CNC TURRET PUNCH PRESS

EM-NT 30-TON SERIES EU

(AMNC-F)

CE

OPERATOR'S MANUAL

AMADA

EM30-NT-F180I OPE EU-E00-200411

PREFACE Read this manual carefully to obtain a thorough knowledge of the machine and its installation, operation, and maintenance. Correctly operate the machine as described in the manual to prevent personal injuries and machine damage. Do not operate the machine by guesswork. Keep the manual at hand and refer to it whenever you are not sure of how to perform any of the procedures.

Operator's Manual:

EM-NT 30-Ton Series CNC Turret Punch Press

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Safety Rules & Safety Functions

SAFETY RULES

Observe these safety rules to prevent injuries and accidents.

a) Install protective devices (such as a light curtain) around the machine. Refer to "Installing Protective Devices" in Part I, Installation.

b) Have the machine operated by a single, trained person who has read this manual and acquired a thorough knowledge of the machine and its operation. If more than one authorized operator must be involved, coordinate their work to ensure utmost safety.

c) Do not wear loose clothing, a necktie, or a muffler when operating the machine. They can be extremely dangerous if any part of them is caught in the machine.

d) Observe the following punching precautions. If you are not sure of whether or not a particular worksheet can be punched, consult the AMADA engineer.

- Do not punch worksheets that exceed the nominal press capacity of the machine.
- Do not punch worksheets that exceed the maximum allowable thickness.
- Do not punch worksheets of glass, stone, or any other material that may scatter when punched.
- Do not punch worksheets of wood, plaster, and any other material that generate powder or crumble when punched.
- Do not punch worksheets that exceed the tool usage conditions and punching conditions.

e) Turn the SAFETY DEVICE keyswitch to SETTING, remove the key from the switch, and keep it by yourself when working inside the hazardous area around the machine.

f) Clear the hazardous area around the machine of people and obstacles before starting the machine. Do not overlook the area behind the machine.

g) Do not leave the keys in the machine's keyswitches. Leave the keys in the custody of the supervisor when they are not in use.

h) Turn off the power and shut down the compressed air supply when carrying out a maintenance operation. Then padlock the machine circuit breaker switch lever. If the power is needed, prevent the machine from being started by mistake. Turn the SAFETY DEVICE keyswitch to SETTING, remove the key from the switch, and keep it by yourself.

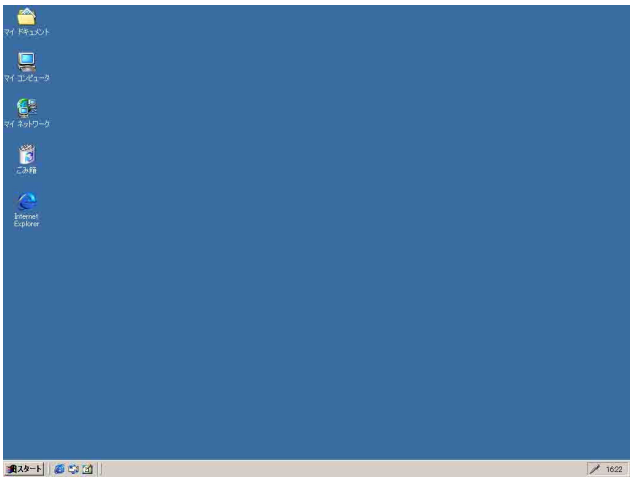
i) Inspect the machine before starting the day's work and as frequently and regularly as possible. Carry out the periodical maintenance operations to ensure trouble-free machine operations.

j) Never modify the machine's parts or electric circuits or change them for unauthorized parts or circuits. Doing so will cause machine malfunction and damage and disrupt the safety of the machine and the operator.

k) The machine is controlled by a personal computer-based NC unit. Any software or hardware changes may cause the machine to misoperate and lead to a serious accident.
Strictly observe the following rules:

- Do not add or change any hardware (e.g., memory, SCSI card, PC card, hard disk).
- Do not remove or insert boards like the CPU board.
- Do not install or uninstall software.
- Do not change, add, delete, or move Windows files and folders.
- Do not operate on the Windows system files (e.g., control panel and registry file).

- At the startup and shutdown of the NC unit, the following Windows 2000 screen appears. Do not touch the screen.



- Do not save files other than punching programs in the NC unit through a CD-ROM or a floppy disk, or through another computer connected to the AMNC system.
- To prevent infection with computer viruses, do not use floppy disks and other media that contain files and programs of unknown origin.

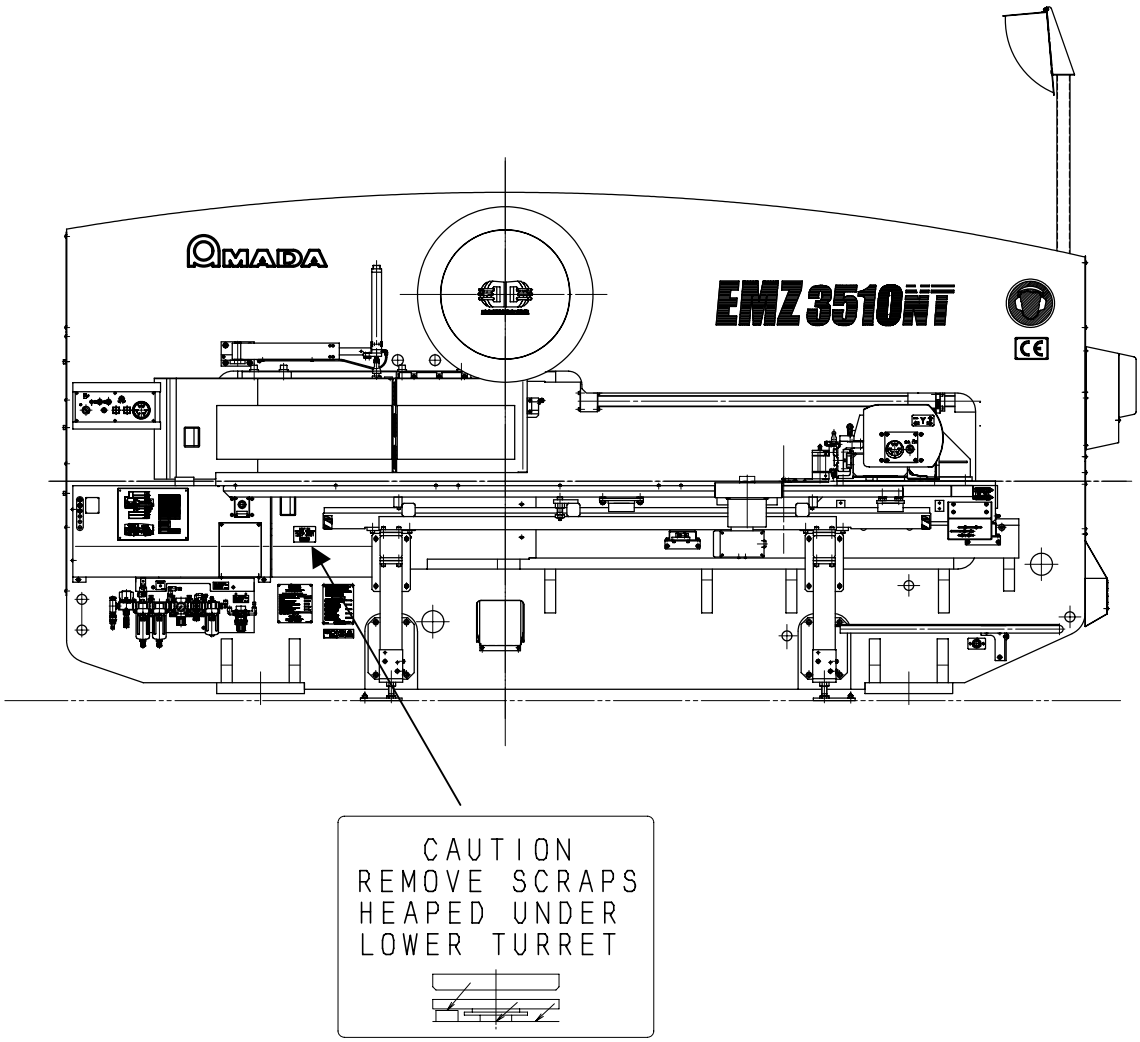
l) Do not allow anyone with a heart pacemaker or other medical device to approach the machine. Such medical devices may malfunction or fail around the machine.

DANGER, WARNING and CAUTION plates

Keep the DANGER, WARNING and CAUTION plates well noticeable and never remove them.

CE mark countries:

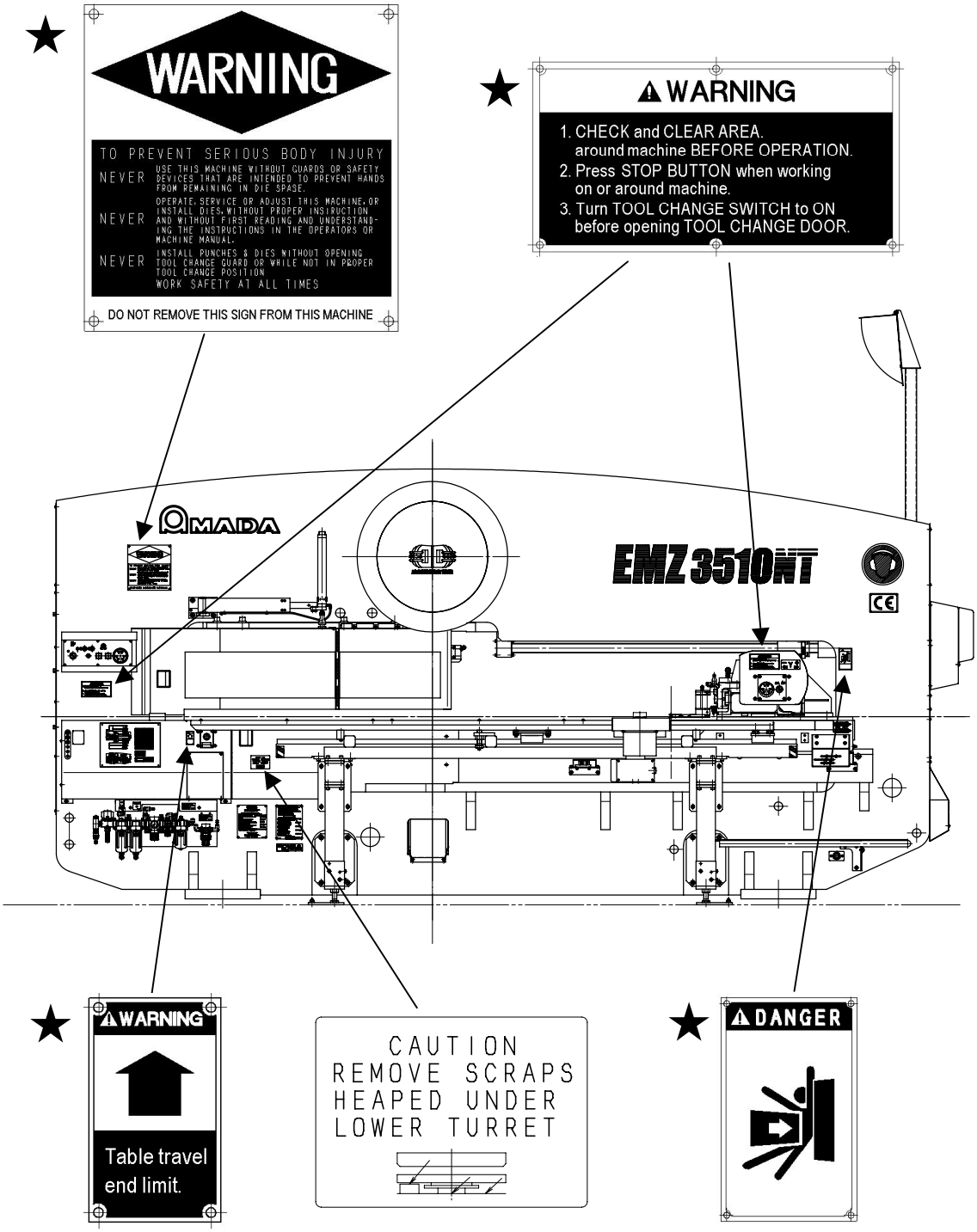
Machine is operated with protective devices like light curtains.

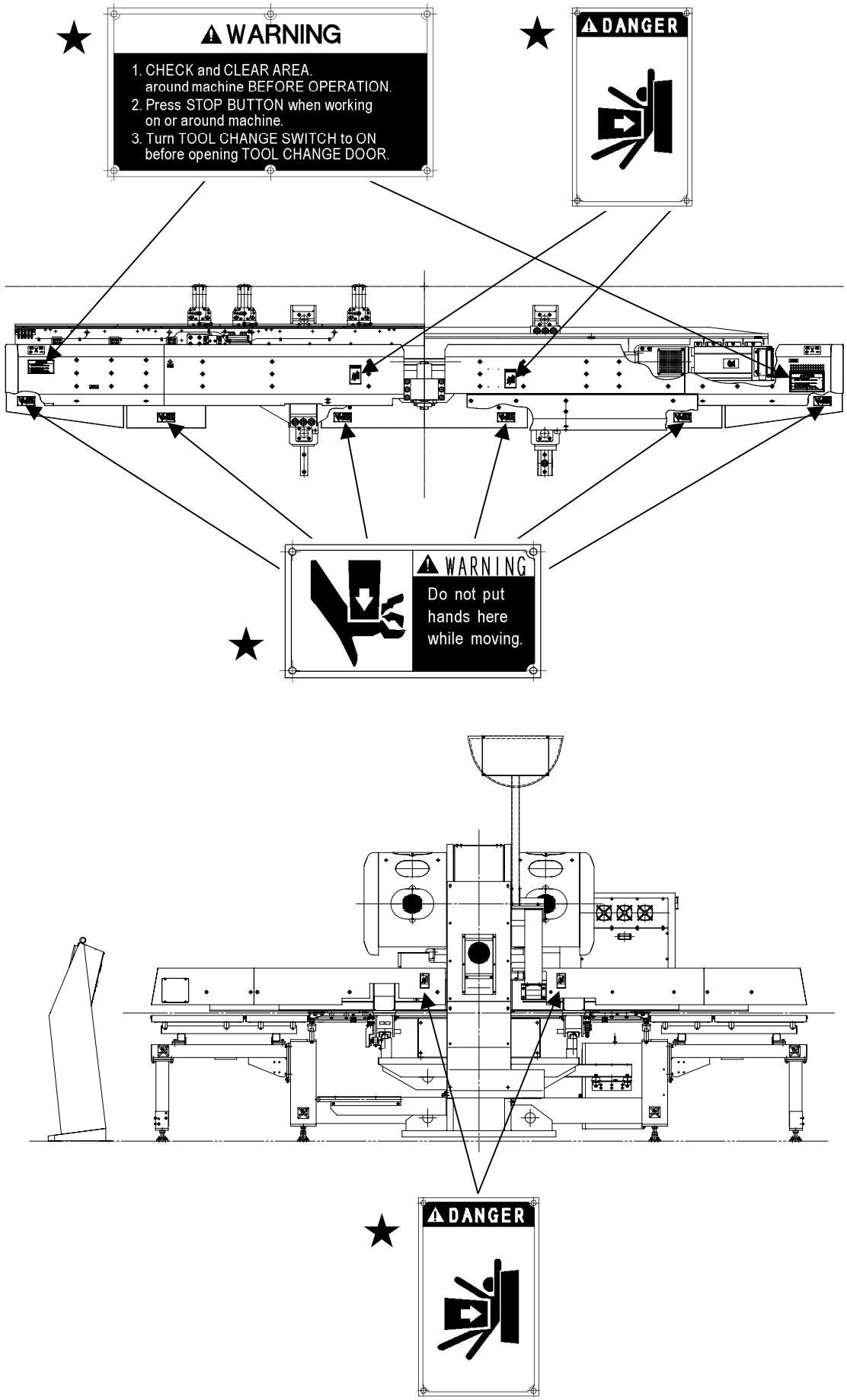


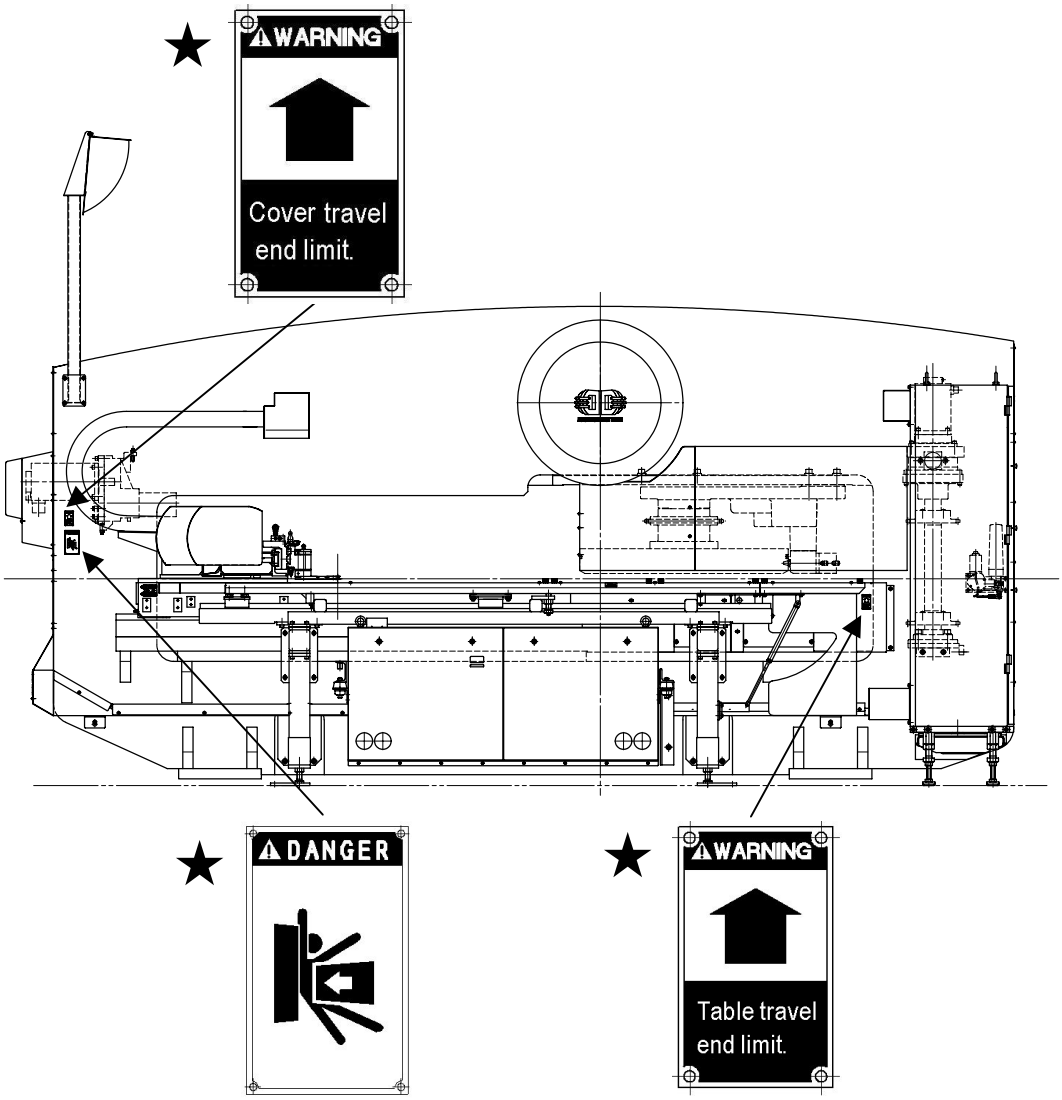
Non-CE mark countries:

Machine is operated without protective devices like light curtains.

WARNING	**●If machine is operated without protective devices like light curtains in non-CE mark country, add asterisked (★) WARNING plates.**




WARNING
1. CHECK and CLEAR AREA.
around machine BEFORE OPERATION.
2. Press STOP BUTTON when working
on or around machine.
3. Turn TOOL CHANGE SWITCH to ON
before opening TOOL CHANGE DOOR.
DANGER
WARNING
Do not put
hands here
while moving.
DANGER



Hazard seriousness level

DANGER	**Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**
WARNING	**Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**
CAUTION	**Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

SAFETY FUNCTIONS

The following functions ensure the safe operations of the machine:

Operator safety

- Hazard detection:
  The machine stops if one of the light beams of the light curtain is interrupted.

- Tool-change protection:
  A switch is installed to lock the carriage and carriage base during a tool change.

- Tool change door interlock:
  The machine does not start if the tool change doors are not closed. The machine stops if either tool change door is opened during operation.

Machine safety

- Servo-system protection:
  The machine stops if an irregularity is detected in the servo-system, such as an overloaded servomotor.

- Stripping failure detection:
  The machine stops if the worksheet is not stripped off the punch or if stripping is delayed.

- Workclamp/Workholder protection:
  The machine stops temporarily if a workclamp enters an area in which it may interfere with the punch. The machine also stops temporarily if there is a danger of workclamp-and-workholder collision during a worksheet repositioning. The workclamps can be opened only when the machine is stopped.

- Overtravel detection:
  The machine stops if the carriage or carriage base overtravels.

- Overtravel precheck:

  An alarm is caused if any program data which will make the carriage or carriage base overtravel are detected. The detection is made automatically by the NC unit in the MEMORY mode prior to program execution.

- Turret index pin & striker position detection:

  Punching will not be performed if a turret index pin is not inserted or if the striker is not positioned over the proper turret track.

- X-gauge block protection:

  The machine does not start if the X-gauge block is not lowered. The machine stops if the X-gauge block is raised erroneously during operation.

- Air pressure detection:

  The machine stops if the operating air pressure has been reduced below the required pressure.

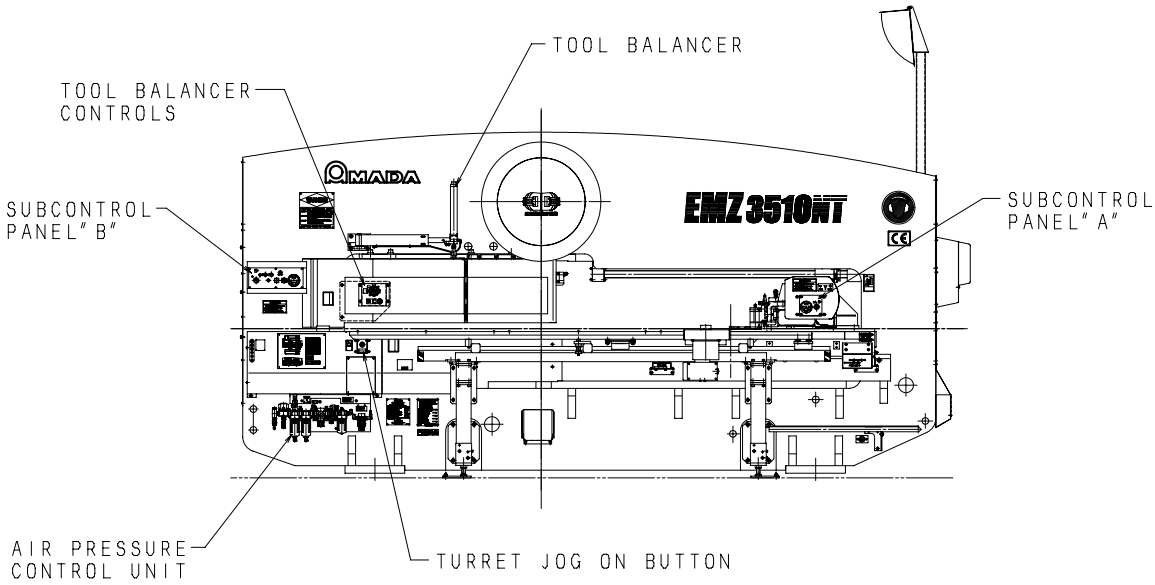
- Hit rate regulation:

  The protection of the drive motor automatically regulates the timing of punching to prevent the temperature of the drive motor from rising. When the hit rate is regulated, “Under hit rate regulation” is displayed in the guide area. If this regulation extremely prolongs the punching time, check the TOOLING DATA display to see that the circumferential length is appropriately set.

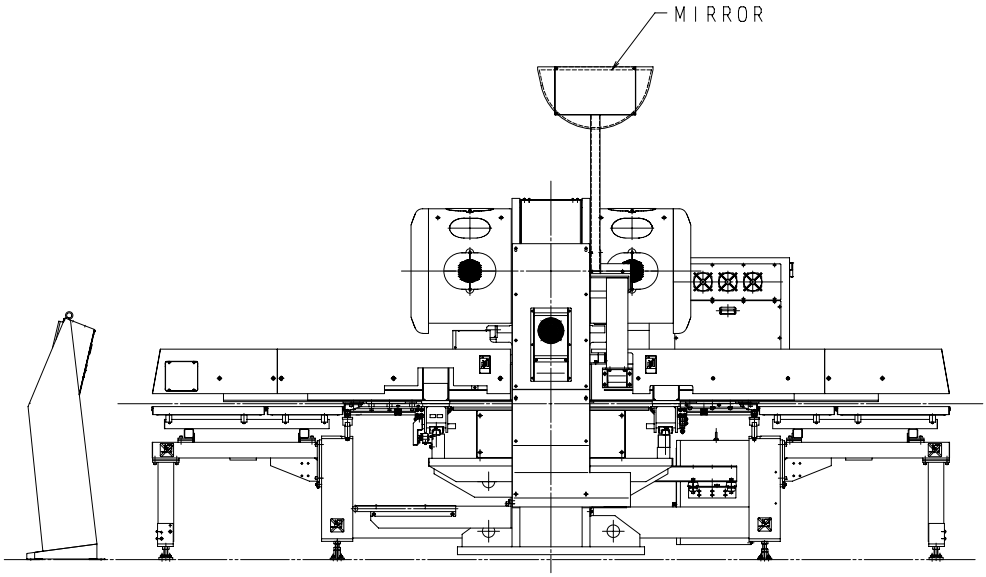
General Information

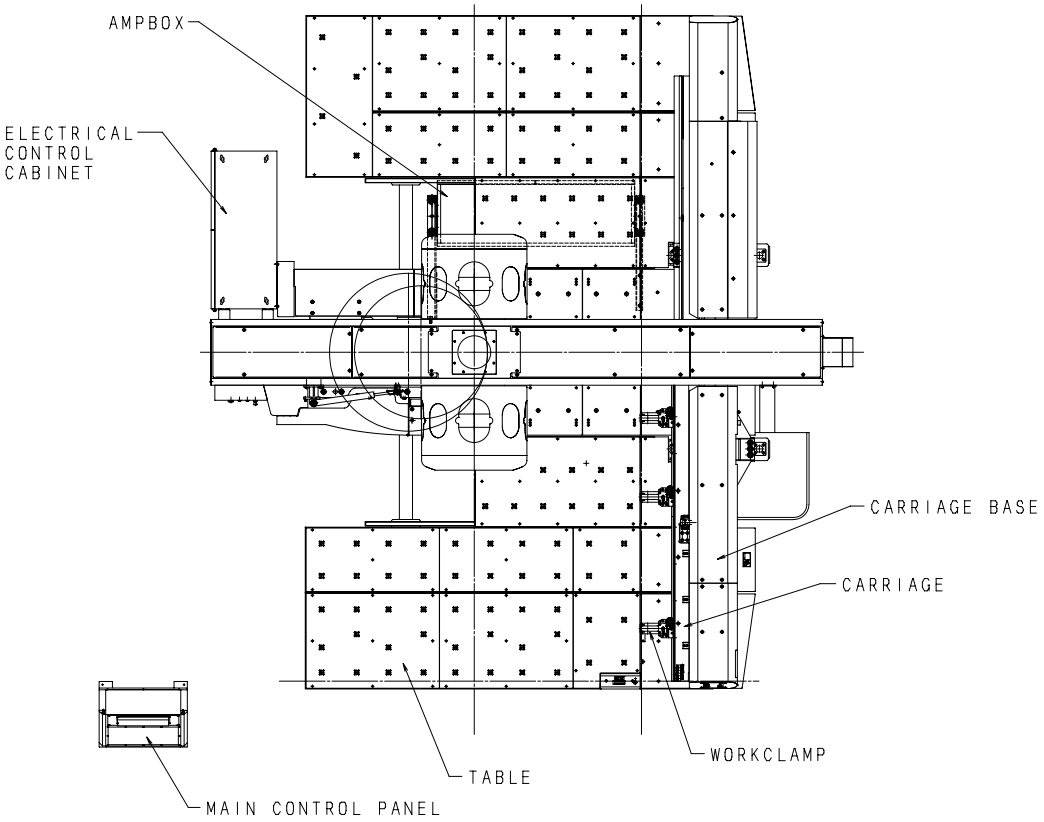
IDENTIFICATION OF MACHINE PARTS

FRONT VIEW



REAR VIEW




AMPBOX
ELECTRICAL
CONTROL
CABINET
CARRIAGE BASE
CARRIAGE
WORKCLAMP
TABLE
MAIN CONTROL PANEL

SPECIFICATIONS

Machine specifications

Press model	EMZ3510NT/EMK3510NT	EMZ3610NT/EMK3610NT
Press capacity	300 kN (30.59 metric tons or 33.71 U.S. tons)	300 kN (30.59 metric tons or 33.71 U.S. tons)
Tool storage	45 or 58*** stations (4AI)	45 or 58*** stations (4AI)
	58 or 70*** stations (2AI)	58 or 70*** stations (2AI)
Max. sheet size	1270 × 5000 mm (50 × 196.85")	1525 × 5000 mm (60 × 196.85")
Max. sheet thickness	3.2 mm (0.126")	3.2 mm (0.126")
Max. sheet mass	50 kg (110 lb) at F1	50 kg (110 lb) at F1
	150 kg (330 lb) at F4	150 kg (330 lb) at F4
Y-axis travel	1270 mm (50")	1525 mm (60")
X-axis travel	2500 mm (98.43")	2500 mm (98.43")
Punching accuracy	±0.1 mm (0.004")*	±0.1 mm (0.004")*
	±0.07 mm (0.003")**	±0.07 mm (0.003")**
Strokes per minute	1 mm pitch (5 mm stroke) : 780 min^{-1} (hpm) 25.4 mm pitch (5 mm stroke, X-axis): 500 min^{-1} (hpm) 25.4 mm pitch (5 mm stroke, Y-axis): 330 min^{-1} (hpm)	1 mm pitch (5 mm stroke) : 780 min^{-1} (hpm) 25.4 mm pitch (5 mm stroke, X-axis): 500 min^{-1} (hpm) 25.4 mm pitch (5 mm stroke, Y-axis): 330 min^{-1} (hpm)
Max. press stroke length	37 mm (1.456")	37 mm (1.456")
Max. feed speed (X-axis)	100 m/min (328 ft/min)	100 m/min (328 ft/min)
Max. feed speed (Y-axis)	80 m/min (262 ft/min)	80 m/min (262 ft/min)
Turret speed	30 min^{-1} (rpm)	30 min^{-1} (rpm)
Power supply	27 kVA	27 kVA
Air supply	250 liters/min (8.8 ft^3/min)	250 liters/min (8.8 ft^3/min)
Operating air pressure	0.5 MPa (5.0 kgf/cm^2 or 72 psi)	0.5 MPa (5.0 kgf/cm^2 or 72 psi)
Length	4877 mm (192")	5422 mm (213.46")
Width	5120 mm (201.57")	5120 mm (201.57")
Height	2317 mm (91.22") 3162 mm (124.49") mirror installed	2317 mm (91.22") 3242 mm (127.64") mirror installed
Mass	22.0 metric tons (24.2 U.S. tons)	24.5 metric tons (27.0 U.S. tons)

*When a 914-mm square sheet is punched.

(Sheet thickness : 2.3mm)

**In the mild mode

***KING type-turret (EMK3510NT / EMK3610NT)

NC specifications

NC model	AMNC-F (FANUC 180i-PB)
Controlled axes	4 axes (X, Y, T, C) + A-axis (Press)
Program code	ISO or EIA
Program format	Address and data
Min. dimension	0.01 mm (0.001"), 0.01°
Memory capacity	125 KB (1 program), 10 MB (total)

Operating environment

Ambient temperature	5 to 40°C (41 to 104°F)
Max. relative humidity	75 % without dew condensation
Illumination	Over 500 lux.

Never use the machine in an explosive environment.

Sound level

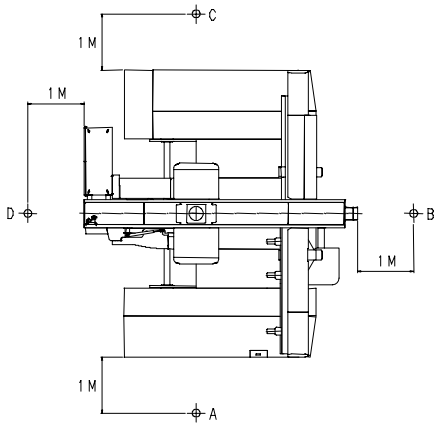
Sound level (measured at position A shown below):

L_A eq = 86.5 dB (A)	No load (Carriage and carriage base move according to program without punching.)
L_A eq = 91.0 dB (A)*	Mild steel sheet SPCC (JIS), measuring 3.2 mm in thickness and 914 × 914 mm in size, is punched by tool without shear angle
L_A eq = 86.6 dB (A)	Mild steel sheet SPCC (JIS), measuring 1.2 mm in thickness and 914 × 914 mm in size, is punched by tool without shear angle
L_P peak < 130 dB	Mild steel sheet SPCC (JIS), measuring 3.2 mm in thickness and 914 × 914 mm in size, is punched by tool without shear angle

Measuring height: 1.6 m from floor

Measurements made: according to ISO 8500

*91.0 dB (A) > 85 dB (A)



Position A: 91.0 dB (A), maximum level
Position B: 88.3 dB (A)
Position C: 89.7 dB (A)
Position D: 88.5 dB (A)

Machine acoustic power level:
LWA = 107.33 dB (A) (54.2 mW) in full load.

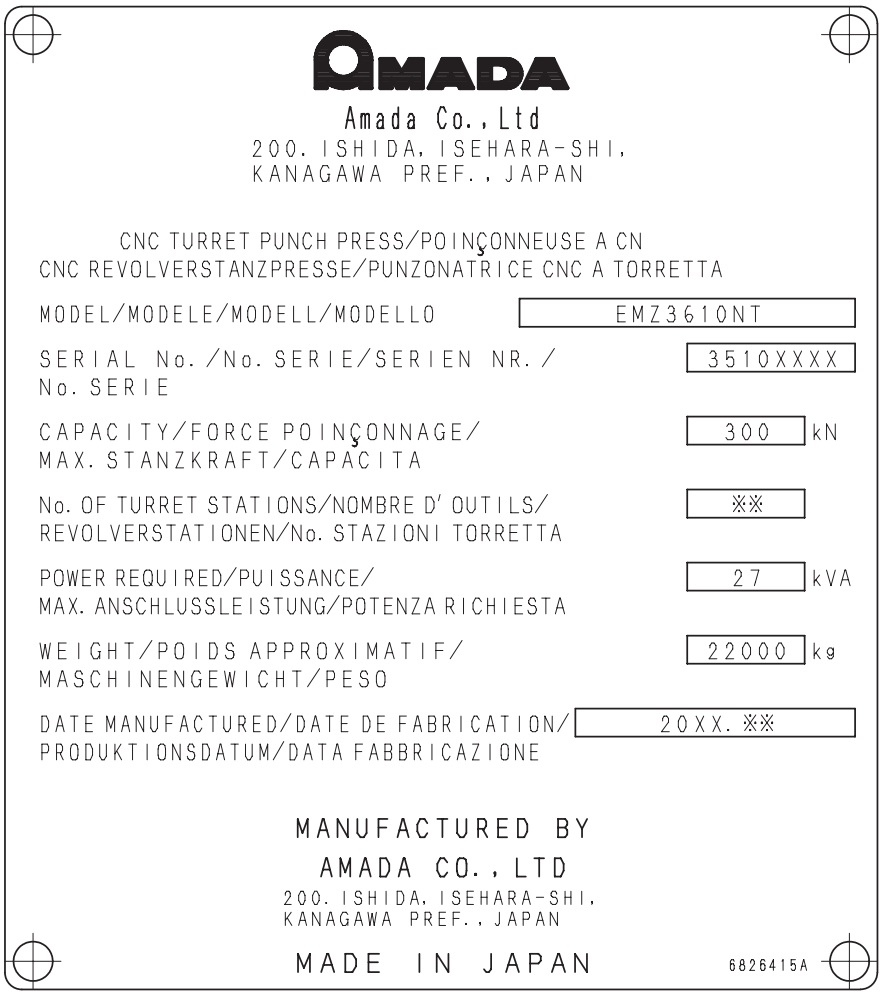
Determination in accordance with ISO 9614-1.

