

NASA, CNC CONTINUOUS PATH, MOORE JIG GRINDER INTEGRATIONS AND REMANUFACTURING



**Guaranteed
Precision!**

**Converted to
State-of-the-Art
CNC Contouring
System**

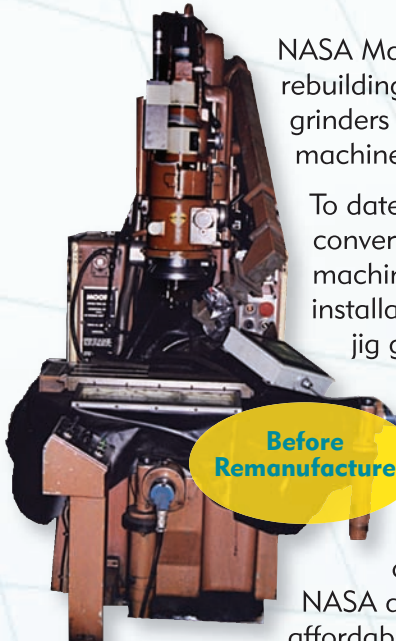


NASA

Machine Tools, Inc.

The Leader In CNC Jig Grinding Technology

NASA - Quality, Reliability, Affordability, Service, Support and Integrity



NASA Machine Tools has been rebuilding, and converting Moore jig grinders into CNC, continuous path machines since the mid 80's.

To date, NASA has rebuilt, and converted several hundred machines, of all sizes, and has installation in some of the largest jig grinding companies in the world.

With more than four (4) years of developmental time, and over 1 million dollars devoted to this project, NASA achieved the ultimate; an affordable CNC jig grinding system.

Utilizing existing Moore No.3's, G-18's, G-32's, G-48's, series 1000's, 8400's, and all other types of Moore jig grinders, NASA will completely remanufacture, and convert your existing machine, into a state-of-the-art, CNC continuous path system, or supply a complete machine.

With the successful integration of specialized components, part tolerances and finishes in contouring, and point to point jig grinding of holes, are achieved well within the tolerances standard for CNC jig grinders.

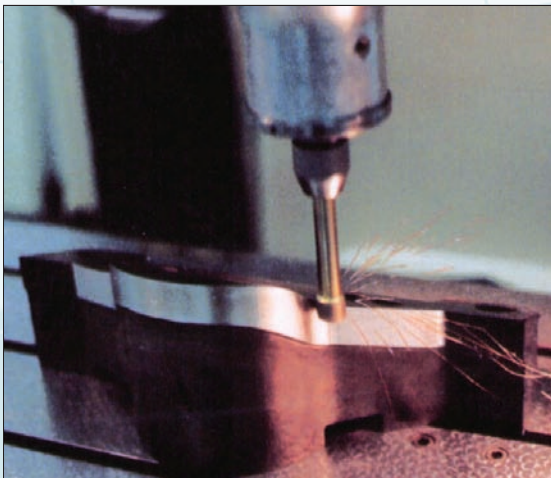
By utilizing ultra precision ballscrews, high precision angular contact bearings, and a precision roller bearing way system, all friction related problems such as oil film, wind up, and "stiction," as well as backlash, are virtually eliminated with this exclusive process.

All NASA CNC integrations are offered with FANUC or FAGOR CNC control system, which offers .000010" resolution input, and up to five (5) controlled axes (X, Y, C, U and rotary).

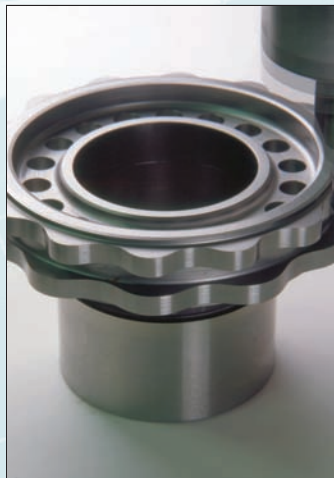
Compare what we have to offer, and see why we are light years ahead of the competition.



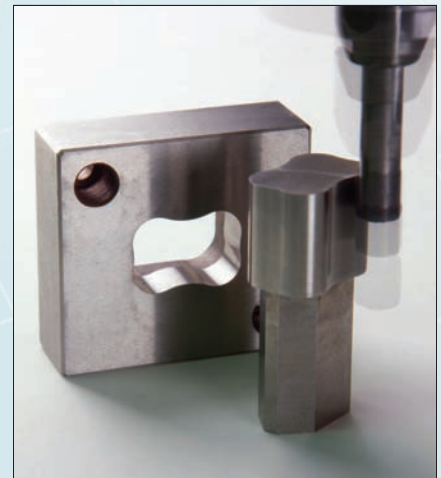
NASA - Applications



Multiple depth grinding is easily accomplished using our multiple reciprocation zone feature.



Complete countours and complicated blends are precision ground in one continuous path.



