuck, 12.35 dia capacity, 12 station turret, tailstock 5,000 RPM
1 Samsung SL 25/1000, 10" chuck, 14.9" dia capacity, 12 station turret, tailstock 3,500 RPM
2 Samsung SL 30/1000, 12" chuck, 15.8" dai capacity, 10 station turret, tailstock 2,800 RPM
1 Samsung SL 35/1500, 15" chuck, 16.5" dia capacity, 10 station turret, tailstock 2,000 RPM



Conventional Machining Equipment

Jig Grinders

1 Moore G-18

Jig Borers

1 Moore B-18

1 Moore # 1-1/2

1 Moore # 2

Surface Grinders

1 Okamoto Automatic 20" X 40" EX

1 Okamoto Automatic 12" X 24" EX

2 Harig 6" X 12"

3 Harig 6" X 18"

O.D. Grinders

1 Kellenberger 60QU-125, Automatic cycle & sizing, 10" X 24" capacity and internal grinding attachment

1 Royal Master Centerless Grinder, Model TG-12 X 4 Hi – Accuracy, 1.5" capacity

Honing Machine

1 Sunnen 1650 manual

Finishing Machines

1 Pressure Blast Wet Blast system

4 Abrasive Blast Cabinets

Lathes

1 Trak conversational lathe Model TRL 1840 V

1 Trak conversational lathe Model TRL 2460 SX

1 Hardinge chucking lathe

1 Harrison M600 engine lathe

Milling Machines

1 KIA-MT Seiki # 2 Vertical miller

3 Bridgeport Series 1, 3 hp variable speed w/ 48" table and Prototrak Control

3 Bridgeport Series 1, 2 hp variable speed w/ 42" table and Prototrak Control

1 Bridgeport Series 1, 3 hp variable speed w/ 48" table and E-Z Trak Control

6 Bridgeport Series 1, 2 hp variable speed w/ 42" table

3 Trak DPM conversational 3 axis miller

1 Royal vertical miller w/ 50" table and Prototrak Control

Special Equipment and Services

*****Robotic automation cell: 2 Fanuc robots servicing 11 horizontals and 3 Lathes*****

Hot Plate, Oven, and Manual flame soldering

Vacuum testing

Leak testing

Flow testing

Refrigerant system evacuation and charging (R-134 and AZ-50)



Quality Assurance Equipment

Comparators

2 Jones & Lamson EPIC-114
1 Jones & Lamson TC-14
1 Mitutoyo PH 350
3 Stereo Microscopes

Data Collection

Micro Measure IV
PCDMIS Software (used with CMM)
Minitab SPC Software, 3 seats
Measurlink Real Time SPC, Site License

Additional QA Equipment

5 Federal Air Gauges and Various Probes
4 Dillon Dial Forces Gauge
1 Mountz M-200 Torque Analyzer
4 Fowler Sylvac Z – Cal 24"
18 Fowler Sylvac Z – Cal 12"

Coordinate Measuring Machines

1 Brown & Sharpe PFx B454, Auto CMM
1 Brown & Sharpe Xcel 9-15-9, Auto CMM
1 Brown & Sharpe 7-10-7 UHA, Auto CMM
1 Brown & Sharpe Global 9-12-8, Auto CMM
7 Brown & Sharpe Gage 2000, Manual CMM
1 Brown & Sharpe Micro Val, Manual CMM
1 Brown & Sharpe Micro Xcel, Manual CMM
1 Brown & Sharpe Global Advantage 20.33.15, Large Capacity Auto CMM

Other Testing Equipment

1 Tropel measurement system

- Measures flatness and topography
- Accurate to .002 microns
- 150 mm and 300 mm size ranges
- Stitching capability for larger surfaces

1 Precitech, roundness & concentricity measuring system
1 XRF Portable Analyzer

- Analytical mode for material identification
- RoHS mode for material compliance

1 Mitutoyo Z-Microscope, vision type measuring system
1 Fischer Beta 870C Plating Thickness
1 Isoscope Plating Thickness
10 Federal Surface Finish Analyzer
3 Wilson Hardness Tester



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3D Printing

- 1 Stratasys uprint "SE plus" FDM, Build Size: X8" Y8" Z6",
Material: ABS
- 1 Stratasys "Fortus 450Mc" FDM, Build Size: X16" Y14" Z16",
Material: ABS-M30, Nylon 12, Polycarbonate, Ultem 1010

Engineering Software

- 2 seat Catia CAD
- 5 seats Pro E CAD
- 2 seats Unigraphics CAD
- 4 seats Solidworks CAD
- 2 seats MasterCAM CAD/CAM Design Only
- 6 seats MasterCAM, 3D with solids
- 2 seats Minitab
- 2 seats Micro Estimating