Advice for decreasing sound level

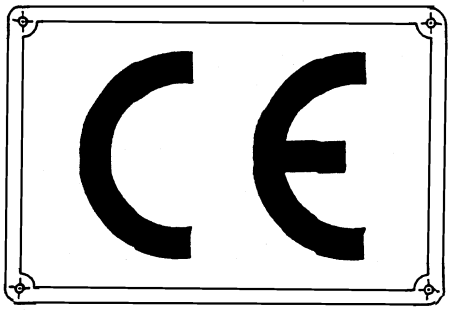
- Keep the operator away from the machine.
- Use a lower press speed and lower axis feed speed.
- Use tools with shear angle.
- Use tools of smaller size.
- Enclose the machine with soundproof walls or the like.

It is also recommended to wear ear protectors.

The following plates are affixed to the frame of the machine.



(For EMZ3610NT)



The machine is accompanied by the Declaration of Conformity shown in the sample below.

CE DECLARATION OF CONFORMITY

****

The undersigned Manufacturer

AMADA Co., LTD.
200, ISHIDA, ISEHARA - SHI,
KANAGAWA Pref. 259 - 11 JAPAN
(J A P A N)

declares under its responsibility that the machine :

DESIGNATION : NC Turret Punching Machine
TYPE : EMZ3610NT
MODEL :
Serial No. :

is in conformity with the Machinery Directive 98/37/CE 22 June 1998 as well as with EMC Directive 89/336/EEC modified by the Directive CE 93/68

At Fujinomiya - shi
Date

Name :
Position : General Manager
Quality Assurance Dept.
Signature :

Part I

Installation

Location and foundation.....*I-2*
Lifting and placing.....*I-2*
Cleaning.....*I-3*
Leveling.....*I-3*
Supplying compressed air.....*I-4*
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Floor plan drawings.....*I-14*
Accessory parts.....*I-22*

Install the machine according to the instructions described in this Part and the instructions given by the AMADA engineer.

LOCATION AND FOUNDATION

Select a location where ample space can be provided around the machine, air compressor and tool storage after their installation, as well as for handling worksheets and parts and performing maintenance. Install an air compressor within a distance of 5 m (15') from the machine.

Install protective devices around the machine (see page I-10).

The location must be isolated from any nearby equipment that produces dust or vibration and at least 3 m (10') from any equipment that produces electrical interference, such as welding, drilling, sanding, or grinding machines.

Provide a firm, level concrete floor for the installation of the machine according to the floor plan provided by AMADA. (See page I-14.)

LIFTING AND PLACING

WARNING

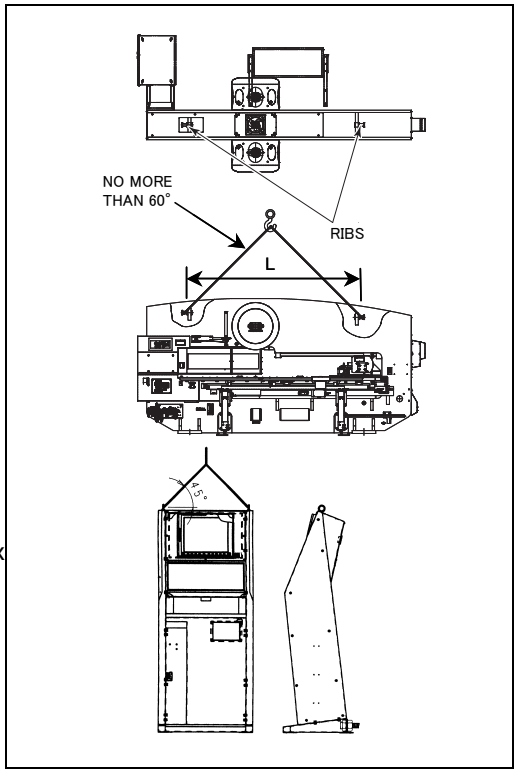
- **Have qualified personnel perform the lifting work. And use a crane and wire rope sling that have ample capacities. Do not spread the wire rope sling so that its angle exceeds 60 degrees when slinging and lifting.**

Lift and carry the machine. Use a crane and wire rope sling with capacities high enough to carry the machine and main control box that weigh:

EMZ3510NT/EMK3510NT: 22.0 metric tons (24.2 U.S. tons)
EMZ3610NT/EMK3610NT: 24.5 metric tons (27.0 U.S. tons)

Main control box: Approx. 100 kg (220 lb)

To lift the machine, attach the wire rope sling to the two ribs located below the top covers. Balance, lift, and place the machine carefully while protecting it from impacts.



*L (distance between ribs)
EMZ3510NT/EMK3510NT: 2940 mm (115.75”)
EMZ3610NT/EMK3610NT: 2940 mm (115.75”)

NOTICE

- A hard disk is installed in the main control box. Do not vibrate, shock, stroke, and sway the main control box.
- Anchor the main control box to the floor so that it cannot be moved or tilted.
- Take the utmost care when moving the machine for relocation or other

CLEANING

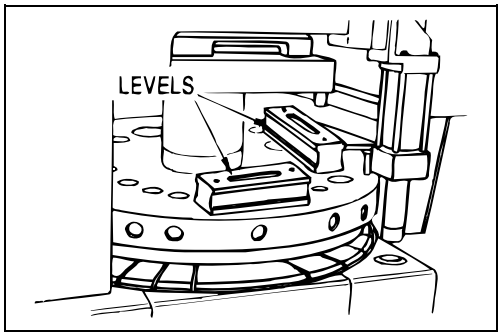
After installing the machine, remove the rust preventive from its surfaces by using cleaning oil, and then apply machine oil to the parts that may rust.

NOTICE

- Never use a scraper or solvents which may damage the coated surfaces of the machine.

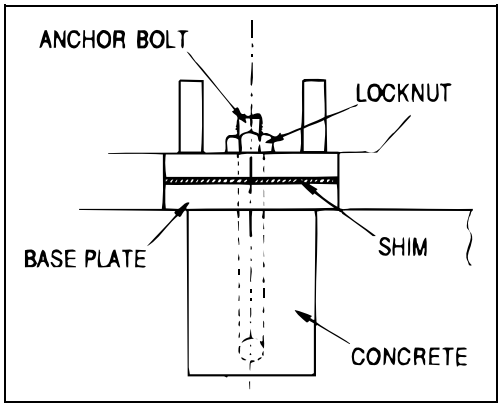
LEVELING

Place spirit levels on the top surface of the upper turret disk in the X- and Y-axis directions. Insert an accessory shim between each machine frame base and its base plate to level the machine.



Lift the machine with a hydraulic jack to insert the shims. Do not lift the bottom of the electrical control cabinet. The machine must be level to within ±0.05 mm/m in both the X- and Y-axis directions.

After leveling the machine, insert the anchor bolt through the holes in each base plate and its machine frame base from below, fit the lock nut on the anchor bolt, and fix the anchor bolt with concrete. When the concrete is completely dried, securely tighten the lock nuts to fix the machine.



SUPPLYING COMPRESSED AIR

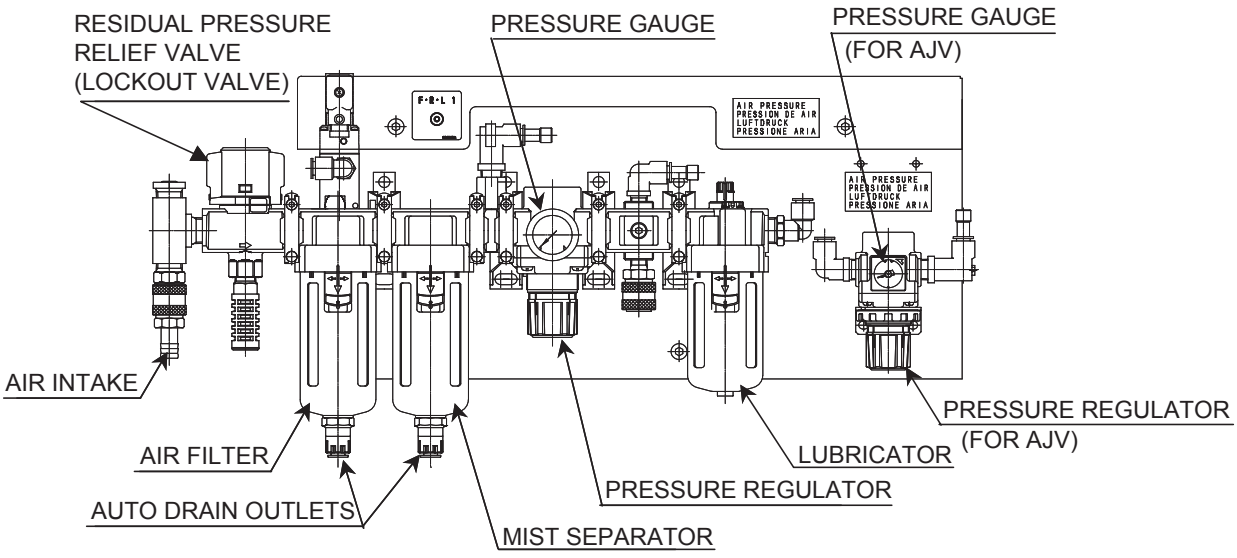
The machine require clean, dry air of 250 liters/min (8.8 ft^3/min) with an operating pressure of 0.5 MPa (5.0 kgf/cm^2 or 72 psi). It is thus necessary to use an air compressor with a capacity of over 2.2 kW (3 HP). Install the air compressor within a distance of 5 m (15') from the machine to minimize the loss of pressure.

Use a pipe or hose with an inside diameter of 1/2" to connect the air compressor with the machine, and connect the pipe or hose to the 1/2" air inlet of the air pressure control unit.

NOTE

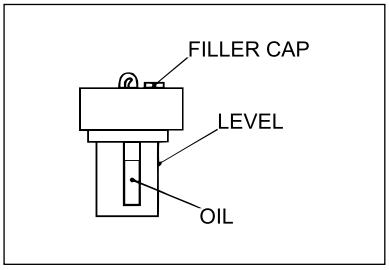
- If the air compressor must be installed more than 5 m (15') away from the machine, use a pipe or hose with an inside diameter of more than 3/4".

AIR PRESSURE CONTROL UNIT



Set the operating pressure at 0.5 MPa (5.0 kgf/cm^2 or 72 psi) for the main air system, the striker air blow system and the servomotor valve lubrication system by pulling out the knob of the pressure regulator and turning the knob clockwise to increase the pressure or counterclockwise to decrease it. Push in the knob when the pressure is set.

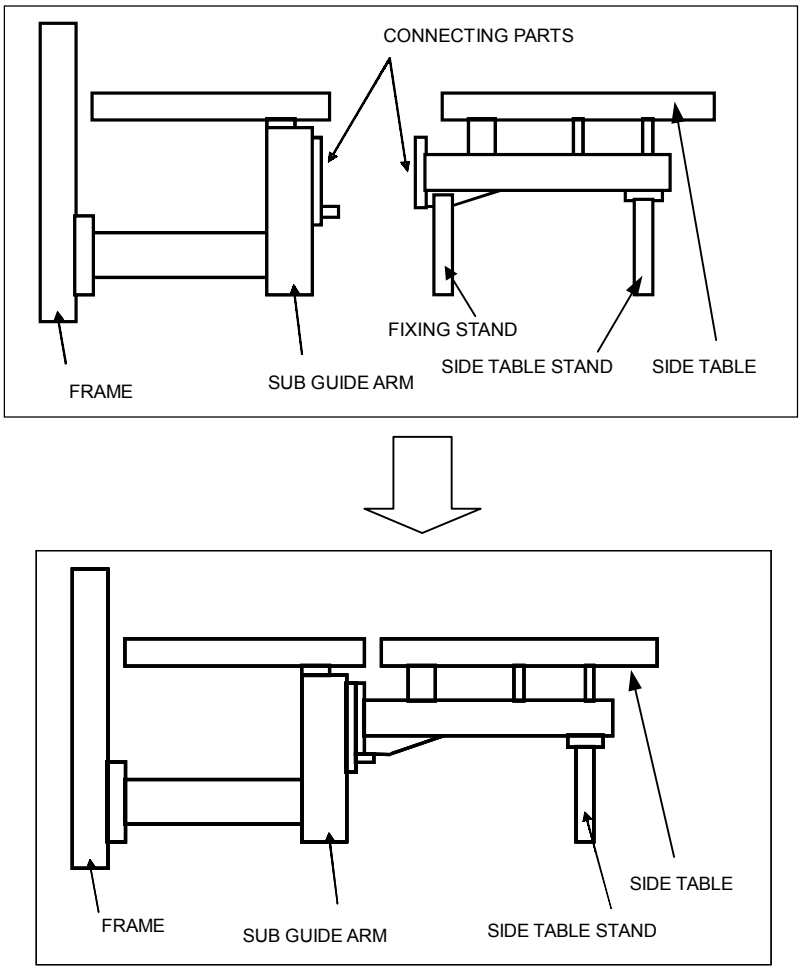
Keep the level of oil in the lubricator above the line marked on the lubricator. The recommended oil is Exxon Teresstic 33, Mobil DTE Oil Light, or Shell Tellus Oil 32. Refer to Part VIII, Maintenance, for adjustment of the amount of oil drops.



INSTALLING FRONT AND REAR SIDE TABLES

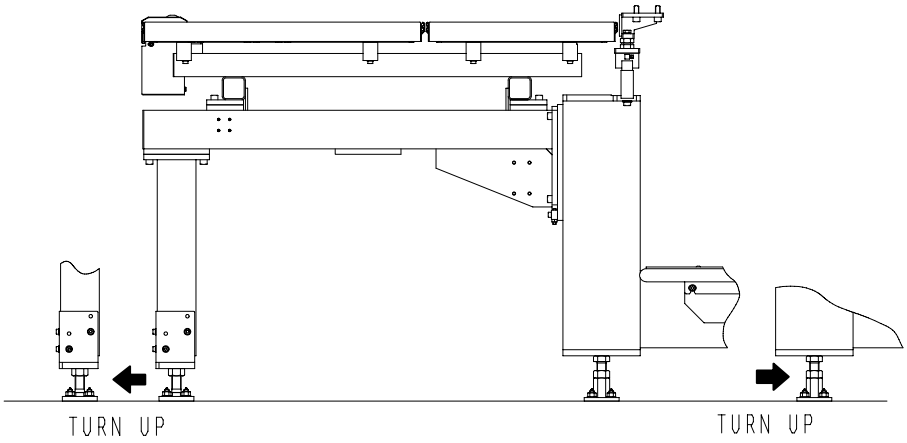
Install the front and rear side tables as described below.

1 Move the connecting part of the side table to the guide in the connecting part of the sub guide arm. Connect the side table to the sub guide arm with four fixing bolts.



2 Remove the fixing stand.

3 Place auxiliary blocks below the sub guide arm and the side table stand.



4 Turn up the bolt of each auxiliary block until it supports the bottom surface of the sub guide arm or side table stand.

NOTICE

- If the auxiliary block bolt is turned up excessively, the LM guides may interfere with the sub guide arm or side table stand when it passes over the sub guide arm or side table stand. Turn up the bolts so that the sub guide arm and side table stand are raised by hits lightly.(about 0.05mm).

5 Fix the auxiliary block bolts with the lock nuts.

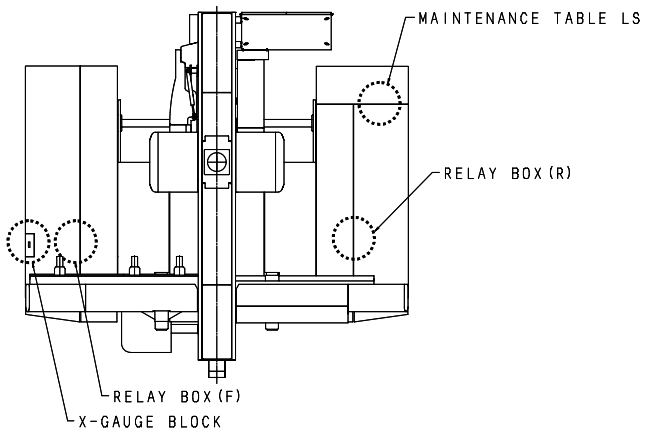
6 After positioning, fix the auxiliary blocks with anchors.

Connect the cables from the machine as follows:

Connect the cable YF to the relay box F.

Connect the cable Y18 to the relay box R.

Connect the cable S18 (CE) to the relay box for the maintenance table limit switch.



Connecting air hoses

Connect the red and blue air hoses from the machine to the air plugs of the X-gauge block assembly and free-motion bearing assembly.

CONNECTING ELECTRIC POWER

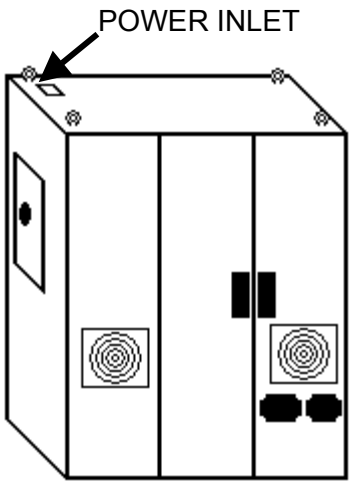
WARNING

- **Have a qualified electrician carry out all electrical work in order to prevent injuries or accidents.**

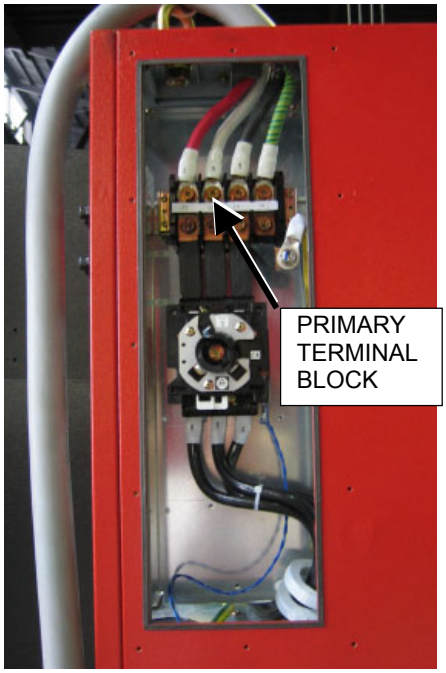
Use a power supply that is not shared by a welding, drilling, sanding, or grinding machine that can cause electrical interference. This machine requires a power supply of 27 kVA, and the voltage should be within 200 VAC ±10 %. Use a power cable with conductors, each having a cross section of 38 mm^2. The lead of the ground conductor should be longer than that of the power cable conductors.

1 Pull the power cable from the shop circuit breaker through the power inlet into the electrical control cabinet.





2 Connect the three power cable conductors and grounding conductor to the primary terminal block.



3 Install the cover and handle of the machine circuit breaker switch.



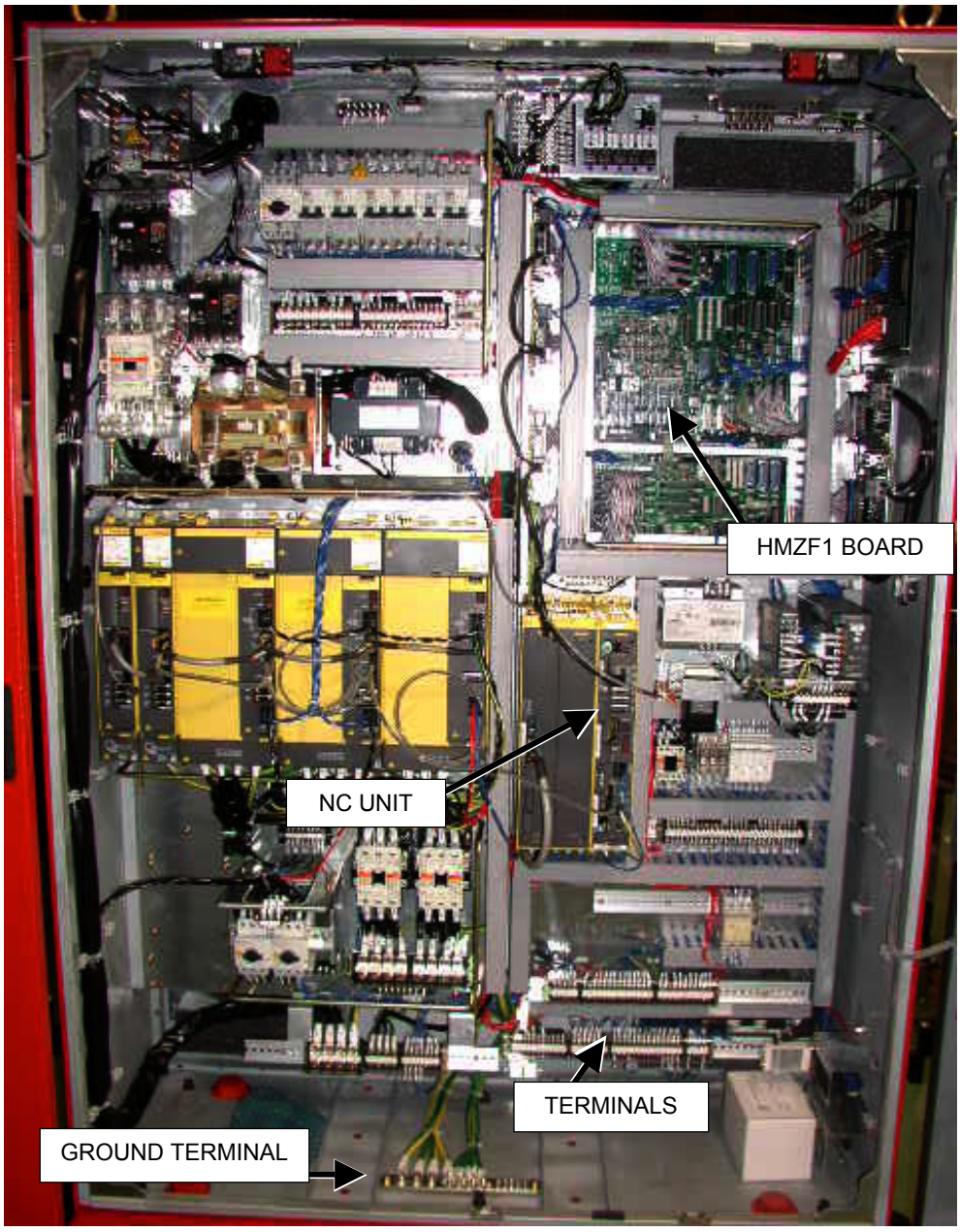
NOTE

- Connect the cable of the auxiliary control stand to the receptacle in the electrical control cabinet

Electrical connections of electrical control cabinet and main control panel

Line that connects

Cable name	Function	Connection tip
WE1	Round conductor	Ground terminal
WE2	NC power on/off, NC reset, stop, etc	PD connector on lower right metal plate in control box
WE3	Safety device reset switch etc	EUPD connector on HMZF1 board
WE4	Safety device on LED etc	PD2 on HMZF1 board
WE5	I/O link	JD44 connector on NC unit
WE6	I/O link	JD1B connector on I/O board 1
WE7	Emergency switch	Terminals
HSSB	HSSB	COP7 on HSSB board



INSTALLING PROTECTIVE DEVICES

Consider the movement of the machine and worksheet to ensure the safety of the operator when installing protective devices (light curtains) around the machine. The worksheet will thrust out in the front of the machine when the machine axes are zero-returned after automatic repositioning. An oversized worksheet will thrust out both in the front and rear of the machine during operation. Refer to the electric and pneumatic circuit diagrams for connecting the protective devices.

- Use a light curtain at the front of the machine.
- Install the light curtain at the following distance D from the travel range of the worksheet (or from the end of the auxiliary table if used):

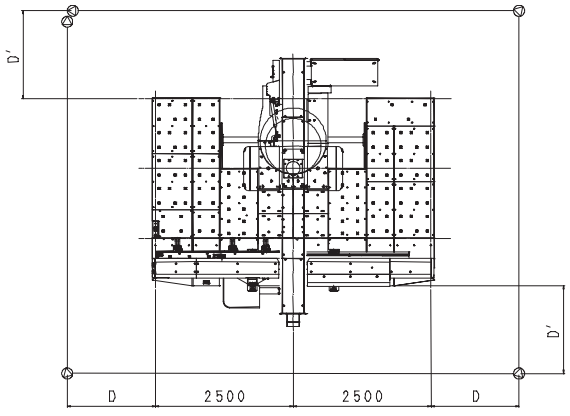
NOTE

● When oversize worksheets are not used and when automatic repositioning is not taken into account, install the light curtain at the distance D' from the table at the front and rear of the machine. The distance D' can be calculated by the same equations as the distance D, but the location of the light curtain varies.

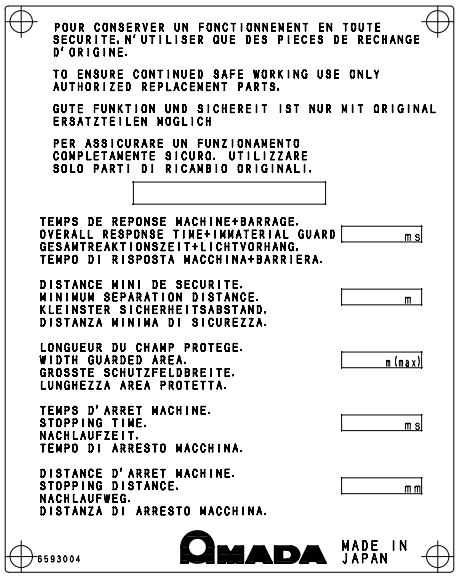
When the SICK LGS system (standard accessory) is used,
D or D' = 1600 mm

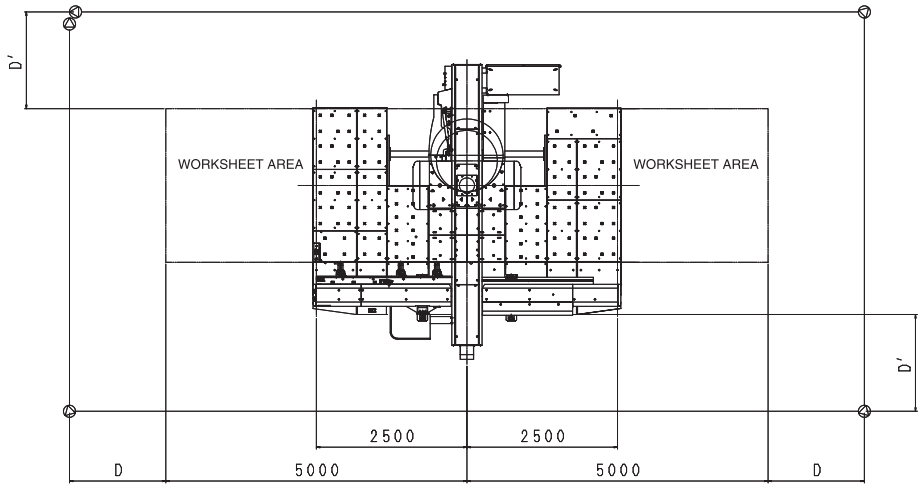
The response time of the SICK LGS system is 20 ms. For more information on the SICK LGS system, refer to its manual.

When another system is used, the distance D or D' is calculated by
D or D' = 850 + (1600 x T) (mm)
where T is the overall response time (machine stopping time plus response time of the light curtain).



PROTECTIVE DEVICES POSITION
(IN CASE OF WORKSHEET SIZE≦ 2500×1270mm)
*WITHOUT REPOSITIONING





PROTECTIVE DEVICES POSITION
(IN CASE OF WORKSHEET SIZE≦ 2500×1270mm)

- The topmost light beam of the light curtain must be higher than 1100 mm, and the bottommost light beam must be lower than 300 mm.
- When a wall or fence is installed, it must be higher than 1600 mm and more than 900 mm apart from the travel range of the worksheet.
- Use a fence with openings of 50 mm or less.

Determining hazardous area

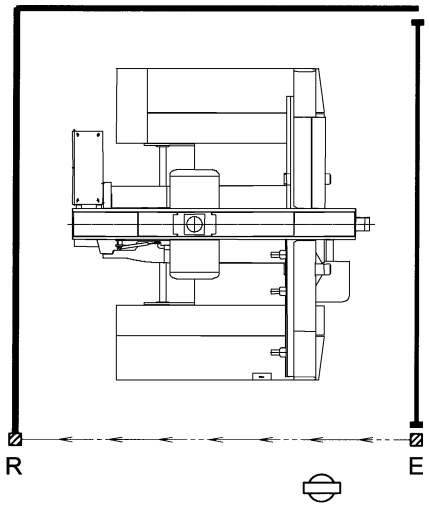
Determine the hazardous area of the machine by considering the moving parts of the machine, such as the tables, covers, and worksheet to be punched.

This hazardous area is defined by the dimensions of the largest worksheet that can be punched. Please inform the AMADA engineer who will install the machine of the maximum worksheet dimensions. The engineer will work out the layout of the peripheral guard in accordance with the samples given on the next page.

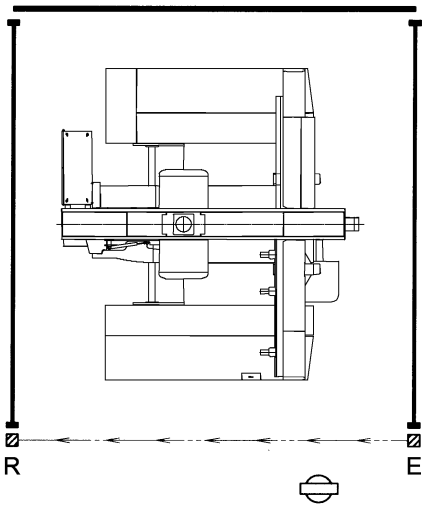
NOTICE

- It is important to take automatic repositioning into account when calculating the hazardous area. This notice should be written on the commissioning engineer's report.

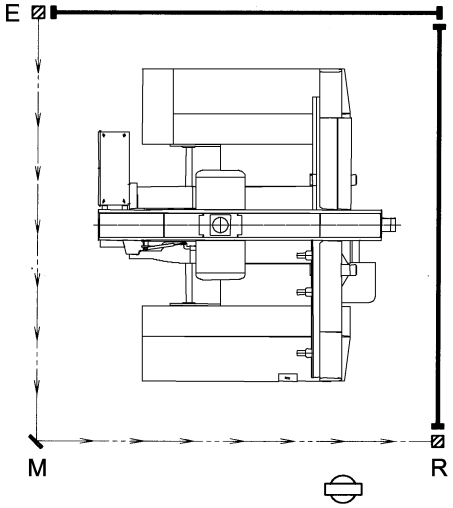
Layout samples



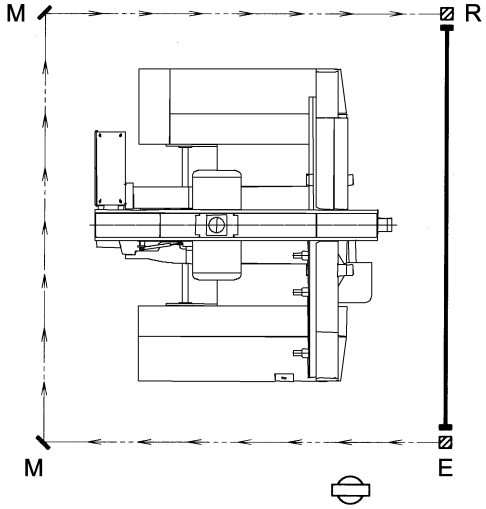
Example 1



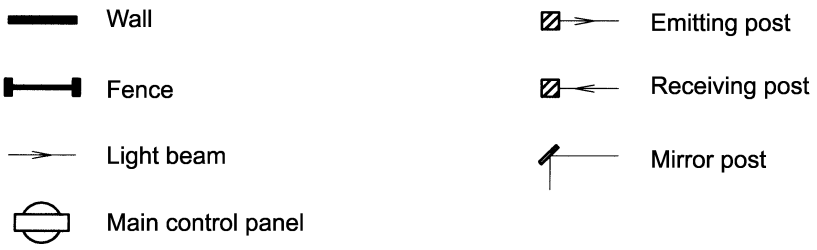
Example 2



Example 3

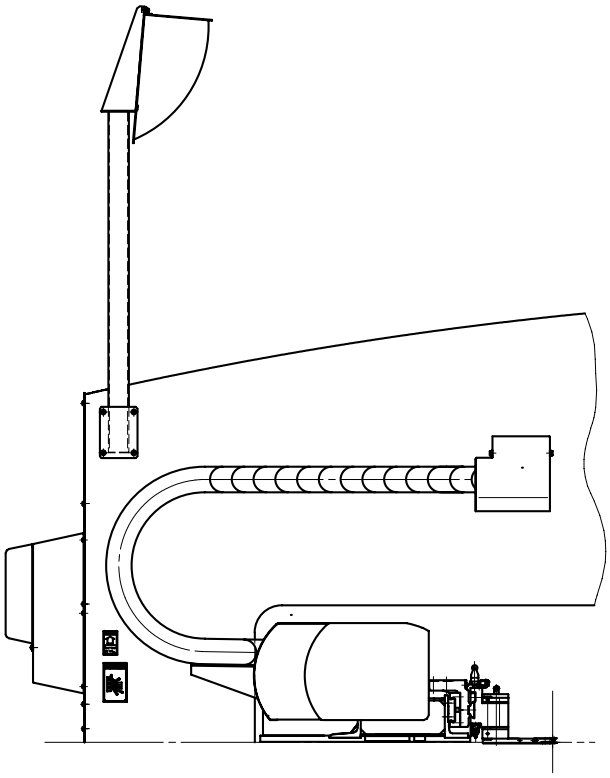


Example 4



INSTALLING MIRROR

Install the mirror (standard accessory) for checking the area at the rear of the machine to the frame with four bolts as shown below.