Mating punch and dies are easily programmed and ground due to NASA's specialized Jig Grinding software.

NASA AGS-3, Completely Remanufactured, Moore No.3/G-18, CNC Continuous Path Jig Grinder

NASA Machine Tools will completely remanufacture, and convert your existing Moore jig grinder, into a CNC continuous path system, or supply a complete machine, to include the following items, and features:

STANDARD FEATURES:

- ▶ FANUC or FAGOR CNC control system with color LCD flat screen
- ▶ Y axis travel 10.5"
- ▶ X axis travel 17.5"
- ▶ Automatic "C" axis NORMALCY (360 degrees rotation)
- ▶ 60 IPM Rapid traverse rate
- ▶ 15 IPM contouring rate
- ▶ Ultra precision ballscrews on the X & Y with rotary encoder feedback
- ▶ Precision roller bearing way system
- ▶ Oil bath for ballscrews
- ▶ Accordion way covers
- ▶ Automatic lubrication system with low level alarm
- ▶ PROGRAMMABLE main spindle speeds (PLANETARY)
- ▶ PROGRAMMABLE chop grind ON/OFF
- ▶ PROGRAMMABLE air grinding spindle ON/OFF
- ▶ PROGRAMMABLE 110V outlets ON/OFF
- ▶ PROGRAMMABLE U axis outfeed (OPTIONAL)
- ▶ Manual Pulse generator (handwheel)
- ▶ X, Y & C axis home switches
- ▶ X & Y axis limit switches
- ▶ Minimum programmable resolution .000010"
- ▶ Stand alone control cabinet with electronics
- ▶ Three (3) coats of high gloss epoxy paint
- ▶ New main spindle bearings and outfeed bearings
- ▶ New u-cups, packings, seals, o-rings, and micro switches
- ▶ New chop valves
- ▶ New link and link pins
- ▶ New hoses and head thermometer
- ▶ Remanufactured vertical slide assembly for proper "FIT" of slide and sleeve



- ▶ Precision hand scraping of table, saddle, and column for geometry correction
- ▶ One (1) year warranty/guarantee
- ▶ Laser certification of machine accuracies

GUARANTEED ACCURACY:

- ▶ Positioning accuracy (full travel) .000080"
- ▶ Contouring accuracy (full travel) .000120"

All accuracies are guaranteed based on a calibration temperature of 68 degrees F; +/- 1 degree.

OPTIONAL FEATURES:

- ▶ PROGRAMMABLE "U" axis outfeed with home and limit switches
- ▶ Multiple reciprocation zones
- ▶ PROGRAMMABLE rotary table
- ▶ High speed reciprocation package
- ▶ Glass scale feedback
- ▶ Portable manual pulse generator (handwheel)



NASA AGS-3F, In-The-Field, CNC Continuous Path Integration

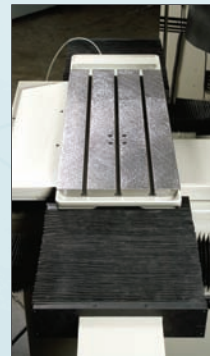
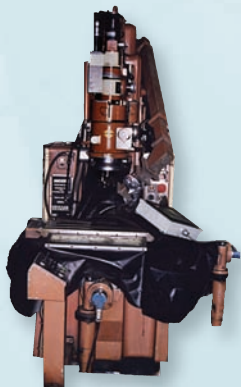
Guaranteed Precision!

STANDARD FEATURES INCLUDE:

- ▶ FANUC or FAGOR CNC control system with color LCD flat screen
- ▶ Three (3) axis CNC controlled X, Y and C (U axis outfeed OPTIONAL)
- ▶ Automatic "C" axis NORMALCY (360 degrees rotation)
- ▶ Y axis travel 10.5"
- ▶ X axis travel 17.5"
- ▶ Ultra precision ballscrews on the X and Y axis with rotary encoder feedback
- ▶ Precision roller bearing way system
- ▶ 60 IPM rapid traverse rate
- ▶ 15 IPM contouring rate
- ▶ Automatic lubrication to ballscrews and roller ways
- ▶ PROGRAMMABLE main spindle speeds (PLANETARY)
- ▶ PROGRAMMABLE chop grind ON/OFF w/head up microswitch
- ▶ X & Y axis limit switches
- ▶ X, Y & C axis home switches
- ▶ Manual pulse generator (handwheel)
- ▶ Minimum programmable resolution .000010"
- ▶ Stand alone control cabinet with electronics
- ▶ 000080" positioning accuracy
- ▶ .000120" contouring accuracy
- ▶ Complete installation, Q.C. and laser verification of machine accuracies
- ▶ Plus much, much more



Manual, Moore Jig Grinder Remanufacturing



STANDARD SPECIFICATIONS:

