



# OPERATING MANUAL

FOR



**MAZAK**

**MAZATROL CAM  
M-2**

CENTRO DE MAQUINADO

Type :

SERIAL NUMBER :



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## Introduction:

The MAZATROL CAM M-2 is CNC equipment specially developed for machining centers. It allows easy and quick programming in daily conversational language. The MAZATROL CAM M-2 has various functions for reduction of set-up time and for many other purposes. Of course, it allows the conventional style of programming.

This manual describes the operating procedures of the MAZATROL CAM M-2 (excluding the EIA/ISO programming functions). For details of programming and EIA/ISO programming functions, please refer to:

1. MAZATROL CAM M-2 Programming Manual
2. MAZATROL CAM M-2 EIA/ISO Programming Manual.

NOTE: The specifications of the MAZATROL CAM M-2 may be subjected to change without previous notice for remodeling.



## PART I OPERATION

### 1. NC

#### 1.1 CYCLE START

This key switch is used to execute a program or command in the auto mode or MDI mode.

When the key is once depressed and released again, the command becomes valid, the CYCLE START lamp is illuminated, and the program and command are executed. When the command has been executed, the lamp goes out.

#### 1.2 FEED HOLD

When the FEED HOLD signal is turned on during automatic operation (auto MDI), all the axes which have been being moved are decelerated and stopped. Re-starting can be performed with the automatic starting (CYCLE START) signal.

- ① Even when the FEED HOLD signal is valid, M, S, T and B are executed. Make a temporal stop of M or B, if so desired, on a single block basis.
- ② FEED HOLD is suspended when the mode is changed from the auto to the manual mode (HSx1, HSx10, JOG, RAPID, No. 1 ZERO, or No. 2 ZERO) during automatic operation.
- ③ When FEED HOLD is valid, interruption by the manual operation (HSx1, HSx10, JOG, RAPID, No. 1 ZERO or No. 2 ZERO) is possible.
- ④ FEED HOLD is invalid during the tap cycle. It becomes valid after the end of the tap cycle.

#### 1.3 NC RESET

The reset function works when the RESET button on the control panel is pressed.

When the NC reset is pressed during machine operation, the machine feed speed is decelerated and the machine feed is stopped finally.

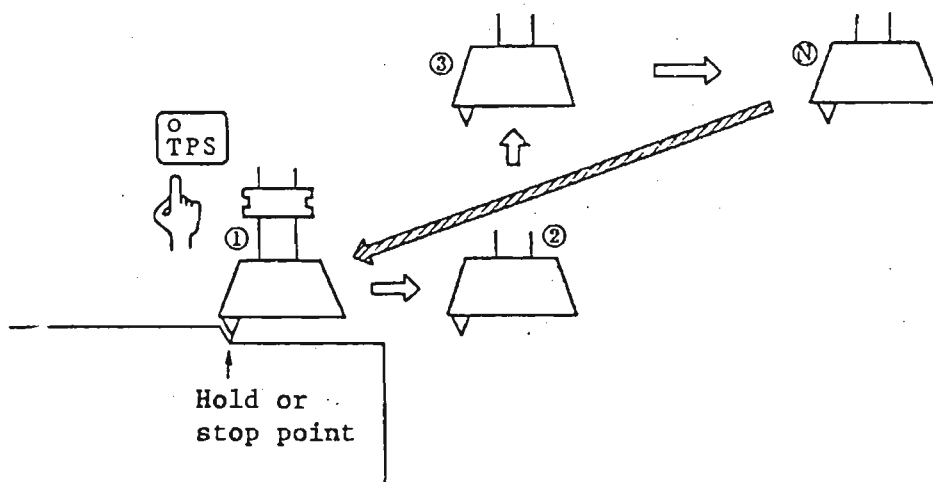


#### 1.4 TPS

If the **TPS** (tip path storage) key is depressed before transfer (quick feed, slow feed, manual pulse generator or stepping) of the spindle according to the program when manual interruption is to be executed during an automatic operation to manually transfer the spindle, that position will be stored. When the **CYCLE START** key is depressed after returning to the auto mode, the spindle automatically returns to the former position and starts automatic operation. TPS is valid either in the MAZATROL Program or in the EIA/ISO Program. The TPS function is effective in a maximum of four positions.

(1) When a stop point only has been stored: \* Tool path at interrupt ( )

- Turn on the automatic pause (**FEED HOLD**) or automatic stop (**SINGLE BLOCK**)
- After making certain that the tool has stopped make a changeover to the manual mode and depress the **TPS** ( tip path storage) key.
- Move the tool from (1) to (N) position in the manual mode.



