



MITSUBISHI CNC  
M700V Series, M70 Series  
Simple programming function  
NAVI MILL / NAVI LATHE



**The Best Partner for Your Success**

# Programming function with simple operation "NAVI MILL" "NAVI LATHE"

~Installed in M700V/M70 Series~

## Interface Design with Overall View

Intuitively view system configuration and machining programs

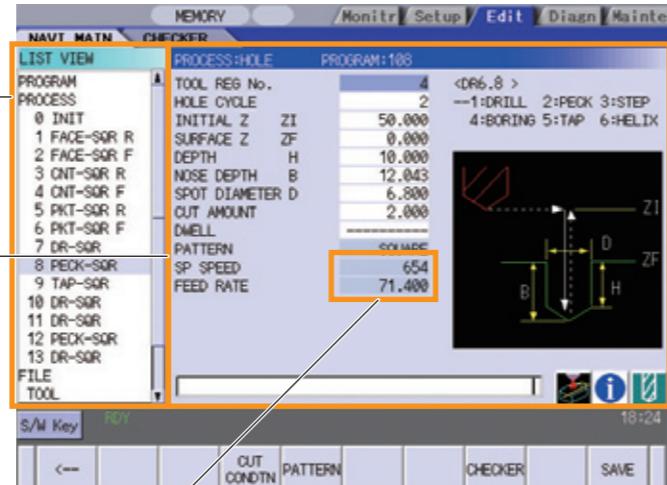
### LIST VIEW

LIST VIEW displays objects such as programs, processes, file data and parameters.

### OPERATION VIEW

OPERATION VIEW displays the items corresponding to the object selected in LIST VIEW.

Data can be input easily referencing the guidance drawing for input items.



## Automatic Setting of Cutting Conditions

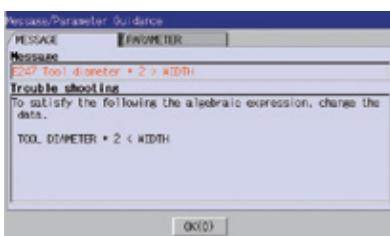
Simply input the tool number. The cutting conditions for each process are automatically set based on previously registered tool files and cutting-condition files.

## Checker and Guidance Functions

Detects input errors for troubleshooting.

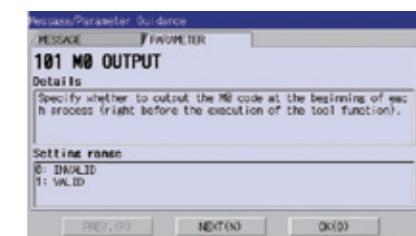
### Message guidance

Troubleshooting options for an input error are displayed.



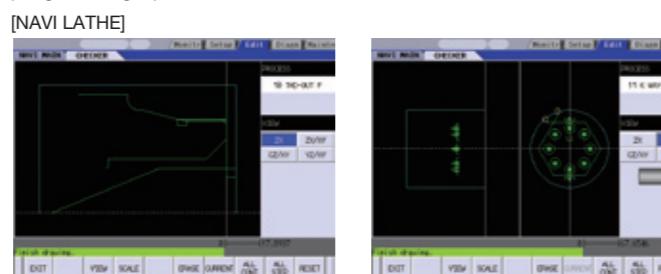
### Parameter guidance (under development)

Displays parameter details and setting range.



### Checker

Displays the tool path or machining shape of a program in graphic form.



## Customize Machining Programs

Machining programs using macro programs enable the commands to be added between processes via the editing screen.

Machine tool builders can customize the macro program of each process according to machine specifications and machining know-how.