- ▶ Table size 11" x 24"
- ▶ Table travel X axis 18"
- ▶ Table travel Y axis 11"
- ▶ Spindle housing vertical travel 12 5/8"
- ▶ Spindle vertical travel (quill) 3 5/8"
- ▶ Table top to wheel collet 2" to 18"
- ▶ Spindle column to ways 10"
- ▶ Spindle column below ways 13 1/2"
- ▶ Angular adjustment of spindle up to 1 1/2 degrees

REBUILD FEATURES:

- ▶ X & Y axis digital readout system with .000010" resolution
- ▶ New main spindle bearings and outfeed bearings
- ▶ New Ross chop valves, u-cups, wipers, seals, o-rings and micro switches
- ▶ New link and link pins
- ▶ New bibs and aprons
- ▶ New hoses and head thermometer
- ▶ Rebuilt by-pass valve assembly
- ▶ Remanufactured vertical slide assembly for proper "FIT" of slide and sleeve
- ▶ Rework of original Moore leadscrews
- ▶ Precision hand scraping of table, saddle and column for geometry correction
- ▶ Spotting of the table surface
- ▶ Three (3) coats of high gloss epoxy paint
- ▶ Positioning accuracy .000090"
- ▶ One (1) year warranty/guarantee

NASA-Remanufactured, Moore G-48, CNC Continuous Path Jig Grinder (X, Y, C and U Axes)



**In-Process
Remanufacture,
and CNC
Integration**

- 1 Absolute Programmable "U" Axis Outfeed with Home and limit Switches
- 2 Automatic "C" Axis Normalcy and Planetary Modes
- 3 New Main Spindle Bearings
- 4 Precision Roller Bearing Way System
- 5 Complete Geometry Correction to Include Flatness, Squareness, Parallelism, and Perpendicularity
- 6 State-of-the Art Electronics Mounted in a Roll Around Cabinet
- 7 USB Port
- 8 FANUC or FAGOR CNC Control System with Color LCD Flat Screen
- 9 Ultra Precision Ballscrews Submersed in Oil
- 10 Power Elevation of the Spindle Housing

FANUC

FAGOR 

NASA-Parts, Accessories and Services

NASA Offers the Following Parts, Accessories and Services for all your Moore Jig Grinders

- ▶ Main spindle bearings
- ▶ Outfeed bearings
- ▶ Link
- ▶ Link pins
- ▶ Ross and Mac chop valves
- ▶ U-cups
- ▶ Packings
- ▶ Seals
- ▶ O-rings
- ▶ Wiper Kits
- ▶ Air spindle nuts
- ▶ Air spindle repair kits
- ▶ Air spindle hoses
- ▶ Air spindle boots and ring guards
- ▶ Micro switches
- ▶ Handwheels
- ▶ Planetary motors
- ▶ Flex shafts
- ▶ Regulator valves
- ▶ Aprons and bibs
- ▶ Lead screws
- ▶ Micro stops
- ▶ Reducer collets
- ▶ Laser calibration
- ▶ Hand scraping
- ▶ Thermometers
- ▶ Machine lights
- ▶ Drive gears
- ▶ Pinion shafts
- ▶ Clutch assemblies
- ▶ Hose assemblies
- ▶ Slot grinding attachments
- ▶ Indicator holders
- ▶ Column risers
- ▶ Box parallels
- ▶ Grinding wheels
- ▶ Wrenches
- ▶ Rebuilt air spindles - 9K, 40K, 55K, 60K, 120K, 175K
- ▶ 2 axis, .000010" DRO system
- ▶ Rotary tables
- ▶ Drive motors
- ▶ Electronic boards
- ▶ Encoders
- ▶ Thrust bearings
- ▶ Positive stops
- ▶ Handles
- ▶ General Maintenance
- ▶ Machine preparation
- ▶ Air spindle rebuilding



After final assembly, each machine is laser tested in NASA's quality control center.



40,000 RPM Air Grinding Spindle.

Company Profile



Since our inception in 1979, NASA Machine Tools has earned a reputation as a top-quality, CNC machine tool manufacturer, and service mandated company, with thousands of installation worldwide.

NASA
Machine Tools, Inc.

1B Frassetto Way, Lincoln Park, NJ 07035

PHONE:

973-633-5200

FAX: 973-633-5727

EMAIL: sales@nasamachinetools.com

www.nasamachinetools.com

Today, NASA Machine Tools is a global resource, with an established distribution network, serving small, medium, and large size companies. Among our fortune 500 customers, many are technological leaders in their field, including ITT, Corning, United Technologies, ALCOA, Lockheed, G.E. and General Motors.

NASA's CNC Moore Jig Grinder Integrations are known throughout the world for offering reliability, extreme accuracies, and continuous throughput.

Our company philosophy is to provide our customers with the "very best" in technology, and continued support.

We sincerely expect that the combination of progressive management, and continual R & D technology, will ensure the attainment of continued success, and growth, throughout the coming decades.

Distributed by:

