



EQUIPMENT LIST

December 17, 2010

#1 Quality Way
Irwin, PA 15642
Phone: 742-863-1100
Fax: 724-863-3308

CNC VERTICAL MACHINING CENTERS

3 Haas Vertical Machining Center VF10/50

X – 120", Y – 32", Z – 30" travel
30 HP drive motor; high performance vector drive spindles;
high torque brushless servos on all axes and standard
spindle speeds of 7,500 rpm; torque ratings of 450 ft. lbs.

1 Haas Vertical Machining Center VF-6/50

X-64", Y-32", Z-30" travel, 50 taper cartridge spindle. Produces 450 ft. lb. of torque. 500-7500 rpm ± 120° Tilt /360° rotation.

1 Haas Vertical Machining Center VF-5/50

X-50", Y-26", Z-25" travel, 50 taper cartridge spindle powered by 30 hp dual drive (Y-Delta) motor. Produces 450 ft. lb. of torque. 500-7500 rpm

1 Haas Vertical Machining Center VF-2

X-30" x Y-16" x Z-20" travel; 40 Taper, 20 HP Vector Drive 7500 rpm
20 station tool changer; 4th axis wired; wireless intuitive probing system

1 Johnford VMC-1624A (6000 MAX RPM'S)

Table working surface – 70.9" x 25.6"
XYZ travel – X – 63", Y – 30", Z – NO 40 - 31.5"
Load Capacity – 10,000 lbs.

2 Bostomatic Model #312 (4800 MAX RPM'S)

3 Axis CNC Contouring, 4th Axis Rotary Table (A or B Axis)
12" Longitudinal Travel, 12" Saddle Travel, 12" Vertical Travel,
12" x 38" Table

CNC HORIZONTAL MACHINING CENTERS:

1 Haas Horizontal Boring Mill HS6R – 50 Taper HMC

4 Axis CNC contouring with touch probe capability. 84" Longitudinal travel X, 50" Vertical travel x 60" Cross travel with build in 4th axis rotary table 37" Dia. 30 HP, 5000 RPM Spindle, 38 Position Tool Changer, 10,000lb table capacity.

1 Haas EC-1600 50 Taper HMC

4-Axis CNC Contouring with Touch Probe Capability,
64" Longitudinal Travel, 40" Vertical Travel, 32" Cross Travel, 30" Rotary Table, 30-HP 6000 RPM Spindle, 30 position Tool Changer, 10,000 lb. table capacity with optional machining enclosure

1 Haas EC-2000 50 Taper HMC

4-Axis CNC Contouring with Touch Probe Capability,
84" Longitudinal Travel, 40" Vertical Travel, 32" Cross Travel, 30-HP 6000 RPM Spindle, 30 position Tool Changer, 10,000 lb. table capacity

1 Kearney & Trecker 5-Axis Moduline(2400 MAX RPM'S)

Horizontal Spindle Traveling Column Machine

72" Longitudinal Travel, 60" Vertical Travel, 30" Cross Travel, A-Axis Table Tilt 90 degree, B-Axis Table Rotation 360 degrees, (2) 40" x 40" Shuttle Pallet System equipped with K&T Gemini - D CNC Control, 89 Pos. TC

3 Kearney & Trecker Orion 2200 (5000 MAX RPM'S)

4 Axis CNC Contouring with Touch Probe Capability
40" Longitudinal Travel, 36" Vertical Travel, 30" Cross Travel, 24" Square Table Pallets with 2 Pallet Shuttle System, 360,000 Position Rotary Milling Capability. Equipped with K&T Gemini-D CNC Control

2 Kearney & Trecker Milwaukee Matic #80 (4000 MAX RPM'S)

3 Axis CNC Contouring, 20" Longitudinal Travel, 20" Vertical Travel, 20" Cross Travel, 16" Square Table Pallets with 2 Pallet Shuttle System, Equipped with K&T Gemini-D CNC-Control, 360 Degree Index Table with 11 Increments