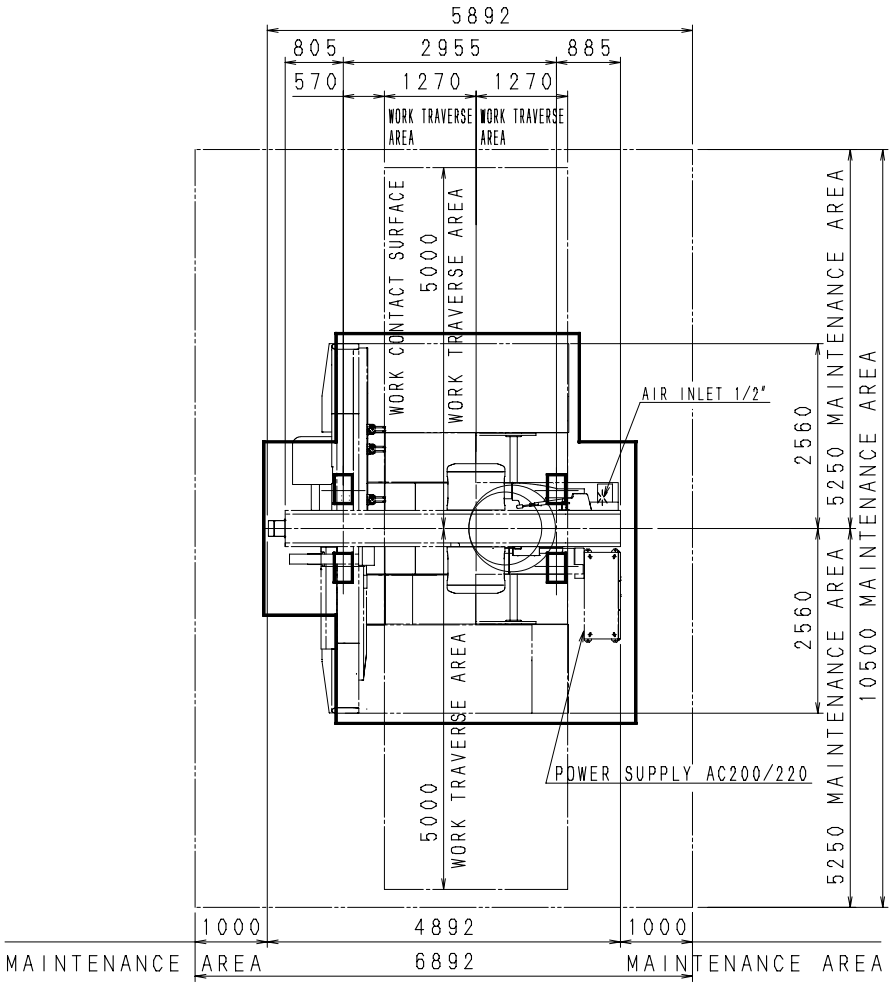


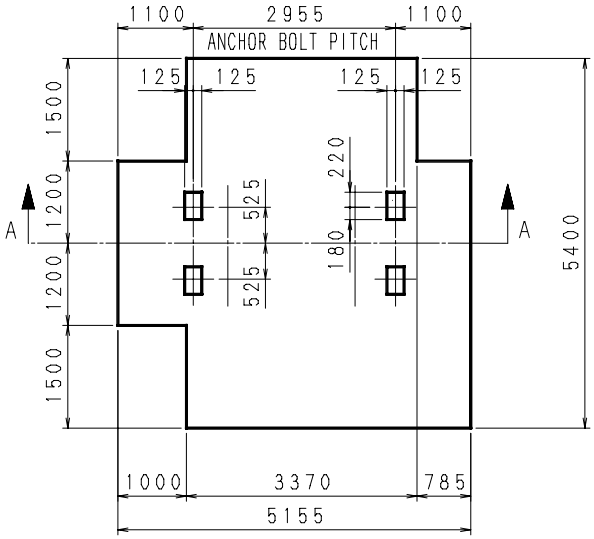
FLOOR PLAN DRAWINGS

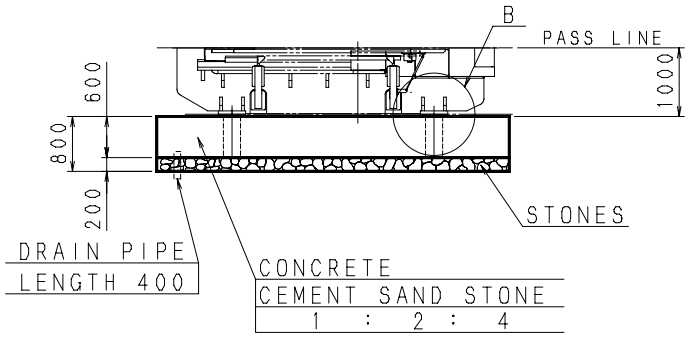
EMZ3510NT / EMK3510NT floor plan

(J-ANCHOR BOLTS)

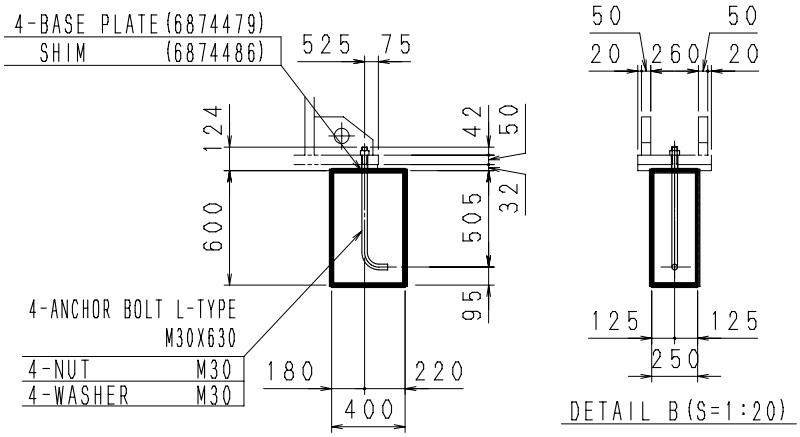
Unit: mm







SECTION A-A

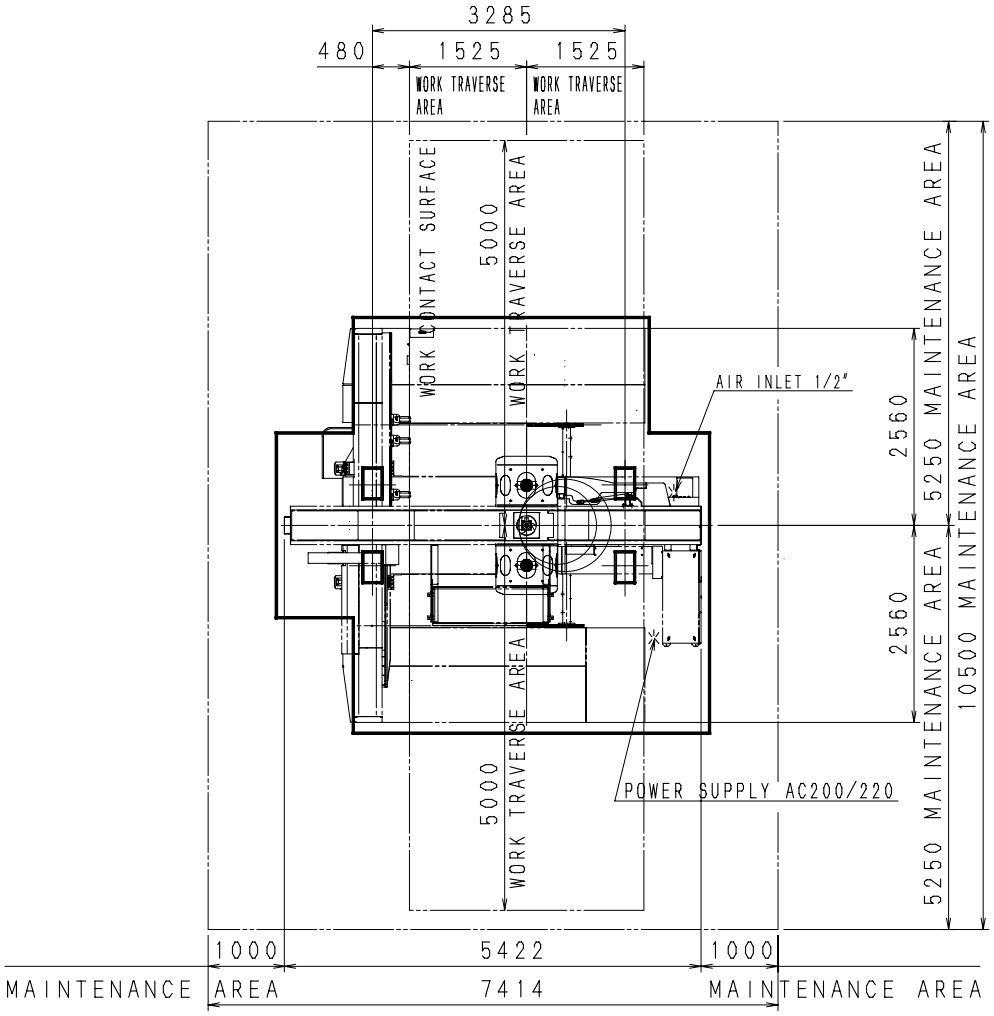


DETAIL B(S=1:20)

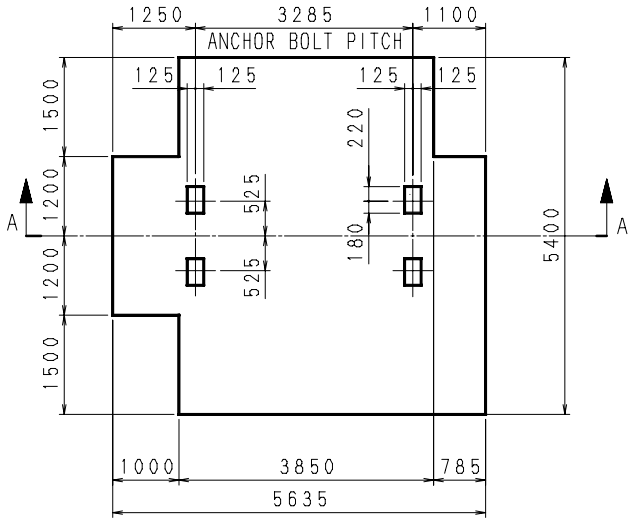
EMZ3610NT / EMK3610NT floor plan

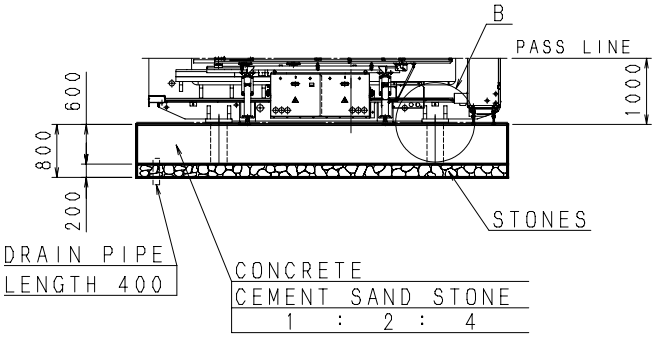
(J-ANCHOR BOLTS)

Unit: mm

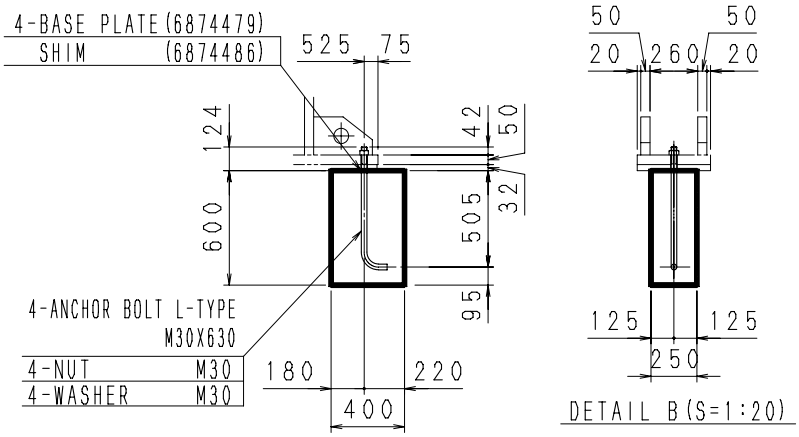


Unit: mm





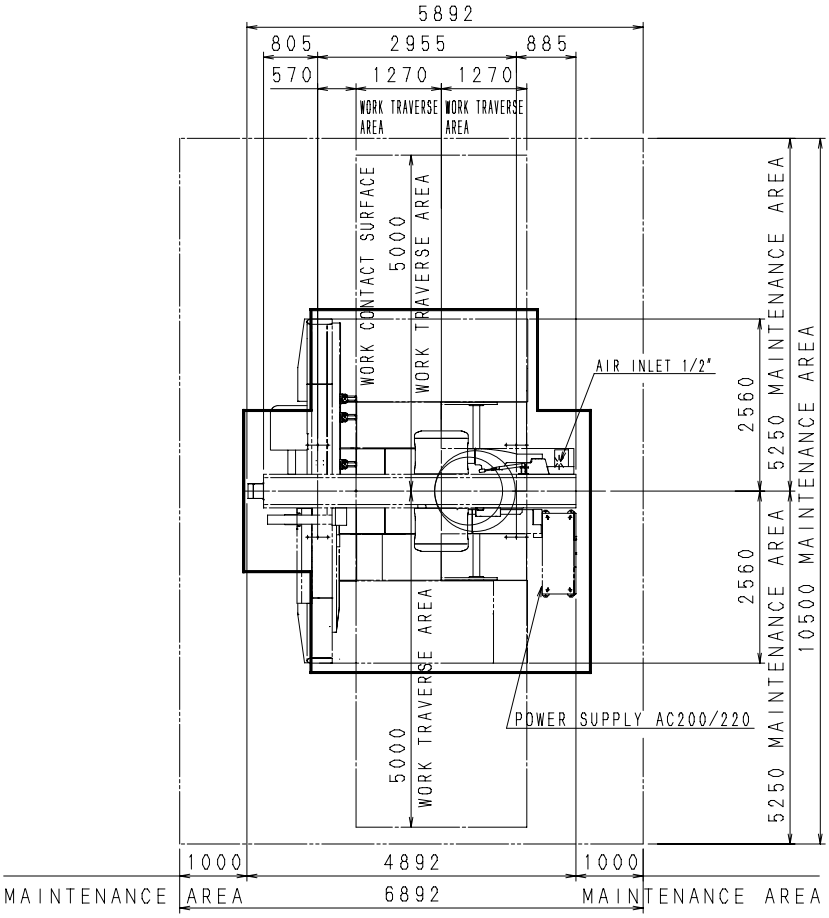
SECTION A-A

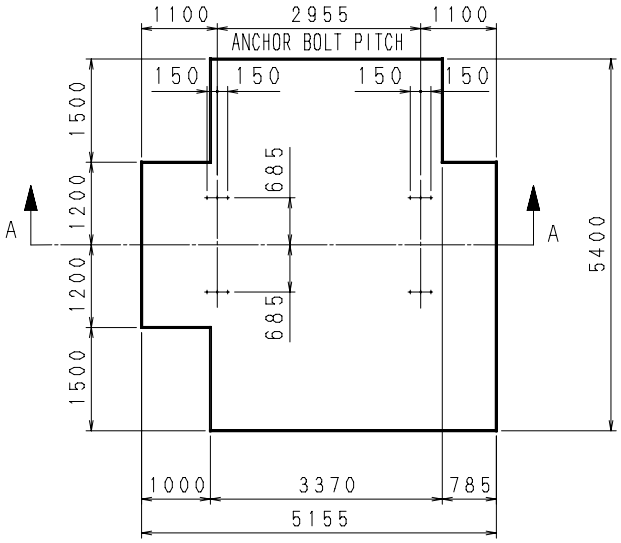


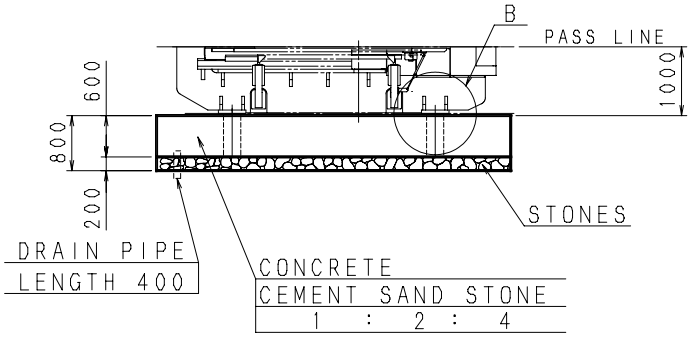
EMZ3510NT / EMK3510NT floor plan

(AY-PLATES)

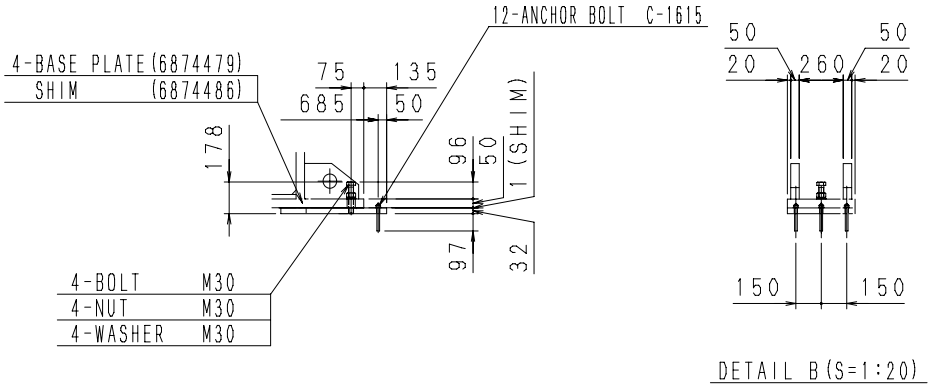
Unit: mm







SECTION A-A

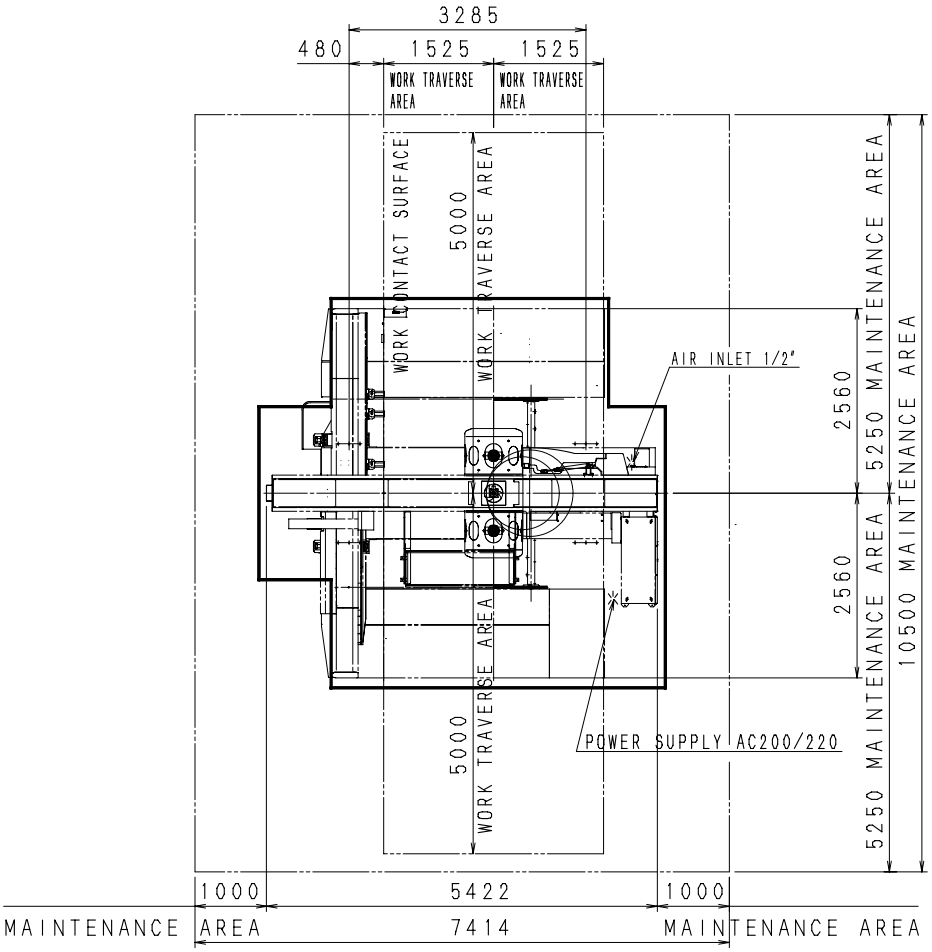


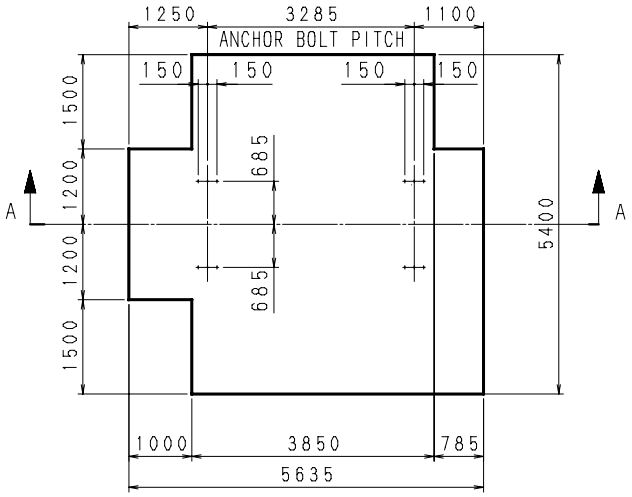
DETAIL B(S=1:20)

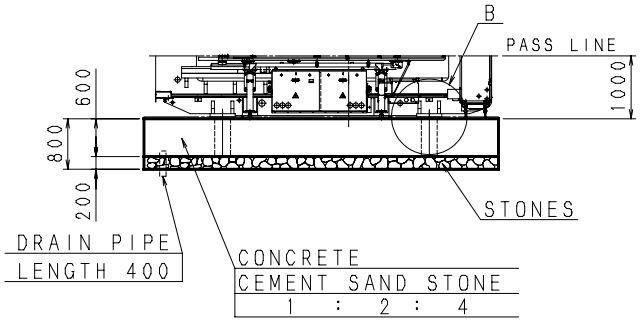
EMZ3610NT / EMK3610NT floor plan

(AY-PLATES)

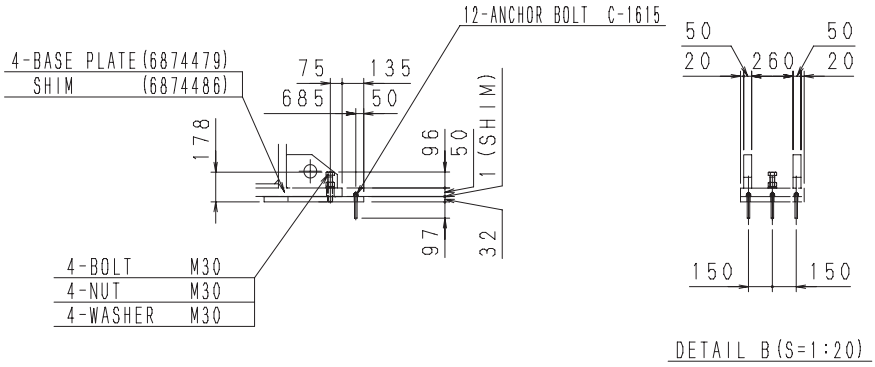
Unit: mm




1250
3285
1100
ANCHOR BOLT PITCH
150
150
150
150
1500
1200
1200
1500
685
685
A
A
5400
1000
3850
785
5635


B
PASS LINE
1000
600
800
200
STONES
DRAIN PIPE
LENGTH 400
CONCRETE
CEMENT SAND STONE
1 : 2 : 4

SECTION A-A


12-ANCHOR BOLT C-1615
4-BASE PLATE(6874479)
SHIM (6874486)
75
135
685
50
178
96
50
1(SHIM)
97
32
4-BOLT M30
4-NUT M30
4-WASHER M30
50
50
20
260
20
150
150
DETAIL B(S=1:20)

ACCESSORY PARTS

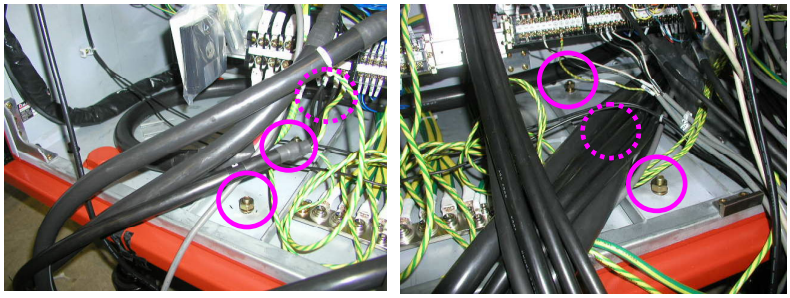
Electrical control cabinet level adjuster bolts

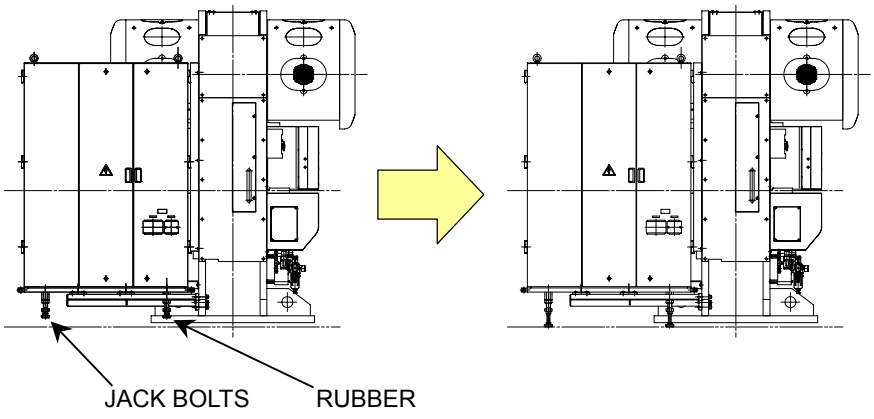
Make the electrical control cabinet self-standing.

Remove the brackets from the electrical control cabinet, and make the electrical control cabinet stand on its own as described below.

1 Open the door of the electrical control cabinet, remove the six M10 nuts (indicated by circles in the photo below) in the reinforcing ribs in the middle and lower positions, and loosen the four jack bolts (M20 and P = 2.5).

2 Loosen the four jack bolts until they completely touch the ground or floor surface, or the surface of the block on which the electrical control cabinet is installed, and adjust them so that they are parallel within 1 to 5 mm.





NOTICE

- Loosen the four jack bolts two more turns (or 5mm) after their contact with the supporting surface while balancing them and checking for interference between the electrical control cabinet and the frame fastening brackets. Check that the electrical control cabinet is self-standing. Then securely fix the jack bolts with lock nuts.

Part II

Controls

Electrical control cabinet *II-2*
Controls in electrical control cabinet *II-2*
Main control panel *II-4*
Floppy disk drive *II-11*
CD-ROM drive *II-11*
RS232C interface *II-12*
Ethernet interface *II-12*
Bar code reader interface (option) *II-12*
Controls in main control panel drawer *II-13*
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Subcontrol panel “B” *II-15*
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Keyboard *II-16*
Foot switch *II-17*
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The switches and other devices used to operate and control the machine are described in this Part.

ELECTRICAL CONTROL CABINET

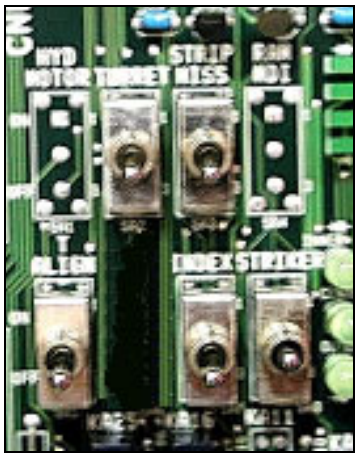
Machine circuit breaker switch

Used to turn on and off the power of the machine and the NC unit. The flow of overcurrent automatically turns off the power of the machine and the NC unit.

The lever can be padlocked when the switch is turned to OFF.



Controls in electrical control cabinet



[1] TURRET switch

Turned to ON to rotate the turret. Normally set to ON.

[2] STRIP MISS switch

Turned to ON to enable the stripping failure detection function. Normally set to ON.

[3] STRIKER switch

Used for maintenance purposes. Normally set to CENTER.

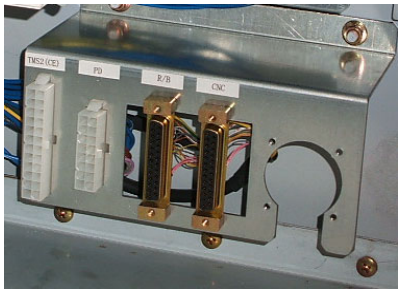
[4] INDEX switch

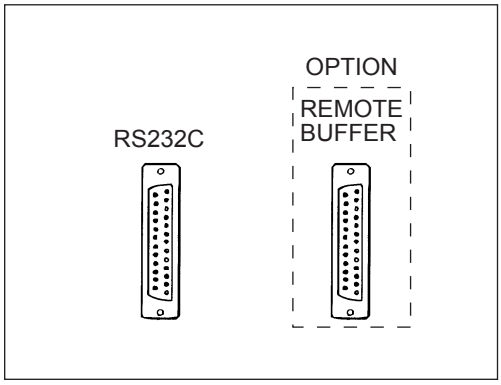
Turned to ON to rotate the auto-index device. Always set to ON.

[5] T. ALIGN switch

Turned to ON to stop the A-axis servomotor when the TOOL CHANGE keyswitch on the subcontrol panel “B” is turned to ON. Normally set to OFF. Used in the ON position only for maintenance purposes.

[6] Interfaces





The left-hand RS232C interface is used for the input and output of punching programs and custom macro programs. Its connector configuration is as shown below. This interface is used for connecting the CNC unit to an external device. The right-hand optional interface is connected to a remote buffer and used for the DNC operation of the machine.

NOTE

● When using these interfaces, properly set the input and output parameters.

CONNECTOR CONFIGURATION

1	2	3	4	5	6	7	8	9	10	11	12	13
FG	SD	RD	RS	CS	DR	SG	CD					

14	15	16	17	18	19	20	21	22	23	24	25
						ER					+24N

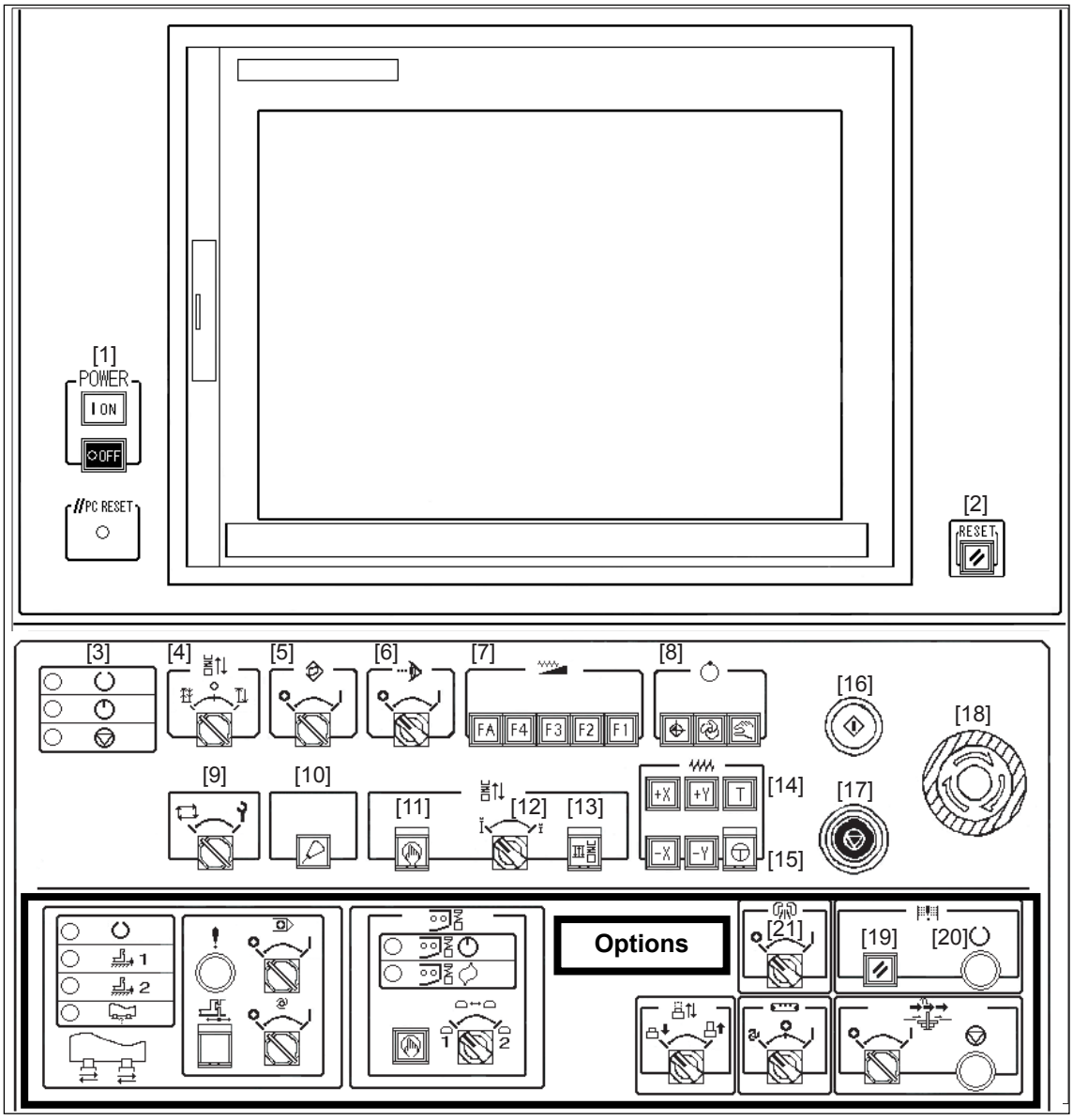
CHANNELS FOR SETTING INPUT AND OUTPUT PARAMETERS

0: Handy file unit
1: RS232C interface
2: Not used
3: Remote buffer
4: Built-in floppy disk drive

MAIN CONTROL PANEL

NOTICE

- A hard disk is installed in the main control box. Do not vibrate or shock the main control box for fear of damaging the hard disk.



[1] POWER ON and OFF buttons

Used to turn on and off the power of the NC unit.

[2] RESET (⧸⧸) key

Pressed to reset the NC unit.

[3] Indicator lights

NC READY light (green)

Illuminates to indicate that the NC unit is ready for operation.

TOP DEAD CENTER light (green)

Illuminates to indicate that the press is at the top dead center.

MACHINE STOP light (red)

Illuminates to indicate that the machine is stopped by a program stop (M00) or optional stop (M01) command.

[4] PRESS SELECT keyswitch

Used to select the press operation pattern as shown in the table below.

NC mode	Keyswitch position	Press operation pattern
MEMORY	INCHING	The press does not operate at all.
	OFF	
	CYCLE	The press punches one cycle after positioning.
MANUAL	INCHING	The press inches as long as the PUNCHING button is pressed and held. The rotational direction of the indicator is counterclockwise.
	OFF	The press does not operate at all.
	CYCLE	

NOTE

- In the INCHING mode, the press moves up and down as long as the PUNCHING button is pressed and held. The press automatically returns to the top dead center when the NC mode is changed from MANUAL or the RESET key is pressed.