\* Tool path upon re-start of automatic operation ( )

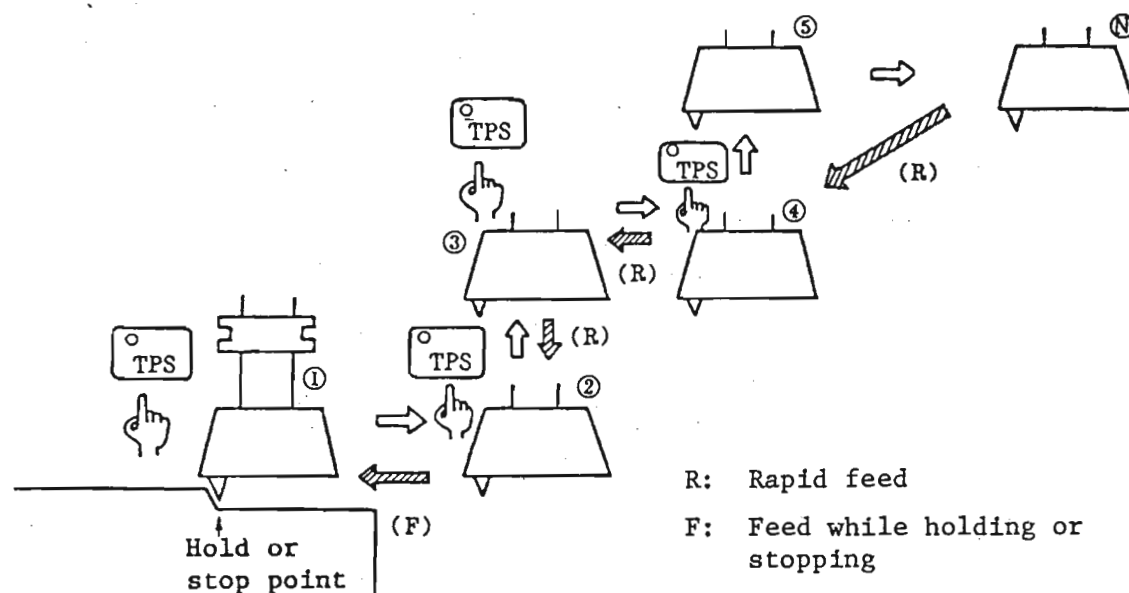
- Return to auto mode and depress the **CYCLE START** key.
- The tool approximates from (N) to (1) linearly at the same feedrate as it has paused or stopped. Then, the machine restarts the normal automatic operation.



(2) When stop point and turning points have been stored:

\* Tool path at interrupt ( ➡ )

- Turn on the automatic pause( **FEED HOLD** ) or automatic stop( **SINGLE BLOCK** )
- Move the tool from (1) to (4) and further to (N) in the manual mode.
- While moving the tool to N, depress the **TPS** key at points (1), (2), (3) and (4).



\* Tool path at re-start of automatic operation ( ➡ )

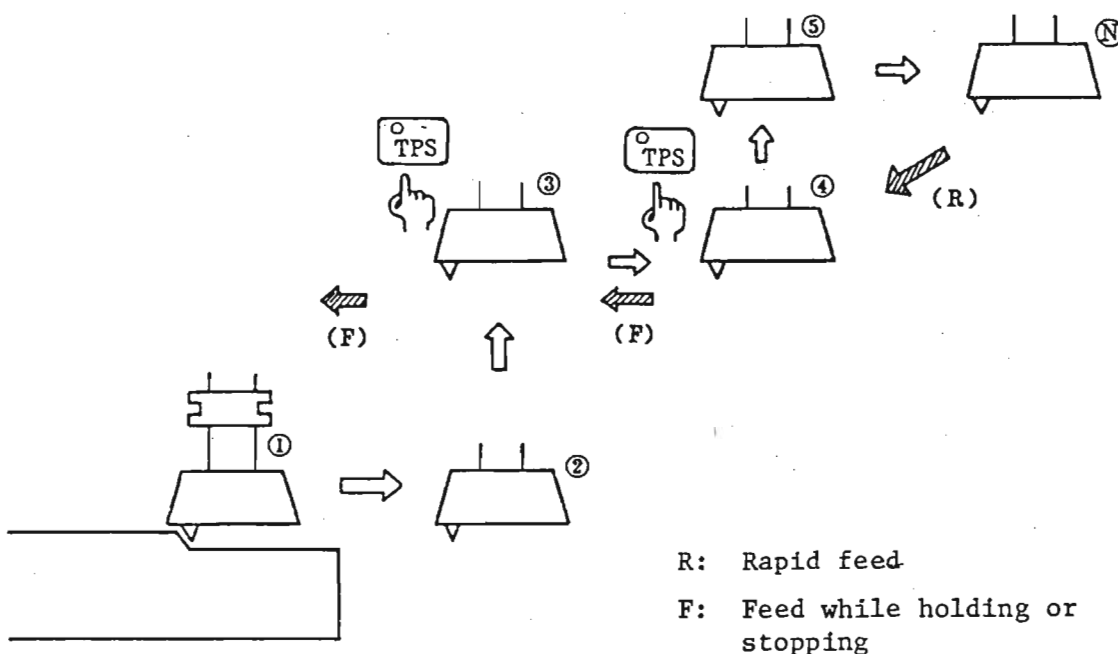
- Return to auto mode and depress **CYCLE START** key.
- The tool moves from (N) to (4) at the quick feed speed. Further, the tool moves from (4) to (2) through (3) at the quick feed speed.
- When it reaches (2), it moves directly to (1) at a speed equivalent to that before tool hold or stop and resumes automatic operation normally.



(3) When only turning points have been stored:

\* Tool path at interrupt ( ➡ )

- Turn on the automatic pause ( **FEED HOLD** ) or automatic stop ( **SINGLE BLOCK** ).
- Move the tool from ① to ④ and further to ⑤ in the manual mode.
- While moving the tool to ⑤, depress the **TPS** at points ③ and ④.