## ■ Specifications

Class	NAVI MILL	NAVI LATHE
Basic function	Processing edit (New, Copy, Move, Delete) File edit Displays in 17 languages (Japanese/English/German/Italian/French/Spanish/Chinese (simplified)/Chinese (traditional)/Korean/Portuguese/Hungarian/Dutch/Swedish/Turkish/Polish/Russian/Czech) mm/inch change	Processing edit (New, Copy, Move, Delete) File edit Displays in 17 languages (Japanese/English/German/Italian/French/Spanish/Chinese (simplified)/Chinese (traditional)/Korean/Portuguese/Hungarian/Dutch/Swedish/Turkish/Polish/Russian/Czech) mm/inch change
Initial setting	Workpiece material, Workpiece shape (square/circle), Initial point, Workpiece coordinate system, Tool change position, Program stop instruction	Workpiece material, Workpiece shape (cylinder), Programmed zero point, Workpiece coordinate system, Tool change position, Program stop instruction
Machining process*	Hole drilling   Drilling, Pecking, Step, Boring, Tapping, Helical-boring Random, Line, Arc, Circle, Square, Grid Face cutting   Rough cutting, Finish cutting Square, Circle (reciprocation/single direction/shape) Contour cutting   Rough cutting, Finish cutting Square (inside/outside), Circle (inside/outside), Free (left/right/center), Wall shape designation Pocket machining   Rough cutting, Finish cutting Square, Circle, L pattern, U pattern, Track EIA   Machining surface specifications (under development) Euler angle, Roll- Pitch- Yaw angle, 3 points, 2 vectors, Projection angle	Turning   Turning Copying   Copying Thread cutting   Thread cutting Grooving/Trapezoid grooving   Grooving/Trapezoid grooving Hole drilling   Hole drilling Cutting off (under development)   Cutting off (under development)
Milling	Keyway   Keyway Contour cutting   Contour cutting Hole drilling   Drilling, Pecking, Boring, Tapping drilling   Random, Line, Arc, Circle, Square, Grid	EIA   Transfer (under development) Setting of cutting condition (Feedrate, Spindle rotation speed) Workpiece shape (square/circle), Tool path Plane (XYZ/XZ/XY)   Workpiece shape (cylinder), Machining shape Plane (ZX, ZX/XY, CZ/XY, YZ/XY)   Plane (ZX, ZX/XY, CZ/XY, YZ/XY) Scale (Auto/scale up/scale down)   Scale (Auto/scale up/scale down)
Program checker	Machining program, Machining program for multiple parts Macro program (Engineering macro program, Tool change macro program)	Machining program   Macro program (Engineering macro program, Tool change macro program)
Machining program	Four rules operators, Triangle function (SIN/COS/TAN/ATAN), Absolute value (ABS), Square root (SQRT), Circle ratio (PAI), Inch (INCH)	Four rules operators, Triangle function (SIN/COS/TAN/ATAN), Absolute value (ABS), Square root (SQRT), Circle ratio (PAI), Inch (INCH)
Arithmetic input	Cutting condition files	Cutting condition files
File	Tool files Parameter files	Tool files Parameter files

\* Depending on the NAVI MILL/NAVI LATHE parameter settings, additional CNC specifications may be required.

