# NFTS-8000 v3 *Fast Tool Servo*

For use with Nanotech 250UPL v3, 450UPL v3 & 650FG v3 Systems
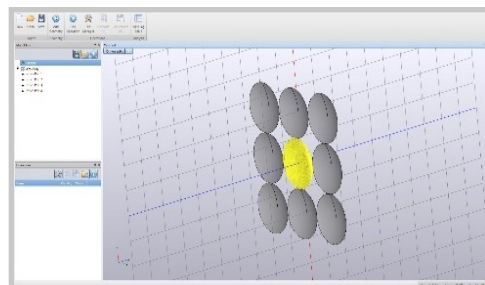
Technological Advancements

- Closed loop design with up to 8mm of total stroke
- Ability to chain up to 5 FTS program files for overlaid operation
- *NanoSMART*® HMI module on machine's controller for ease of operation
- Control System: Delta Tau Power PMAC
- *NanoCAM4* 3T programming software
- Voice coil motor with fully constrained porous air bearing design and integrated counterbalance
- Linear scale feedback with sub-nanometer resolution and home sensor
- Sub-nanometer programming resolution
- Micro height tool adjustment mechanism with 0.063 µm/degree (2.4µ"/degree) resolution
- 19X Increase in file size handling (up to 4,000,000 points) compared to previous generation
- 4X faster load line speed (20,000 points / second) compared to previous generation
- File inputs : Parametric Surface Definition, Cloud of Data Points, Bitmap, PNG, Step, IGES, User Specific
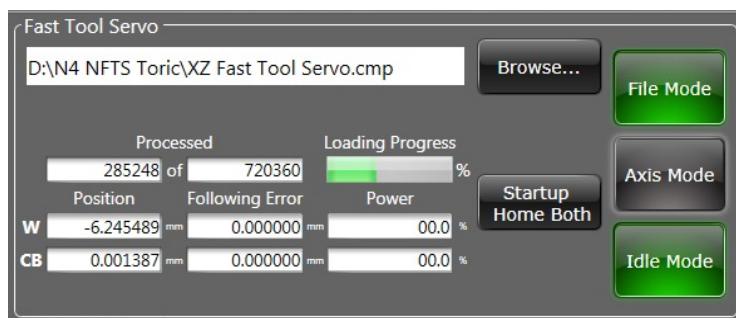
NFTS Programming with NanoCAM4 3T

Our most advanced **NanoCAM4 Module 3T** programming software is used to generate the CNC code for this closed loop NFTS-8000. *(See NanoCAM4 brochure for details)*
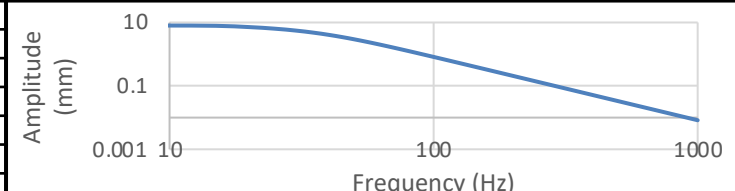

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NFTS-*8000*^{v3} Specification Overview

General	Description
System Configuration	Double Counterbalanced Axis, Air Bearing Fast Tool Servo. Fully integrated into NanoSMART controller for ease of use. The fast tool servo is actuated using the lathe spindle feedback and the axis position feedback. The NFTS-8000 can be integrated on the Nanotech 250UPLv3, 450UPLv3, and 650FGv3
Functional Performance	Shape: Toric with R1 = 7.4mm; R2 = 7.5mm; Aperture = 12.5mm Material: Brass Form Accuracy (P-V): $\leq$ 0.3 µm Surface Finish (Ra): $\leq$ 6.0 nanometer

Mechanical Specification	
Bearing Type	Fully constrained porous air bearing
Counterbalance	Integrated in the unit
Total Travel	8000µm (8mm)
FTS Unit Dimensions	Width 94mm, Length 305mm, Height 127mm
Drive System (Motors)	Voice Coil Motors
Tool	Uses insert type diamond tools
Tool Adjustment Total Travel	+/- 0.36 mm, utilizing a Z-Wedge type stage under the FTS unit
Tool Adjustment Resolution	0.063 µm/degree (2.4µ"/degree)

Electrical Specification	
Feedback System Resolution	0.008 nanometer
Programming Resolution	Sub-nanometer
Amplifier	Linear Amplifier
Fault Protection	Current Limit, Low Air Pressure, Encoder Fault

Software Specification	
Product (Included with NFTS-8000)	NanoCAM4 3T programming package
File Input	Parametric Surface Definition, Cloud of Data Points, Bitmap, PNG, Step, IGES, User Specific
Tool Compensation	Tool radius compensation, rake compensation, and checks for tool clearances
Post Processor	Multiple independent surface profiles

Performance Specification		
Max. Cont. Acceleration	30G (294 m/s^2)	
Total Travel and Frequency	8000 um @ 20 Hz	
	2000 um @ 60 Hz	
	1000 um @ 90 Hz	
	500 um @ 140 Hz	
	250 um @ 180 Hz	
	100 um @ 300 Hz	

Utility Requirements	Air	Electrical	Dimensions
For optimal cutting results, facility thermal stability should be held within $\pm$0.5°C ($\pm$1.0°F)	7 to 9 bar (100 –130 psi) < 10 liters/min (0.35 scfm) Dry to 10°C pressure dew point and pre-filtered to 10µm - Supplied from the machine	- Supplied from the machine	FTS (mm) 94W x 305L x 127H Electronic Enclosure (mm) 250W x 650L x 520H

Warranty	
	1 year full parts and labor warranty

Note: In an effort to continually improve our product performance, specifications are subject to change without notice.