

Mori Seiki NT Series

Machine tool support kit for NX CAM and CAM Express

fact sheet

Siemens PLM Software

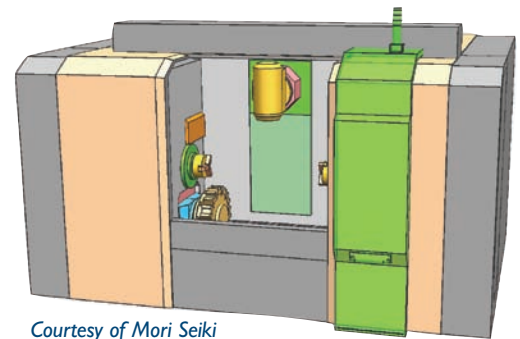
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► Summary

A machine tool support kit is a package consisting of post-processor, simulation driver, machine tool model, CAM templates, documentation, etc. that enables out of the box post-processing and simulation for a specific machine tool using NX™ CAM or CAM Express software. This machine tool support kit is tailored for the Mori Seiki NT Series multi-function machine tools.

Content of the machine tool support kit:

- Post-processor
- Machine Tool Driver for Simulation
- Postbuilder files
- 3D Machine Tool Model
- Machine specific NX CAM template
- Machine specific NX CAM UDE's
- Example Data (part, setup, operations, tools)
- Example tool holders
- Documentation (installation, usage)
- Installation routine (only for Microsoft Windows)



Courtesy of Mori Seiki

Supported software versions

This Machine Tool Support Kit supports the following Siemens PLM Software Products:

- NX 5
- Postbuilder 5.0.3

Prerequisites

- NX CAM Base
- NX Post Builder (only for customization)
- NX Post Exec
- Synchronization Manager (for SZ with Lower Turret only)
- ISV – Adv. Simulation

These pre-requisites are for example met with the MACH 2, 3 and 4 bundles of NX

Units

- Inch
- Metric

Technology used

- Post processor: Postbuilder-generated
- Simulation driver: Postbuilder-generated

Supported machine tool configurations (requires customization)

- Mori Seiki NT Series (3000, 4000 and 5000 Series)
- Various chuck/collet system sizes (e.g. NT4200 – 8", NT4250 – 10" and NT4300 – 12" for 4000 Series)

- All available machine sizes (e.g. /700, /1000 and /1500 for 4000 Series)
- B-axis main turret
- Optional lower turret
- Optional sub spindle

Supported capabilities (references to lower turret only when applicable)

Turning processes – highlights (not all inclusive)

- B-axis turning at any B-angle (main or sub-spindle) index mode only – does not support B-axis lathe turning contour mode
- Support of D1-D2 lathe tool indexing in spindle (0-180 degree orient)
- Lower turret turning (main or sub-spindle)
- 4-axis merged turning (lead – follow different cut levels method) fully IS&V supported
- 4-axis merged pinch turning (exact cutter positions adjacent – double feed allowed) fully IS&V supported

Canned drilling cycles for live rotary tools

- B-axis main or sub-spindle
- Coordinate system rotation support (G68.1)
- User selectable XYZ Cartesian versus XZC Cycle Motion (B-axis head)
- Lower turret axial
- Lower turret radial

Lower turret milling

- G112 polar interpolation XZC

B-axis head milling

- 5-axis positioning (3+2)
- 5-axis tool center point full contouring (G43.4 mode)
- Polar coordinates G112 interpolation
- Coordinate system rotation support (G68.1)
- User selectable XYZ Cartesian versus XZC Cutter Motion

Dual synchronized spindle support (both spindles latched onto workpiece)

- Turning mode synchronized spindles
 - Live rotary tool synchronized spindles

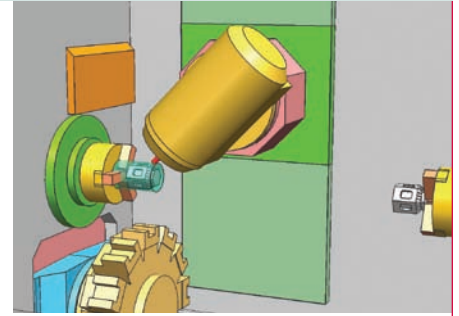
Part transfer (sub spindle only)

