



Changes for the Better

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

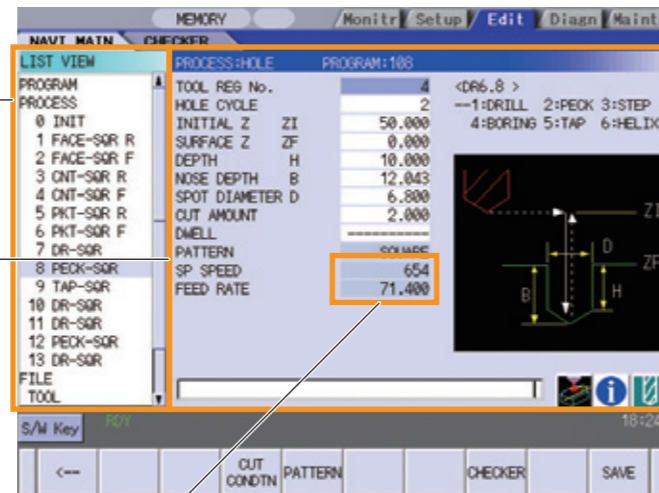
LIST VIEW

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

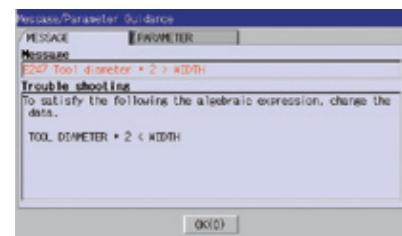
Simply input the tool number. The cutting conditions for each process are automatically set based on previously registered tool files and cutting-condition files.

Checker and Guidance Functions

Detects input errors for troubleshooting.

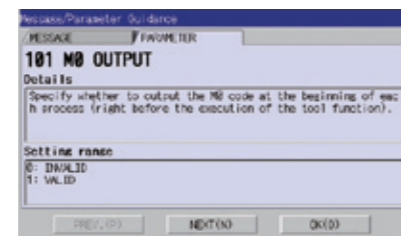
Message guidance

Troubleshooting options for an input error are displayed.



Parameter guidance (under development)

Displays parameter details and setting range.



Tool guidance

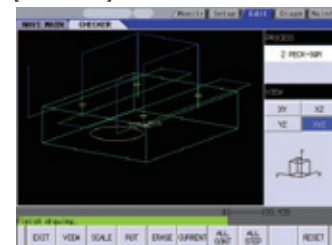
Displays primary data of the tool data previously registered in the tool file.



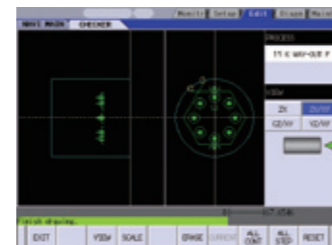
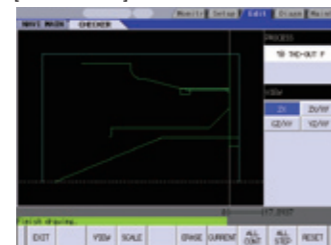
Checker

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

[NAVI MILL]



[NAVI LATHE]



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)	Processing edit (New, Copy, Move, Delete)	
	File edit	File edit	
Initial setting	Displays in 17 languages (Japanese/English/German/Italian/French/Spanish/Chinese (simplified)/Chinese (traditional)/Korean/Portuguese/Hungarian/Dutch/Swedish/Turkish/Polish/Russian/Czech)	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	mm/inch change	
Machining process*	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	
	Hole drilling	Drilling, Pecking, Step, Boring, Tapping, Helical-boring	Turning Turning Copying Thread cutting Grooving/Trapezoid grooving Hole drilling Cutting off (under development)
	Face cutting	Random, Line, Arc, Circle, Square, Grid	
	Contour cutting	Rough cutting, Finish cutting Square, Circle (reciprocation/single direction/shape)	
	Pocket machining	Rough cutting, Finish cutting Wall shape designation	
	EIA	Euler angle, Roll- Pitch- Yaw angle, 3 points, 2 vectors, Projection angle	Milling Keyway Contour cutting Hole drilling Drilling, Pecking, Boring, Tapping Random, Line, Arc, Circle, Square, Grid
	Auto-setting	Setting of cutting condition (Feedrate, Spindle rotation speed)	Setting of cutting condition (Feedrate, Spindle rotation speed)
	Program checker	Workpiece shape (square/circle), Tool path Plane (XYZ/XZ/XYZ) Scale (Auto/scale up/scale down)	Workpiece shape (cylinder), Machining shape Plane (ZX, ZX/XY, CZ/XY, YZ/XY) Scale (Auto/scale up/scale down)
	Machining program	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)
	Arithmetic input	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)
File	Cutting condition files Tool files Parameter files	Cutting condition files Tool files Parameter files	

