

Lavigne Manufacturing Facilities List

May, 2009

CNC TURNING CENTERS

Mori Seiki NT-3200SZ Multi Axis Milling Center

- MSX-711T3 Control
- LNS barfeed
- automatic parts catcher
- chip conveyor
- chip blaster D16-70-1 (1000psi) high pressure coolant

(2) Nakamura Tome TW-20

- dual spindles / dual 12 position turret
- six axis machine
- LNS barfeed
- automatic parts catcher
- chip conveyor

(4) Nakamura Tome TW-20

- dual spindles / dual 12 position turret
- six axis machine
- LNS barfeed
- automatic parts catcher
- chip conveyor
- y-axis

Nakamura Tome WT-20

- dual spindles / dual 12 position turret
- six axis machine
- automatic parts catcher
- chip conveyor

(2) Mori Seiki SL-25B/1000

- distance between centers 44.3"
- swing over bed 20.5"

Mori Seiki CL-20A

- swing over bed 18.5"
- SMW Quick Bar-feed System
- automatic parts catcher

Mori Seiki CL-200

- swing over bed 18.5"
- automatic parts catcher
- chip conveyor

Mori Seiki SL-250/500

- distance between centers 24"

- swing over bed 20.5"
- automatic parts catcher
- chip conveyor

CNC SWISS AUTOMATIC LATHE

Citizen CinCom M-20

- 13 axis simultaneous control
- 10 station turret live toll capability in all positions
- 4 live spindles
- 2000 PSI HP coolant system
- citizen cinCom sav20M auto bar loader

Citizen CinCom M-32

- 14 axis simultaneous control (with Y Axis)
- 10 station turret live toll capability in all positions
- 4 live spindles
- 2000 PSI HP coolant system
- citizen cinCom sav20M auto bar loader

Maier ML-20D CNC ProLine

- 9 axis simultaneous control
- 4 live spindles
- 2000 PSI HP coolant system
- LNS barfeed

CNC MACHINING CENTERS

Mori Seiki NH4000DCG

- table size 16" X 16" square pallets
- tool capacity of 30
- high pressure coolant through spindle
- chip conveyor

Matsuura ES-450H II PC5

- table size 12" X 12" square pallets
- tool capacity of 30
- high pressure coolant through spindle
- chip conveyor
- 5 Pallet

Matsuura RA-IIIF

- automatic pallet changer
- table size 43.3" X 17.7"
- tool capacity of 30
- high pressure coolant through spindle
- chip conveyor

Matsuura MC-800VF

- table size 43.3" X 17.7"
- 4th axis RNCX-251 Tsudakoma Rotary Table
- tool capacity of 30
- high pressure coolant through spindle
- chip conveyor

Mori Seiki SV-50

- 4th axis RNCV-251R Tsudakoma Rotary Table
- table size 43.3" X 17.7"
- tool capacity of 20

Mori Seiki MV-40B

- automatic pallet changer
- table size 43.3" X 17.7"
- tool capacity of 30

Mori Seiki MV-40M

- 4th axis RNCV-251R Tsudakoma Rotary Table
- table size 40" X 17.7"
- tool capacity of 20

Fanuc Alpha-T10B Robodrill

- 4th axis Tsudakoma Indexer
- table size 18" X 12"
- tool capacity of 10

Fanuc Alpha-T10B Robodrill

- automatic pallet changer
- table size 18" X 12"
- tool capacity of 10

Fanuc Alpha-T14A Robodrill

- 4th axis Tsudakoma Indexer
- table size 18" X 12"
- tool capacity of 14

(2) Fanuc Alpha T-21 iEL Robodrill

- 24,000 RPM
- high pressure coolant through spindle
- table size 33.46" X 16"
- tool capacity of 21
- Fanuc Robotics M-6ib 6 axis floor mounted robot with R-J3iB Controller

Fanuc Alpha T-21 iEL Robodrill

- 24,000 RPM
- high pressure coolant through spindle
- table size 33.46" X 16"
- tool capacity of 21

LATHES

Clausing-Colchester 17" Lathe with Gap Bed

- distance between centers 80"
- swing: over bed 17" in gap 25"
- spindle bore 3 1/16"
- accessories: 3 jaw chuck, Aloris quick change
- tool post with holders, follower rest, steady
- rest, 2-J collet chuck, 17" face plate