[5] EDIT PROTECT keyswitch

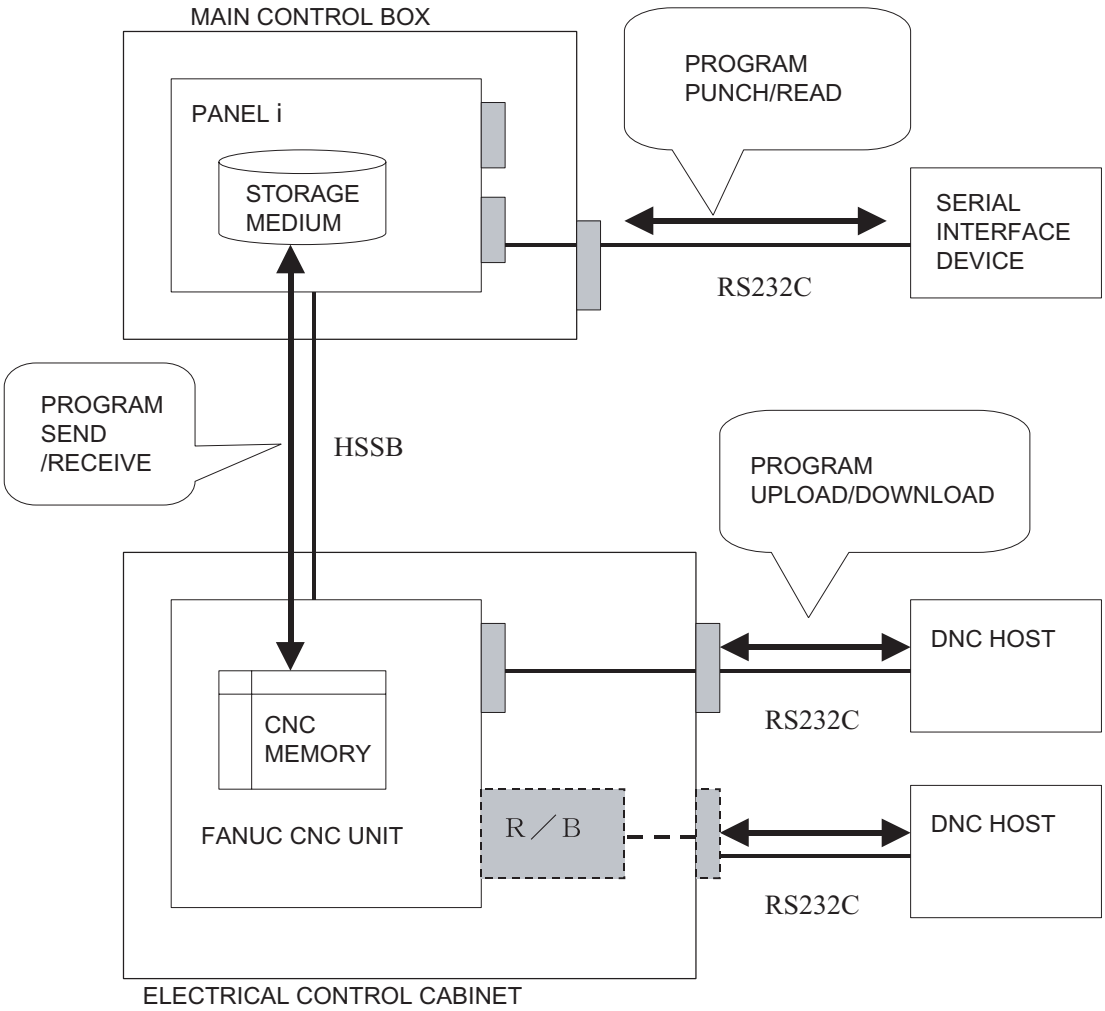
Turned to ON to protect the programs stored in the memory of the NC unit from being overwritten or erased. Normally set to ON, except when editing the program or programs. Turned to ON to lock the keyswitch and remove its key.

Connecting to PANEL *i* and to CNC unit

NOTICE

- The storage media of the PANEL i are the hard disk and floppy disk of the main control panel. The storage medium of the CNC unit is its memory. Note that the data save-to location varies with the automatic operating mode selected.

  The RS232C port at the rear of the main control panel is connected to the PANEL i. The RS232C port of the electrical control cabinet is connected to the CNC unit. Note that the different RS232C ports have different “connect to” devices.



NOTE

- When the RS232C port is connected through the remote buffer (R/B) to the CNC unit, programs can be downloaded to the CNC memory, but cannot be uploaded from the CNC memory.

<automatic operating mode is PROGRAM or SCHEDULE>

Programs are stored in the PANEL i. The program for punching each job is selected and transferred to the CNC unit.

<automatic operating mode is CNC>

Programs are stored in the CNC memory and are only displayed on the PANEL i.

[6] OVERRIDE switch

Enables the override detection function and repositioning confirmation function.

Once the program is run, the function of detecting only the dead zone in the override zone and the repositioning confirmation function are enabled.

Turned to OFF to enable the same functions as enabled for the second and subsequent worksheets by turning to the ON position.

Once the program is run in this condition, all functions are disabled.

Override first worksheet discrimination function available (standalone specification)

	OVERRIDE switch			
	ON		OFF	
	First worksheet	Second and subsequent worksheets	First worksheet	Second and subsequent worksheets
Distortion region	Detected (Worksheet can be punched by pressing START button)	Not detected	Not detected	Not detected
Dead zone region	Detected (Worksheet can be punched by pressing PUNCHING button and START button)	Detected (Worksheet can be punched by pressing PUNCHING button and START button)	Detected (Worksheet can be punched by pressing PUNCHING button and START button)	Not detected

Override first worksheet discrimination function not available (line specification)

	OVERRIDE switch			
	ON		OFF	
	First worksheet	Second and subsequent worksheets	First worksheet	Second and subsequent worksheets
Distortion region	Detected (Worksheet can be punched by pressing START button)	Not detected	Not detected	Not detected
Dead zone region	Detected (Worksheet can be punched by pressing PUNCHING button and START button)	Detected (Worksheet can be punched by pressing PUNCHING button and START button)	Not detected	Not detected

[7] FEEDRATE buttons

Pressed to set the feed speed of the carriage (X-axis) and carriage base (Y-axis) and the indexing speed of the turret (T-axis) and auto-index device (C-axis). Each illuminates when the corresponding speed is selected.

Button	X- and Y-axes	T-axis	C-axis
F1	100/80 m/min (3937/3149 ipm)	30 min^{-1} (rpm)	60 min^{-1} (rpm)
F2	75/60 m/min (2952/2362 ipm)	30 min^{-1} (rpm)	60 min^{-1} (rpm)
F3	50/40 m/min (1968/1574 ipm)	15 min^{-1} (rpm)	30 min^{-1} (rpm)
F4	25/20 m/min (984/787 ipm)	15 min^{-1} (rpm)	30 min^{-1} (rpm)

NOTE

- Press the FA button to change to the mild mode. The mild mode emphasizes the stability of positioning or reduces the speed at which the X- and Y-axes are accelerated or decelerated. This mode can be selected at all of the feedrates F1 to F4.

The feed speed of the carriage and carriage base in the MANUAL mode is 5.2 m/min (204 ipm) regardless of the selection made here.

The turret indexing speed in the MANUAL mode is 3 min^{-1} (rpm) regardless of the selection made here.

[8] MODE buttons

Pressed to select an NC mode. Each illuminates when the corresponding NC mode is selected.

RETRACT button

Selects the RETRACT mode to permit the manual zero-return of an axis or axes.

MEMORY button

Selects the MEMORY mode to permit the execution of a program stored in the memory of the NC unit.

MANUAL button

Selects the MANUAL mode to permit the manual feed of the carriage (X-axis) or carriage base (Y-axis), rotation of the turret (T-axis), or direct programming.

[9] SAFETY DEVICE keyswitch

Turned to OPERATION to enable a protective device or devices. Set to OPERATION during the automatic operation of the machine. Turn the keyswitch to SETTING, remove the key, and keep it by yourself when performing a preparation or maintenance operation. The SAFETY DEVICE READY light should then extinguish.

[10] LUBRICATION button

Pressed to lubricate the press.

[11] PUNCHING button (with protective cover)

The press operates to punch the worksheet as long as the button is pressed and held in the MANUAL mode. When the machine is paused in the dead zone during its automatic operation or when nesting tools are used, the punching operation is enabled by pressing this button and then the START button.

NOTE

- The PUNCHING button is pressed to allow punching when:
  - The PRESS SELECT keyswitch is turned to INCHING.
  - The INDEX PIN switch on the subcontrol panel “B” is turned to IN.
  - The striker is set in the position to allow punching.

[12] RAM POSITION switch

Used to select where to stop the press in a MEMORY mode operation: top dead center or top stroke end. Normally turned to the right position (top stroke end). Turned to the left position (top dead center) when the worksheet is warped by the punching operation.

[13] RAM MDI START button (with protective cover)

Used by the AMADA service engineer for maintenance purposes. Pressed to stop the press in the position set on the RAM MDI display.

[14] FEED buttons

These buttons have different functions in the RETRACT mode and the MANUAL mode.

+X, +Y, and T buttons

Pressed to zero-return the carriage (X-axis), carriage base (Y-axis), and turret (T-axis) and auto-index device (C-axis) in the RETRACT mode, respectively. Each illuminates to indicate that the corresponding axis is zero-returned.

+X, -X, +Y, and -Y buttons

Pressed to feed the carriage (X-axis) and carriage base (Y-axis) in the indicated direction in the MANUAL mode.

[15] OT RELEASE button (with protective cover)

Used to clear the overtravel condition of the carriage (X-axis) or carriage base (Y-axis) in combination with the corresponding FEED button. These two buttons must be pressed together.

[16] START button

Starts the operation of the machine when pressed in the MEMORY or MDI mode. Also pressed to move a turret station to the tool change position using the Turret rotation display. Illuminates to indicate that the machine is operating or its associated sections are operating.

NOTICE

- When “Override” is shown on the MESSAGE display and the machine is paused, check that the worksheet is not distorted, and then press the START button. The machine resumes the operation to punch the worksheet. When “Dead zone” is shown on the MESSAGE display and the machine is paused, the worksheet cannot be punched by pressing the START button because one of the workclamps is also likely to be punched.

  When “Dead zone” is shown, press first the PUNCHING button and then the START button to punch the worksheet. If this procedure is performed, the machine punches where it may punch one of the workclamps. Before performing the procedure, check the position of the workclamps.

[17] STOP button

Pressed to stop the operation of the machine. Illuminates when pressed and stays on for the duration of the stopped condition.

[18] EMERGENCY STOP button

Stops the operation of the machine as soon as pressed in any NC mode, and then locked. Unlock the button by turning it clockwise, return the machine to the normal condition, and zero-return all axes before starting the machine for another operation. The machine cannot resume the operation interrupted by the depression of the button.

[19] SAFETY DEVICE & AIR DOWN RESET button

Pressed to reset the actuated protective device or the alarm caused by a low air pressure. The actuated protective device cannot be reset unless the TOOL CHANGE keyswitch on the subcontrol panel “B” is turned to OFF.

[20] SAFETY DEVICE READY light

Illuminates to indicate that a protective device or devices are turned on. Extinguishes to indicate that the SAFETY DEVICE keyswitch is turned to SETTING, a protective device is actuated, or the TOOL CHANGE keyswitch on the subcontrol panel “B” is turned to ON in the MANUAL mode.

[21] VACUUM switch (option for 1/2” and 1/4” stations)

Turned to ON to enable the vacuum function and perform punching using vacuum. Turned to OFF to disable the vacuum function and perform punching without using vacuum.

Floppy disk drive

A drive for data input and output using a floppy disk.

Insert the floppy disk all the way into the drive with the label side up. Press the eject button to remove the floppy disk from the drive.

The access LED illuminates or flashes to indicate that data is read from or written to the floppy disk.



NOTICE

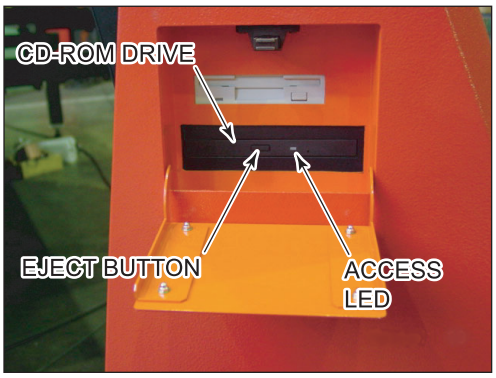
- Do not press the eject button while the access LED is illuminated or flashing. If you press the eject button to remove the floppy disk from the drive, the data in the floppy disk may be destroyed.
- The floppy disk drive is susceptible to dust. Keep its acrylic cover closed except when inserting or removing the floppy disk.

CD-ROM drive

A drive to read data from a CD-ROM.

The CD-ROM drive will be used by the AMADA service engineer for maintenance and adjustment.

Press the eject button to insert the CD-ROM into or remove the CD-ROM from the drive.



Place the CD-ROM in the tray with the label side up. The access LED is illuminated or flashing while the data is read from the CD-ROM.

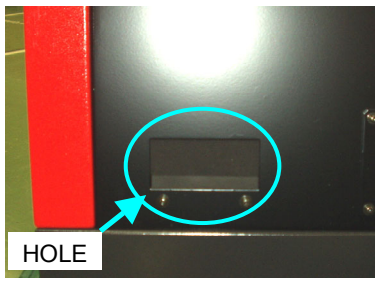
NOTICE

- Do not press the eject button while the access LED is illuminated or flashing. If you press the eject button to remove the CD-ROM from the drive, the data read from the CD-ROM may be destroyed.
- The CD-ROM drive is susceptible to dust. Keep its acrylic cover closed except when inserting or removing the CD-ROM.

RS232C interface

Used to connect the PANEL i to an external device.

Pull the cable from the external device through the hole at the lower rear of the main control box, remove the rear cover, and connect the cable to the interface in the main control box.



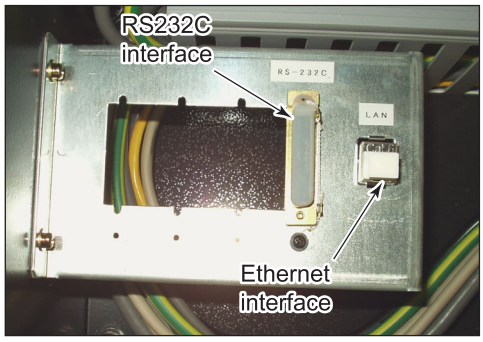
NOTE

Be sure to use the interface after replacing the rear cover.

Ethernet interface

Used for network connection with the AP100 or ASIS100PCL.

Pull the cable from the AP100 or ASIA100 PCL through the hole at the lower rear of the main control box, remove the rear cover, and connect the cable to the interface in the main control box.



NOTE

Be sure to use the interface after replacing the rear cover.

Bar code reader interface (option)

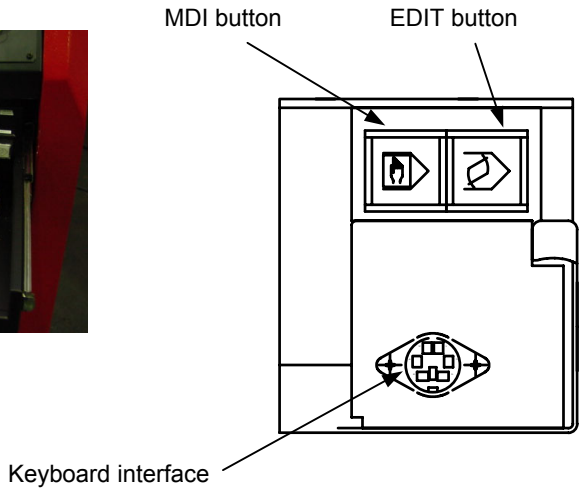
Used for connection of the optional bar code reader. When the machine is network-connected with the AP100 or ASIS100PCL, the optional bar code reader can be used to read the bar code printed on the output document of a part and call the program of the part.

NOTE

● This interface is added on the front of the main control panel.

Controls in main control panel drawer





[1] EDIT button

Used for entering a program in the CNC memory.

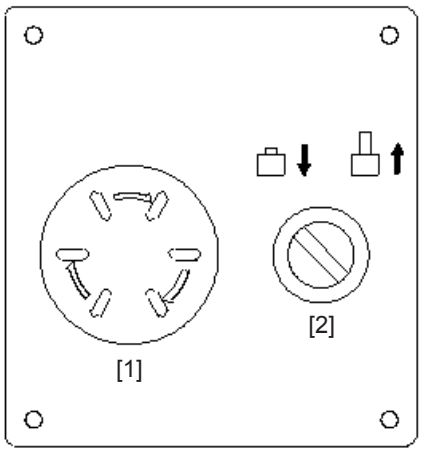
[2] MDI button

Used by AMADA for maintenance purposes. Do not touch this button.

[3] Keyboard interface

Used for connection of the accessory keyboard.

SUBCONTROL PANEL “A”



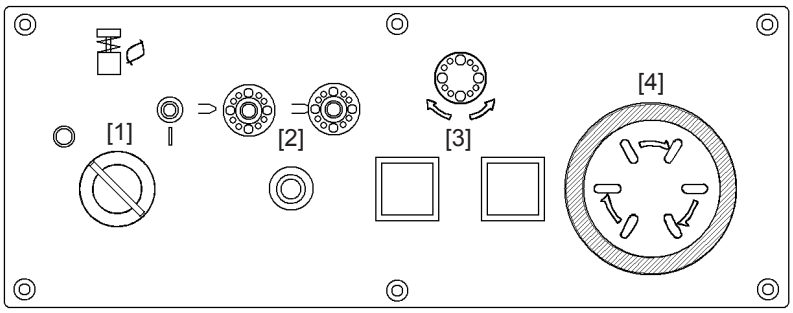
[1] EMERGENCY STOP button

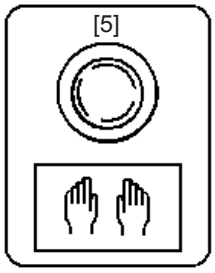
Stops the operation of the machine as soon as pressed in any NC mode, and then locked. Unlock the button by turning it clockwise, return the machine to the normal condition, and zero-return all axes before starting the machine for another operation. The machine cannot resume the operation interrupted by the depression of the button.

[2] X-GAUGE BLOCK switch

Turned to UP to raise the X-gauge block and to DOWN to lower the X-gauge block.

SUBCONTROL PANEL "B"





[1] TOOL CHANGE keyswitch

Turned to ON in the MANUAL mode to lock the carriage (X-axis) and carriage base (Y-axis). The turret can be then safely rotated. The key can be removed from the keyswitch in the ON position.

NOTE

- Never turn the switch to ON during the operation of the machine in any NC mode other than MANUAL.

[2] INDEX PIN switch, and IN and OUT lights

The switch is used to operate the turret index pins in the MANUAL mode and is disabled in other NC modes. The pins are inserted in the turret disks by turning the switch to IN to illuminate the IN light. The pins are withdrawn when the switch is turned to OUT to illuminate the OUT light. Normally keep the OUT light illuminated. The switch is spring-returned to the neutral position when it is released.

[3] TURRET JOG buttons

Used to rotate the turret in the MANUAL mode when the TOOL CHANGE keyswitch (see above) is turned to ON. Use the left button to rotate the turret clockwise and the right button to rotate the turret counterclockwise. The turret rotates at 3 min^{-1} (rpm). The turret stops and indexes the nearest turret station in its rotational direction when each button is released.

The turret index pins must be out of the turret disks when using these buttons. Press each button within 0.5 sec after pressing and holding the TURRET JOG ON button (see below).

The TURRET JOG buttons are disabled in NC modes other than MANUAL.

[4] EMERGENCY STOP button

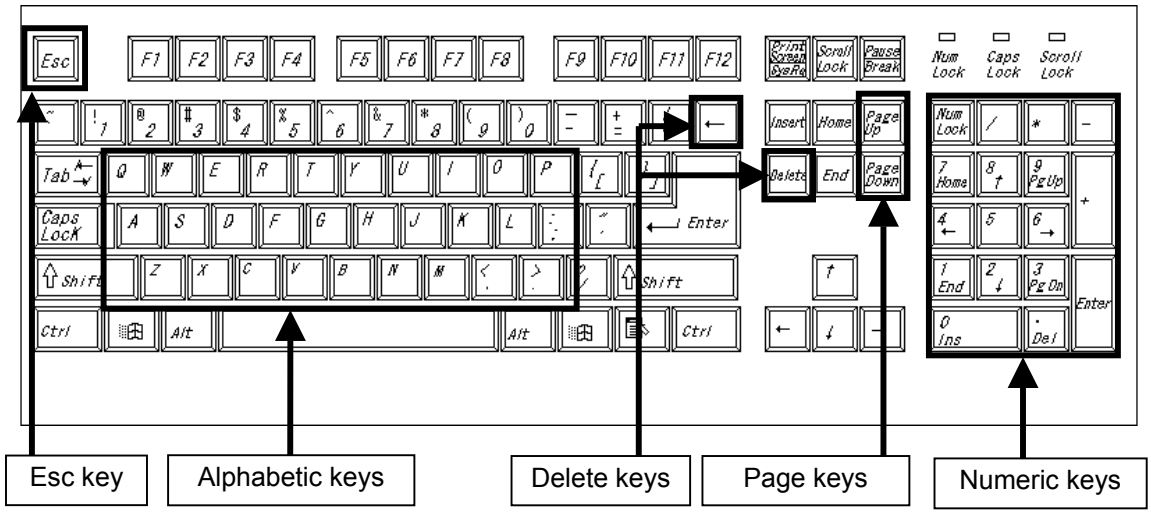
Stops the operation of the machine as soon as pressed in any NC mode, and then locked. Unlock the button by turning it clockwise, return the machine to the normal condition, and zero-return all axes before starting the machine for another operation. The machine cannot resume the operation interrupted by the depression of the button.

[5] TURRET JOG ON button

Used to rotate the turret in combination with the TURRET JOG buttons (see above) in the MANUAL mode.

OTHER CONTROLS

Keyboard



[1] Alphabetic keys

Pressed to enter alphabetic characters or symbols.

[2] Numeric keys

Pressed to enter numerals, the minus symbol (–), and the decimal point (.), among other characters.

[3] Esc key

Pressed to cancel the entry operation.

[4] Delete keys

Pressed to delete a character.

← : Deletes the character before the cursor.

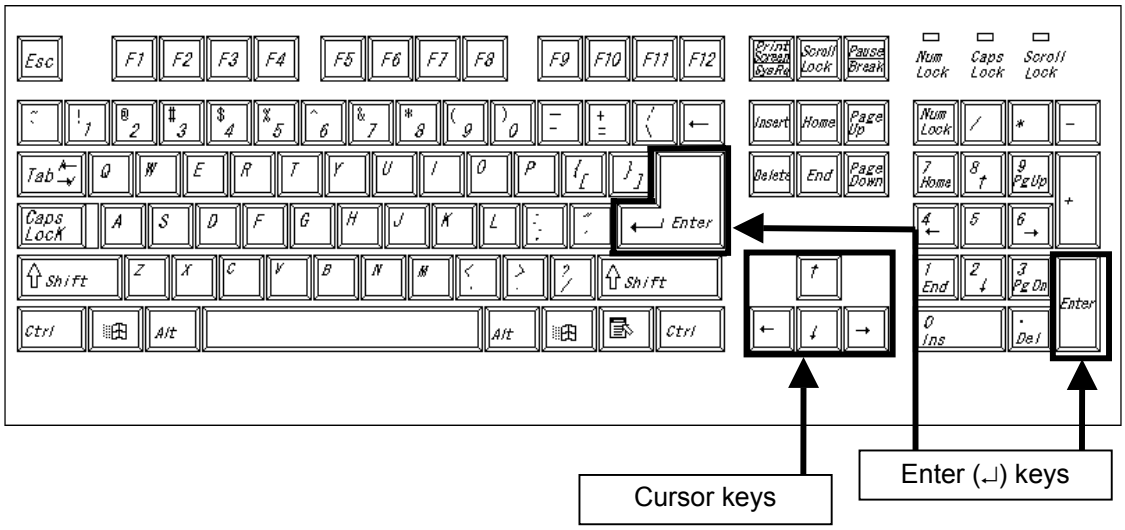
Delete : Deletes the character after the cursor.

[5] Page keys

Pressed to change a display from one page to another.

Page Up : Goes to the previous page.

Page Down : Goes to the next page.



[6] Cursor keys

Pressed to move the cursor on the screen.

↑ : Moves the cursor up.

↓ : Moves the cursor down.

← : Moves the cursor left.

→ : Moves the cursor right.

NOTE

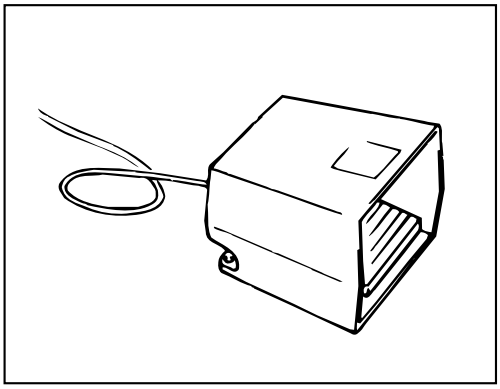
- When the cursor is moved after entering a value, the value is stored in memory. Press the Esc key to cancel this entry operation.

[7] Enter (↵) keys

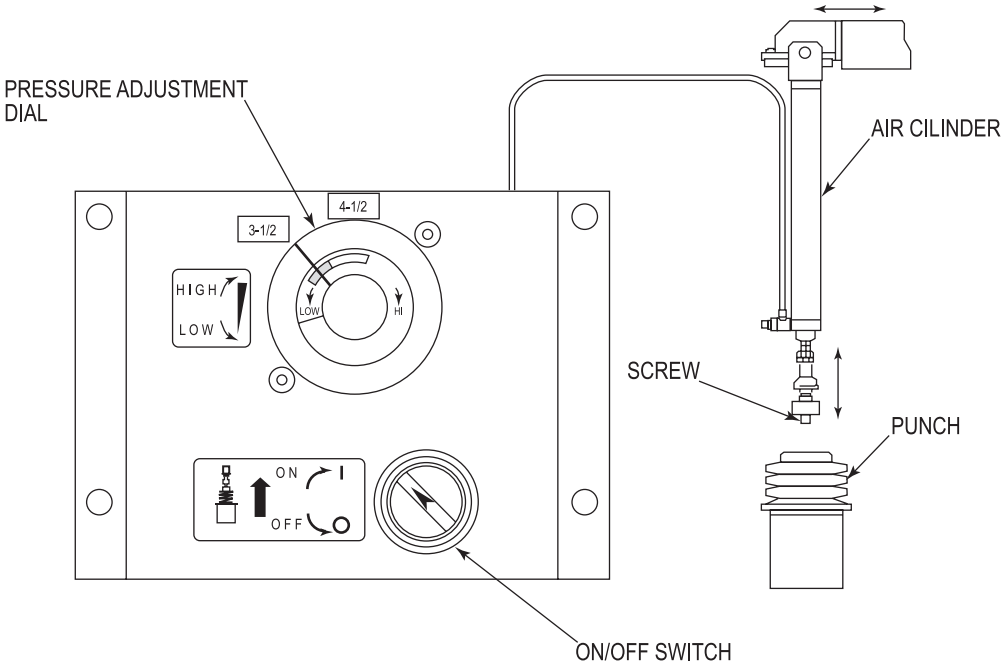
Pressed to store each value in memory.

Foot switch

Pressed to open and close the workclamps. During the automatic operation of the machine, the foot switch is enabled only when the machine is stopped by a program stop command (M00) or optional stop (M01) command.



Tool balancer controls



The following dial and switch are located behind the upper tool change door (see the figure above) and used to control the tool balancer. The tool balancer supports the mass of a large-diameter (3-1/2” or larger) punch during installation or removal.

[1] Pressure adjustment dial

Used to adjust the lifting force of a large-diameter punch. Turn the dial clockwise to increase the lifting force and counterclockwise to decrease the lifting force.

[2] ON/OFF switch

Used to support a large-diameter punch during installation or removal.

AUTOMATIC MEASUREMENT OF WORKCLAMP POSITION

The workclamp position is measured at the first instance of a G92 or G05 command after the power of the machine and NC unit is turned on.

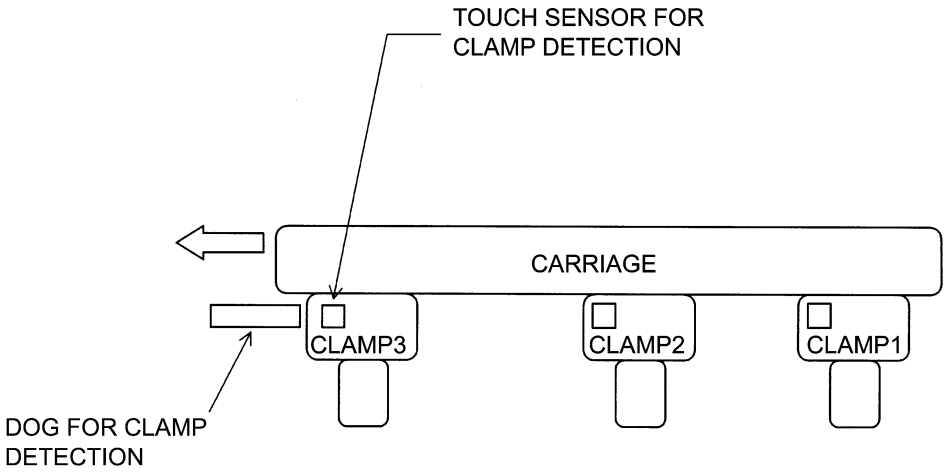
Each workclamp is equipped with a sensor to detect a dog working with the clamp lever. When the workclamp is released or the machine is stopped in an emergency, the sensor changes its status and informs the NC unit that the workclamp has moved.

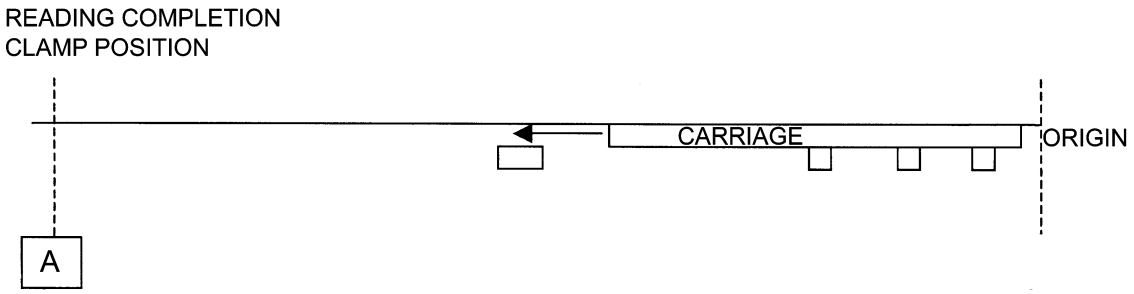
The workclamp position is measured when the workclamp is moved by releasing the clamp lever or when another workclamp reposition is commanded. (The G05 command can be used when the optional clamp positioner function is added.)

NOTE

- Do not use incremental programming on the block next to the G92 command line. Be sure to use absolute programming instead.

When G92 is commanded, the machine starts punching at the point A after the workclamp position is measured.





Part III

Displays

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DESCRIPTION

Here are described the displays that appear on the screen after the startup of the NC unit and the zero-return of the machine.

For the procedure for starting up the NC unit and the flow of processing, refer to Part VI, Operation.

Basic operation

The machine has various buttons arranged on each display. The buttons function when the corresponding portions on the display are pressed or touched. Some of the buttons illuminate to indicate that they are pressed.

Entering letters and numerals

Use the accessory keyboard to enter or edit the letters and numerals on each display.

Scroll bars

One or two scroll bars appear when all data cannot be shown on one display as is the case with a file list. The display can also be scrolled with the up, down, left and right arrows and the thumb of each scroll bar.

Cursor

When you touch the display position to which you want to move the cursor, the cursor moves to that position.

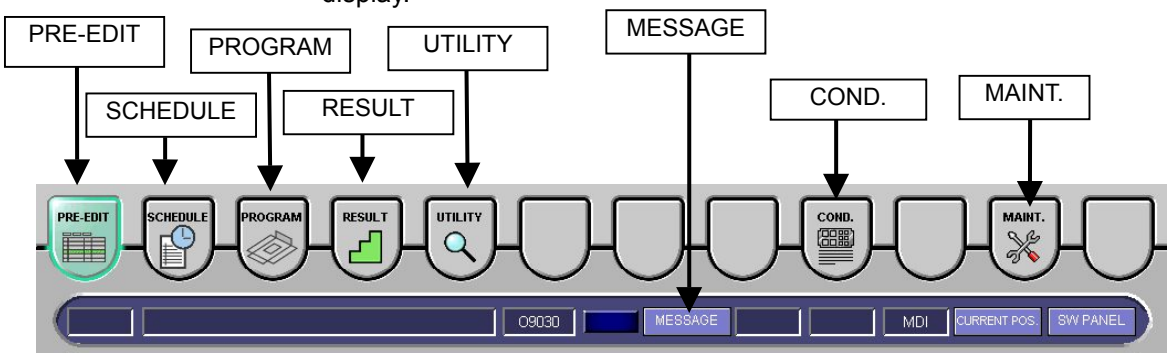
If the display has cursor buttons, press the cursor buttons to move the cursor to your desired position on the display.

The cursor moves also when the display is scrolled with the scroll bar or bars.

Composition of displays

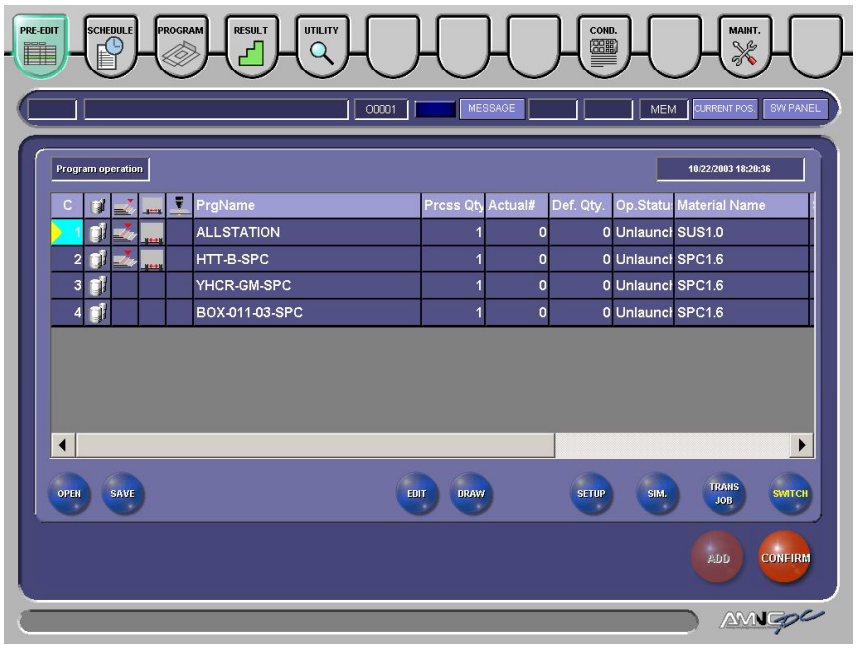
DISPLAY SELECTION BUTTONS

There are eight displays: PRE-EDIT, SCHEDULE, PROGRAM, RESULT, UTILITY, MESSAGE, COND. (processing condition), and MAINT. (maintenance). Press the corresponding button to change to each display.



I: PRE-EDIT (background)

Pressed to open the PRE-EDIT display to create and edit the next program or schedule while the machine is operating. You can also check the setup and check the part by drawing it before operating the machine.



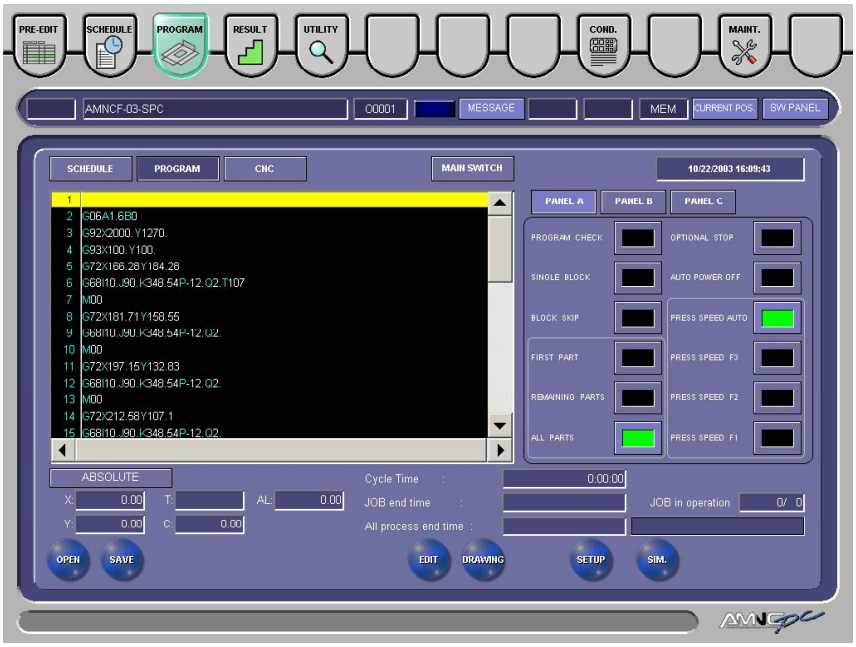
II: SCHEDULE

Pressed to open the SCHEDULE display to read a schedule, create a schedule, and set a start job or end job. You can also check the setup and check the part by drawing it.