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

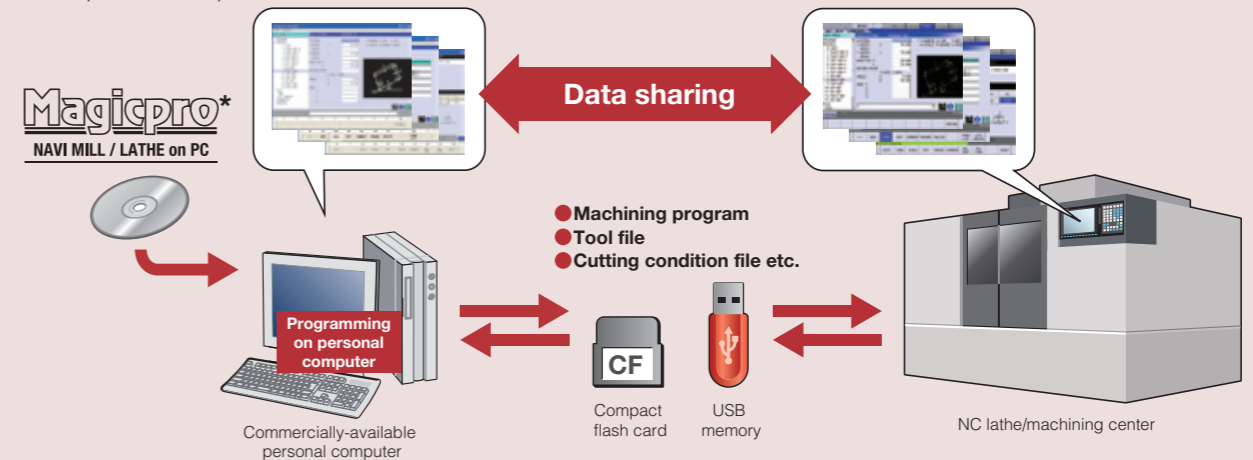
Compatible Machine Specifications

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.



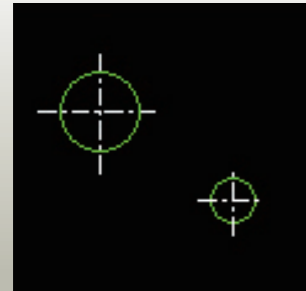
*Magicpro is a registered trademark of Mitsubishi Electric Mechatronics Software Corporation.

NAVI MILL

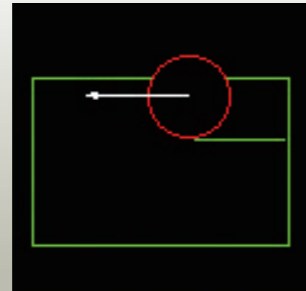
Create machining programs for 3- and 5-axis vertical machining centers (table tilt, tool tilt and combined types)