## ■ Compatible Machine Specifications

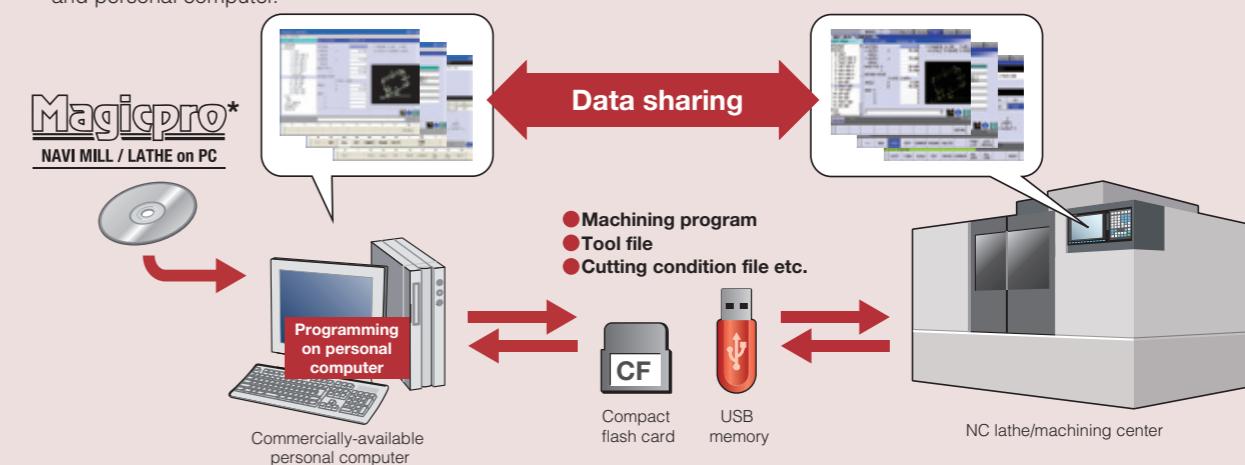
NAVI MILL : 3- and 5-axis vertical machining centers (table tilt, tool tilt and combined types)

NAVI LATHE : 2-axis lathes, milling-enabled lathes with a C-axis or CY-axis, and lathes with sub-spindles

## Magicpro-NAVI MILL on PC / Magicpro-NAVI LATHE on PC\*

(Simple programming tool for use with personal computer)

- With Magicpro-NAVI MILL/LATHE on PC\*, the same machining programs created with NAVI MILL/LATHE on a CNC can be created on a personal computer.
- Items such as machining programs, tool files and cutting-condition files can be shared between the NAVI programs on the CNC and personal computer.



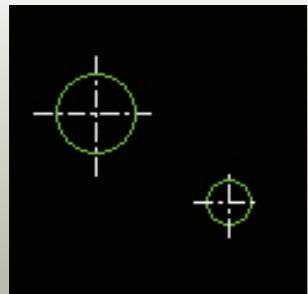
\*Magicpro is a registered trademark of Mitsubishi Electric Mechatronics Software Corporation.

# NAVI MILL

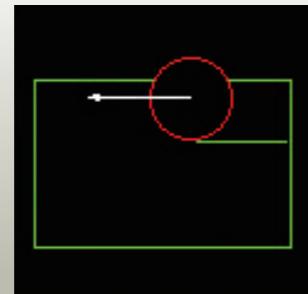
Create machining programs for 3- and 5-axis vertical machining centers  
(table tilt, tool tilt and combined types)