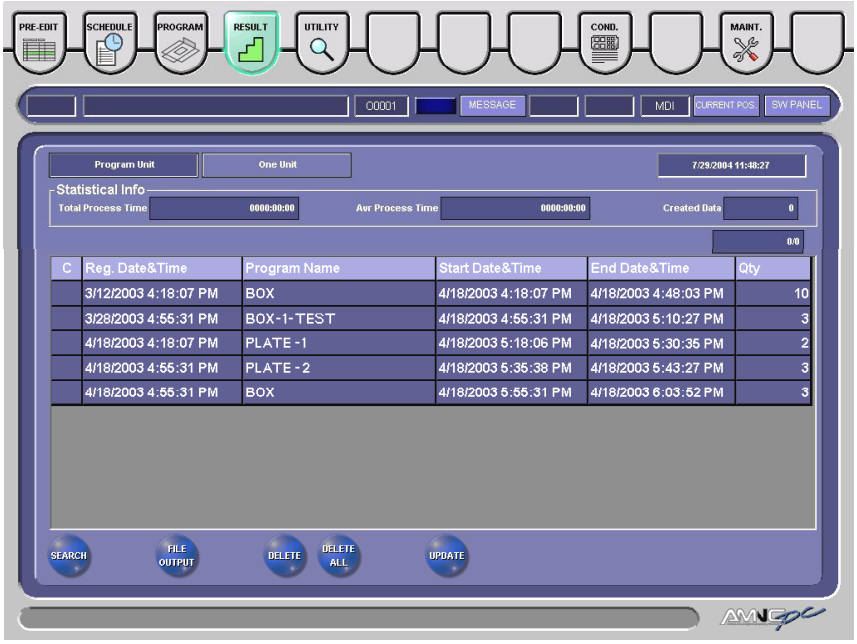
III: PROGRAM

Pressed to open the PROGRAM display to show a program. You can also check the setup and check the part by drawing it.



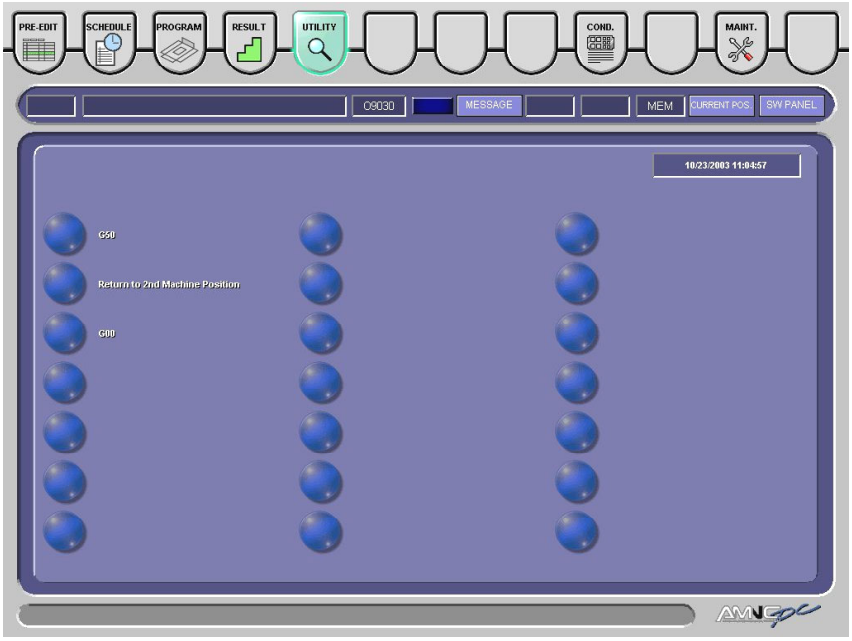
IV: RESULT

Pressed to open the RESULT display to show the actual processing results. The result file can be output in CSV format.



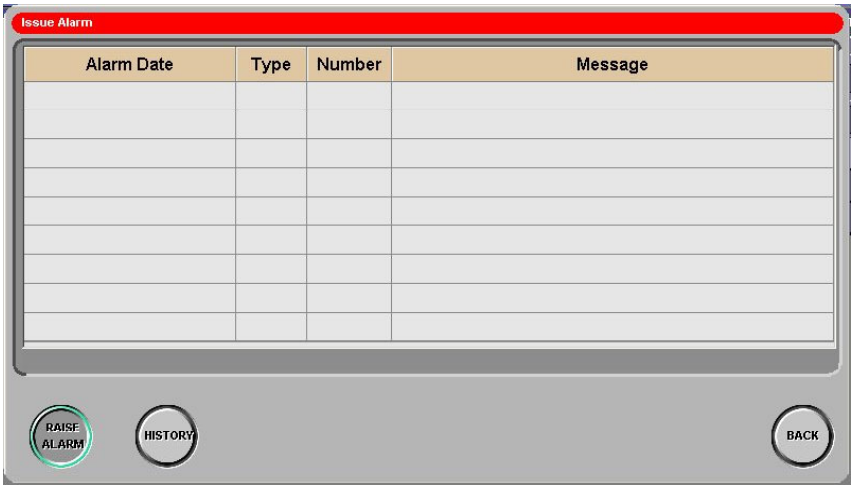
V: UTILITY

Pressed to open the UTILITY display to run one of the registered macro programs.



VI: MESSAGE

Pressed to open the MESSAGE display to show alarms and warnings and their logs.



VII: COND.

Pressed to open the processing condition display to set the press pattern parameters (M-codes) and the time zone selection. Either “list input” or “guide input” can be selected as the method of setting the press pattern parameters. Trial punching during the setup of the press pattern parameters can also be performed on this display.



VIII: MAINT.

Pressed to open the maintenance display to set the following items:

USER SETTINGS

Sets the operation, display, drive, line, and time.

APPLICATION SETTINGS

Sets check items by setup simulation software.

DATA INPUT AND OUTPUT

Copies and moves a program or programs between media.

HIT COUNT MANAGEMENT

Sets the hit count and tool life by turret station.

NOTE

- If the machine is equipped with the multi-tap device option, the hit count and tool life of each tap can also be set on this display.

CNC MAINTENANCE

Manages program setting data, macro variables, DNC parameters, and CNC settings.

VERSION INFORMATION

Shows the version information of each software.

E-MAIL NOTICE FUNCTION

Sets the receiver address, send time, and other particulars of e-mail.

INSPECTION

Sets the inspection period of a given inspection item (e.g., lubrication or filter cleaning).

BACKUP SCHEDULER

Sets the data to be backed up and the backup interval.

EXTERNAL IO SETUP

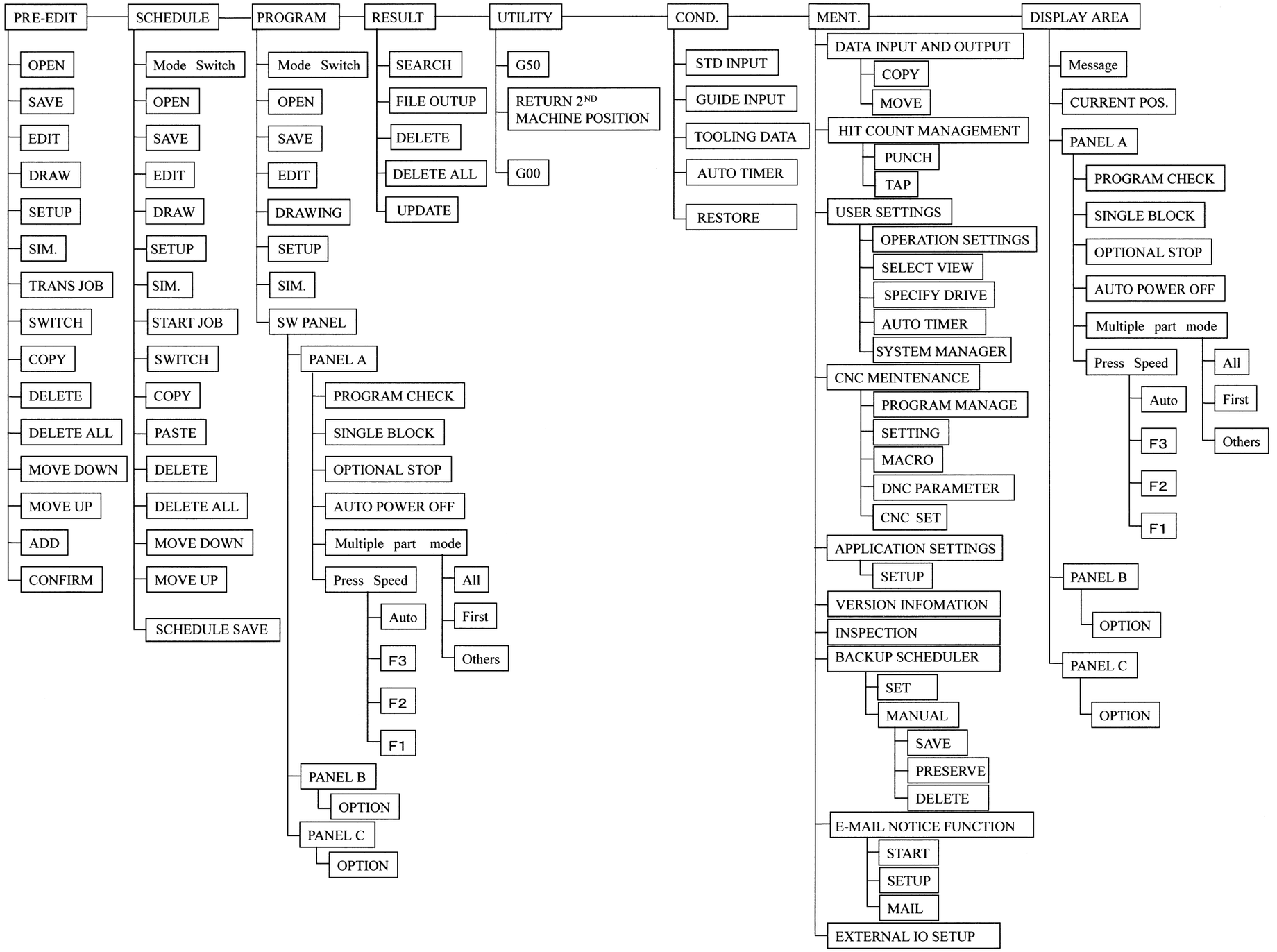
Makes the settings for connecting an external communication device through the RS232C interface.

NOTE

- The port that can be set on the External IO Setup display is the PANEL i serial port but not the CNC unit serial port.

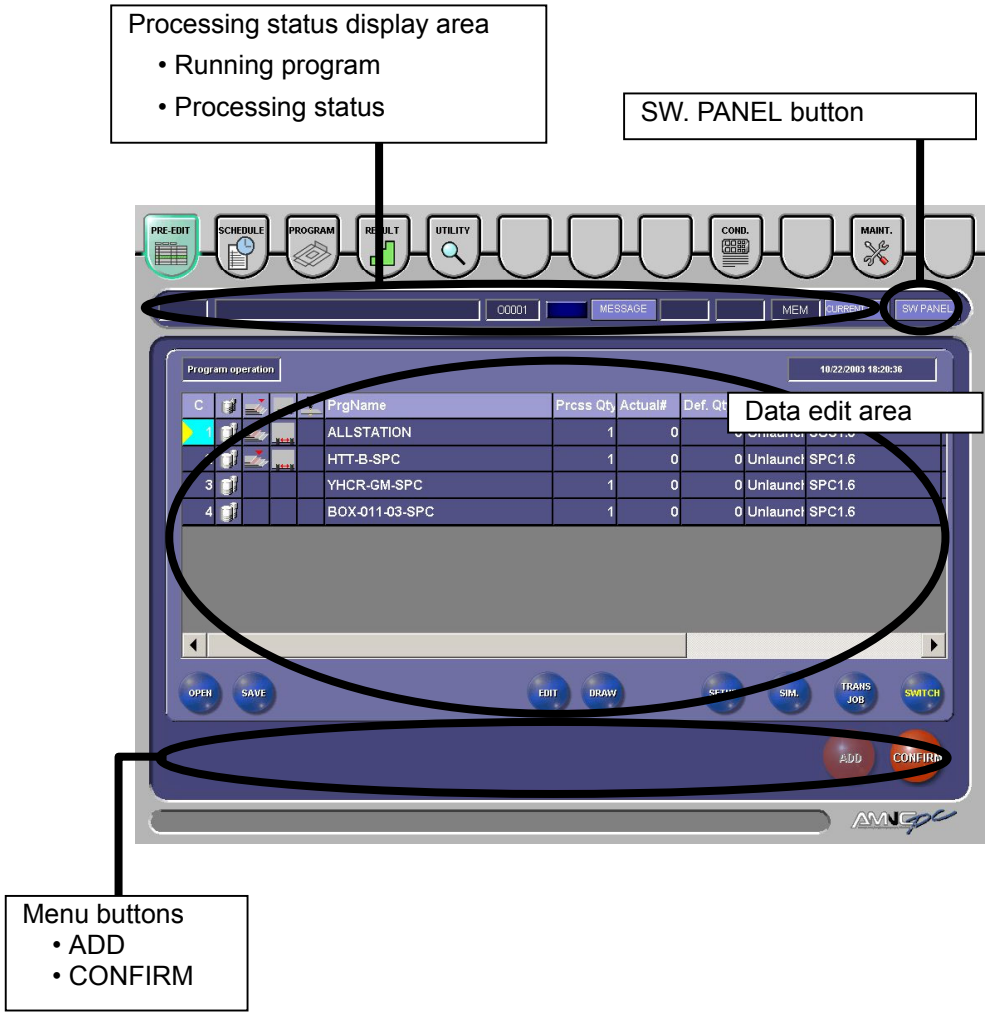


OVERALL MENU

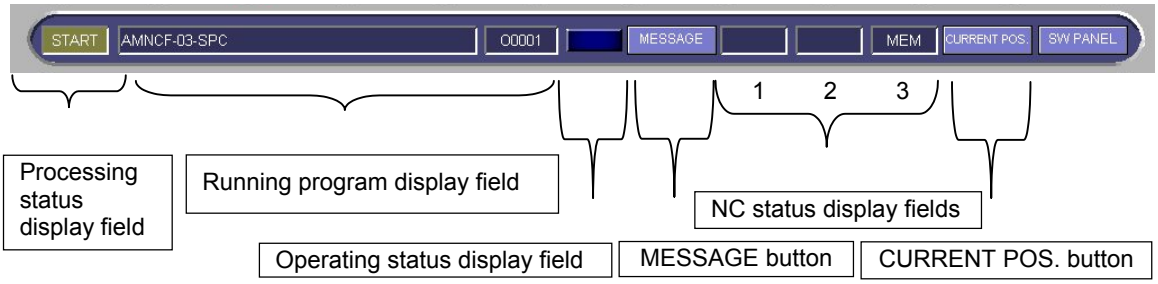


DESCRIPTION OF DISPLAYS

PRE-EDIT display



PROCESSING STATUS DISPLAY AREA



Processing status display field

Displays the processing status based on the NC status.

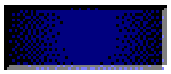
- START: Displays the execution of a program.
- HOLD: Displays the input of a stop signal.
- STOP: Displays the input of a processing end signal.

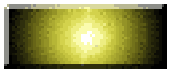
Running program display field

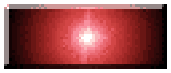
Displays the name of the program being run or on standby.

Operating status display field

Displays the operating status of the machine.


Operating: Blue


Warning produced: Yellow


Alarm produced: Red

MESSAGE button

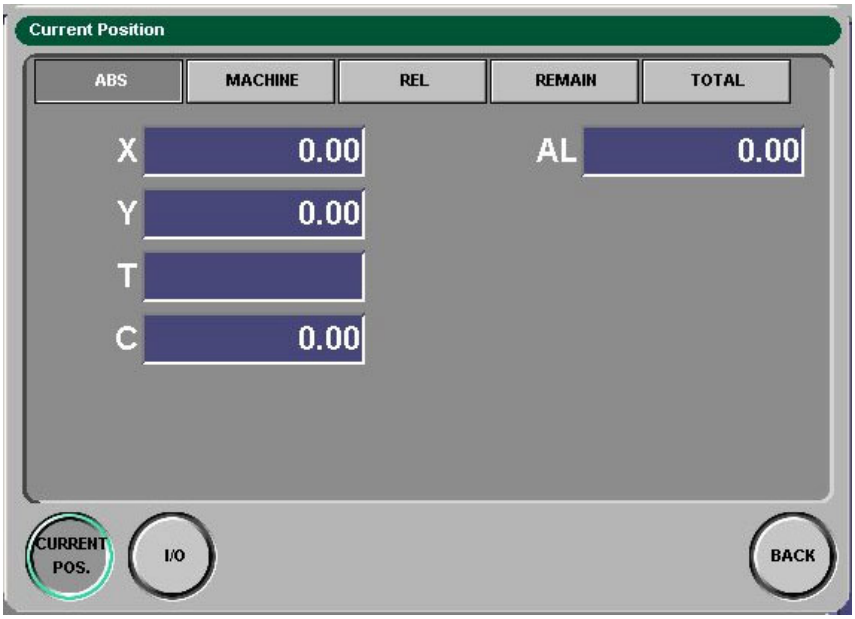
Pressed to open the MESSAGE display.

NOTE

● When an alarm or warning occurs, the MESSAGE display automatically appears.

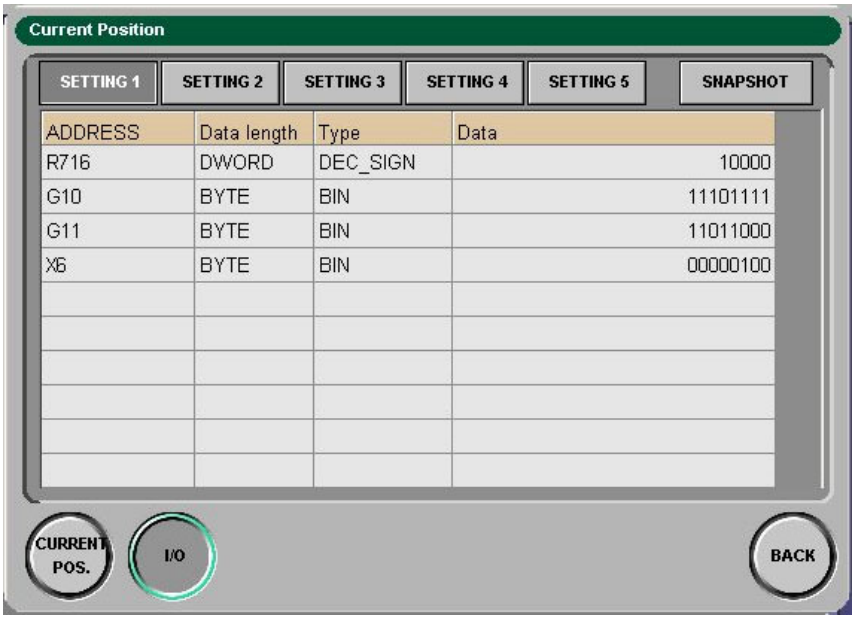
CURRENT POS. button

Opens the Current Position display. Press the ABS, MACHINE, REL, REMAIN, or TOTAL button to change the coordinate values of the axes to be displayed.



I/O button

Shows the status of the set address in real time.



SNAP SHOT button

Outputs the currently displayed I/O status in a CSV file.

NC status display fields

1: Displays “Mcode” when an M-code is being run.

NOTE

● The M-code is displayed while it is being run.
Example: M194

2: Displays “EMG” when the machine is in an emergency stop condition.

3: Displays the current NC mode.

MEM: MEMORY mode	MDI: MDI mode
JOG: MANUAL mode	EDIT: EDIT mode
REF: RETRACT mode	RMT: DNC mode

SW. PANEL BUTTON



Pressed to cycle through the following buttons required for the operation of the machine.

NOTE

● The types of buttons to be displayed vary with the specifications of the machine.

PROGRAM CHECK button



Pressed and illuminated to enable the program check function. The machine does not operate while the program is being checked. For details, refer to “Checking program” in Part VI, Operation.

Pressed again and extinguished to disable the program check function.

SINGLE BLOCK button



Pressed and illuminated to enable the single block operation of the machine.

Each time the START button on the main control panel is pressed in the single block operation, the machine executes one block of the program and then stops.

Pressed again and extinguished to disable the single block operation of the machine.

NOTE

- If multiple punching strokes are commanded as for pattern punching in the single block operation, the machine stops after each punching stroke. When the “G68, G69” nibbling commands are specified, the machine stops after executing all punching strokes from the start point to the end point.

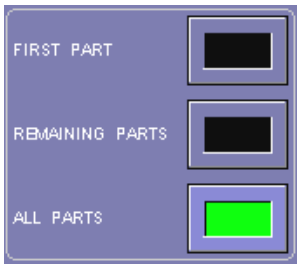
BLOCK SKIP button



Pressed and illuminated. When the program is started, the machine ignores each block with a slash (/) at the beginning and goes to the next block.

Pressed again and extinguished. The machine executes blocks with a slash (/) at the beginning without ignoring them.

Multiple-part punching setup buttons

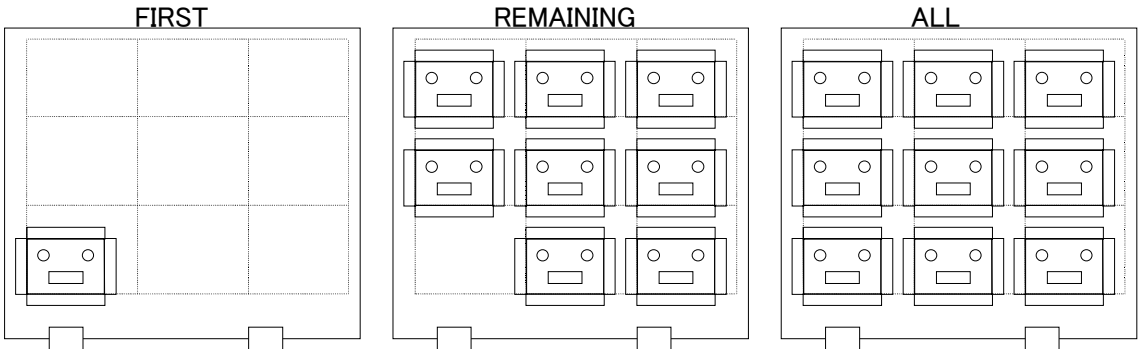


Press one of the multiple-part punching setup buttons to select the multiple-part punching function you want to perform.

The button illuminates when pressed.

Press the button again to extinguish it.

Button condition	Description
All extinguished	Program does not use multiple-part punching function (machine does not punch multiple parts from one worksheet)
FIRST PART button illuminated	Machine punches only first of multiple parts programmed
REMAINING PARTS button illuminated	Machine punches second and subsequent parts
ALL PARTS button illuminated	Machine punches all parts



NOTE

- Before starting a multiple-part punching program, press and illuminate one of the multiple-part punching setup buttons. An alarm occurs if all buttons are extinguished. Before starting a non-multiple-part punching program, press and extinguish all buttons. If one of the buttons is illuminated, the program cannot normally run.

OPTIONAL STOP button

Pressed and illuminated. When the program is started, the machine pauses each time "M01" (optional stop command) is read.



When the machine pauses, press the START button on the main control to resume its operation.

Pressed again and extinguished. When "M01" is read, the machine ignores it and continues to operate.

AUTO POWER OFF button

Pressed and illuminated to enable the automatic power-off function.



Pressed again and extinguished to disable the automatic power-off function.

The button changes to flashing after the program is completed, and the power of the NC unit turns off 15 min later.

If the machine is not automatically operating, the power of the NC unit can be turned off 1 min later after the button is pressed and held for 2 sec or more.

Button illuminated: The automatic power-off function is enabled

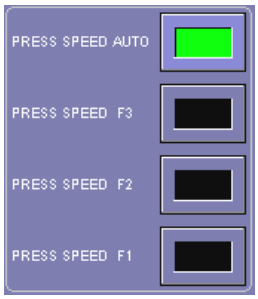
Button flashing: The power of the NC unit turns off 15 min after the start of flashing.

NOTE

- This function applies only to a standalone machine.
- For the line specification, refer to the operator's manual of the line.
- This function turns off the power of the NC unit alone and does not trip the machine circuit breaker.
- If the machine enters an alarm or stop condition during its operation, the power of the NC unit automatically turns off 15 min later.
- The program can be restarted even if the button is flashing. The button changes from flashing to steady when the program is restarted. The button changes back to flashing after the program is completed, and the power of the NC unit turns off 15 min later.

PRESS SPEED buttons

Select the press speed (punching speed) during the automatic operation of the machine.



Press and illuminate one of the PRESS SPEED buttons to select one of the following functions:

- F1 to F3: The worksheet is punched at one of the three press speeds (high speed F1, medium speed F2, and low speed F3).
- AUTO: The press speed is automatically set to suit the worksheet material and thickness and the tool size.

JAMMING SENSOR button (option)

Pressed and illuminated to enable the worksheet bow detection (jamming sensor) function.



Pressed again and extinguished to disable the worksheet bow detection (jamming sensor) function.

NOTE

- The button is not displayed unless the option is set.

STRIP MISS button

Pressed and illuminated to enable the stripping failure detection function.



The machine pauses when the punch does not normally rise after punching. Check the punch and worksheet. If there is no problem, press the START button on the main control panel to resume the automatic operation of the machine.

Pressed again and extinguished to disable the stripping failure detection function.

NOTICE

- Usually, press and illuminate the STRIP MISS button to enable the stripping failure detection function. When the function is disabled, the machine does not pause even if the punch does not normally rise after punching, with the result that the machine and tool (punch or die) may be damaged.

CLAMP DETECTION button (option)

Pressed and illuminated to enable the worksheet clamp detection function.



Pressed again and extinguished and disable the worksheet clamp detection function.

NOTE

● The button is not displayed unless the option is set.

REMOTE button

Pressed and illuminated to enable the DNC operation when the automatic operating mode is CNC.



CHUTE SENSOR button (option)

Pressed and illuminated to enable the work chute sensor function.



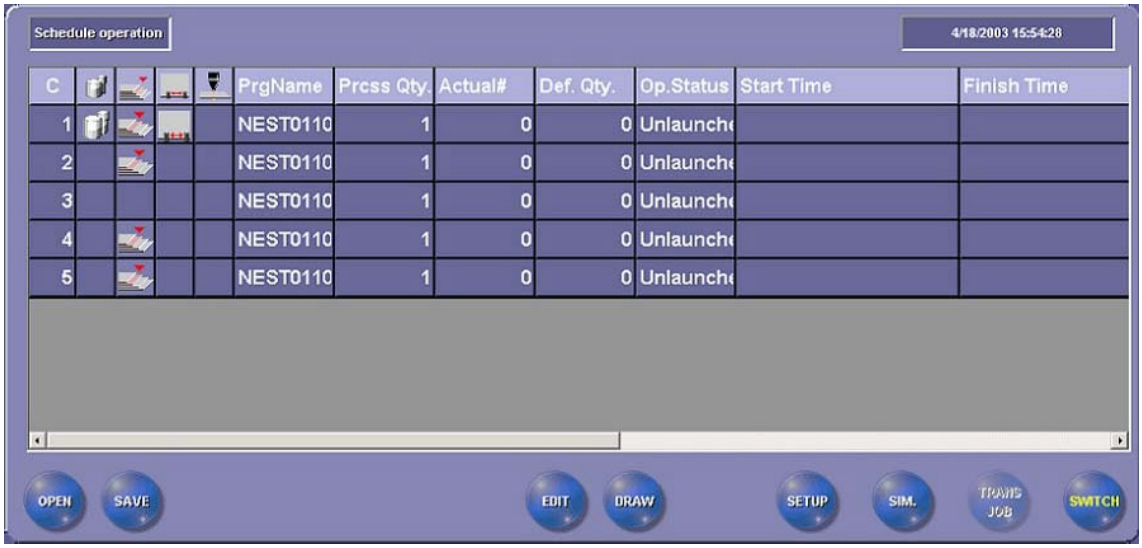
Pressed again and extinguished and disable the work chute sensor function.

NOTE

● The button is not displayed unless the option is set.

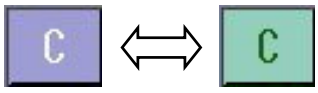
DATA EDIT AREA

Create and edit schedules and programs in this area.



C button

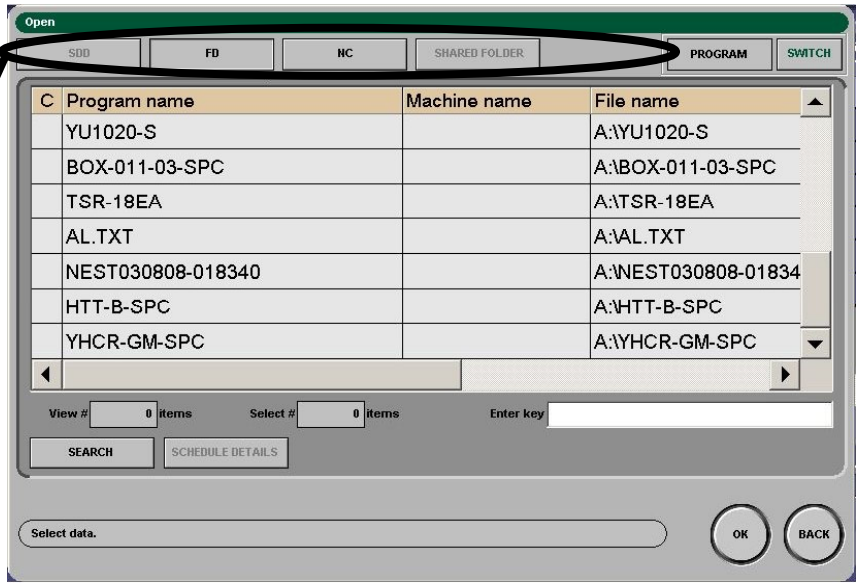
Located at the upper left of the list and changes in color to indicate if there are any items selected in the list. Pressed to deselect such items.
Enabled for all lists.



OPEN button

Calls a necessary program or programs to the data edit area.

Pressed to open the OPEN display.



Media selection buttons

Select the call-from media, select the necessary program or programs from a list of programs contained in the call-from media, and press OK.

NOTE

- Multiple programs can be called to the data edit area when the screen is the PRE-EDIT or SCHEDULE display.
- When the automatic operating mode is PROGRAM, the program or programs cannot be called unless the MEMORY button on the main control panel is pressed and illuminated.

SDD:	Lists the programs saved in the SDD system.
FD:	Lists the programs saved in the floppy disk.
NC:	Lists the programs saved in the NC unit.
SHARED FOLDER:	Lists the programs saved in the specified share folder.
SEARCH:	Searches a program list for a program or programs.
SCHEDULE DETAILS:	Shows the contents of each schedule. Select the schedule, and press the button. Enabled when the schedules are listed.
SWITCH:	Changes the listed data between the programs and schedules.

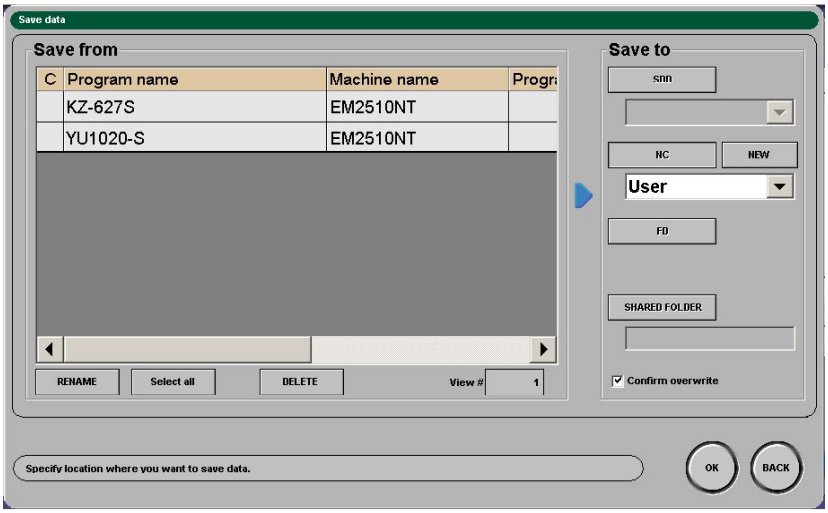
NOTE

- The SDD system is the data management system composed of Amada's automatic programming unit AP100 and data server ASIS100PCL.

SAVE button

Saves the program created or edited on the screen.

Select the program to save, and press the button to open the Save data display.



RENAME: Changes the program name.

DELETE: Deletes the program without saving it.

SDD: Saves the program in the SDD system (select the folder in which the program is saved).

NC: Saves the program in the NC unit (select the folder in which the program is saved).

NEW: Creates a new folder in the NC unit.

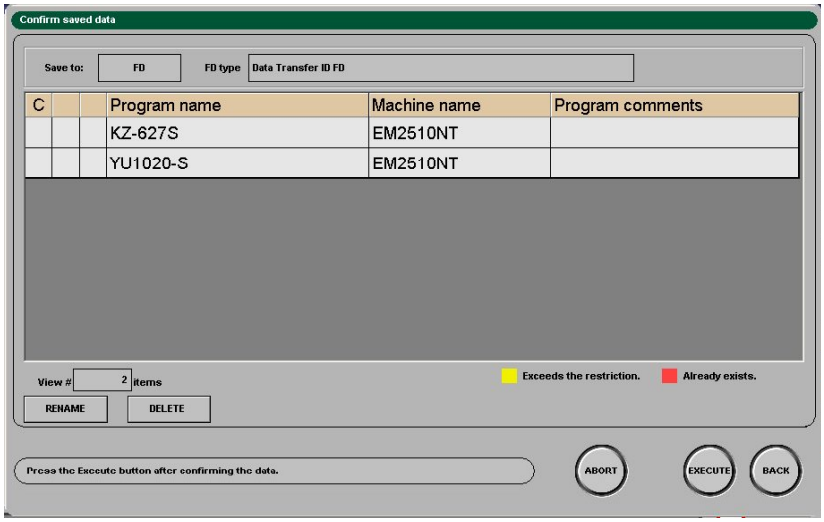
FD: Saves the program in the floppy disk.

SHARED FOLDER: Saves the program in the specified share folder.

NOTE

- Check the Confirm overwrite check box to confirm whether or not to overwrite a program of the same name with the new program when saving the new program.
- Multiple programs can be selected for saving on the PRE-EDIT and SCHEDULE displays.
- For specifying the share folder, refer to “SPECIFY DRIVE display” on page III-60.

Select where to save the program, and press OK on the Save data display to open the Confirm saved data display.



