

NV Series MAPPS III Machine Operation EOD Course Description

The NV Education-On-Demand (EOD) Machine Operation course is a revolutionary approach to operator training. EOD overcomes the cost and time barriers associated with taking operators and machines out of production and incurring travel expenses.

EOD provides training 24/7 in a virtual, web-based environment. It is designed for manufacturing-based employees who will be able to operate a virtual Mori Seiki CNC machine in just a few hours.

Machine operation skills are those skills we expect operators and machinists to have in order to operate a specific Mori Seiki CNC machine model. Individual learning modules have been developed for popular Mori Seiki machines. This allows operators to learn in a safe, virtual world. The NV module is self-paced (approximately 4 to 6 hours of online learning).

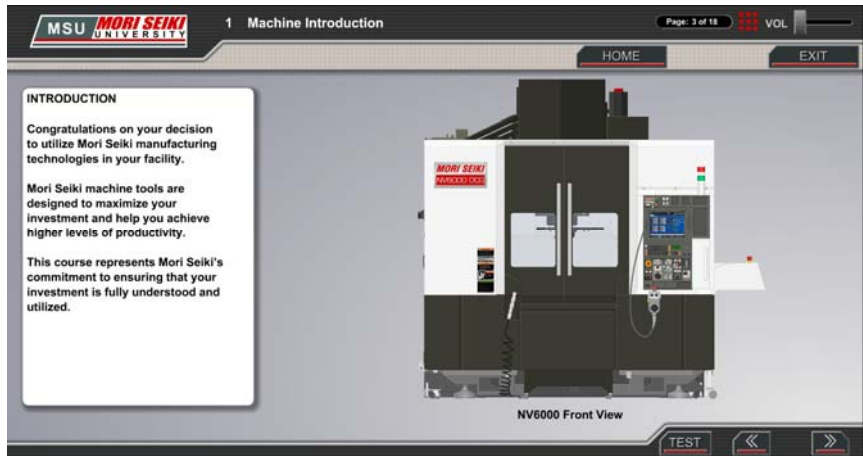
Customers buying new machines will receive two (2) free seats for unlimited access for 6 months. In addition, one customer supervisor will have full access to the machine operation course(s) and their employee's training records. Extra seats can be added and free seats can be extended beyond the 6 months for an additional fee.



Machine Introduction

This chapter provides a basic definition of the machine, its capability and its major components. The student takes a “walk-around” the machine to learn nomenclature and function.

- Machine capabilities
- Basic NV model specifications
- Major components
- Front view components
- Machining area
- Operation panel
- Rear view components
- Left view components
- Animated simulation of machining a workpiece



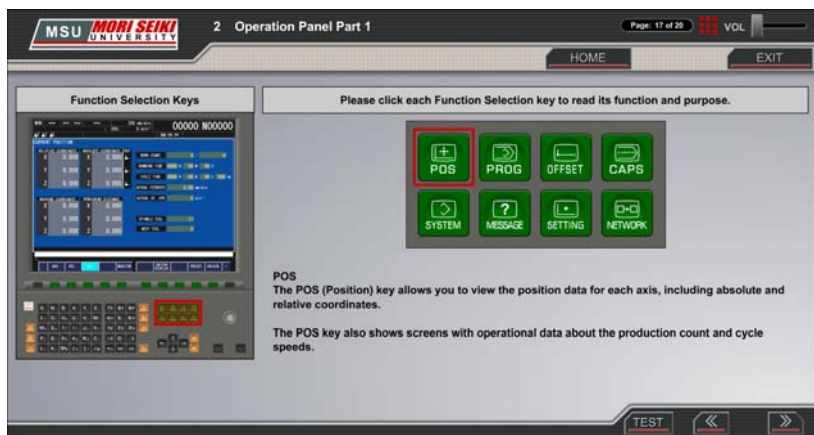
Machine Introduction



Operation Panel (2 chapters)

The Operation Panel is the key to regulating the machine's movement and managing the machine's programming and productivity. These chapters explore all of the control's buttons and switches of the control's six (6) panel sections. The student will learn each panel section and physically and mentally link each button/switch icons to its definition and location.