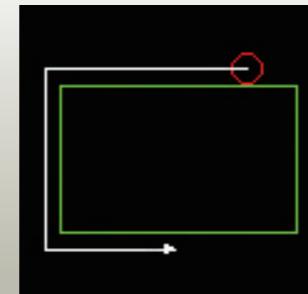
## NAVI MILL menu



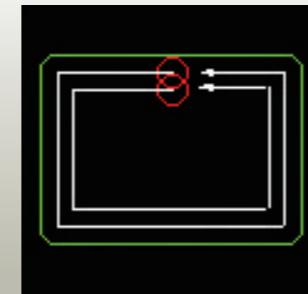
Hole drilling



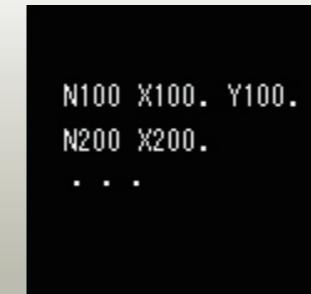
Face cutting



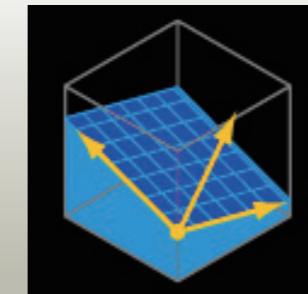
Contour cutting



Pocket machining

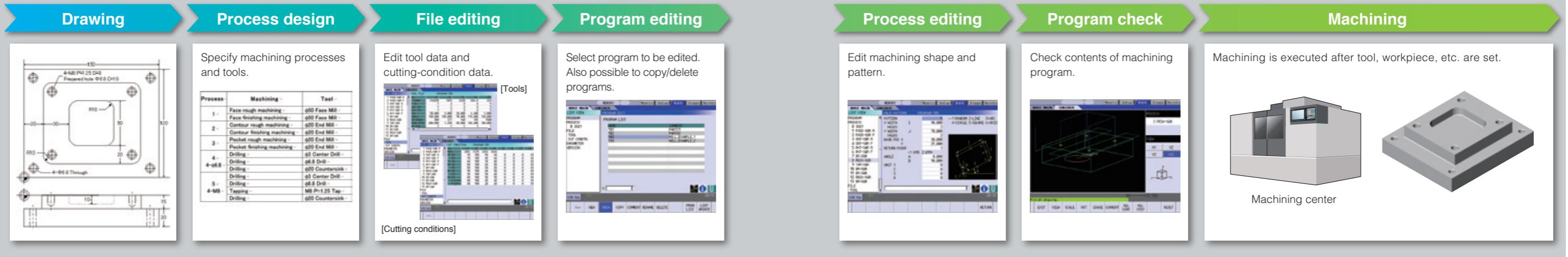


EIA



Machining surface specifications (under development)

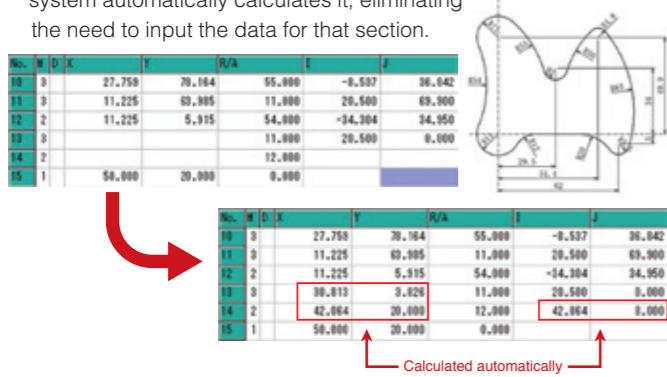
## Program Creation



## Programming Support Functions

### Input any type of shape

- The table input method is used for contour cutting, turning and copying.
- When the end point or central position of an arc is unclear, the system automatically calculates it, eliminating the need to input the data for that section.

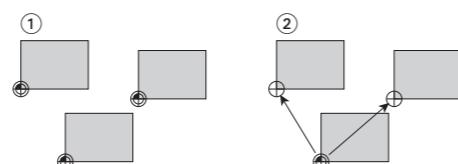


### Multiple parts function

- Specify the coordinates for multiple workpieces to create a multi-piece machining program from a single-piece machining program.

### Coordinate specification method

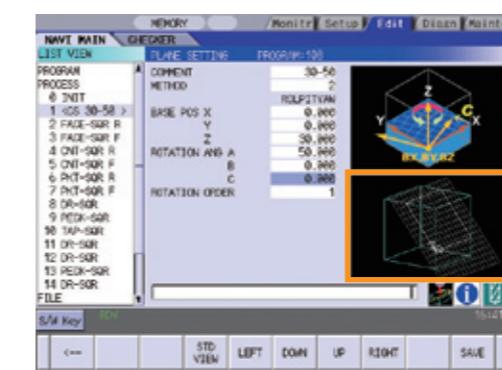
- Select the coordinate system for each workpiece.
- Determine the offset value from a specific workpiece coordinate system.



## Compatible with Various Types of Machining

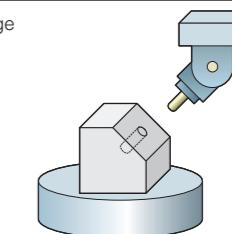
### Machining surface specification (under development)

- It is now possible to edit the machining process for inclined surfaces.
- There are five methods to choose from when specifying the machining surface. Inclination data is set according to the selected method.
- The machining surface setting can be checked on the machining surface view.