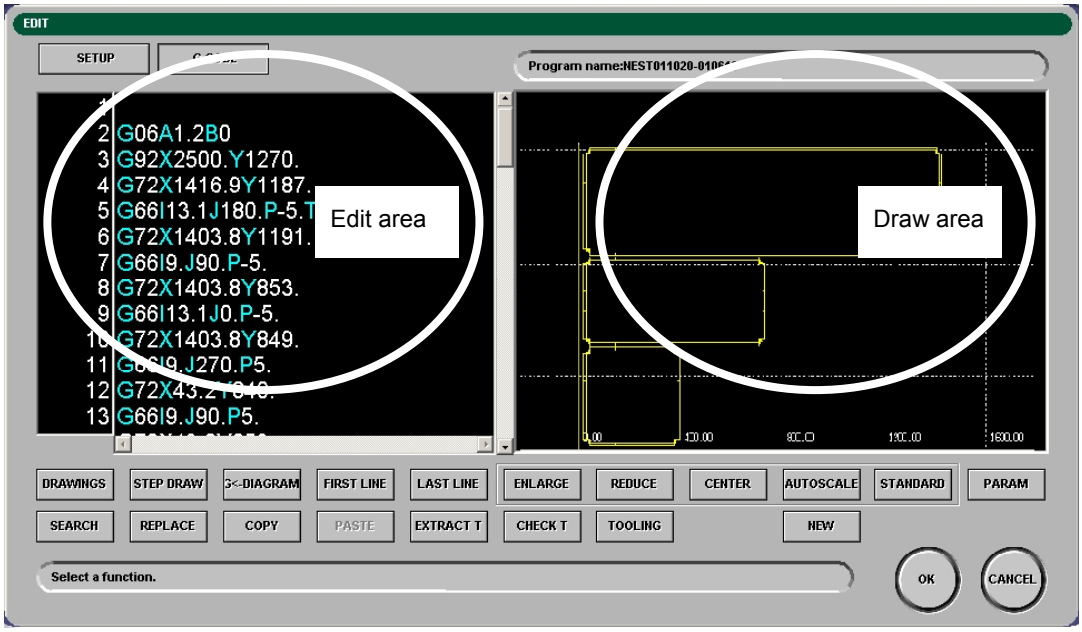
Check the name of the program, and press EXECUTE.

RENAME: Changes the program name.
DELETE: Deletes the program without saving it.
BACK: Returns to the Save data display.
EXECUTE: Saves the program.
ABORT: Stops saving the program.

EDIT button

Allows the editing of the program called to the data edit area.

Select the program to edit, and press the button to open the EDIT display.



There are the following buttons on the EDIT display:

DRAWINGS

Draws a part in the draw area according to the program shown in the edit area.

STEP DRAW

Draws a part in the draw area sequentially according to the program blocks shown in the edit area.

When the STEP DRAW button is pressed, the DRAWINGS button changes to the END DRAW button. Press the END DRAW button to interrupt the step drawing.

G←DIAGRAM

Places the cursor at the program block that corresponds to the selected portion of the figure drawn in the draw area.

Press the button, and select the portions of the figure whose program block you want to check.

FIRST LINE

Places the cursor at the first line of the program shown in the edit area.

LAST LINE

Places the cursor at the last line of the program shown in the edit area.

ENLARGE

Enlarges the selected portion of the figure drawn in the draw area.

Press the button, and select the portion of the drawn figure to expand.

REDUCE

Reduces the selected portion of the figure drawn in the draw area.

The reduction is referenced to the center of the draw area.

CENTER

Press the button, and select the portion of the figure to place the selected portion at the center of the draw area.

AUTOSCALE

Draws a figure on an automatic scale.

STANDARD

Draws a figure in the reference position.

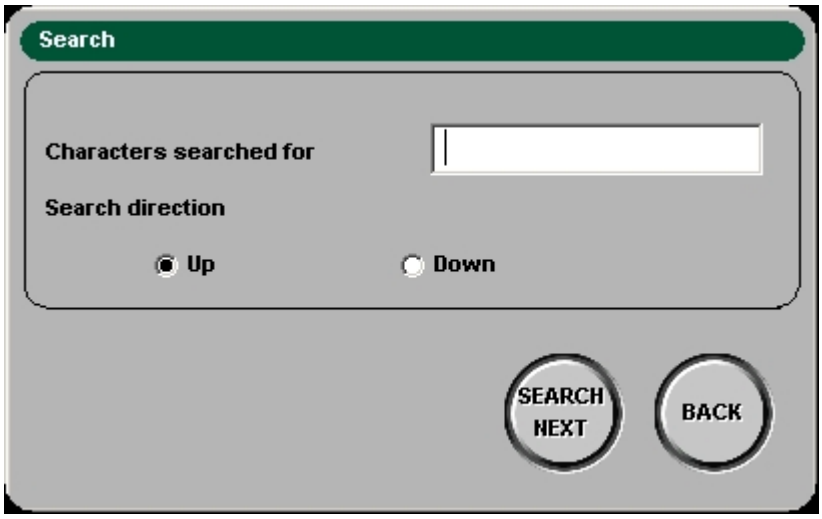
PARAM

Sets the drawing conditions like color.

SEARCH

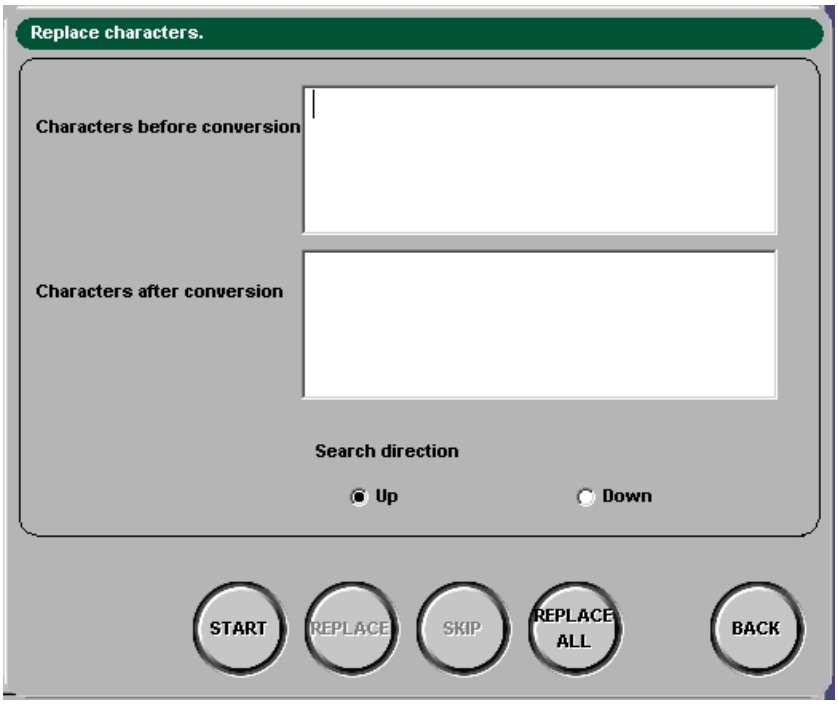
Opens the Search display.

Enter the character string to search for, select the search direction (Up or Down), and press SEARCH NEXT.



REPLACE

Opens the Replace characters display.

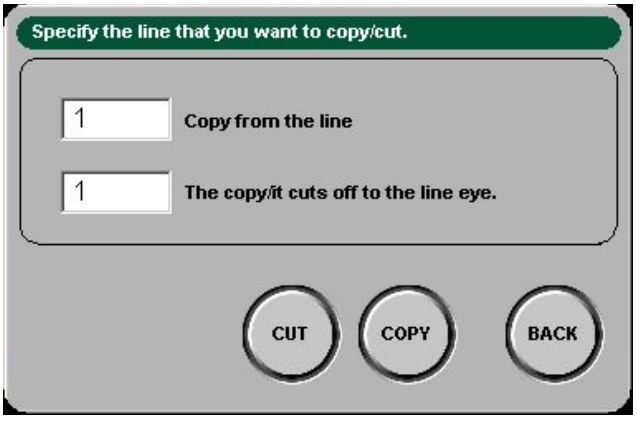


Enter the character string to find the character string to replace with, and press START.

When the cursor reaches the first instance of the character string to replace, press REPLACE. You can skip some instances of the searched character string or can replace all instances of the searched character string.

COPY

Opens the Specify the line that you want to copy / cut. display.



Enter the numbers of the first line and last line of the program blocks you want to copy from.

Press the COPY button to copy the G code to the destination line.
Press the CUT button to copy the G code to the destination line and delete the G code in the source line.

PASTE

Pastes the program blocks copied with the above-mentioned copy command.

Select the line to copy the program blocks to, and press the button.

EXTRACT T

Extracts the T-numbers used in the selected program.

CHECK T

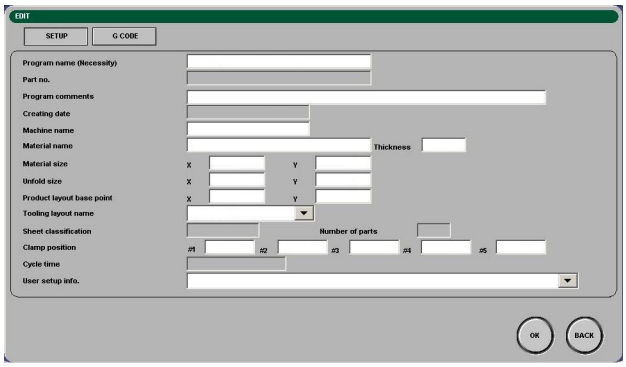
Checks that the T-numbers used in the selected program are the same as the numbers of the turret stations where the respective tools are installed.

TOOLING

Lists the tools used in the selected program.

NEW

Creates a new program. Opens the Edit display.



OK
Opens the PROGRAM display.

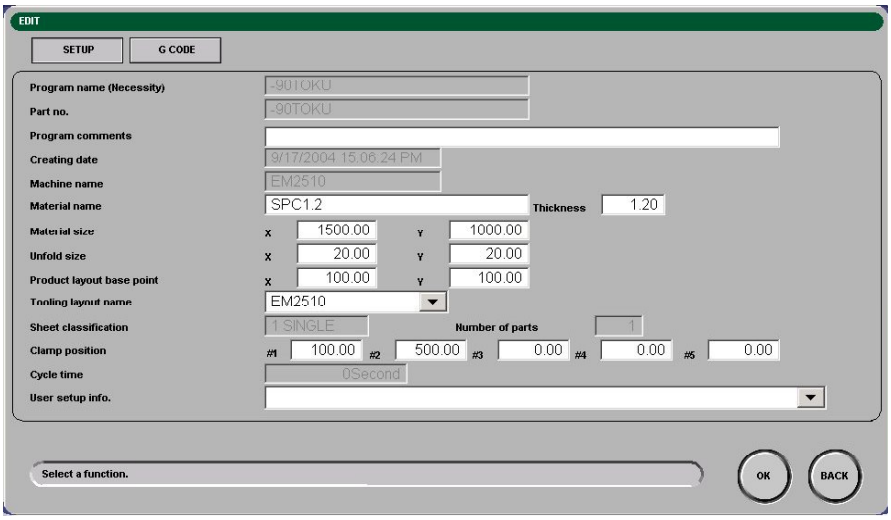
BACK
Returns to the previous display.

G CODE

Displays the contents of the selected program.

SETUP

Displays the setup information of the selected program.



OK

Registers the edited program to the PRE-EDIT display.

CANCEL

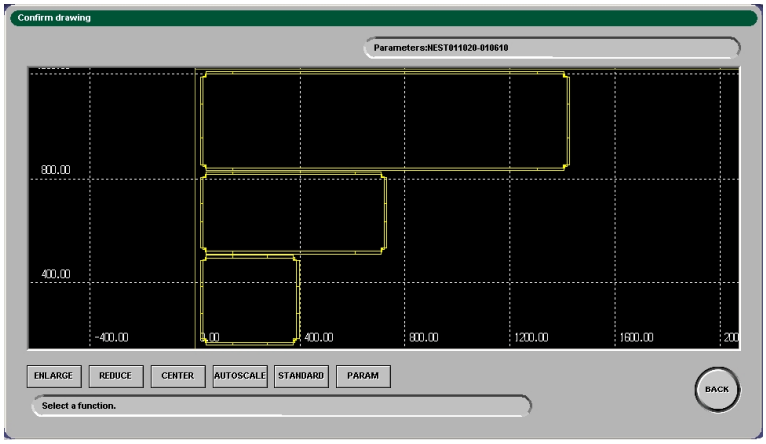
Interrupts the registration, and returns to the PRE-EDIT display.

DRAW button

Draws a part according to the program called to the data edit area.
Select the program to use for drawing the part, and press the button to open the Confirm drawing display.

NOTE

- When an index tool is specified, its setup data is not shown on the TOOL USED SCREEN display, so that the DRAW button cannot draw the portion to be processed by the index tool.



There are the following buttons on the Confirm drawing display:

ENLARGE

Enlarges the figure drawn.
Press the button, and select the portion of the figure to expand.

REDUCE

Reduces the figure drawn.
Press the button to reduce the figure as referenced to the center of the display.

CENTER

Changes the display position.
Press the button, and select the portion of the figure to show as the center of the display.

AUTOSCALE

Draws a figure on an automatic scale.

STANDARD

Draws a figure in the reference position.

PARAM

Sets the drawing conditions like color.

BACK

Returns to the previous display.

SETUP button

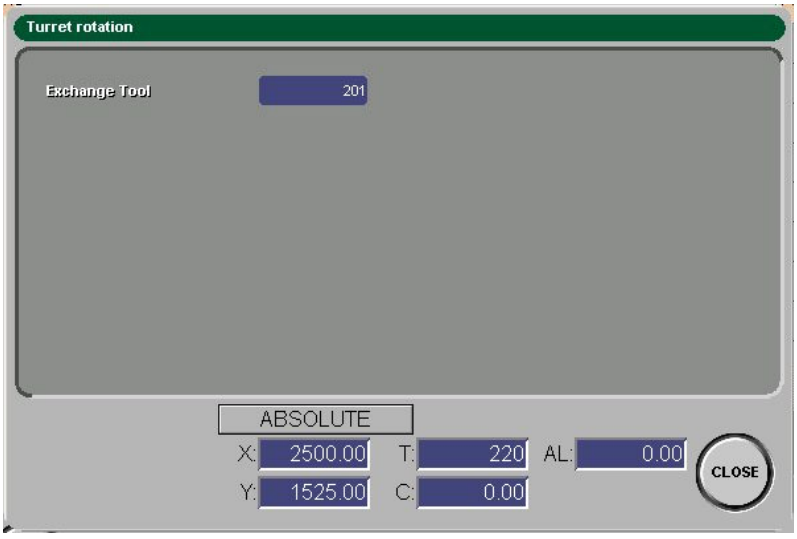
Opens the TOOL INSTALLED SCREEN or LAYOUT SCREEN display to check the tools installed in the turret.

TOOL INSTALLED SCREEN display



TOOL EXCHANGE

Select the T-number line for the tool to be changed, and press the button to open the Turret rotation display.



Press and illuminate the MEMORY button and START button on the main control panel to move the selected turret station to the tool change position.

WARNING	● **Before changing the tool, turn the SAFETY DEVICE keyswitch on the main control panel to SETTING.**

SAMPLING

Lets the NC unit memorize the fact that the tool is removed from the selected turret station.

INS./EXC.

Lets the NC unit memorize the fact that a new tool is installed in the selected turret station.

Select the T-number, and press the button.

TOOL INSTALL

Opens the TOOL INSTALLED SCREEN display, and lists the tools installed in the turret.

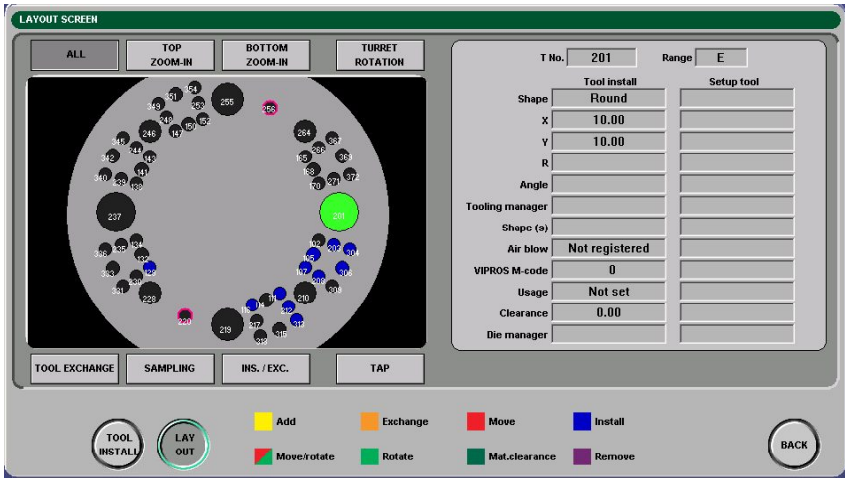
LAYOUT

Opens the LAYOUT SCREEN display, and shows the tool installation conditions by using the turret diagram.

RETURN

Returns to the previous display.

LAYOUT SCREEN display



TOOL EXCHANGE

Refer to “TOOL INSTALLED SCREEN display”.

SAMPLING

Refer to “TOOL INSTALLED SCREEN display”.

INS.／EXC.

Refer to “TOOL INSTALLED SCREEN display”.

ALL

Shows the entire turret diagram.

TOP ZOOM-IN

Shows the upper part of the turret diagram enlarged.

BOTTOM ZOOM-IN

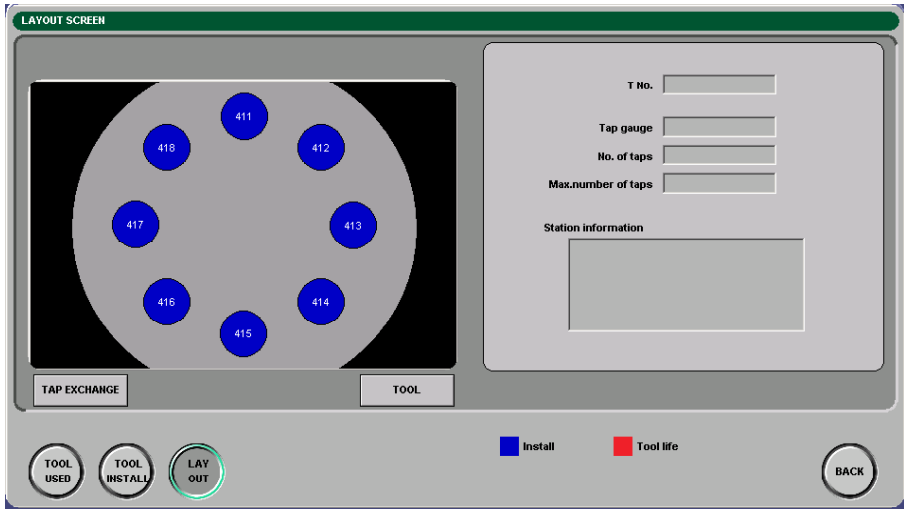
Shows the lower part of the turret diagram enlarged.

TURRET ROTATION

Rotates the turret diagram clockwise.

TAP

Shows the tap layout diagram.



TOOL

Shows the tool layout diagram.

TAP EXCHANGE

Shows the tap layout diagram.

To move the necessary tap station to the tool change position, press the necessary station in the tap layout diagram, and press and illuminate the MEMORY button and START button on the main control panel.

TOOL INSTALL

Refer to “TOOL INSTALLED display”.

LAYOUT

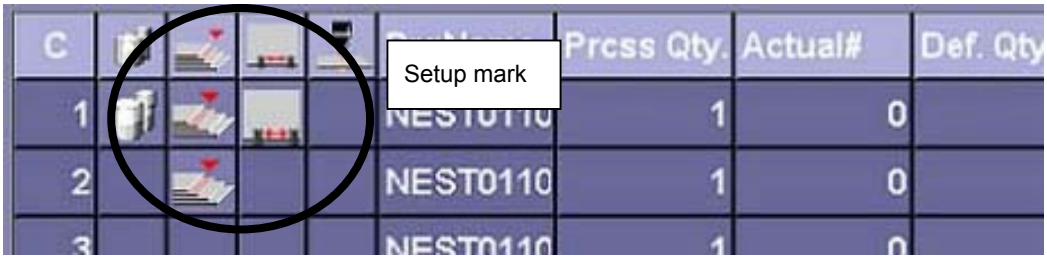
Refer to “TOOL INSTALLED display”.

RETURN

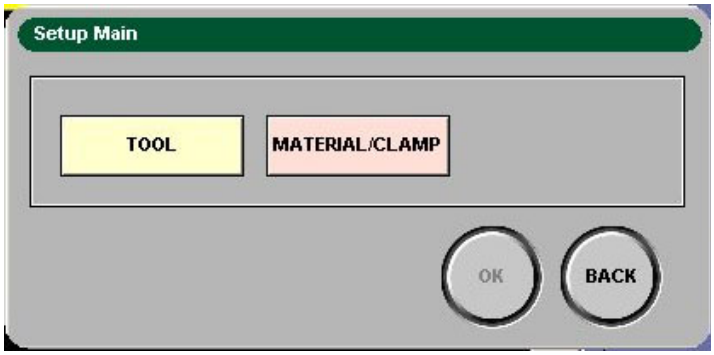
Refer to “TOOL INSTALLED display”.

SIM button

Calculates setup for all programs and show the results.



Select a part given the setup mark to show the SETUP MAIN display.



Select the item you want to check, and press OK.

NOTE

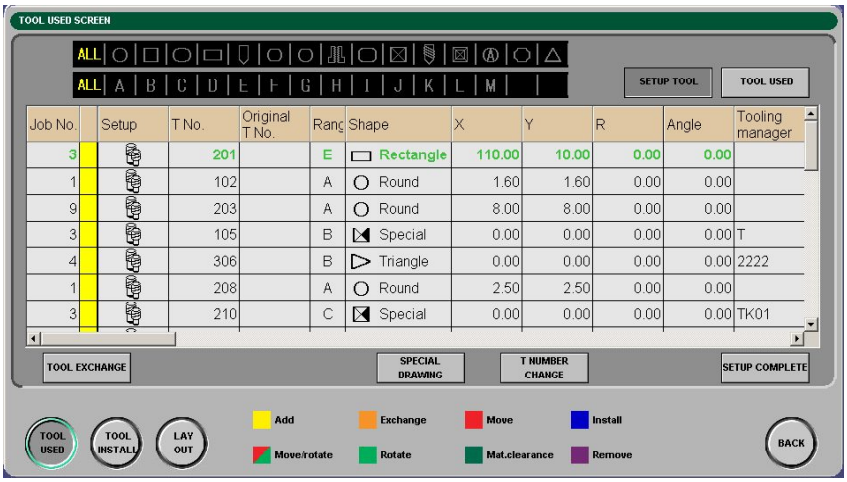
- Usually, press the SIM button to open the setup display if a setup is necessary.

NOTE

- The color of the item button shows setup information as follows:
  Red: A setup is made.
  Yellow: Setup calculations are being made.
  Gray: No setup is necessary, or setup calculations are completed.
- The SIM function is not effective unless the Tool arrangement and Work/clamp arrangement check boxes on the APPLICATION SETTINGS (Arrangement) display are checked.
- When an index tool is specified, its setup data is not shown on the TOOL USED SCREEN display, so that the DRAW button cannot draw the portion to be processed by the index tool.

TOOL SETUP button

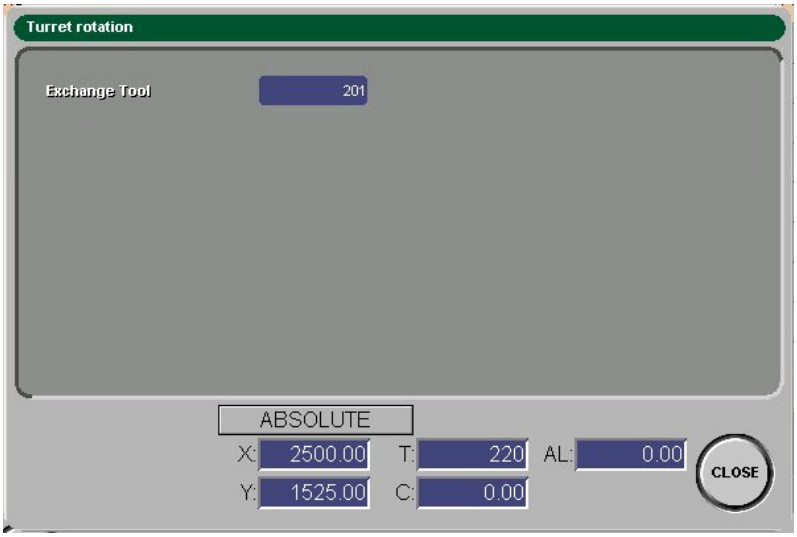
Pressed to set mark TOOL in the data edit area or press the TOOL button on the SETUP MAIN display to open the TOOL display. Determine the tool setup according to the setup instructions.



The buttons on the TOOL USED SCREEN display are as follows:

TOOL EXCHANGE

Select the T-number for the tool to be changed, and press the button to open the Turret rotation display.



Press and illuminate the MEMORY button and START button on the main control panel to move the selected turret station to the tool change position.

WARNING

- **Before changing the tool, turn the SAFETY DEVICE keyswitch on the main control panel to SETTING.**

SETUP TOOL

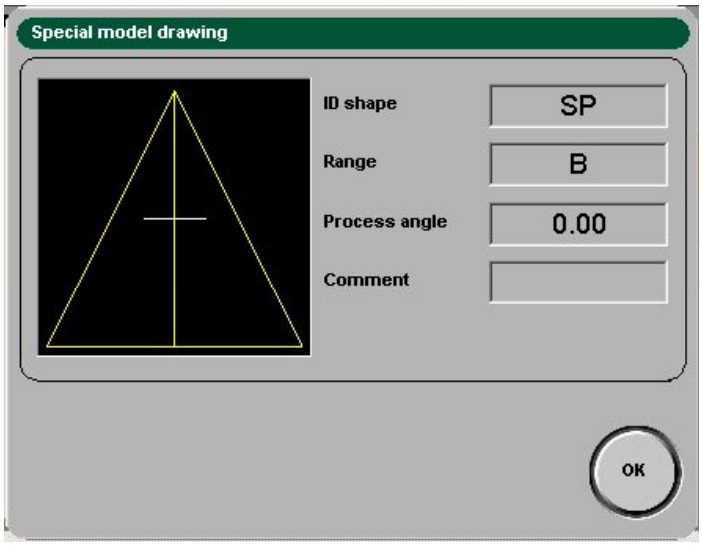
Shows only the tool whose setup is necessary.

TOOL USED

Shows all tools to be used.

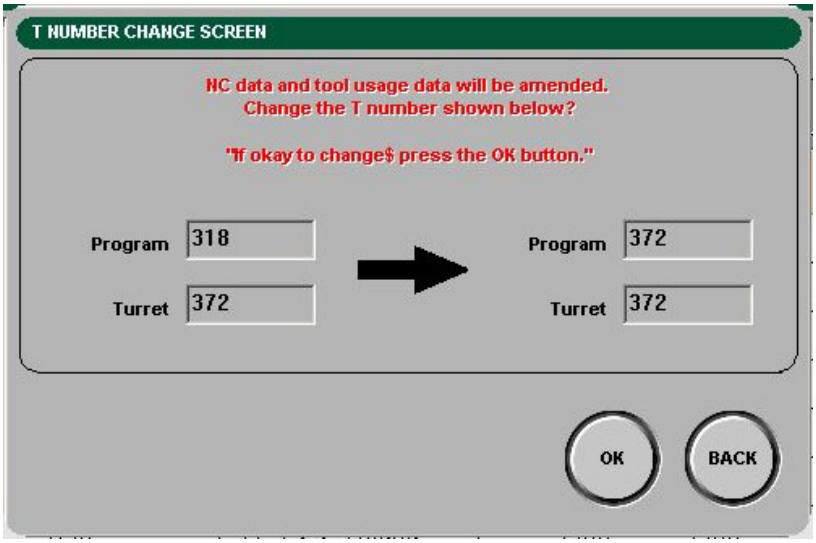
SPECIAL DRAWING

Shown only when the machine is connected to the SDD system. The tool can be specially drawn only if its shape is “special”, “forming”, or “triangle”. If its shape is registered in the SDD system, the Special model drawing window opens.



T NUMBER CHANGE

The program can be changed for the tool shown in the “Move” color on the TOOL USED SCREEN window.



NOTE

- The T number of the program cannot changed by pressing the OK button on the T NUMBER CHANGE SCREEN window. Press the OK button on the Setup Main display to change the T number of the program.

SETUP COMPLETE

Registers the results of setup for tool layout.

NOTE

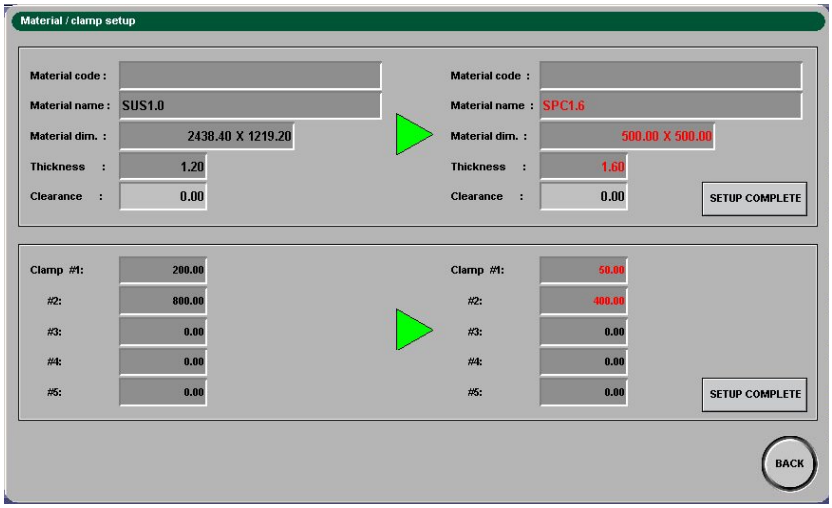
- Be sure to press the SETUP COMPLETE button. If the button is not pressed, the tool information will be incorrect.

BACK

Returns to the SETUP MAIN display.

MATE./CL. button

Pressed to set mark MATE. and CL in the data edit area or press the MATE./CL. button on the SETUP MAIN display to open the MATE./CL. display. Make material and clamp setup calculations according to the setup instructions.



The buttons on the setup display are as follows:

SETUP COMPLETE

After completing the setup calculations, press this button.

NOTE

- Be sure to press the SETUP COMPLETE button. If the button is not pressed, the tool information will be incorrect.

BACK

Returns to the SETUP MAIN display.

NOTE

- If the application setting tool setup box or material/clamp setup check box is checked, pressing the SIM button causes the setup calculations to be made. If the check box is not checked, pressing the setup button does not cause the setup calculations to be made. For further information on the setup conditions, see “Application setting setup”.

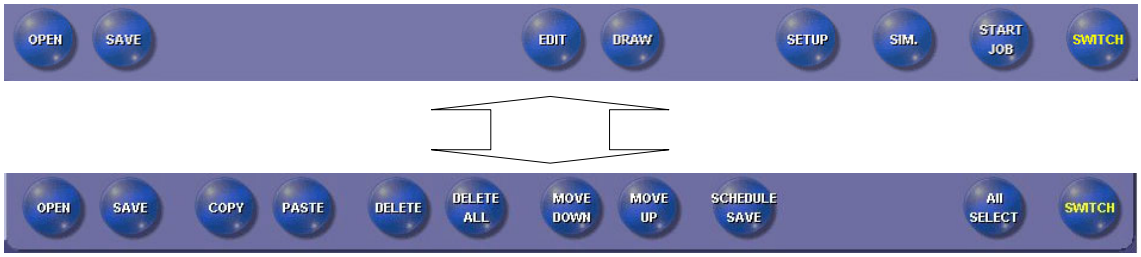
TRANS JOB button

Effective only when the automatic operating mode is PROGRAM.

Press the button to select the program to be transferred from the PRE-EDIT display to the PROGRAM display.

SWITCH button

Changes from one command button menu to the other.



ALL SELECT button

Select all programs or schedules shown on the display.

COPY button

Copies the program or programs called to the data edit area.

Select the program or programs to copy, and press the button.

PASTE button

Pastes the copied program or programs in the data edit area.

Select the line of the list to which to paste the program or programs, and press the button.

DELETE button

Deletes the program or programs called to the data edit area.

Select the program or programs to delete, and press the button.

DELETE ALL button

Deletes all of the programs called to the data edit area.

MOVE UP button

Moves up the selected program or programs in the data edit area.

Select the program or programs to move up, and press the button.

MOVE DOWN button

Moves down the selected program or programs in the data edit area.

Select the program or programs to move down, and press the button.

SCHEDULE SAVE button

Enabled only on the PRE-EDIT display or SCHEDULE display. Saves the selected job list with a schedule name.

MENU BUTTON AREA

ADD

Adds to the SCHEDULE display the program selected in the program list created on the PRE-EDIT display.

NOTE

- The ADD button cannot be used when the automatic operating mode is PROGRAM.

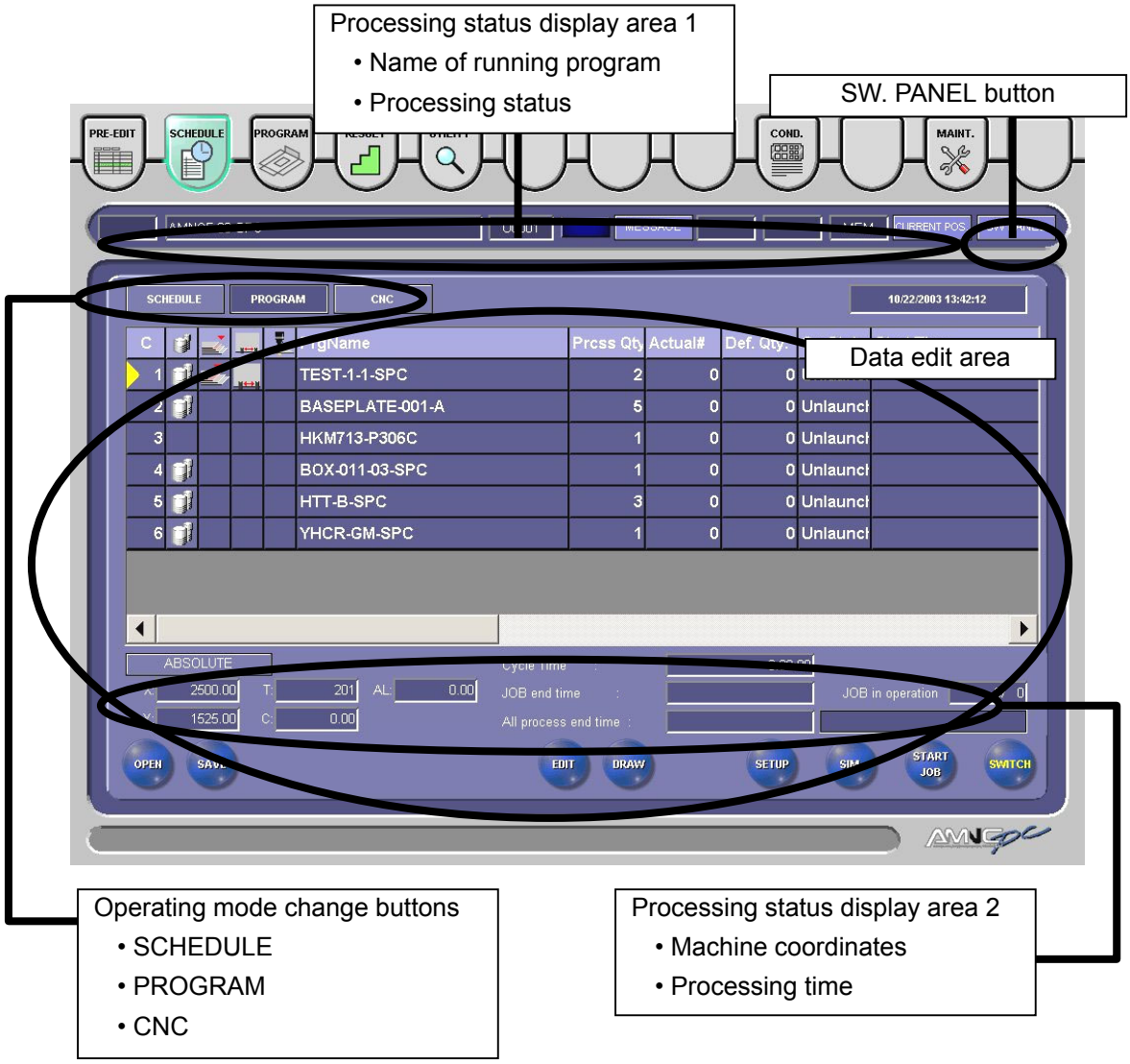
CONFIRM

Registers to the SCHEDULE or PROGRAM display the program selected in the program list created on the PRE-EDIT display.