1 WOTAN (1600 MAX RPM'S)

4 Axis CNC Contouring, 72" Longitudinal Travel, 64" Vertical Travel, 60" Cross Travel, 22" Spindle Travel
44" x 54" Table, Equipped with G.E. 1050 Mark Century CNC Control

1 Giddings & Lewis Model 70-H5-T (1020 MAX RPM'S)

3 Axis CNC Contouring, 96" Longitudinal Travel
48" Vertical Travel, 48" Cross Travel, 36" Spindle Travel
48" x 96" Table (with Airlift Rotary), Equipped with Fanuc 11MA CNC Control

2 Pratt & Whitney Vikings (3600 MAX RPM'S)

3 Axis CNC Contouring, 4th Axis Rotary Table (A or B Axis)
96" Longitudinal Travel, 60" Vertical Travel, 20" Cross Travel,
40" x 100" Table

CNC LATHES

1 Fryer CNC Lathe – Easy Turn-50 w/Big Bore

X-27", Z-127", 50" swing, 35" Over cross slide, A2-20 spindle
55hp, 500 rpm, 3 speed gearbox, max torque 19,700 ft/lbs
Max part weight with tailstock & steady rest is 20,000 lbs.

1 Haas CNC Lathe SL30

14.5" x 34" max, 30" swing, 30-hp, 50-3, 400 rpm, A2-6 spindle and 10" chuck 2 speed High-torque Gearbox

1 Haas CNC Lathe SL40

25" x 44" (max), 40" swing, 40-hp, 20-2, 400 rpm,
2-speed gearbox, A2-8 spindle and 15" chuck



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1 MAZAK 3 AXIS (X, Y, Z) (3000 MAX RPM'S)

16.5" Swing, 59" Between Centers, 13.2" X Axis Travel
60.55" Z Axis Travel, (360,000 Positions in .001 degree increments on C Axis), 16 Tool Turret, Equipped with Mazatrol CAM T-3 CNC Control
Equipped with milling adapter

3 Cincinnati Milacron Cinturn CNC 2 Axis (2240 MAX RPM'S)

18" Swing, 100" Between Center

1 Mori Seiki Model S1-5H-CNC (3000 MAX RPM'S)

24" Swing Over Bed, 21" Swing Over Carriage
13" Swing Over Crossslide, 43" Between Centers

1 LeBlond Knight 30 CNC Universal Turning Center

24" Swing, 66" Between Centers (2800 MAX RPM'S)

PRECISION HORIZONTAL BORING MILLS:

1 DeVlieg Spiramatic Jig Mill - Model 4K60 (1450 MAX RPM'S)

60" Horizontal Travel, 48" Vertical Travel, 20" Spindle Travel
36" x 72" Table (with Anilam autopoisoning system and digital readout)

1 DeVlieg Spiramatic Jig Mill - Model 43K96(1450 MAX RPM'S)

96" Horizontal Travel, 60" Vertical Travel, 20" Spindle Travel
36" x 96" Table, Equipped with Topec V Control

1 El Dorado Universal Gundrill (5860 MAX RPM'S)

25" Max. Depth, .078" to .750" Diameter Hole Capacity

PRECISION JIG BORE

1 Pratt & Whitney Jig Bore - Model 2A (1800 MAX RPM'S)

24" Vertical Travel, 22" x 44" Table

CONVENTIONAL VERTICAL MILLS

6 Bridgeports - Model BR-J Series I (4200 MAX RPM'S)

60" Vertical Travel, 9" x 42" Table
(2) Machines equipped with Anilam Digital Readouts

2 Heller (1080 MAX RPM'S)

24" Vertical Travel, 20" x 50" Table Travel
4" Diameter Spindle

CONVENTIONAL HORIZONTAL MILL

1 Cincinnati Duplex Hypowermatic Milling Machine
22-900 RPM's; 140" X Travel

CONVENTIONAL LATHES

1 LeBlond #4 Gun Boring/Deep Hole Drilling & Boring

Work Piece Capacity: 10" ID, 12 3/4" OD, 12 Ft. Length

1 Chausing Colchester

15" Swing Over Bed, 54" Between Centers

1 LeBlond

15" Swing Over Bed, 54" Between Centers

2 LeBlond

19" Swing Over Bed, 72" Between Center

1 LeBlond

24" Swing Over Bed, 144" Between Centers

1 American Pacemaker

27" Swing Over Bed, 16" Swing Over Saddle
168" Between Centers, Equipped with Mimik Tracer