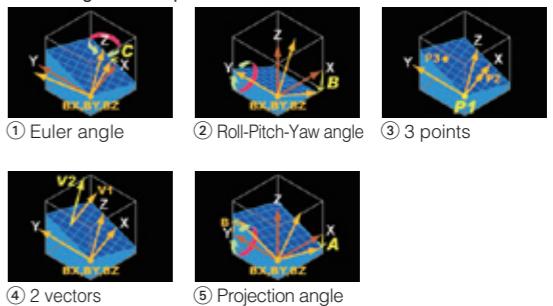


Machining surface view

### Machining image



### Machining surface specification method

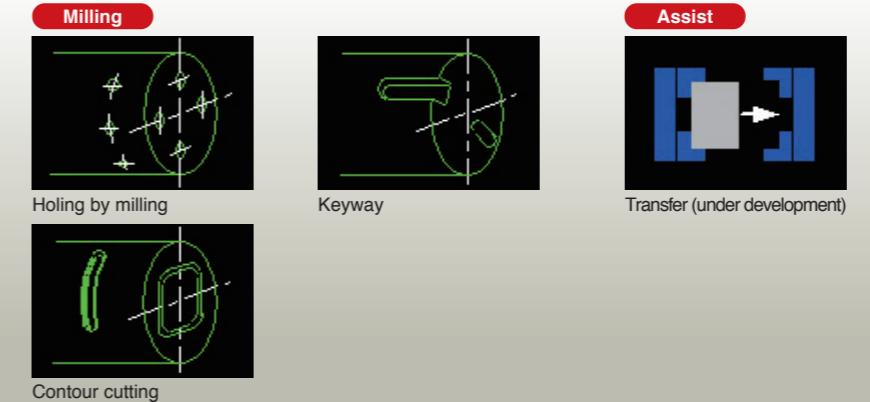
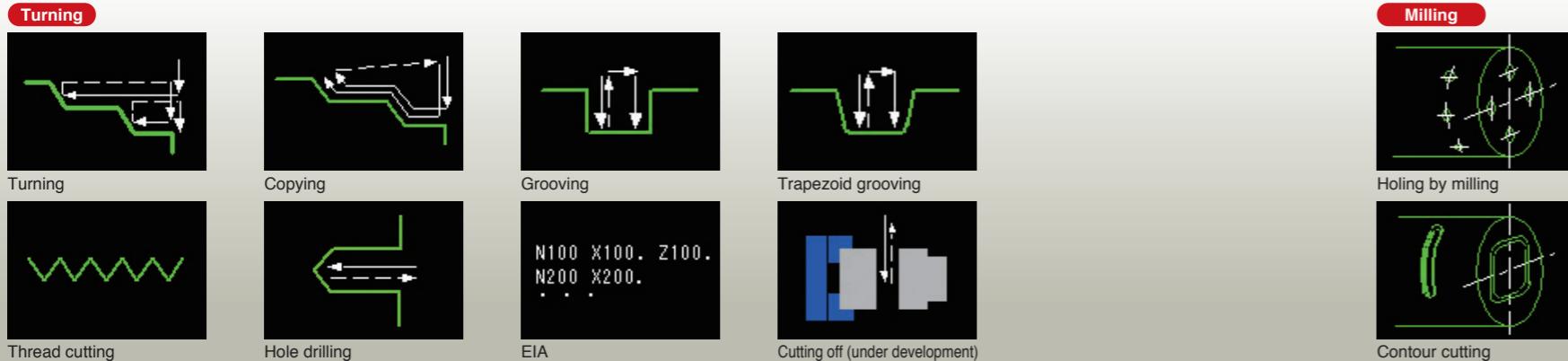