\* Tool path re-start of automatic operation ( ➡ )

- Return to auto mode and depress the **CYCLE START** key.
- The tool moves from ⑤ to ④ at the quick feed speed.
- The tool moves from ④ to ③ at a speed equivalent to that before hold or stop.
- The automatic operation continues as if position ③ were **TPS** has been initially turned on were stop point ①. In other words, the machine goes on automatically operating after the coordinate system has been shifted from ① to ③.

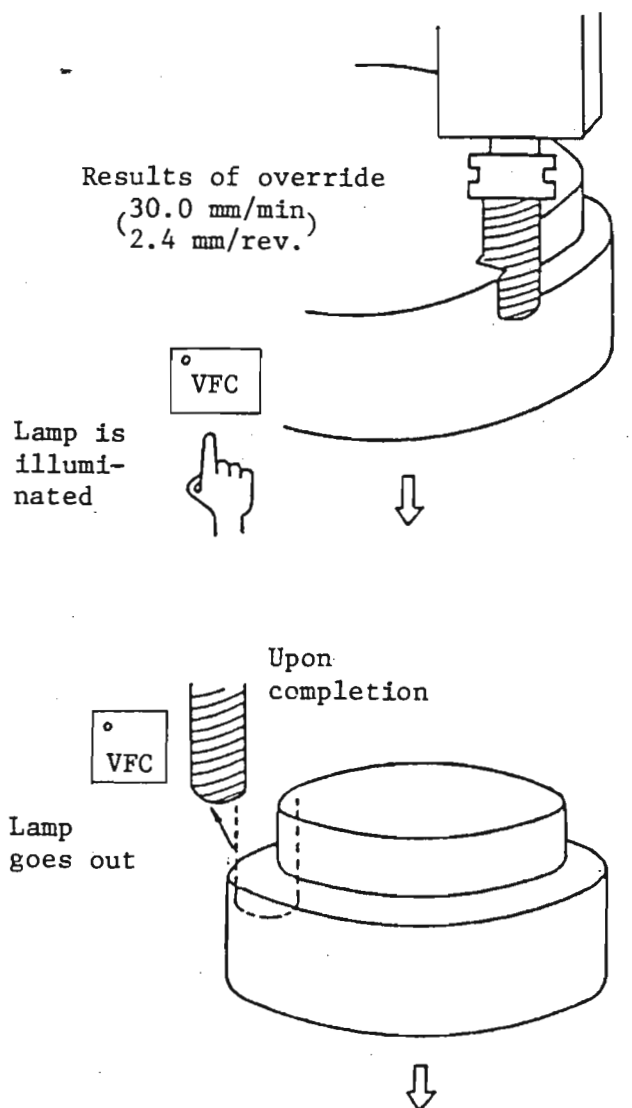
NOTE: Except when deliberately shifting the tool path, do not fail to turn on the **TPS** key at the pause or stop point. If not, the cutting program with that tool will be executed at a position offset from the coordinate system already established.





## 1.5 VFC

This function may be effectively used when it is desired to alter a program to the cutting speed and feedrate, both already changed by overriding a spindle speed and feedrate during the automatic operation. This function is effective for both rough and finish machining. VFC is invalid in the EIA/ISO Program.



### Example:

	Program	Override
Feed speed	: 20.0 mm/min	150% (30.0 mm/min)
Peripheral speed	: 2 mm/rev.	120% (2.4 mm/rev.)

- ① Apply override and turn on the **VFC** key during cutting. - Lamp is illuminated
- ② When that machining sequence has been completed, the VFC lamp goes out and the programmed feed speed and peripheral speed are changed to the newly overridden speeds.

**Note 1:** The VFC function is invalid in the rapid feed mode, in the manual program mode or in the tap cycle.

**Note 2:** About override in the tap cycle

#### o Feed speed override

Although the varied speed is displayed, the actual cutting feed speed remains unchanged.

#### o Spindle override

This is valid even in the tap cycle. In this case, the feed speed is also automatically changed.

(See "Spindle Override".)

Feed speed: (20.0 mm/min)  $\Rightarrow$  30.0 mm/min

Peripheral speed : (2 mm/rev.)  $\Rightarrow$  2.4 mm/rev.



## 1.6 Measurement of Tool Length

For measurement of tool length, any of the following methods is used:

### i) Fully automatic

If the tool whose length is to be measured is set in the MDI mode, its length will automatically be measured and entered in the "LENGTH" column in the tool data. (This method is applicable only to those tools whose tips are aligned with the centerline of the spindle. )