- Operation Panel's Sections & Controls
 - NC power buttons / Door interlock key-switch
 - NC Operation panel
 - Machine operation panel
 - Handheld Pulse Handle Selection Switch
 - Optional Panel
 - Interface ports
- Screen display basics



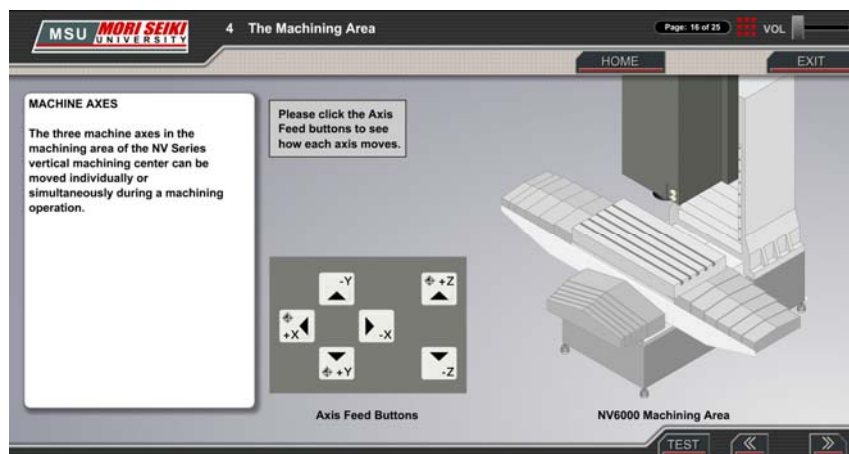
Operation Panel



The Machining Area

The NV Series functions as a CNC 3-axis mill. This chapter provides a detailed overview of the major components inside of the machining center area and an overview of the tool-spindle. This chapter also explains the axis nomenclature and direction of all axes. The student will use the machine control switches and buttons to move the machine axes. Major training areas are:

- Machining area components
 - Table
 - Saddle
 - Spindle head
 - Automatic tool changer
 - Tool-spindle
 - Chip conveyor
 - Lubrication & air systems
 - Coolant system
- Machine axes
 - X-axis
 - Y-axis
 - Z-axis



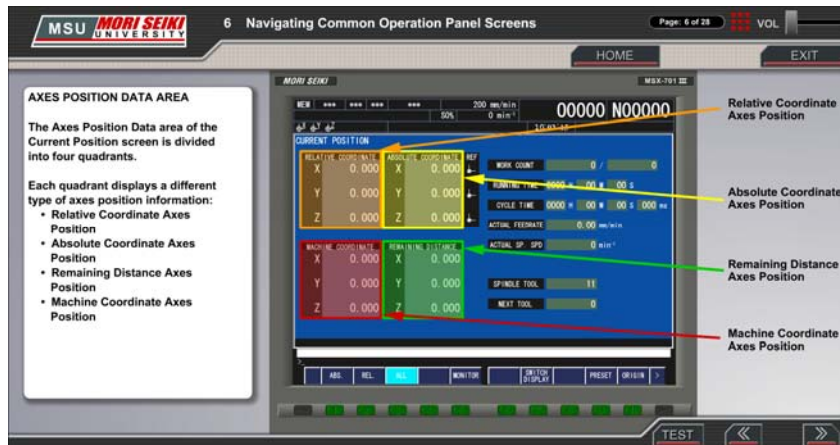
The Machining Area



Navigating Common Operation Panel Screens

In this chapter, the student learns how to use the Function Selection keys to navigate to various screens. They will learn how to use soft keys to navigate within each screen. Over thirty lesson screens provide interaction with all key screen data. The topics covered are:

- Function selection keys
- Axis position data (absolute & incremental)
- Zero return symbols
- Machine operation monitoring data
- Program selection screen
- Program list key
- Offset key & tool offset screen data
- Message key & screens
- Alarms message screens (NC & PLC)



Navigating Common Operation Panel Screens



Machine Operations (2 chapters)

All previous training comes together in these chapters. The student will learn how to perform 11 key machine operation functions. The buttons, switches and screens from previous chapters are now presented in step-by-step lessons to perform typical machine functions. The student is the one operating the machine in these simulations.