NOTE

- The selected program is registered to the PROGRAM display when the automatic operating mode is PROGRAM and to the SCHEDULE display when the automatic operating mode is SCHEDULE.

SCHEDULE display



PROCESSING STATUS DISPLAY AREA 1

Refer to “Processing status display area” described in “PRE-EDIT display”.

PROCESSING STATUS DISPLAY AREA 2

Displays the current coordinates and processing time of the machine.

SW. PANEL BUTTON

Refer to “SW. PANEL button” described in “PRE-EDIT display”.

DATA EDIT AREA

Refer to “Data edit area” described in “PRE-EDIT display”.

START JOB

Sets the start job.

Select the program to set in the start job, and press START JOB.

OPERATING MODE CHANGE BUTTONS

Change the automatic operating mode of the machine.

SCHEDULE: Pressed to perform the schedule operation of the machine.

PROGRAM: Pressed to perform the single-program operation of the machine.

CNC: Pressed to perform the CNC operation of the machine. Press and illuminate the REMOTE button on the panel B to perform the DNC operation.

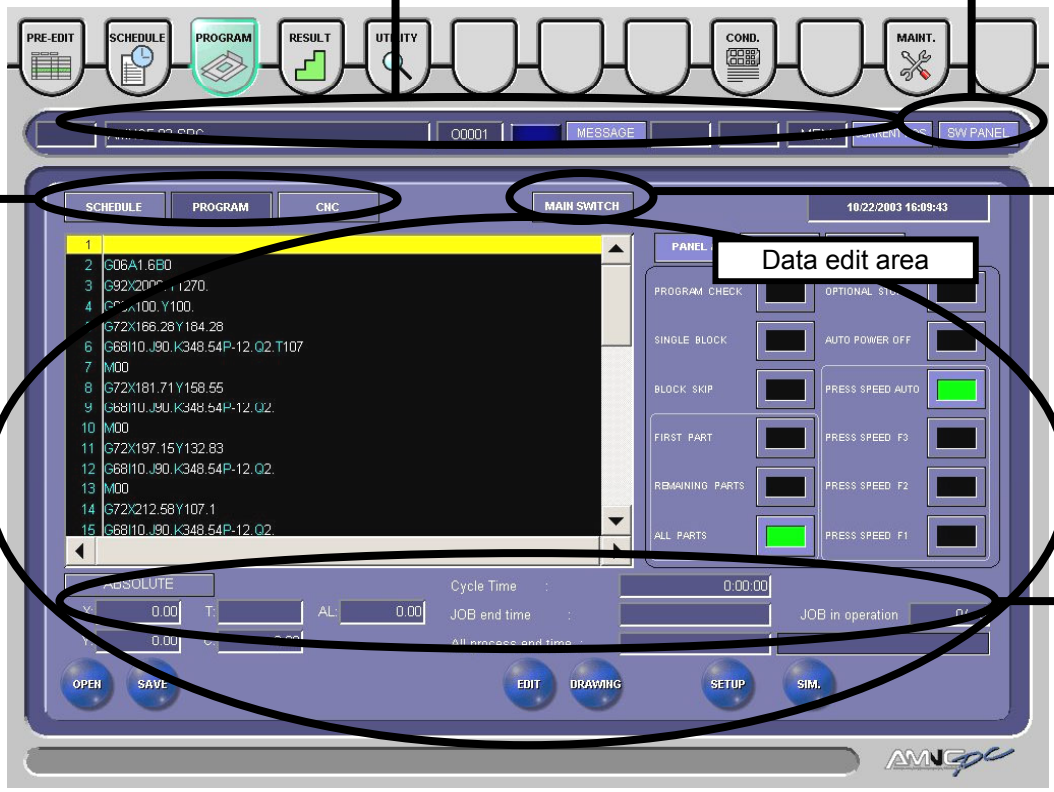
NOTE

- The automatic operating mode of the machine cannot be changed while it is operating.
- The CNC operation is the method whereby the machine is operated according to the programs that are managed by their O numbers in the CNC unit.
- The DNC operation refers to the operation of the machine according to the data being sent from an external personal computer with a terminal function to the NC unit.
- To perform the DNC operation of the machine, illuminate the REMOTE button on the. PANEL B.

PROGRAM display

Processing status display area 1
- Name of running program
- Processing status

SW. PANEL button



Data edit area

Operating mode change buttons
- SCHEDULE
- PROGRAM
- CNC

Processing status display area 2
- Machine coordinates
- Processing time

MAIN SWITCH button

PROCESSING STATUS DISPLAY AREA 1

Refer to “Processing status display area” described in “PRE-EDIT display”.

PROCESSING STATUS DISPLAY AREA 2

Displays the current coordinates and processing time of the machine.

SW. PANEL BUTTON

Refer to “SW. PANEL button” described in “PRE-EDIT display”.

DATA EDIT AREA

Refer to “Data edit area” described in “PRE-EDIT display”.

OPERATING MODE CHANGE BUTTONS

Change the automatic operating mode of the machine.

SCHEDULE: Pressed to perform the schedule operation of the machine.

PROGRAM: Pressed to perform the single-program operation of the machine.

CNC: Pressed to perform the CNC operation of the machine. Press and illuminate the REMOTE button on the panel B to perform the DNC operation.

NOTE

- The automatic operating mode of the machine cannot be changed while it is operating.
- The CNC operation is the method whereby the machine is operated according to the programs that are managed by their O numbers in the CNC unit.

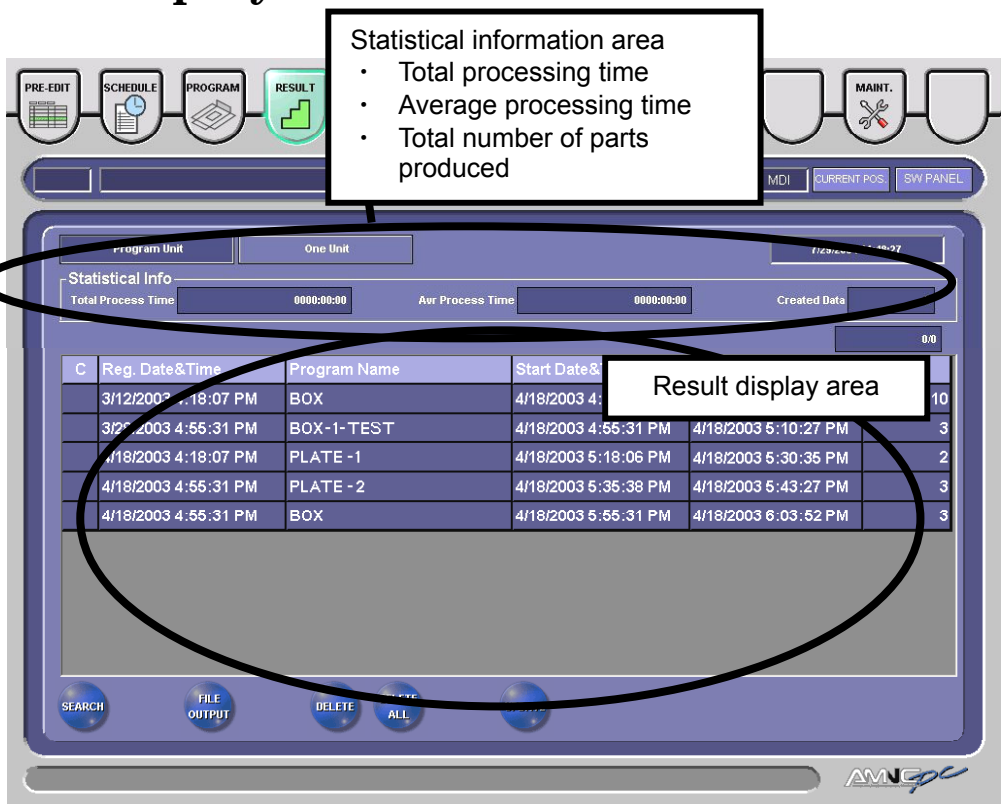
MAIN SWITCH BUTTON

Switches between displaying the contents of the program alone and on-line drawing.

NOTE

- On-line drawing refers to the method of drawing a part sequentially according to the blocks of the program to be executed.

RESULT display



The RESULT display shows the actual processing results of the machine.

The buttons on the RESULT display are as follows:

NOTE

● The actual processing results cannot be registered unless the Schedule results item “Regist” is selected on the OPERATION SETTINGS display. The OPERATION SETTINGS display appears when the MAINT button and USER SETTINGS button are pressed.

Program Unit button

Lists the actual processing results on a program (or job) basis.

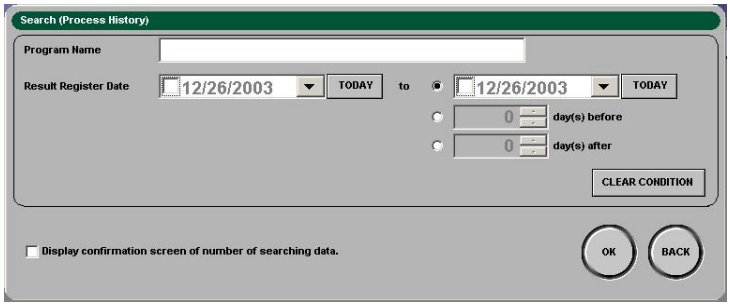
One Unit button

Lists the actual processing results on a total number of pats produced basis.

SEARCH

Pressed to open the Search (Process History) display.

Set the search conditions, and press OK.



Program Name: Enter the program name to search for.

Result Register Date: Select the date or period to search for.

TODAY'S DATE: Sets the current date as the date to search for.

CLEAR CONDITION: Clears the search conditions.

OK: Searches the results according to the search condition.

BACK: Returns to the previous display.

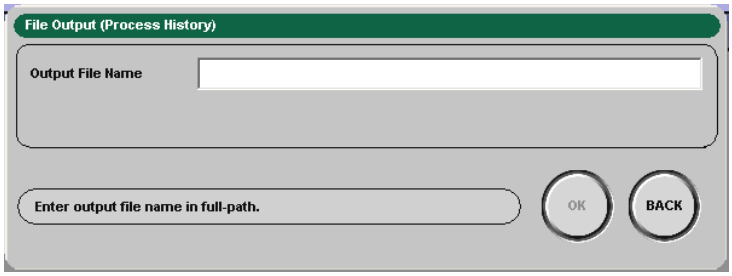
NOTE

- Check the "Display confirmation screen of number of searching data" box to show the search result confirmation display.

FILE OUTPUT

Pressed to open the File Output (Process History) display.

Enter the file name, and press OK.



NOTE

- Enter the file name by a full path. An example is "A: File name". If the file name alone is entered, the data are stored in C:¥ASIS1V11¥BIN. The storage format is CSV.

DELETE

Pressed to delete individual items of the actual result data.

Select the data to delete, and press DELETE.

DELETE ALL

Pressed to delete all of the actual result data.

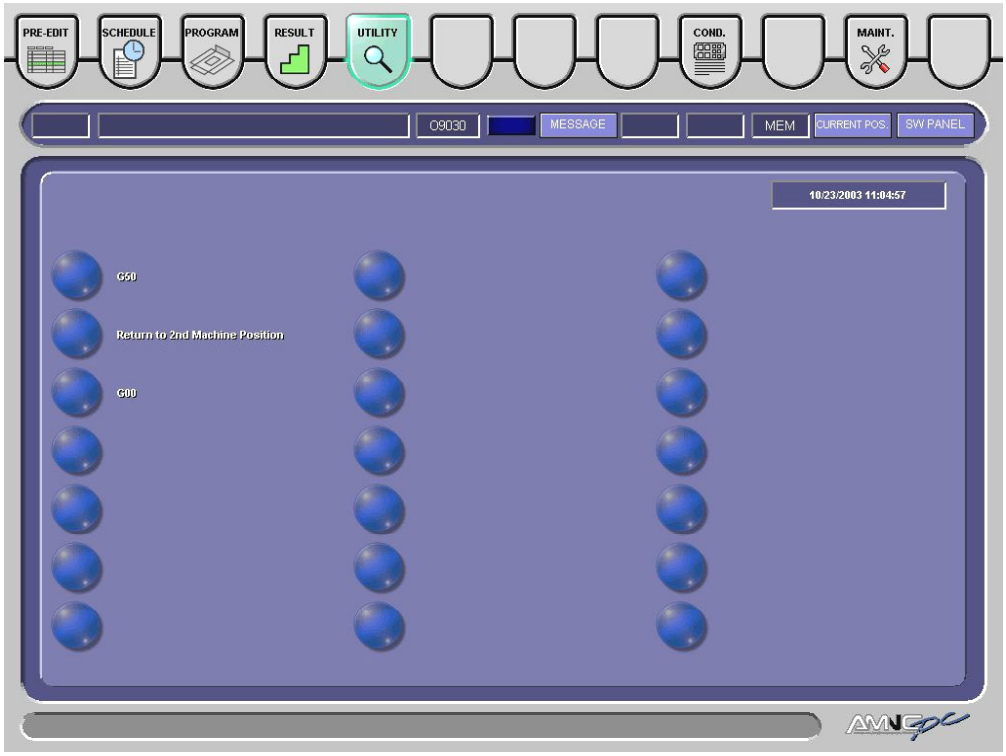
UPDATE

Pressed to update the actual result data.

NOTE

- If the worksheet is processed with the RESULT display shown on the screen, the actual results cannot be accurately stored in the memory of the NC unit. In this case, press UPDATE to change to the latest actual result data.

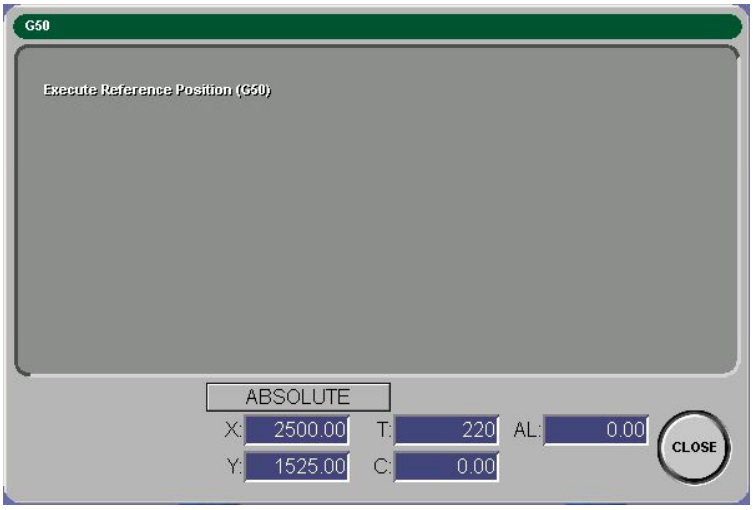
UTILITY display



G50

Pressed to open the G50 (zero-return) display.

Press the START button on the main control panel to zero-return the machine.



CLOSE

Closes the G50 display.

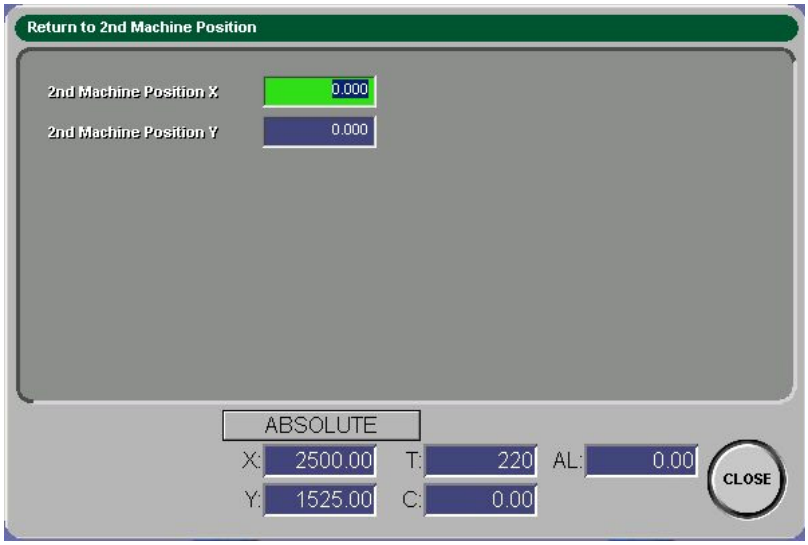
NOTE

- Before performing the G50 operation, press and illuminate the MEMORY button on the main control panel.

Return to 2nd Machine Position

Pressed to open the Return to the 2nd Machine Position display.

Press the START button on the main control panel to zero-return the X- and Y-axes to the position indicated in the 2nd Machine Position X and 2nd Machine Position Y fields.



CLOSE

Closes the Return to 2nd Machine Position display.

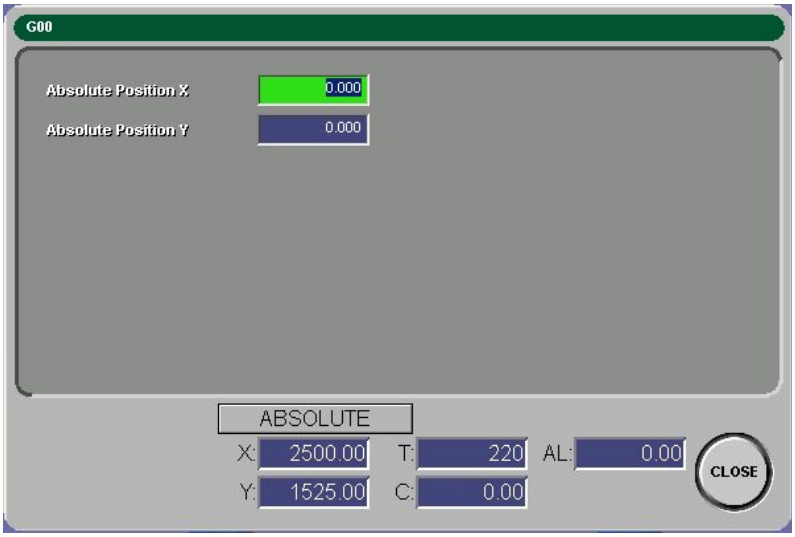
NOTE

- Before performing the Return to 2nd Machine Position operation, press and illuminate the MEMORY button on the main control panel.

G00

Pressed to open the G00 (Positioning) display.

Enter the appropriate coordinates in the Absolute Position X and Absolute Position Y fields. Press the START button on the main control panel to move the X- and Y-axes to the target position.



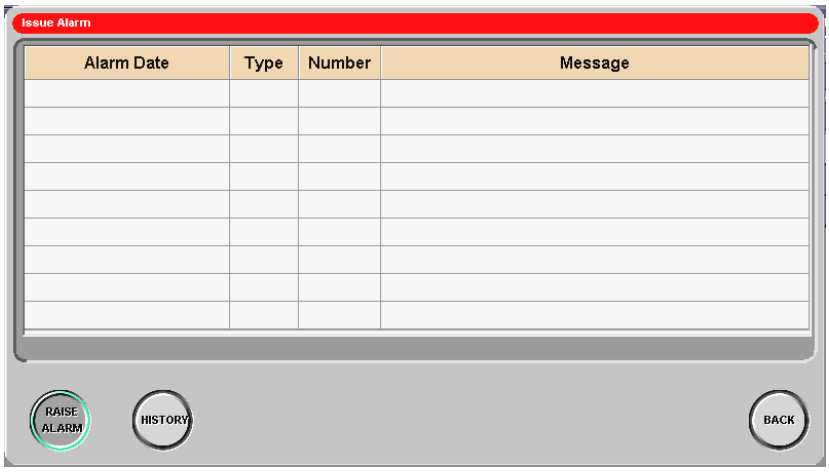
CLOSE

Closes the G00 display.

NOTE

- Before performing the G00 operation, press and illuminate the MEMORY button on the main control panel.

MESSAGE display

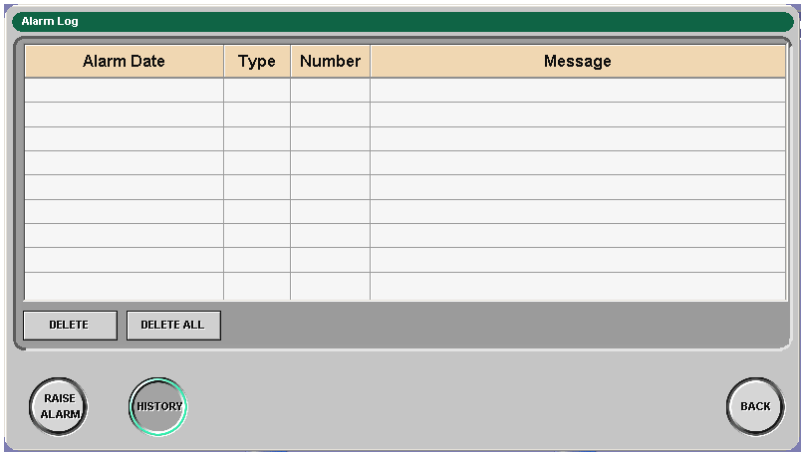


RAISE ALARM

Shows the current alarms.

HISTORY

Shows the alarm history.



DELETE

Deletes an alarm history.

Select the alarm history to delete, and press DELETE.

DELETE ALL

Deletes all alarm histories.

Processing condition displays

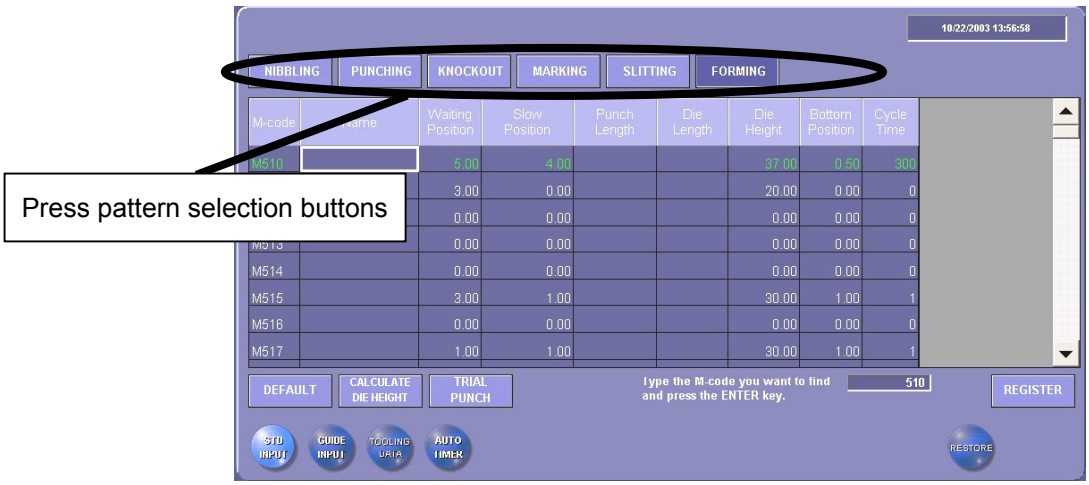
Press the COND. button to open one of the processing condition displays.

There are four processing condition displays: STD INPUT, GUIDE INPUT, TOOLING DATA, and AUTO TIMER displays.

STD INPUT (M-CODE LIST) DISPLAY

Press the STD INPUT button to open the STD INPUT display.

On the STD INPUT display, set the parameters of the press pattern (press mode) M-codes required for the automatic operation of the machine. For the details of the press patterns, refer to Part V, Press axis control parameters.



NIBBLING

Displays a nibbling pattern M-code (M12) and its parameters.

PUNCHING

Displays punching pattern M-codes (M500, M501 and M696), and their parameters.

KNOCKOUT

Displays knockout pattern M-code (M502 to M505 and M570 to M575), and their parameters.

MARKING

Displays marking pattern M-code (M560 to M569), and their parameters.

SLITTING

Displays slitting pattern M-codes (M506 to M509), and their parameters.

FORMING

Displays forming pattern M-codes (M510 to M559 and M800 to M999), and their parameters.

DEFAULT

Returns the parameter values of the selected M-code to the default values.

CALCULATE DIE HEIGHT

Calculates the die height.

Enter the punch length and die length, and press the button to calculate the die height.

TRIAL PUNCH

Changes to the Trial Punch display.

STD INPUT

Changes to the STD INPUT display.

GUIDE INPUT

Changes to the GUIDE INPUT display.

TOOLING DATA

Changes to the TOOLING DATA display.

AUTO TIMER

Changes to the AUTO TIMER display.

REGISTER

Registers the newly set parameters in the memory of the NC unit.

NOTE

- When the parameter value or values are changed, the change is not stored in the memory of the NC unit unless the REGISTER button is pressed.

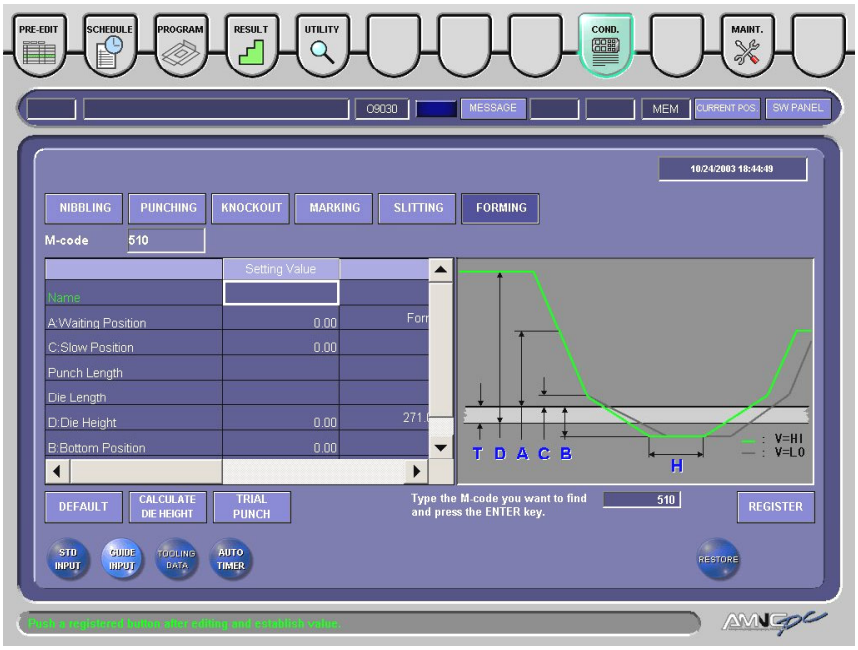
RESTORE

Used by AMADA for maintenance purposes.

GUIDE INPUT DISPLAY

Sets the press pattern parameters required for the automatic operation of the machine. For detailed information on the press patterns, refer to Part V, Press axis control parameters.

Press the GUIDE INPUT button to open the GUIDE INPUT display.

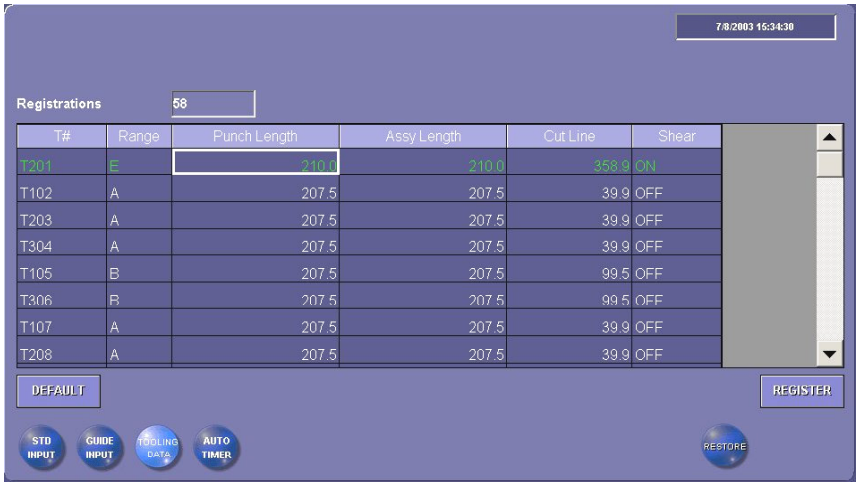


For information about the buttons on the display, refer to “STD INPUT (M-code list)”.

TOOLING DATA DISPLAY

If the tooling parameters Punch Length, Assy Length, Cut Line, and Shear are set for each turret station, the worksheet can be punched at a speed that suits the set punch size, or some of the press pattern (press mode) commands can be omitted in the program. The press position can also be compensated for reground punches. For the details of the tooling parameters, refer to Part V, Press axis control parameters.

Press the TOOLING DATA button to open the TOOLING DATA display.



DEFAULT: Returns the parameter values of the selected T-number to the default values.

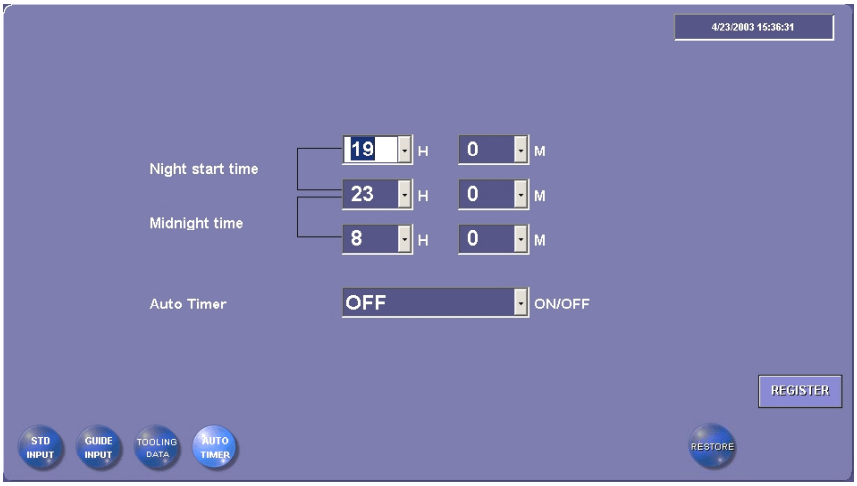
NOTE

- When the parameter value or values are changed, the change is not stored in the memory of the NC unit unless the REGISTER button is pressed.

AUTO TIMER DISPLAY

Press the AUTO TIMER button to open the AUTO TIMER display.

When the PRESS SPEED AUTO button on PANEL A is pressed and illuminated and the Auto Timer switch on the AUTO TIMER display is set to ON, the press speed can be automatically reduced to alleviate punching noise in the preset night and midnight time zones. When you want to have the press speed automatically reduced to prevent night punching noise, set the night and midnight time zones to suit your situation. For the details of time zone settings, refer to Part V, Press axis control parameters.



NOTE

- When the time zone settings are changed, the change is not stored in the memory of the NC unit unless the REGISTER button is pressed.

Maintenance display

Press the MAINT. button to open one of the maintenance displays to set the display conditions.

The display has twelve buttons: USER SETTINGS, APPLICATION SETTINGS, DATA INPUT AND OUTPUT, HIT COUNT MANAGEMENT, CNC MAINTENANCE, VERSION INFORMATION, EXTERNAL IO SETUP, E-MAIL NOTICE FUNCTION, BACKUP SCHEDULER, and INSPECTION.

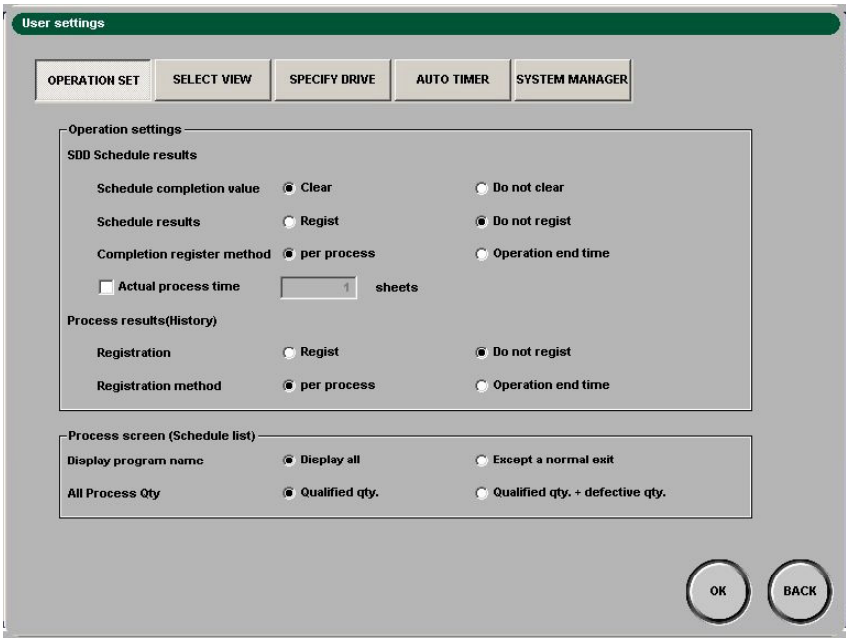


USER SETTINGS BUTTON

Pressed to open the User settings display.

The User settings display consists of OPERATION SETTINGS, SELECT VIEW, Specify Drive, AUTO TIMER, and SYSTEM MANAGER.

OPERATION SETTINGS display



Schedule completion value

Sets whether or not to clear the actual results before reading a schedule file.

Schedule results

Sets whether or not to register the actual schedule results.

Completion register method

Sets whether to register the actual processing results at the end of each worksheet or operation.

Actual process time

When you want to specify the timing of calculating the actual processing time, check the Actual result working time check box, and enter the number of worksheets at which to calculate the actual processing time.

NOTE

- This timing can be set only when you have selected the method of registering the actual processing results at the end of each worksheet.

Registration

Sets whether or not to register the actual processing results.

Registration method

Sets whether to register the actual processing results at the end of each worksheet or operation.
per process: Registers the actual processing results at the end of each worksheet.
Operation end time: Registers the actual processing results at the end of each operation.

Display Program name

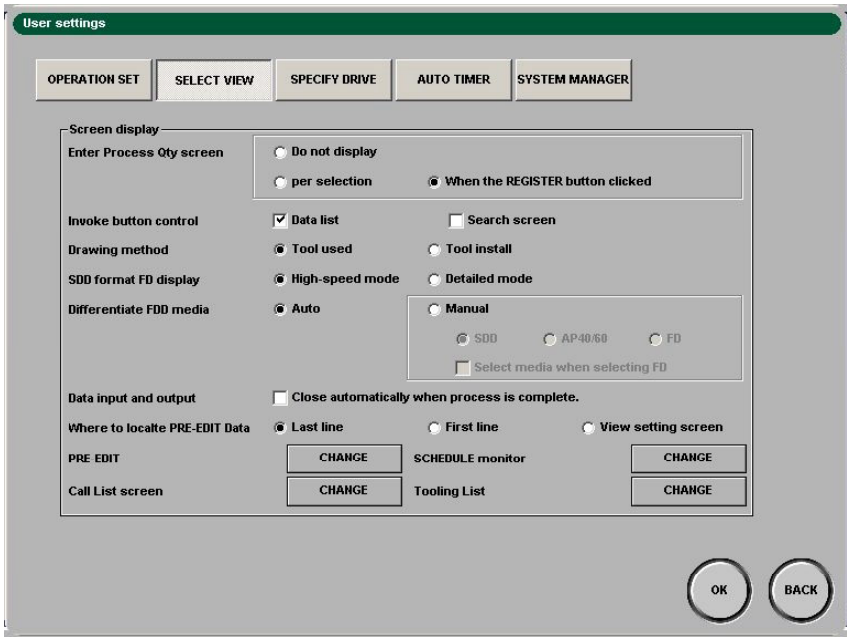
Sets whether to display the names of all programs or programs that have not been normally completed.