### ii) Semi-automatic

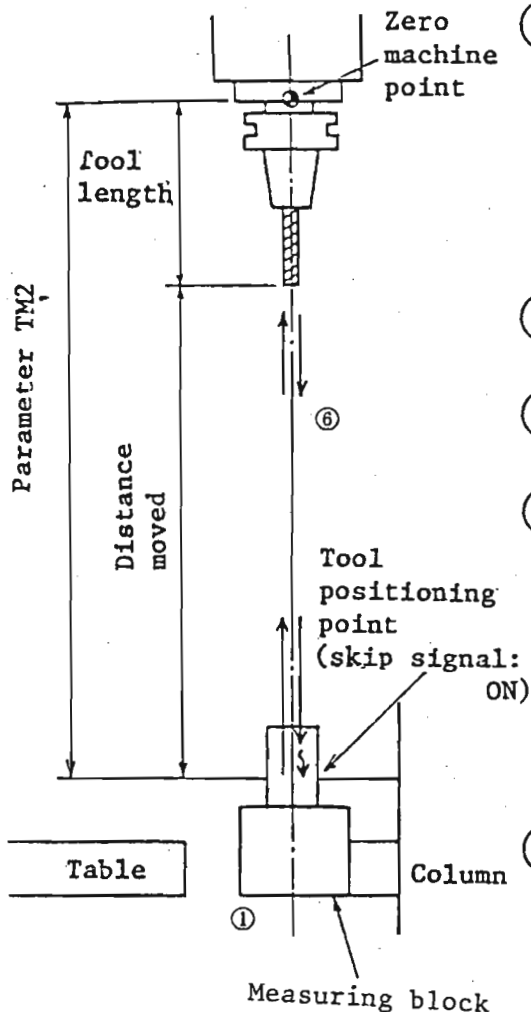
This method is effective for measuring length of tools whose tips are not aligned with the centerline of the spindle (face mill, etc.). After measurement, the tool length is added to the "LENGTH" column automatically.

### iii) Manual

The tool length is measured manually using the TPS function. In this case, the measuring block is not used.



i) Fully automatic tool length measurement(with measuring block)



① In the MDI mode, position the measuring block.  
(In a certain machine model, the measuring block is fixed. If so, this operation is unnecessary.)  
\* Turn on the MSR UNI OUT in the menu or input (INPUT) and start (CYCLE START) the M33 code and the measuring block will come out.

② Call the TOOL DATA screen.(Any other picture is also acceptable.)

③ Select and depress the T MSR AUTO key from the menu.(See Note 1)

④ A message will appear, asking "POCKET NUMBER?" Then, set the pocket Nos. of the tools whose lengths are to be measured.

Example:

To take measurements of the three tools in pockets Nos. 4,5 and 6, input as follows:

4 . 5 . 6 INPUT

⑤ After setting, the pocket Nos. selected in ④ on the TOOL DATA screen will be inverted and the cursor will move to the "LENGTH" position for the applicable pocket Nos.

⑥ When the CYCLE START key is turned on ATC is executed automatically to measure the length of the specified tools.

⑦ When the length of each tool has been measured, the tool length is put automatically into the "LENGTH" sector of the tool data.

⑧ After completion of measurement, return the measuring block.

\* Depress the MSR UNIT IN menu key or set M34 and depress the INPUT, CYCLE START.

Note1: If the measuring block is not set, the T MSR AUTO will not be valid nor will the pocket Nos. be inverted.

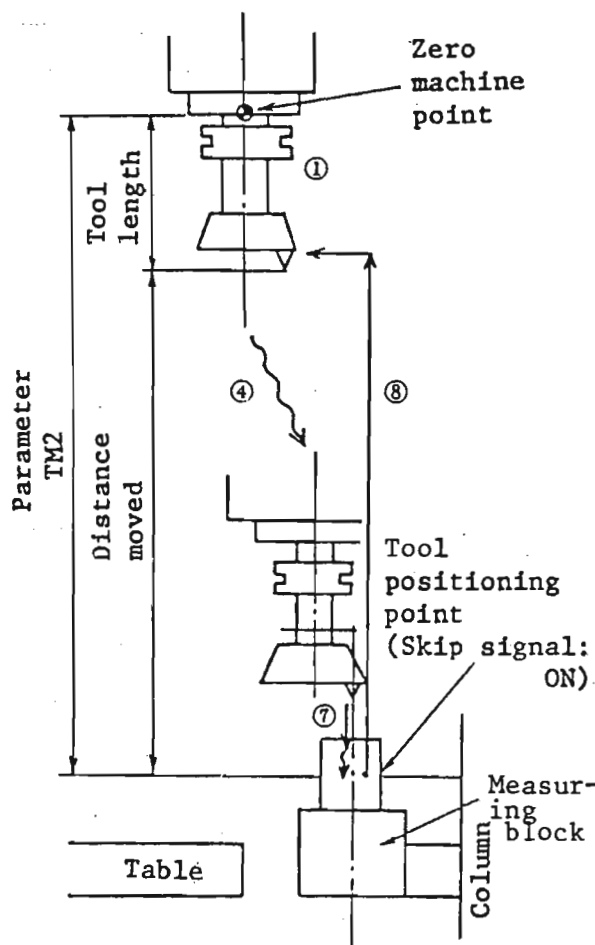
Note2: The single block is valid.

Note3: With the measuring block being set, switch to the automatic operation mode and the measuring block will return automatically. Since switching to the automatic operation mode with the plunger of the measuring block being in contact with the tool will mar the surface of the plunger, avoid such operation.

In such an instance, push the Z axis away after switching to the manual operation mode.



ii) Semi-automatic tool length measurement (with measuring block)



- ① Mount the tool whose length is to be measured to the spindle by executing ATC.

\* In the MDI mode, depress the **TOOL CHANGE** menu key. Input the pocket number corresponding to the tool to be measured and turn on the **CYCLE START** key and tools will be automatically changed.

- ② Locate the measuring block. (On some machines the measuring block may be permanently mounted. In this case, skip this step.)

\* In the MDI mode, depress the **MSR UNIT OUT** menu key. Otherwise, set M33 and depress the **INPUT**, **CYCLE START** and the measuring block will come out.

- ③ Call the TOOL DATA screen. (Any other picture is also acceptable.)