1. Power On the Machine
2. Move Axes to Zero Return Positions
3. Move Axes in Jog Mode
4. Move Axes in Rapid Traverse Mode
5. Move Axes with Manual Pulse Generator
6. Entering Tool Wear Offsets
7. Select & Activate Programs
8. Start Automatic Operation
9. Stop Automatic Operation
10. Change a Tool in the Spindle
11. Recover from an Alarm



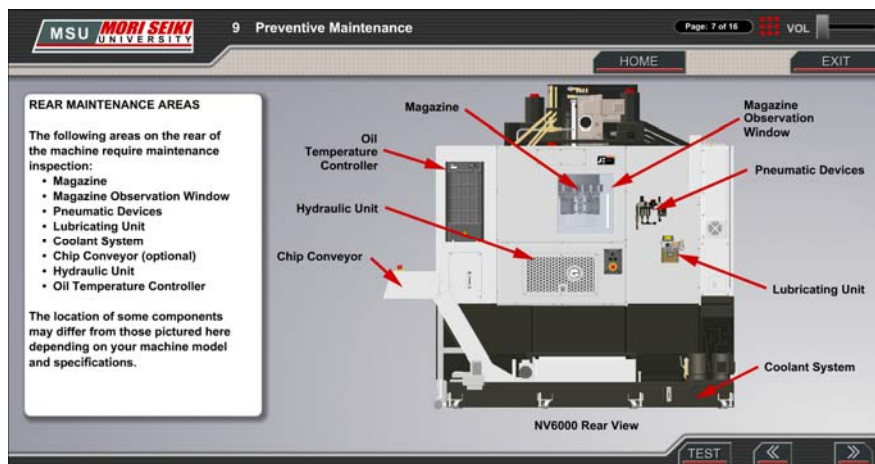
Machine Operations



Preventative Maintenance

Various components of the NV series machine require regular inspection and maintenance. This chapter covers basic inspection and preventative maintenance of:

- Pneumatic devices (e.g. filters, pressure)
- Lubricating unit (e.g. filters, fill points and levels)
- Coolant system (e.g. levels, filters, pump supply rates)
- Hydraulic unit (levels, inspection)
- Oil temperature controller
- Electrical cabinet (e.g. fans & batteries)



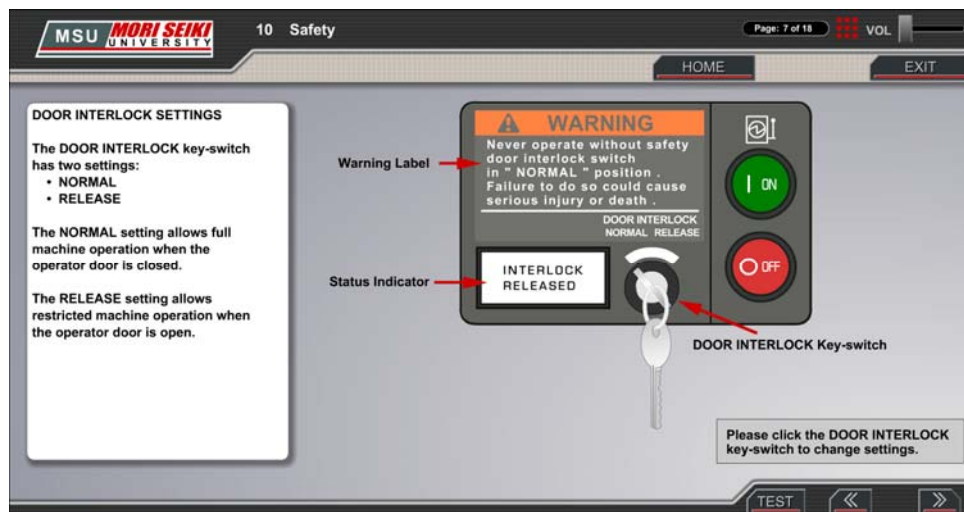
Preventative Maintenance



Safety

This chapter covers the general safety guidelines for safe machine operation. Topics covered include:

- Where to find safety information
- Operator doors
- Door interlock key switch
- Emergency stop button
- Safety labels
- Main power switch
- Cleanliness (slip & fall)
- Precautions before operating machine
- Precautions during machine operation
- Abnormal noise & vibration



Safety

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