- Main to sub

Preparatory G-code support list

G20/G21	Inch or metric mode (NX part file determined)
G361 B D	Tool change macro for upper B-axis head
G362 D	Tool change macro alternate position – allows for dual synchronized spindles
G0	Rapid move
G1	Linear move
G2/3	X Y Z I J K Circular move clw/cclw
G4 P	Delay time (not in cycle mode)
G17/18/19	Principal work plane in effect (G68.1 uses G17 for B-head live tools)
G40/41/42	Cutter compensation (valid for turning and live tools)

G98-G99	Feedrate IPM/IPR or MMPM/MMPR
G92 X Z F-lead	Standard lathe threading
G50 S	Maxrpm for CSS mode
G96 S	Spindle SFM mode
G97 S	Spindle RPM mode
G54 – G59	MCS fixture offset value 1 thru 6
G112/G113	Axial milling polar interpolation mode (active-cancel)
G28 U0 V0 W0 H0	UGPost auto output when necessary (split blocks by axis when needed)
G53 W-Incr B-Head	Arc type motion support for latch on of dual synchronized spindles
G53 A	Sub-spindle carriage motion for dual synch latch on or part transfer
G30	Part transfer coordinates
G68.1 X Y0 Z I0 J1 K0 R	3D rotated coordinates activate
G69.1	3D rotated coordinates cancel
G43 H	Tool length offset activate
G49	Tool length offset cancel
G43.4 G0-I XYZ B C H	Simultaneous 5-axis milling with tool center point contact H-offset system



Preparatory G-code canned cycle support

G83	Axial Z drill cycle (Axial Z codes also used within G68.1 rotated coordinates)
G83 P	Axial Z drill dwell cycle
G83.6	Axial Z drill deep cycle
G83.5	Axial Z break chip cycle
G85	Axial Z bore cycle
G84	Axial Z float tapping
G84 with M329 S output	Axial Z RIGID tapping
G87	Radial X drill cycle
G87 P	Radial X drill dwell cycle
G87.6	Radial X drill deep cycle
G87.5	Radial X break chip cycle
G89	Radial X bore cycle
G88	Radial X float tapping
G88 with M329 S output	Radial X RIGID tapping

Miscellaneous M-code support list

Process/method allocation master codes

M45/M46	MAIN spindle C-axis connect/release
M245/M246	SUB spindle C-axis connect/release
M303	MAIN spindle active for spindle control commands
M304	SUB spindle active for spindle control commands
M100 – M197	Merging B-head with lower turret sync codes (synchronization mgr. and/or UDE allocated)

Dual spindle synchronizing

M34	Dual synchronize spindles turning mode – Phase control C-axis chucks
M35	Dual synchronize spindles turning mode – RPM speed only
M36	Dual synchronize spindles turning mode – CANCEL
M480	Dual synchronize C-axis mill mode – ON – ACTIVATE
M481	Dual synchronize C-axis mill mode – OFF – CANCEL

Turning mode spindles (chucks/collets) for both MAIN HD1 and SUB HD2

M03	Spindle on – lathe spindle CLW
M04	Spindle on – lathe spindle CCLW
M05	Spindle off – lathe spindle OFF

Live rotary tool spindle for both MAIN HD1 and SUB HD2

M13	Spindle on – live tool spindle CLW
M14	Spindle on – live tool spindle CCLW
M05	Spindle off – live spindle OFF

M08 M382 M484	UDE coolant – ON mode: FLOOD – SHOWER – THRU_SPINDLE
M09 M383 M485	UDE coolant – OFF mode: FLOOD – SHOWER – THRU_SPINDLE

B-head clamp unclamp

M369	B-axis un-clamp
M368	B-axis clamp

C- axis clamping

MAIN HD1 clamp-unclamp C-axis	
M69	C-axis un-clamp
M68	C-axis clamp

SUB HD2 clamp-unclamp C-axis

M269	C-axis un-clamp
M268	C-axis clamp
M594	B-axis head contouring feed mode – ACTIVE
M595	B-axis head contouring feed mode – CANCEL
M00	UDE stop
M01	UDE opstop
M30	End of program

Customization

The post processor allows for some customization capabilities:

- Program header/footer
- Operation header/footer
- Tool change comment

**Contact****Siemens PLM Software**

Americas 800 498 5351
Europe 44 (0) 1276 702000
Asia-Pacific 852 2230 3333

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