- ④ Manually put the tool tip to the center-line of the measuring block.

- ⑤ Change to the MDI mode and depress the **T MSR MANUAL** menu key. (NOTE 1)

- ⑥ The question "MEAS.WITH SPINDLE TOOL<INPUT>?" will appear on the screen. Then, depress the **INPUT** key.

The applicable pocket No. on the TOOL DATA screen will be inverted and the cursor will move to the "LENGTH" column.

- ⑦ Depress the **CYCLE START** key, and the axes will be moved automatically to measure the tool length.

- ⑧ After measurement, the Z-axis is automatically moved to the starting point and the measured value of the tool length is displayed.

- ⑨ After completion of measurement, restore the measuring block.



Note 1: If the measuring block is not located properly, the T MSR MANUAL menu key will not be effective or the pocket No. on the screen will not be inverted.

Note 2: As started above, semi-automatic measurement of tool length will be impossible if the tool whose length is to be measured is not mounted in the spindle by ATC. ATC cannot be executed if a value of the tool length is put in the tool data.

Therefore, a provisional numerical value must be put into the tool data as the tool length of such tool.

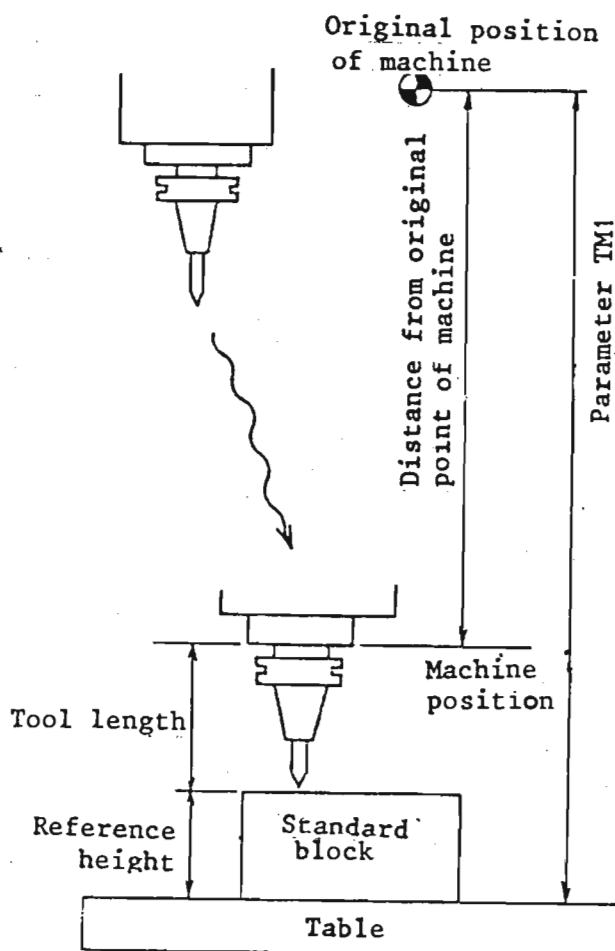
\*Other in the fully automatic tool length measurement mode, are measurements made (ATC is executed) even when there is no data in "LENGTH".

Note 3: Like i) fully automatic tool length measurement, the single block is valid.

Note 4: Same as Note 3 of i)



iii) Manual tool length measurement (without measuring block)



- (1) Mount the tool whose length is to be measured in the spindle by operating ATC.

\* In the MDI mode, depress the **TOOL CHANGE** menu key. Input the tool pocket No. and turn on the **CYCLE START** key.

Then, ATC will be executed.

See Note1.

- (2) In the manual mode (rapid feed, slow feed, step, manual impulse generator), move the axis until the tip of the tool touches the standard block or the workpiece whose height has been already determined.
- (3) Select the TOOL DATA screen with the display select key. Depress the **TEACH** menu key. Then, the pocket No. of the tool mounted on the spindle will be inverted on the screen and the cursor will flicker at the LENGTH column.
- (4) Enter the height of the standard block (or the height of the workpiece) with the **TEACH** inverted. Example: When the height of the standard block (or the height of the workpiece) is 50mm:

**TEACH** **5** **0** **INPUT**

- (5) After setting the measured value of the tool length is automatically displayed in the LENGTH column in the tool data.

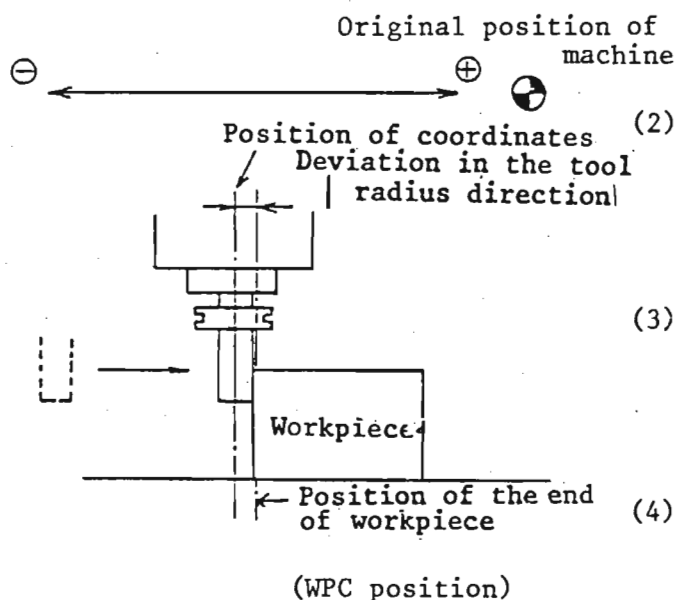


Note 1: As in ii) the semi-automatic tool length measurement , ATC can not be executed in manual tool length measurement unless a value is put in the LENGTH column in the tool data. It is necessary to input the approximate tool length beforehand.