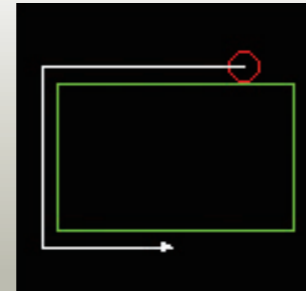
NAVI MILL menu



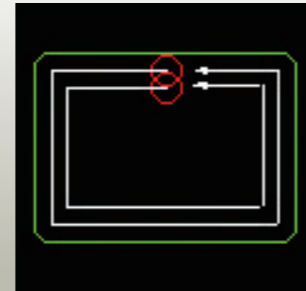
Hole drilling



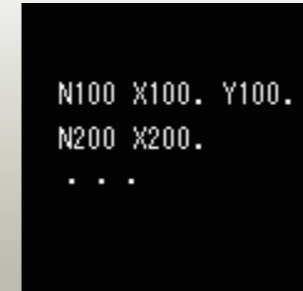
Face cutting



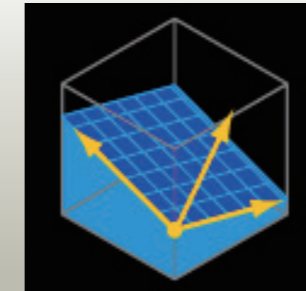
Contour cutting



Pocket machining

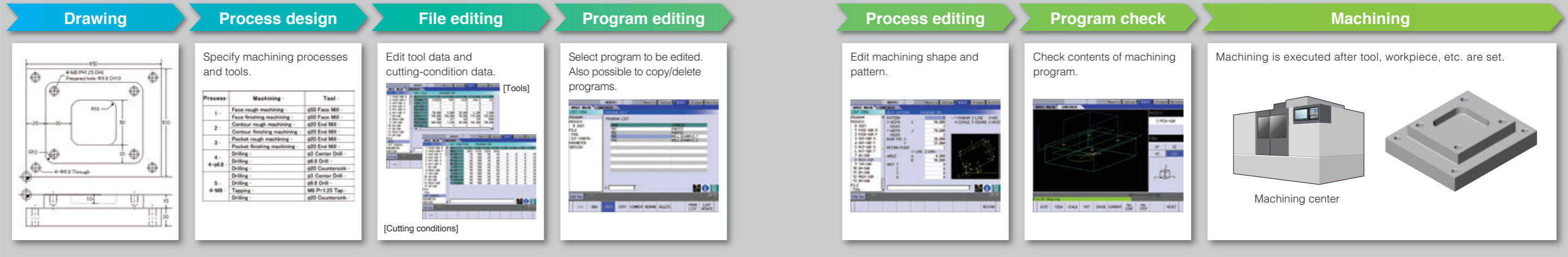


EIA



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.

No.	M	D	X	Y	R/A	I	J
10	3		27.750	70.164	55.000	-0.537	36.042
11	3		11.225	83.905	11.000	20.500	69.900
12	2		11.225	5.315	54.000	-34.304	34.950
13	3			11.000	20.500		0.000
14	2			12.000			
15	1		56.000	20.000	0.000		

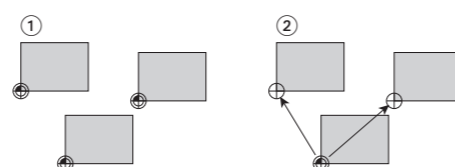
Calculated automatically

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

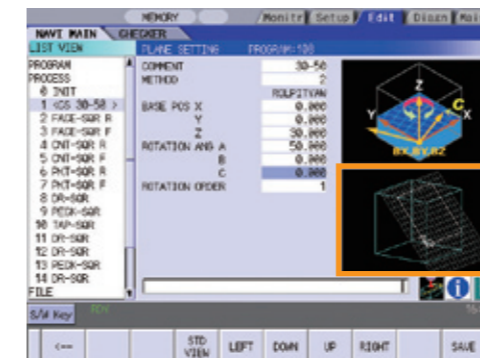
- Select the coordinate system for each workpiece.
- Determine the offset value from a specific workpiece coordinate system.



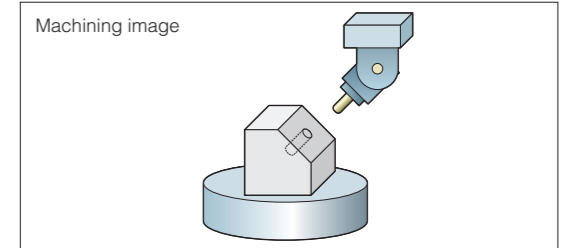
Compatible with Various Types of Machining

Machining surface specification (under development)

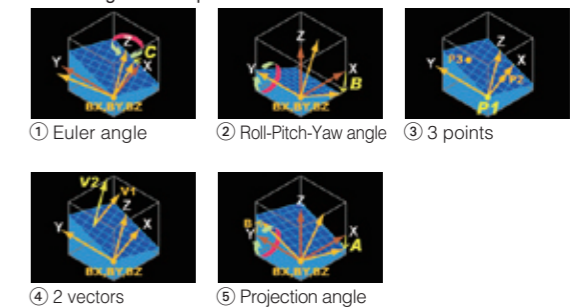
- It is now possible to edit the machining process for inclined surfaces.
- There are five methods to choose from when specifying the machining surface. Inclination data is set according to the selected method.
- The machining surface setting can be checked on the machining surface view.



Machining surface view



Machining 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

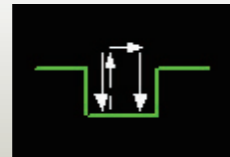
Turning



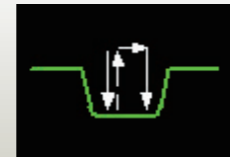
Turning



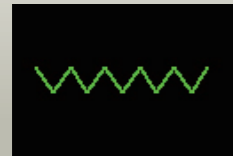
Copying



Grooving



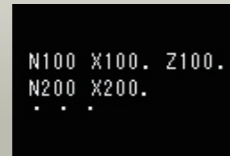
Trapezoid grooving



Thread cutting



Hole drilling

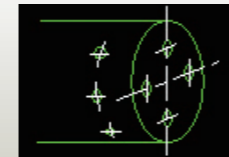


EIA

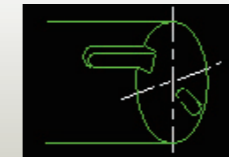


Cutting off (under development)