Clausing-Colchester 15" Lathe with Gap Bed

- distance between centers 55"
- swing: over bed 15 1/2" in gap 22 1/2"
- spindle bore 2 1/8"
- accessories: 9" 3 jaw chuck, 12" 4 jaw chuck, Aloris quick change tool post with holders,
- follower rest, steady rest, 2-J collet chuck,
- 21" face plate, driving plate, 5-C collet
- closer with quick change draw bar, tool post
- grinder

GRINDING MACHINES

K.O. Lee Universal & Tool Grinding Machine

- distance between centers 18"
- swing over table 8 1/4"
- 2 cylindrical grinding I.D./O.D. work heads
- 5" O.D. adjustable 3 jaw chuck
- 5C collet attachment and various accessories

Brown & Sharpe #13 Universal and Tool Grinding Machine

- distance between centers 28"
- swing over table 8"

Brown & Sharpe Surface Grinder

- Model 510
- magnetic chuck size 5" X 10"

Reid Precision Surface Grinder

- Model 618 HR
- magnetic chuck size 6" X 18"

Brown & Sharpe 618 Micomaster Surface Grinder

- Width and Length Ground 6" x 18"
- Precision hand feed surface grinder

MILLING MACHINES

Bridgeport Vertical Miller

- 1 ½” hp
- table size 9” X 42”
- longitudinal travel 16”
- Mitutoyo digital readout

Bridgeport Vertical Miller

- 2 hp
- table size 9” X 42”
- longitudinal travel 16”
- Bridgeport power feed
- Acu-rite III digital readout

Sharpe Vertical Miller with Acu-Rite MILLPWR 3-axis CNC

- 3 hp
- table size 10” X 50”
- longitudinal travel 35”
- Fagor digital readout

HONING MACHINES

Sunnen Model ML-5000D

- Millennium Machine 230V
- automatic size control

Sunnen Model MBB-1660K

- .060” – 6.500” diameter capacity
- .125” – 16.00” length capacity

BAND SAWS

HemSaw H105A-C

- 14” x 16” (W) Capacity
- 1-1/4” x 15’ x .042” Blade
- 7.5HP Motor
- high speed production band saw
- adjustable blade speed, clamping pressure, feed rate, and cutting pressure
- computer controlled feed system

Mastercut S-300HB Precision Automatic Band Saw

- cutting capacities:
 - round 13” diameter
 - rectangular 13” X 17”

Kalamazoo Metal Cutting Saw

- cutting capacities:
 - round 9” diameter
 - rectangular 9” X 13 ½”

Delta Rockwell Vertical Band Saw

COLD SAWS

MetlSaw Systems Automatic Cutoff Saw

- 36” x 8” cutting window
- 12’ stock length maximum
- Allen-Bradley system PLC controls with panel-view screen
- telescopic 7.5HP vacuum chip collection system

Scotchman Non-Ferrous Circular Cold Saw

- 14” diameter blade
- tiger stop automatic feed
- maximum cutting capacities:
 - Round tubing – 4 ½” diameter
 - Square tubing – 4 ¼” square
 - Solid round – 3” diameter
 - Solid square – 3” square

DE-BURRING

Abtex 2000-FS-14

- 4 3HP 1200 RPM brush motors
- accommodates extrusions 1” to 3.75” long and up to 4.75” high
- bradex double head flow-through system
- variable speed conveyor
- C5-2500 dust collection unit

HEAT TREATING

Radyne Flexitune

- 10 kW induction heat treat system

WELDING

Miller Dynasty 300DX

- Stick and TIG AC/DC welding unit

AIR COMPRESSORS

Ingersoll-Rand

- Model SSR U10 Rotary Screw (10 HP)

- with Ingersoll-Rand HG51 air dryer

Ingersoll-Rand

- Model SSR U15 Rotary Screw (15 HP)
- with Ingersoll-Rand HG51 air dryer

Ingersoll-Rand

- Model EPE25/SE Rotary Screw (25 HP)
- with Ingersoll-Rand HG51 air dryer

INSPECTION EQUIPMENT ^[1]

B&S Global A Image Coordinate Measuring Machine

- 20”w. X 17” h. X 27” d. measuring volume
- Touch trigger probing w/ Renishaw 10M and TP200
- 360° rotational wrist indexing w/ scanning
- Fully integrated CAD interface
- Auto probe changer
- Multiple probing styli for all product geometries