## 1.7 Determination of Coordinate System by TPS function

- (1) Select the PROGRAM screen.



Turn on the menu key WPC MSR START.  
The menu will be changed. (Note 1)

- (2) To call the fundamental coordinate system (WPC) programmed for the applicable work No., turn on the WPC SEARCH and depress INPUT.

- (3) The WPC unit is displayed at the top of the program screen.  
The cursor flickers at the X-axis position.

- (4) Move the X-axis in the manual mode so that the tool may touch the workpiece.

- (5) With the tool touching the workpiece, turn on the TEACH and the menu will be inverted. Input the tool radius and depress the INPUT. (See Note 2). Then, the tool radius corrected at the current position will be set and displayed as the value on the X-axis of WPC. At the same time the cursor will flicker at the Y-axis position.

- (6) For the Y-axis, the system operates as referred to in (4) and (5). When WPC coordinate value of the Y-axis is displayed, the cursor flickers at the Z-axis position.

- (7) If it is desired to set WPC point on the Z-axis to Z=0 on the measured face of a workpiece, turn on menu TEACH after moving the cutting edge to the measured face of the workpiece. Then, input 0.

If 2 0 . 5 INPUT is input

Note 1: If no tool is mounted on spindle, an alarm will result.





instead of 0, the coordinates system of the Z-axis is determined in the position shifted by 20.5mm from the measuring surface of the workpiece in the positive direction.

Note 1: If no tool is mounted on the spindle, an alarm will result.

Note 2: When the tool is applied to the negative measuring end of the workpiece, the workpiece end is moved from the coordinate position by a distance equal to the tool radius in the positive direction. Therefore, input a positive tool radius.

Example: When the tool radius is 20mm as in the above figure, depress the keys to set:

**1 0 INPUT**

When measurement is made at the positive end of the workpiece, the negative sign is unnecessary because the workpiece end is moved from the current coordinate system position by the distance equal to the tool radius in the negative direction. depress the keys to set:

**- 1 0 INPUT**



### 1.8 Re-starting:

In the automatic operation mode, turn on the **RESTART** menu key. Questions will appear on the screen, asking the unit No. and sequence No. for the work No. which has been selected. Input desired Nos.

1. Mode: Automatic operation
2. Select and turn on the **RESTART**
3. Input desired unit No., answering the message asking "UNIT NUMBER INPUT?"

Example: **2** **INPUT**

4. A question asking "SEQUENCE NUMBER INPUT ?" Input sequence No. in the unit set in the step 3 above.

Example: **3** **INPUT**

5. Press the **CYCLE START** key, and the program will be executed to the end, starting from the sequence of the machining unit so input. In the above example, the program starting at unit No. 2 and sequence No. 3 will be executed.

NOTE: Restarting will not executed in the sub-program.

Reason: Even when work No. of the sub-program is searched and re-starting is attempted, the execution will not return to the main program. Also, if the **CONTINUE (CONTI)** of the end mode for the sub-program is set to "1", execution will be repeated within the sub-program.

If **WPC** is not defined in the sub-program, the tool will not move according to the coordinate system for the main program because all the axes will work in the machine coordinate system.



### 1.9 Coolant:

When the **COOLANT** key on the control panel is depressed, the menu will be put in the coolant mode. (The coolant menu can be called in any mode and on any screen.)

The menu allows the three kinds of coolants--flood coolant, mist coolant and air blast. Each kind of coolant is provided with the AUTO, MANUAL and OFF modes.

AUTO: When the M code is used to control the coolant, this mode should be switched on.

MANUAL: When this mode is selected, each coolant is turned on, no matter if the machine is operating manually or automatically.

OFF: It cancels the AUTO or MANUAL mode.

\* The **COOLANT** switch will be turned off if the key is depressed again. Then, the coolant menu will disappear and the menu will be put to the original status. Even when the coolant menu has disappeared the coolant mode once set is valid.

Note 1: With the **COOLANT** key ON, any menu other than the coolant menu cannot be operated normally. With the **F3** key on the operation panel kept depressed, however, any menu can be operated normally.



#### 1.10 Tool select:

When the TOOL SELECT is selected in the MDI mode, the magazine can be rotated to the specified position.

Operating procedure :

Using the menu select key, select the TOOL SELECT in the MDI mode. A message asking "POCKET NUMBER?" will appear on the screen. Set the pocket No. of the magazine and turn on the CYCLE START switch. Then, the specified tool will rotate to the ATC reference position for positioning.

However, if no tool is entered for pocket No. specified by the TOOL SELECT or if there is no tool length data in the tool data entered, (100)"TOOL DAT ERROR(INCOMPLETE)" will be displayed and nothing will be executed.



#### 1.11 ATC stop:

When the **ATC STOP** key on the control panel is turned on , the ATC operation currently being executed will continue to operate to the end. Upon execution of the next ATC operation, the machine will stop at the zero point of the machine. To re-start the machine, depress the **ATC STOP** key again to clear the **ATC STOP** status and turn on the **CYCLE START** key to resume ATC operation .