1 Hardings Model HLV

10 7/8" Swing Over Bed, 6 3/8" Swing Over Saddle, 21" between centers

ELECTRICAL DISCHARGE MACHINES (EDM)

7 PDS Custom Made

68" Max. Ram Stroke, Equipped with Elox Astra 400D
Power Supply, Equipped with EDM-12 Digital
Readout Display with Program Stop
38" x 36" x 90" Work Piece Size

2 Elox - Model HRP-109

12" Max. RAM Stroke, Equipped with Elox Astra
400D Power Supply, 56" x 32" x 28" Work Piece Size

GRINDING MACHINES

1 Gardner Hydrabrasive Surface Grinder, 18" Vertical Travel, 12" x 30" Table
Travel (3500 MAX RPM'S)

2 Boyar Schultz Surface Grinders, 12" Vertical Travel, 6" x 18" Table Travel
(3450 MAX RPM'S)

2 Senaca R.O. Universal Cutter Grinders, Equipped with Optical Comparator
(3450 MAX RPM'S)

2 Heald Size-Matic Internal Cylindrical Grinder, Inside Diameter Grinding,
Capabilities up to the Max. Workpiece Diameter 9 3/4" at 3" Max. Depth
(25K MAX RPM'S)



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1 Brown & Sharpe Universal Cylindrical Grinder, 12" Swing, 24" between centers (24 K . 2250 MAX RPM'S)

1 Brown & Sharpe Universal Cylindrical Grinder, 16" Swing, 30" between centers (1800 MAX RPM'S)

1 Studer Cylindrical Grinder, 10" Diameter Swing, 16" between centers (25K / 2250 MAX RPM'S)

1 Parker Majestic Surface Grinder (3600 MAX RPM'S)

1 Cincinnati Monoset Cutter Grinder (8000 MAX RPM'S)

1 Bryant Center Hole Grinding Machine (45000 MAX RPM'S)

2 Taft Pierce Model 1 Surface Grinder (3600 MAX RPM'S)

1 H. T. Schudin OD Grinder (1200 MAX RPM'S)

FINISHING EQUIPMENT AND DEBURRING EQUIPMENT

Ultrasonic Cleaning Machines, Vibratory Deburring Machine, 7.5 Cu. Ft. Capacity, SS White Airbrasive Jet Machining Unit Model D, Extrude Hone Machines - Deburring Process

MICROSCOPIC CRITICAL DEBURRING

3 Zeiss Surgical Microscope, Opmi I on Table Stand with Magnification of 6.2X, 10.0X, 16.0X, 26.0X and 40.0X

2 Baush & Lomb Sterozoom Microscope on Table Stand with Magnification of 2.5X to 140X

1 Baush & Lomb Sterozoom Microscope on Table Stand with Magnification of 7X to 30X

MISCELLANEOUS EQUIPMENT

1 DoAll Model 1213A Horizontal Bandsaw

1 Amada Vertical Bandsaw Model VM-1200, 19.7" x 19.7 x 47.2" Cutting Capacity

1 Buehler 10-1000 Radial Cutting Saw

1 Lincoln Welder, Ideal Arc DC-1000-TIG 300/300 AC/DC

1 Air Products Welder, Model THRF 300 RJ

2 Miller Welders, Syncrowave 300

1 Miller Welder, Model 330A/BP

1 McKay Welder, Model AW-GE Automatic Welding Machine Crane Capacity 3 Ton

Heat Treating - Small Electric and Gas Heat Treating Furnaces
Sub-Zero Freezer, Puffer Hubbard

INSPECTION EQUIPMENT

1 FARO Laser Tracker ION high accuracy, 3 dimensional coordinate measuring device. Measurement range of up to 180'. 2 rotary angular encoders and laser based distance measurement system to track and measure position of a Retroreflector target.