B&S Reflex CMM

- 18”w. X 15” h. X 21” d. measuring volume
- Reflex software w/ touchpad display
- Multiple probing styli

(3) Optical Comparators

- Two units with:
 - 20X, 31.25X, 50X magnification
 - 8.80”w. X 5.25”h. X 2”d. measuring volume (auto feed axes)
 - QC-200 microprocessor w/ geometric tolerancing
- One unit with:
 - 31.25X magnification
 - 8.80”w. X 5.25”h. X 2”d. measuring volume (manual feed axes)

Clark Rockwell Hardness Tester

- Regular and superficial Rockwell load testing, plus light load Brinell testing
- 2,000 data point memory for capability analysis
- Preset direct loads for correct linear displacement

Mahr-Federal Perthometer

- Measures surface finish parameters
 - DIN/ EN/ ISO.
 - Ra, Rz, Rmax, R_{Pc}, and JIS
- Graphic and text printout capable

Dynascope Microscope

- Two axis non-contact measurement
- 20X and 50X magnification

- QC-200 microprocessor w/touch pads
- Dual fiber optic illumination

TESA- lite 600 Height Gage

- 24" measurement height
- Mitutoyo Contracer
- 4"x-axis X 2" z-axis
- Measurement pitch to .000040" resolution
- Formpak 1000 software
 - Graphical display of geometries. Compares dimensional measurements, radii, angles, and contours to tolerances, nominal data and deviations.

ADDITIONAL INSPECTION EQUIPMENT ^[1]

- Mitutoyo Surftest-211 surface roughness measurement system
- (2) Federal .0001" resolution dial indicator on height comparator stands
- Jones & Lamson PC-14 optical comparator and measuring machine with surface illumination
- Brown & Sharpe Micro Val Model 454 System
- 4" Electronic Digital Tesa-Hite height gage
- 0-12" micrometers
- 0-1" & 1"-2" blade micrometers
- (5) 18" X 24" inspection grade surface plates
- 24" X 36" inspection grade Ottavino surface plate
- 36" X 48" inspection grade Ottavino surface plate
- 48" X 120" inspection grade Ottavino surface plate
- 0-1" outside disk micrometers
- (4) Mitutoyo 0-12" dial height gauges
- Mitutoyo 0-18" digital height gauge
- assorted Mitutoyo dial indicators
- .011" - .75" Vermont plug gauges
- Grade "A" Starrett inspection gauge blocks (81 piece set)
- 0-6" Brown & Sharpe dial calipers
- 0-12" Mitutoyo dial calipers
- 0-24" Brown & Sharpe verniers
- 0-50" Starret verniers
- 0-12" Scherr-Tumico I.D. micrometers
- 0-1" Mitutoyo pitch micrometers
- 1-2" Mitutoyo pitch micrometers
- 2-3" Mitutoyo pitch micrometers
- 3-4" Mitutoyo pitch micrometers
- 0-6" Brown & Sharpe depth micrometers
- .8-2" Alina dial bore gauges
- K.O. Lee bench centers
- dial indicators
- precision squares & knees
- Sheffield Style 2000 precision linear gage
- Starrett 12" Digi-Check height gage

- 5” precision hinged sine plate
- Federal groove gage series 99P-20
- thread ring & thread plug gauges

^{1[1]} Lavigne Manufacturing, Inc. will purchase and maintain additional inspection equipment as required to produce parts in compliance with customer specifications.

ASSORTED EQUIPMENT & TOOLING

- Dunlap ¼ hp bench grinder
- Amrox ¾ hp bench grinder
- Craftsman bench model drill press
- Cycle Solve parts cleaner
- Dayton belt/disc sander
- assorted drill chucks and live centers
- (2) Yuasa 8” floatable index heads
- (2) 8” Kurt Anglock precision machining vices
- Lincoln AC-255-S welder
- 8” Van Norman swivel vice
- assorted National precision V-blocks
- Atco precision toolmakers vice
- hydraulic lifting hoist
- Carolina 60,000 lb heavy duty press
- dividing head
- oxygen / acetylene torches
- Nissan 4000 fork-truck
- Nissan 5000 fork-truck
- Bowers inclinable rotary table with 9” diameter