### 1.12 Tool change:

In the MDI mode, turn on the **TOOL CHANGE**, using the menu. A message will ask "POCKET NUMBER?". Then, key in the pocket No. of the tool to be mounted in the spindle and **INPUT**. When the **CYCLE START** switch is turned on, the spindle is automatically returned to the zero point. If any tool has already been mounted on the spindle, the tool is returned to zero position and the specified tool is mounted on the spindle by execution of ATC. If a pocket No. the same as that of the tool already mounted is inputted, no operation will appear to be performed and the cycle will terminate immediately.

If no tool data are entered for the tool specified by the tool change function or if there is no tool length in other data entered, the (100)"TOOL DATA ERROR" will displayed and no operation will be executed:

Note: During execution of ATC, a series of operations are performed even when the tool has been mounted in the spindle. If the **RESET** key is depressed when the **CYCLE START** lamp is on, note the following:

The NC unit is memorizing the pocket No. of the tool currently mounted on the spindle.

("TXX" on the CRT indicates the pocket No. of the tool on the spindle.)

In ATC operation, the pocket No. is updated immediately when execution of ATC has been completed.

(Then, the **CYCLE START** lamp will go out.) Even if a tool has been completely mounted onto the spindle, therefore, a pocket number or numbers prior to the ATC only is stored in the NC unit when the **RESET** key is depressed before the NC unit updates the pocket number.

In such a case input the new pocket No. by selecting the **TOOL NO. SET** from the menu in the MDI mode.

(See operating procedures for tool No. setting below.)



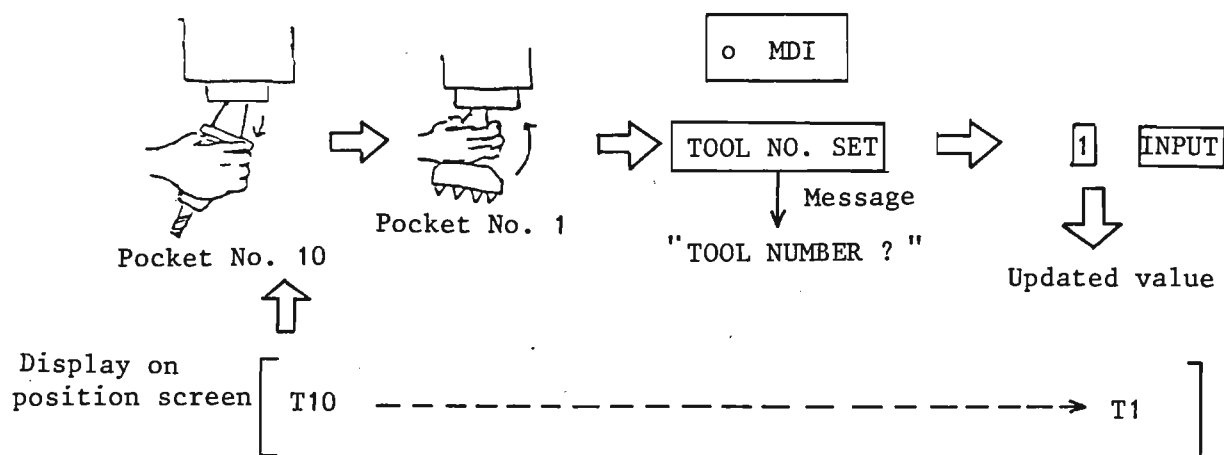
### 1.13 Tool No. Setting:

Depress the **MENU SELECT** key in the MDI mode, and call the **TOOL NO. SET** menu. When this key is turned on, "TOOL NUMBER?" will appear. Then, input a numerical value and INPUT and the "TXX" on the position screen will be updated to the numerical value inputted.

USE:

- (1) This function is used when the tool on the spindle is manually replaced with a new one or when the tool has been removed from the spindle manually. In the former case, it is necessary to inform the N/C unit of the pocket No. of the newly replaced tool. In the latter case, the pocket No. "0" must be made known to the NC unit.

Reason: The NC unit can know the pocket No. of the tool mounted on the spindle only in the ATC mode. The NC unit can not get any pocket No. when the tool mounted on the spindle has been replaced or removed in the manual operation mode. Therefore, it is necessary to teach the NC unit such pocket number unit.



- (2) This function may be used to input the pocket No. of a new tool when the NC unit is displaying the old pocket No. although the old tool has been replaced with a new one because the **RESET** key was depressed or the emergency stop switch was depressed during execution of ATC.

(See "Tool Change".)



#### 1.14 Machine Lock:

Call the MACHINE LOCK menu. (The MACHINE LOCK menu can be called in any of the auto, MDI and manual modes,) Once the MACHINE LOCK is turned on, the position of each axis on the POSITION screen or the "CURRENT" (current position) on the COMMAND screen will be displayed as if the machine axis are moving according to the command if the axis transfer command is given. The machine lock function is valid to G00, G01 (+F) send command for X-, Y-, Z- and (4) axes in the MDI mode, the axis transfer command in the manual mode and in the auto mode.