# NAVI LATHE

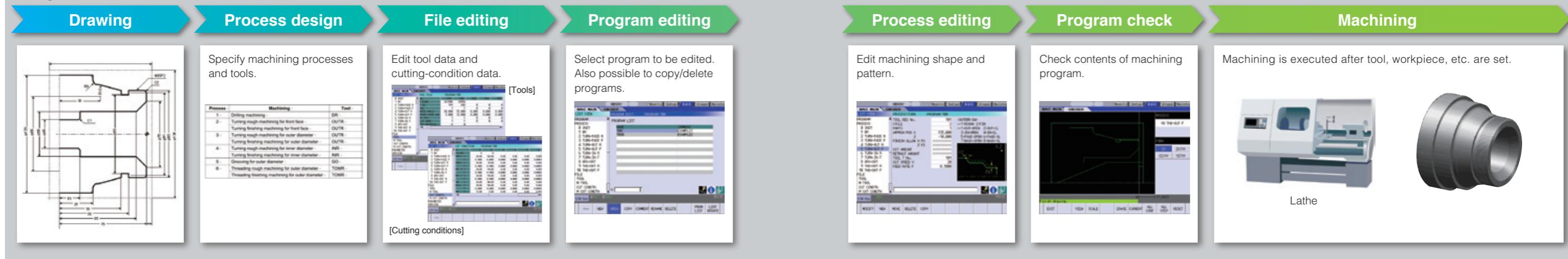
Create machining programs for 2-axis XZ lathes, milling-enabled lathes with a C-axis or CY-axis, and lathes with sub-spindles.



## NAVI LATHE menu



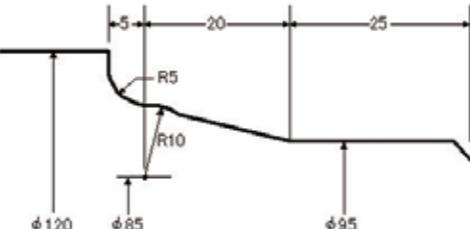
## Program Creation



## Programming Support Functions

### Input any type of shape

- The table input method is used for contour cutting, turning and copying.
- When the end point or central position of an arc is unclear, the system automatically calculates it, eliminating the need to input the data for that section.



No.	M	D	X	Z	R/A	I	E	C
1			91.000	0.000				
2	1		95.000	2.000	45.000			
3	1		95.000	25.000	0.000			
4	1		104.320	42.415	14.981			
5	8			10.000	85.000	45.000		
6	2			5.000		5.000	115.000	45.000
7	1		120.000	50.000	90.000			

No.	M	D	X	Z	R/A	I	E	C
1			91.000	0.000				
2	1		95.000	2.000	45.000			
3	1		95.000	25.000	0.000			
4	1		104.320	42.415	14.981			
5	8			10.000	85.000	45.000		
6	2			5.000		5.000	115.000	45.000
7	1		120.000	50.000	90.000			



Calculated automatically

## Compatible with Various Types of Machining

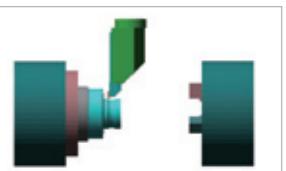
### Sub-spindle machining (under development)

- The workpiece can be transferred between the main spindle and sub-spindle.
- Programs for backside machining can be created.

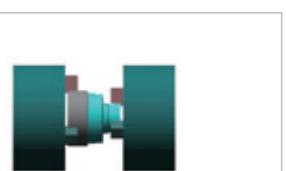


Machining images

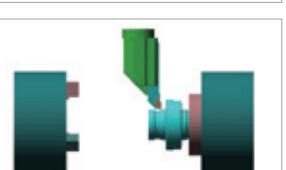
- ① Machining on the main spindle side



- ② Workpiece transfer



- ③ Machining on the sub-spindle side



Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001(standards for quality assurance managememt systems)



### Safety Warning

To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

 **MITSUBISHI ELECTRIC CORPORATION**  
HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN  
<http://Global.MitsubishiElectric.com>

BNP-A1213-A[ENG]  
(ENGLISH)