1 CMM-LK Evolution Model 25.12.10
Measuring range of 100" -X axis, 48" - Y axis & 40 Z axis
Volumetric accuracy of .00024

1 DEA Epsilon 2304 CMM with Renishaw PH10T/TP2 probing system.
Measuring range: 72" x 54" x 38"

1 Jones & Lamson Optical Comparator, Model #Epic 230, Magnification to 100X, 30" Screen, equipped with Digital readouts and Automatic Print-out Systems.

3 PDS Design Camber Tracking Devices, used for tracking Restricted Access Channels, equipped with Digital Readouts and Automatic Print-out Systems.

1 Veeco Leak Detector - Model #MS-31D
Sensitivity: 6 x 10⁻¹¹ atm c4 Sec. for air at full pump speed
Leak Range: 10 atm cc/sec. To 6 x 10⁻¹¹ atm cc/sec. for air

10 Granite Inspection Surface Plates - Lab Grade - ranging in size from 36" x 96" to 48" x 192"

8 Granite Inspection Surface Plates, ranging in size from 36" x 36" to 36" x 72"

5 Micro-Hite Electronic Height Set, 0" to 24", Equipped with Digital Readout and Automatic Print-out Systems

1 Pratt & Whitney Supermic Micrometer, Model B, Measurements to within .00002.

1 Versitron Rockwell Hardness Testing System, equipped with Digital Readout and Automatic Print-out Systems.

1 Tukon Microhardness Tester

1 Jones and Lamson Optical Comparator, 36", With digital readout

Destructive and non-destructive testing facilities for metallographic inspections, dye penetrant inspections and fluorescent penetrant inspections.

Note: All inspection and test equipment is calibrated and traceable to the National Institute of Standards & Technology.

CAD/CAM SYSTEMS

Solid Works System (Latest Revisions)
SMARTCAM CAM System (Latest Revisions)

PDS PARTS CAPACITY

A)	<u>LARGEST PARTS CAPACITY</u>	<u>WORK PIECE SIZE</u>	B)	<u>SMALLEST PARTS CAPACITY</u>	<u>WORK PIECE SIZE</u>
	<u>LATHES</u>	27" OD X 168" Long		<u>LATHES</u>	2" Dia. X 12" Long
	<u>MILLS</u>			<u>MILL - VERTICAL</u>	2" x 2" x 2"
	3 Axis CNC	96" Lg. x 60" High x 36" Wide		<u>MILL - HORIZONTAL</u>	6" X 6" x 6"
	4 Axis CNC	72" Lg. x 64" High x 44" Wide			
	5 Axis CNC	72" Lg. x 60" High x 30" Cross travel			
	Haas	120" Lg. X 32" High x 30" Wide			
	<u>GUNBORE & (TREPAN)</u> 1	2 3/4" OD x 10" ID x 144" Lg.			
	<u>BROACH</u>			<u>BROACH</u>	
	10 Ton Cylinder w/60" Stroke	72" Dia. X 10" Lg. (10" Dia. Hole)		5 Ton Cylinder W/ 36" stroke	2" Dia. X 1" Lg. (1" Dia. Hole)
	<u>EDM</u>	38" x 36" 90" Lg. (Ram Type 68" Stroke)		<u>EDM</u>	2" x 2" x 2"
	<u>GUNDRILL</u>	30" Lg. x 12" High x 30" Wide (.750 Dia. Hole x 25" Lg.)		<u>GUNDRILL</u>	2" Dia. X 1" Lg. (.078" Dia. Hole x 1" Lg.)
	<u>CYLINDRICAL GRINDER</u>	16" Dia. x 30" Lg.		<u>CYLINDRICAL GRINDER</u>	1" Dia. X 3" Lg.
	<u>SURFACE GRINDER</u>	30" Lg. X 18" High x 12" Wide		<u>SURFACE GRINDER</u>	2" Lg. X 2" High x 2" Wide
	<u>CMM</u>	100" Lg. X 48" High x 40" Wide			