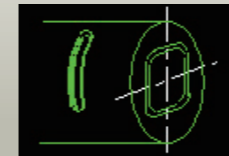
Milling



Holer by milling

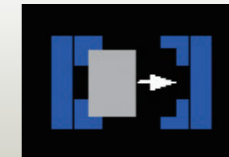


Keyway



Contour cutting

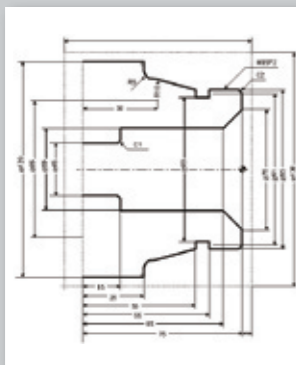
Assist



Transfer (under development)

Program Creation

Drawing



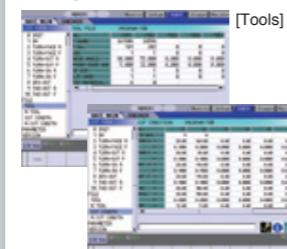
Process design

Specify machining processes and tools.

Process	Machining	Tool
1	Drilling	DR
2	Turning rough machining for front face	DNTR
3	Turning finishing machining for front face	DNTR
4	Turning rough machining for outer diameter	DNTR
5	Turning finishing machining for outer diameter	DNTR
6	Turning rough machining for inner diameter	DNTR
7	Turning finishing machining for inner diameter	DNTR
8	Grooving for outer diameter	GO
9	Threading rough machining for outer diameter	TCMR
10	Threading finishing machining for outer diameter	TCMR

File editing

Edit tool data and cutting-condition data.



[Cutting conditions]

Program editing

Select program to be edited. Also possible to copy/delete programs.



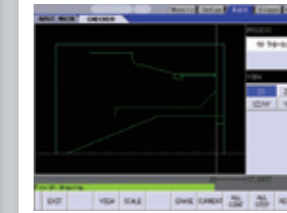
Process editing

Edit machining shape and pattern.



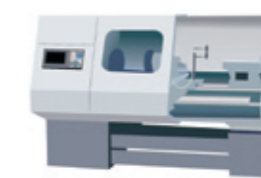
Program check

Check contents of machining program.



Machining

Machining is executed after tool, workpiece, etc. are set.



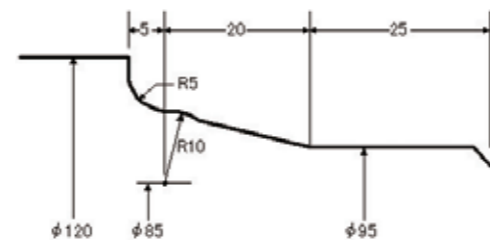
Lathe



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	R	Z	R/A	I	K	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	14.991		
5	3			10.000			95.000	45.000
6	2				5.000			
7	1			120.000	50.000	90.000		

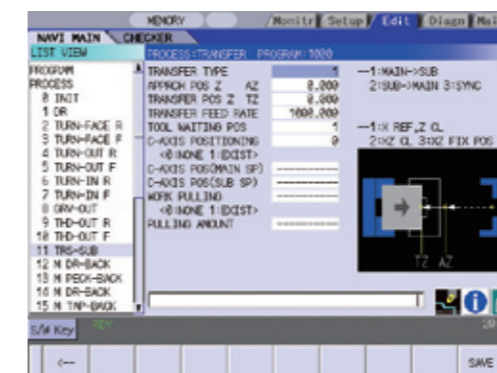
No.	M	D	R	Z	R/A	I	K	C
5	3			105.000	45.000	10.000		95.000
6	2			115.000	50.000	5.000		115.000
7	1			120.000	50.000	90.000		

Calculated automatically

Compatible with Various Types of Machining

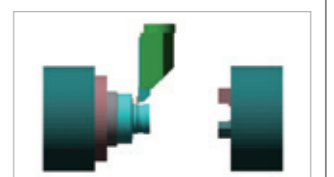
Sub-spindle machining (under development)

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

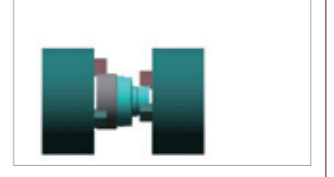


Machining images

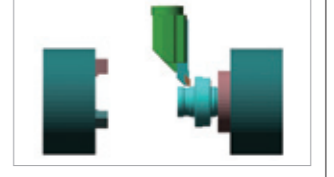
① Machining on the main spindle side



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 management 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.

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<http://Global.MitsubishiElectric.com>

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