All Process Qty

Sets whether to count accepted parts alone or both accepted and rejected parts.

CAUTION	● **When you have changed a condition or conditions, turn off the power and then turn it back on.**

SELECT VIEW display



Enter Process Qty screen

Selects whether or not to display the number of worksheets processed. If you select to display, select whether to display the number of worksheets processed for each selection or each time the Add or Select button is pressed.

Invoke button control

Check the Data list check box to show the program list when the OPEN button is pressed on the PRE-EDIT, SCHEDULE, or PROGRAM display. Usually have this check box checked.

Check the Search screen check box to open the display for searching for the program or programs when the OPEN button is pressed.

SDD format FD display

Selects a display format.

Differentiate FDD media

Selects whether to judge the FDD media automatically or manually.

Where to locate PRE-EDIT Data

Determines the part of the SCHEDULE display to which to add the program name or names from the PRE-EDIT display.

PRE-EDIT/SCHEDULE monitor

Changes the contents of the PRE-EDIT or SCHEDULE display.

Call List screen

Changes the contents of the Call display.

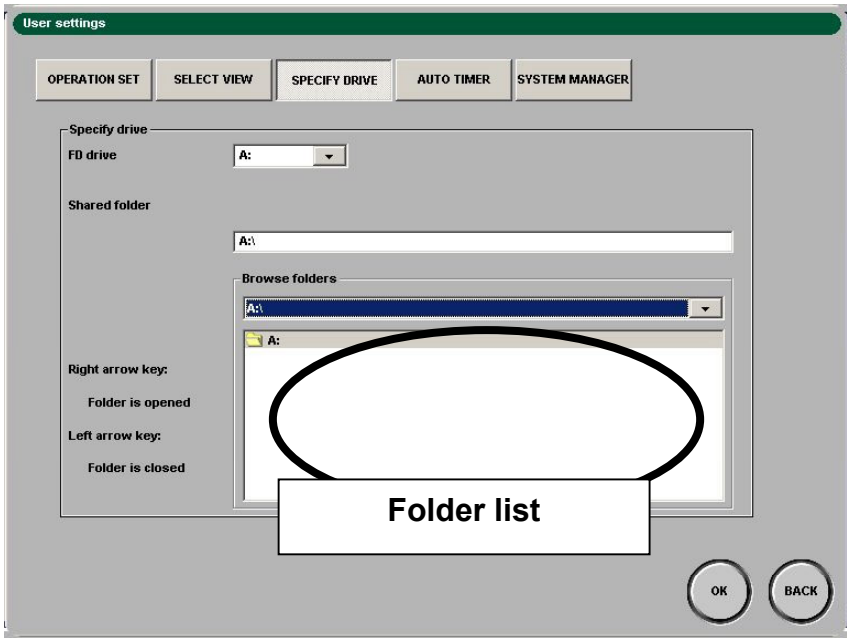
Tooling list

Changes the contents of the Tool list display.

CAUTION

- **When you have changed a condition or conditions, turn off the power and then turn it back on.**

SPECIFY DRIVE display



FD drive

Specifies the floppy disk drive.

Shared folder

Shows a share folder path.

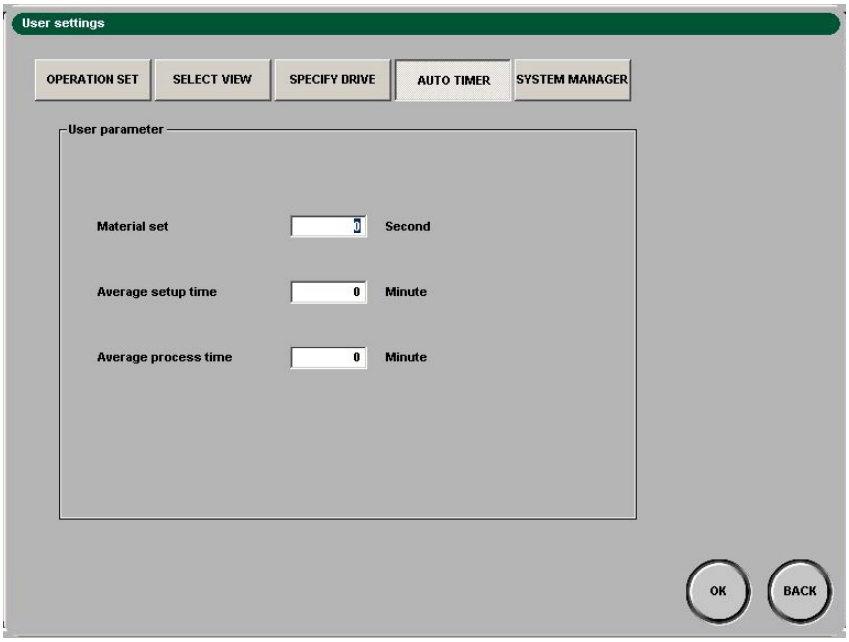
To set a share folder, select the drive in the Browse folders field, and select the desired folder in the Folder list.

NOTE

● The share folder can be directly specified by a full path.

CAUTION ● **When you have changed a condition or conditions, turn off the power and then turn it back on.**

AUTO TIMER display



Material set

Sets the worksheet setting time to calculate the scheduled processing end time.

Average arrangement time

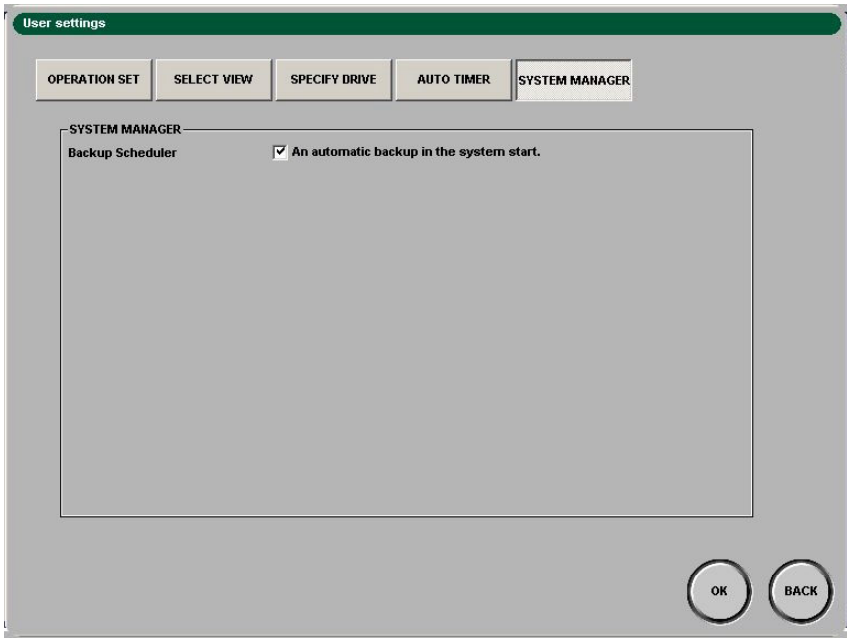
Sets the average setup time to calculate the scheduled processing end time.

Average working time

Sets the average operating time to calculate the scheduled processing end time.

CAUTION	● **When you have changed a condition or conditions, turn off the power and then turn it back on.**

SYSTEM MANAGER display



Backup scheduler

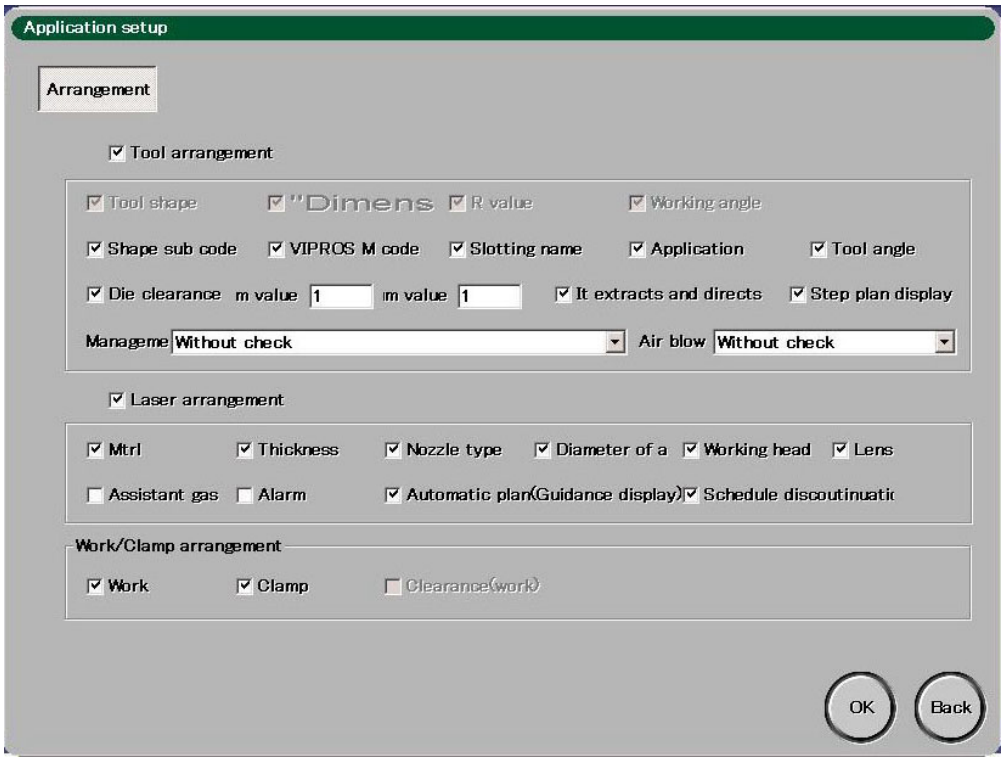
Sets whether or not to start the backup scheduler when the system is started.

For details, refer to the Backup Scheduler button.

APPLICATION SETTINGS BUTTON

Arrangement display

Sets the conditions to perform setup simulation on the PRE-EDIT, SCHEDULE, and PROGRAM displays.



Tool arrangement

Check “Shape sub code”, “VIPROS M code”, and other items you want to display during setup simulation and tool setup.

Work/Clamp arrangement

Check the item or items you want to display during setup simulation:

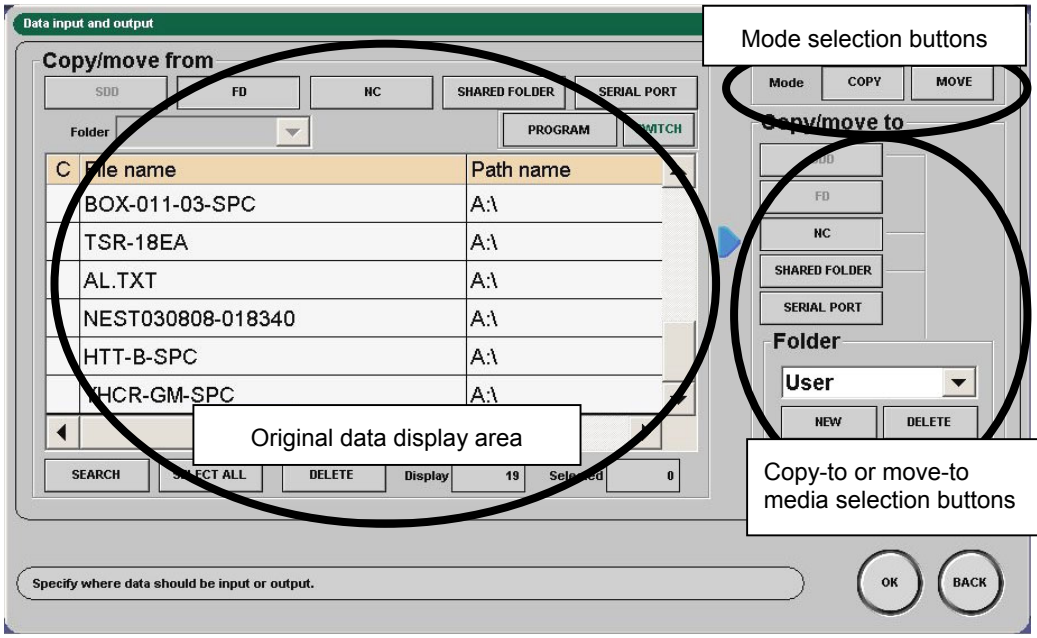
- Work
- Clamp (workclamp)
- Clearance

CAUTION	● **When you have changed a condition or conditions, turn off the power and then turn it back on.**

DATA INPUT AND OUTPUT BUTTON

Pressed to copy and move a program or programs between media.

When the program or programs are copied or moved, they can also be renamed.



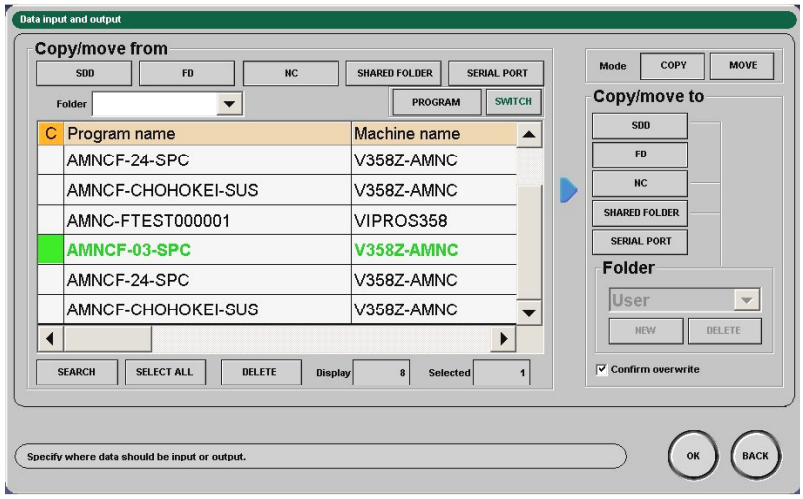
Mode selection buttons

COPY

Copy the program or programs between the media as described below.

1. In the original data display area, select the media where the program or programs to be copied are saved, and display a list of programs.
2. From the list displayed, select the program or programs to be copied. (Multiple items can be selected.)
3. Press COPY.
4. Press one of the copy-to or move-to media selection buttons. With the SDD and NC buttons, you can select a folder.

5 Press OK to open the confirmation display.



6 If the program or programs to be copied are OK, press COPY. To stop program copying, press ABORT.

NOTE

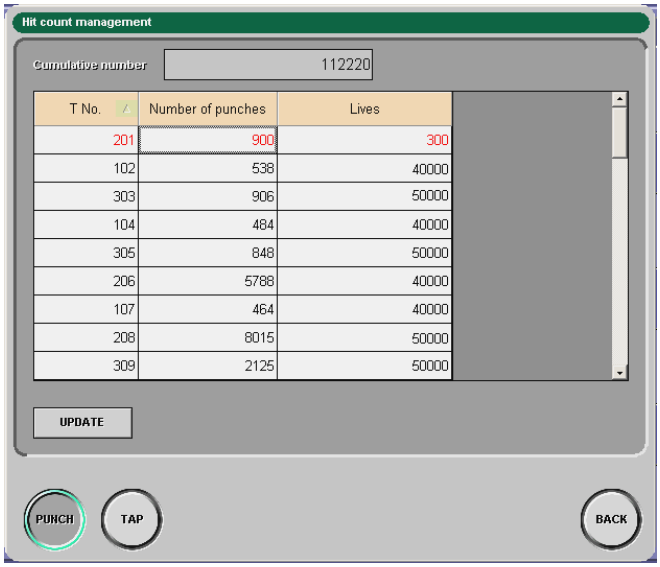
- To rename each program, select the program, and press RENAME. To return to the previous display, press BACK.

MOVE

When you move the program or programs between the media, press MOVE, and do as described in “COPY” above.

HIT COUNT MANAGEMENT BUTTON

For PUNCH



Enter with the accessory keyboard the actual hit count and maximum hit count of a punch in the Number of punches and Lives fields, respectively, and press the ↵ key.

If you press BACK during the data entry, the new values are not stored in the memory of the NC unit.

NOTICE

- When the installed punches reach their maximum hit count, an alarm is not displayed. Periodically check their hit count on this display.

NOTE

- The data in the Number of punches and Lives fields cannot be changed or set during automatic operation. If you have changed the data in these fields by mistake during automatic operation, press the ESC key.

UPDATE

Updates the hit counts of the punches to the latest data.

PUNCH

Opens the hit count management display for the punches.

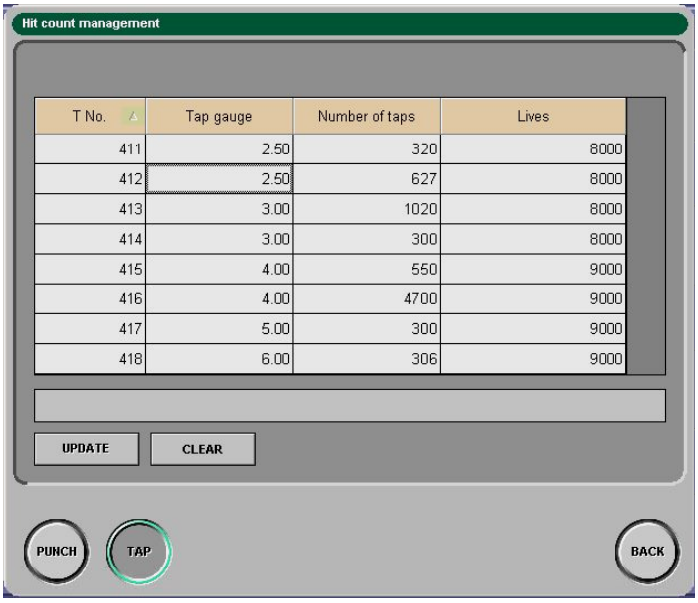
TAP (option)

Opens the hit count management display for the taps.

NOTE

- The display is not opened unless the option is set.

For TAP (option)



Enter with the accessory keyboard the size, actual hit count, and maximum hit count of a tap in the Tap gauge, Number of taps and Lives fields, respectively, and press the ↵ key.

If you press BACK during the data entry, the new values are not stored in the memory of the NC unit.

NOTICE

- When the installed taps reach their maximum hit count, an alarm is not displayed. Periodically check their hit count on this display.

NOTE

- The data in the Number of taps and Lives fields cannot be changed or set during automatic operation. If you have changed the data in these fields by mistake during automatic operation, press the ESC key.

UPDATE

Updates the hit counts of the taps to the latest data.

CLEAR

Clears the tap breakage information when a tap breakage alarm has occurred.

NOTICE

- Be sure to perform this operation after a tap change.

PUNCH

Opens the hit count management display for the punches.

TAP (option)

Opens the hit count management display for the taps.

NOTE

- The display is not opened unless the option is set.

CNC MAINTENANCE BUTTON

Pressed to open the CNC Maintenance display.

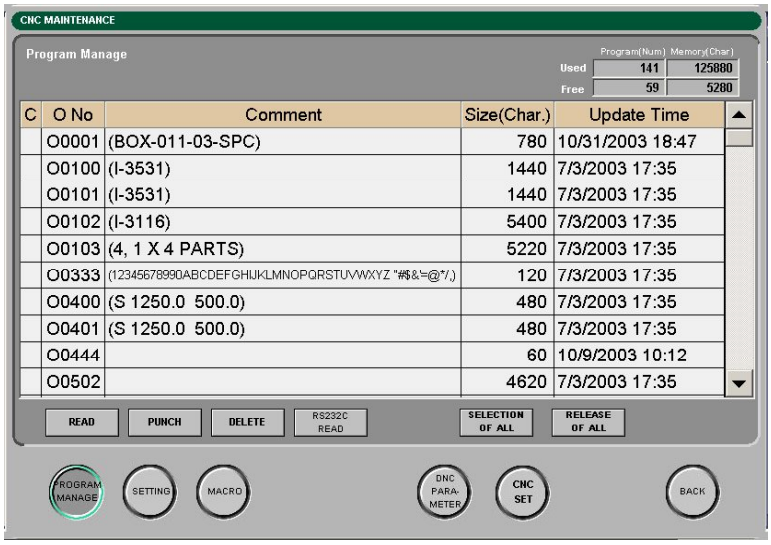
The CNC Maintenance display consists of Program Manage, Setting, MACRO VARIABLE, DNC PARAMETER, and CNC SET displays.

Program Manage display

Reads, writes, and deletes a program in the CNC memory.

NOTE

- If the punching program uses a subprogram, the subprogram must be registered beforehand in the memory of the CNC unit using the Program Manage display.



READ

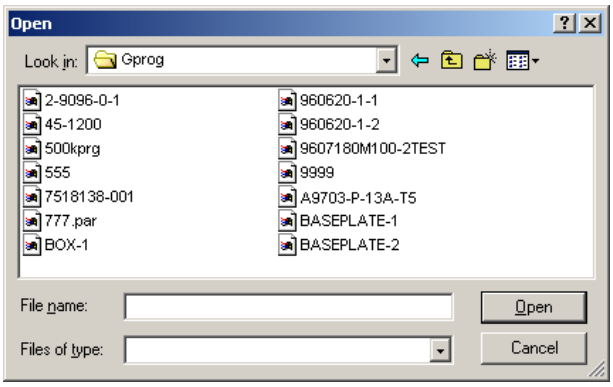
Reads a program to the CNC memory.

Press READ to open the File selection display.

NOTE

- The floppy disk is selected by default as call-from media on the File selection display.
- Register the programs under the O numbers O0100 to O7999. The O numbers O0001 to O0099 are used by the application for schedule operation, for example. If a program is registered under an O number from O0001 to O0099, it may be overwritten or deleted.

● Press the READ button to refer to the floppy disk. To refer to another media, press the CANCEL button, and operate from the following display:



PUNCH

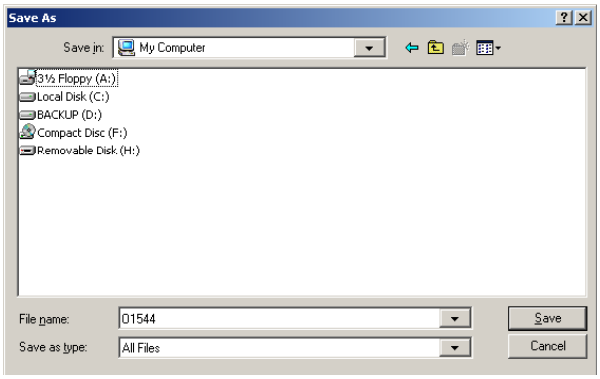
Writes a program from the CNC memory.

Press PUNCH to open the File selection display.

NOTE

● Register the programs under the O numbers O0100 to O7999. The O numbers O0001 to O0099 are used by the application for schedule operation, for example. If a program is registered under an O number from O0001 to O0099, it may be overwritten or deleted.

● Press the PUNCH button to refer to the floppy disk. To refer to another media, press the CANCEL button, and operate from the following display:



DELETE

Deletes a program from the memory of the CNC memory.

Select the program to delete, and press the button.

RS232C READ

Registers a program or programs in the CNC unit through the RS232C interface in the electrical control cabinet.

SELECTION OF ALL

Selects all programs.

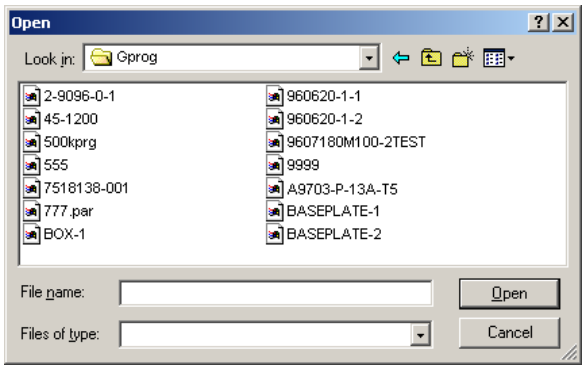
RELEASE OF ALL

Deselects all programs.

File reading procedure

Set the following five items: EDIT mode, NC reset, no NC alarm, TV check disabled, and EDIT PROTECT keyswitch turned to OFF.

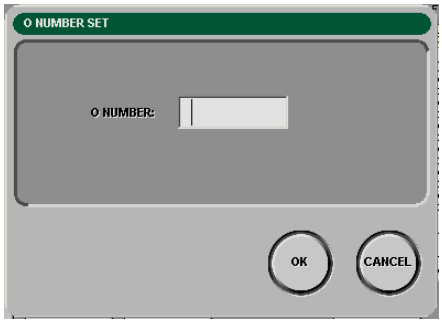
1 Press READ.



Open: Changes to the O NUMBER SET display.
Cancel: Stops the read operation without reading any program.

2 Select the program to read to the CNC memory, and press Open.

3 Set the read-to location in the CNC memory, and press OK.



O NUMBER: Enters the O number under which to save the program in the CNC memory.

OK: Starts reading the program to the CNC memory.

CANCEL: Stops the read operation without reading the program.

NOTE

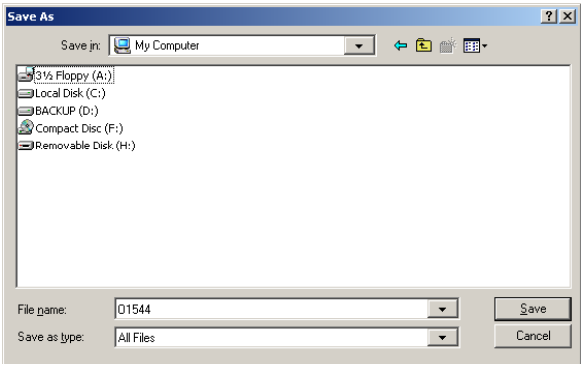
- If you press OK without entering the O number, the O number is detected from the file and read to the CNC memory.
- If a number is already entered in the O NUMBER field, the program is read to the NC memory under the specified O number. If the file has two or more programs, judge the beginning of the programs by O△△△△ in the program statement after O x x x x at the beginning of the file.

File writing procedure

Set the following five items: EDIT mode, NC reset, no NC alarm, TV check disabled, and EDIT PROTECT keyswitch turned to OFF.

1 Select the program to write to the PC.

2 Press PUNCH.



File name: Enters the file name under which to save the program in the PC. A smaller O number selected by default is displayed.
Save: Starts writing the program to the PC.
Cancel: Stops the write operation without writing any program.

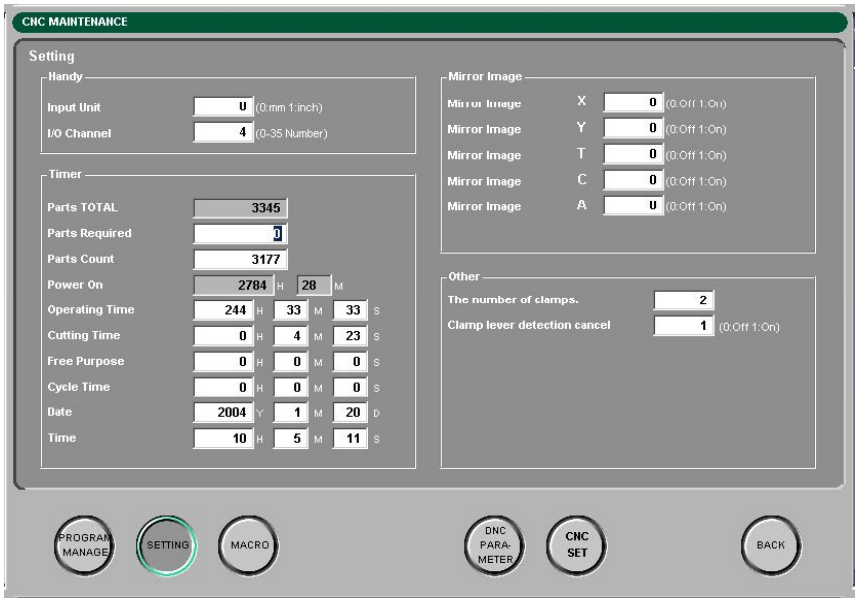
3 Set the write-to location of the PC, and press Save.

NOTE

- Do not select “Local Disk (C:), “BACKUP (D:)”, or “Removal Disk (H:)” as save-to location.

Setting display

Sets such items as the number of worksheets to be processed, number of worksheets already processed, operating time, current date and time, and number of workclamps to be used.



Select the field to set, enter with the accessory keyboard the necessary value in the field, and press the ↵ key.

NOTE

- If you press BACK while changing from one entry field to another, the new value is not stored in the memory of the NC unit.
- The values in the highlighted fields on the Setting display are updated in real time, but cannot be changed.
- If the number of workclamps installed on the machine does not agree with the number of workclamps shown on the Setting display, the alarm message “1150 CLAMP POSITION READ ERROR” appears on the screen.
- Set the “The number of clamps” field to “0” to use short workclamps.

Clamp lever looseness detection cancel function

NOTICE

● This function is an emergency one. As soon as the clamp looseness detection sensor fails or its cable breaks, remove the cause.

1 When the clamp lever loosens or the clamp lever looseness detection sensor fails, the alarm “CLAMP LEVER IS LOOSE” occurs.

2 Check the cause of the alarm.

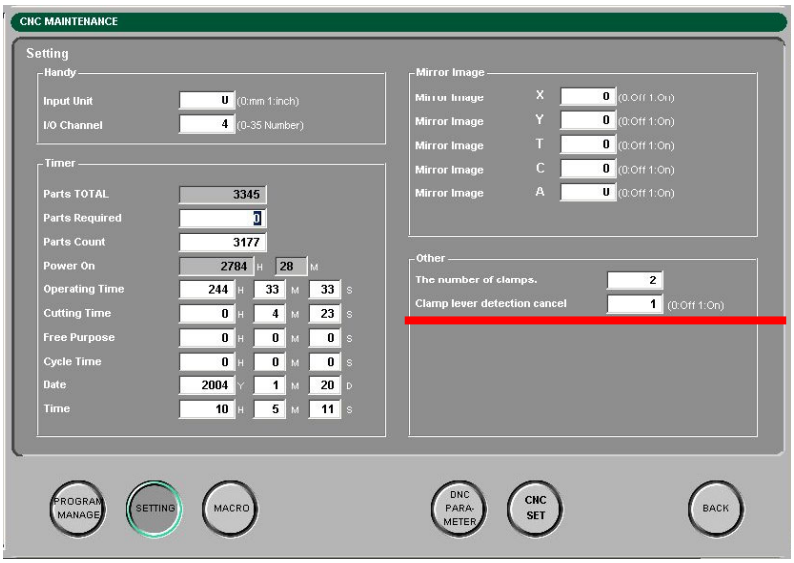
3 When the cause is the failure of the clamp lever looseness detection sensor or the breakage of its cable, the operation cannot start. You can punch the worksheet in an emergency by making the following setting.

4 Press the MAINT., CNC MAINTENANCE, and SETTING buttons to open the SETTING display.

5 Set the “Clamp lever detection cancel” field to “1”.

NOTICE

● Usually keep the “Clamp lever detection cancel” field set to “0”.



6 When this setting is changed, the following warning appears for a few seconds. It also appears at the start of the program.

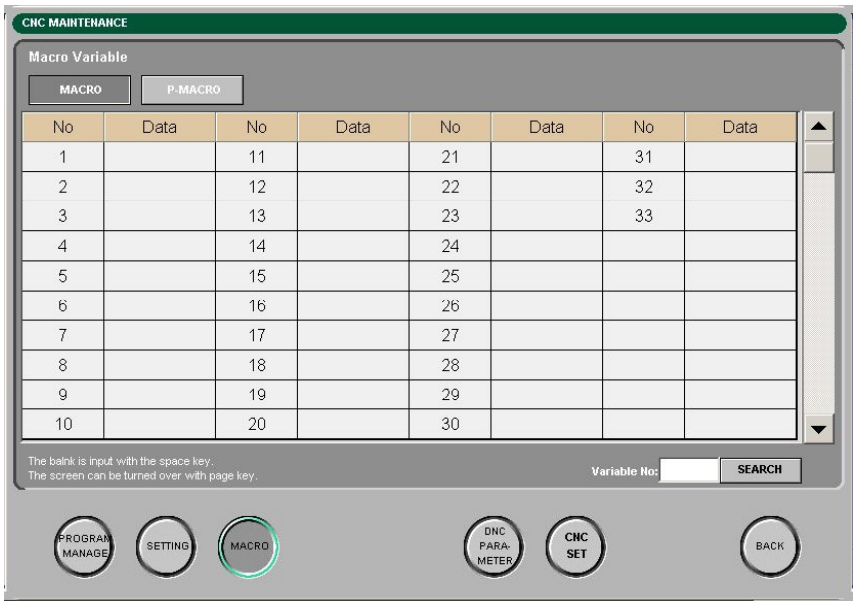
2197 CLAMP LEVER DETECTION CANCEL

NOTICE

● When the clamp lever looseness detection function is disabled, check the position of the workclamps every punching operation so that the workclamps are not punched.

MACRO VARIABLE display

Shows and updates macro variables and the like.



MACRO

1 to 999: Custom macro variables

1000 to 9999: System variables

P-MACRO

10000 to 19999: P-code variables

NO: A variable number

DATA: Value corresponding to the variable number. Click the variable value to change it. When you select the next item, the new variable value is stored in the memory of the NC unit.

Scroll bar

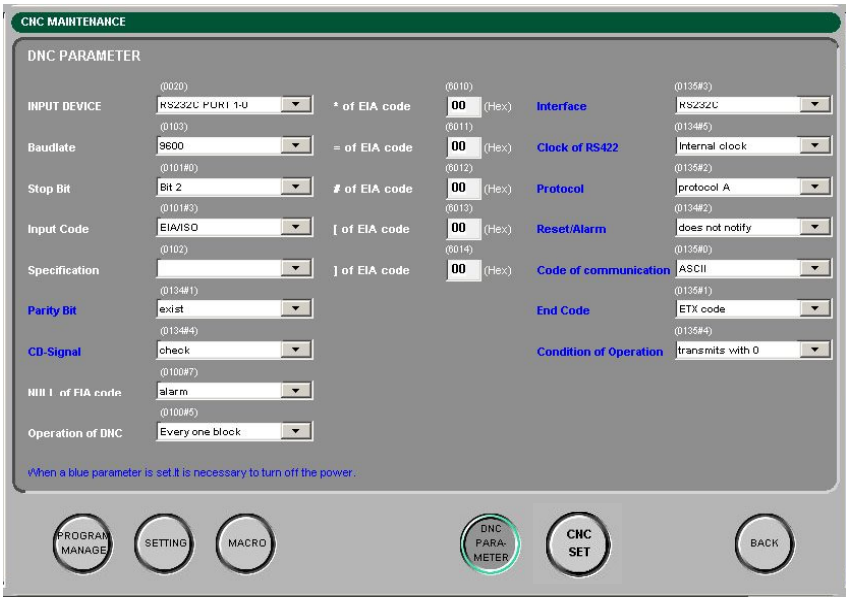
Changes from one page to another.

SEARCH

Searches for the variable number shown in the field, and lists the variables of that number.

DNC PARAMETER display

Selects and sets the input devices.



The RS232C interface to be set here is the RS232C interface in the electrical control cabinet.

INPUT DEVICE (synchronized with I/O Channel on Setting display)

0: Handy file

1: RS232C

3: Remote buffer

4: Floppy disk (default)

Set each item to suit the input device to be used.

NOTE

- After setting a parameter shown blue on the display, turn off the power and then turn it back on.