However, if the ATC command is given after machine locking, the axis transfer will normally not be displayed. Machine locking during execution of ATC is valid only when the block is terminated once (see NOTE 1) after completion of ATC and the CYCLE START switch is depressed again. To turn on the MACHINE LOCK not only on performance of ATC but also in the midcourse of a block in a certain program being run, stop the block once and then depress the CYCLE START key again and the machine will be effectively locked.

If the MACHINE LOCK menu key is depressed again when the machine lock function is valid, such function will be cleared. However, the machine lock function remains valid to the block under execution. If the CYCLE START switch is depressed again after a block stop, the axes will move according to the command. (See Note 2)

##### NOTE 1. Block stop

It means that the CYCLE START lamp goes out and the execution of a program stops when the block currently under execution comes to an end. This term is used for the automatic operation which is executed according to a series of blocks.

NOTE 2. Extreme care must be paid in transfer of axes after clearing of the machine lock function. In the automatic operation, the axes are going to move according to the instructions given by the next block, irrespective of the amount shifting of the machine during the time when the machine is being locked. Thus the tool might interfere with the workpiece.






NOTE 3: After clearing of the machine lock function, the displayed data may differ from the actual machine position in most cases. Correct the displayed data in the following manner:

i) Call the COMMAND screen.

ii) Correct the POSITION values for X-,Y-,Z- and (4) axis at the MACHINE at the left center of the screen. (\*The values on the MACHINE stand for the actual position.)

To do this, change the mode to the manual mode and put the cursor to the X-axis of the CURRENT with the cursor shift  key. Input the value of the X-axis as displayed on the MACHINE and set (depress INPUT) it.

Practice the same steps for the Y-, Z- and (4) axis.

\* POSITION on the COMMAND screen contains the same information as that in the position display on the POSITION screen.

If POSITION on the COMMAND screen is corrected as described above, the position display on the POSITION screen will be automatically corrected too.



### 1.15 Single Block:

In the automatic operation mode (including MDI mode ), call the SINGLE BLOCK by selecting the menu. When the SINGLE BLOCK is put to on, the cutting program after this in the auto mode will be executed by one block each time the CYCLE START switch is turned on.

If the SINGLE BLOCK is put on during execution of a block, that block will be terminated once and then the program will be executed by one block each time the CYCLE START switch is turned on.

If the SINGLE BLOCK is put off during execution of a block, that block will be terminated once. Then, the program will be executed continuously when the CYCLE START switch is depressed again.

NOTE 1: Once the SINGLE BLOCK is put to on, using the menu, the single block function remains valid even when the menu is changed. To put the single block function to off, the SINGLE BLOCK key may be depressed again.

NOTE 2: Because the command in the MDI mode is executed block by block, operation may not seemingly vary whether the SINGLE BLOCK key is turned on or off.

However, the full-automatic tool length measurement and semi-automatic tool length measurement are executed according to a plural number of blocks (equivalent to the operation according to the G code command). If measurement is made with the SINGLE BLOCK key turned on, only a single block may be executed.



#### 1.16 Optional stop:





In the automatic operation or MDI mode, call and turn on the OPTIONAL STOP. If the automatic operation is started in this status, the machine will be block-terminated when the M01 of M code set in the program has been executed. Then, the CYCLE START lamp will go out. To restart the machine, depress the CYCLE START switch, and the remaining part of the program will be executed.

In case M01 of the M code is not set in the program although the OPTIONAL STOP menu has been selected or in case the OPTIONAL STOP menu is not selected although M01 is set properly, the machine will not block-terminated but will continue operation.

When the optional stop function is valid and the machine is block-terminated, the coolants stop temporarily. Upon re-starting of the machine, the coolants also start again.



### 1.17 Feed Speed Override:

This function allows to apply override to the cutting feed speed during the auto mode or MDI mode operation. Using the  and  keys, the amount of override can be increased and decreased. The effective range of override is 0% to 200%. Whenever the  or  key is depressed the amount of override varies by 10%. When either of these keys is held down, the amount of override continues to increase or decrease. The set value is displayed on the digital segment in %. The amount of override thus set is valid to all the three axes in common.

NOTE 1: When the VFC function is utilized, the override function is also valid. However, the VFC function is invalid during the tap cycle. (See "VFC")

NOTE 2: When the amount of override is 0%, the axes will not be shifted during cutting feed.

NOTE 3: Even if the amount of override is changed during the tap cycle the actual feed speed will not vary.



### 1.18 DRYRUN





When the DRYRUN signal is turned on, the feed speed controlled by the F code during automatic operation is changed to the set value for the feed speed in the manual mode. (See Table)

Table

Parameter Command	G00 dry run is not executed	G00 dry run is executed
G00, G28, G30	Set value for quick feed	Set value for manual feed speed
G01, G02, G03	Set value for manual feed speed	Set value for manual feed speed



### 1.19 Spindle Override :

During automatic operational override can be applied to the spindle r.p.m. Using the  and  keys, the amount of override can be increased and decreased. The effective range of override is 0% to 150%. Whenever the  or  key is depressed the amount of override varies by 10%. When either of these keys is kept depressed, the amount of override continues to increase or decrease the set value is displayed on the digital segment in percentage.

NOTE 1: When the VFC function is utilized, this function may also be valid. (See: "VFC")

NOTE 2: When the override is zero, the spindle will not rotate. When the spindle stops rotating during cutting, the axes also stop because of the synchronous feeding.

NOTE 3: Although this function is valid in the tap cycle, it should not be utilized in principle. In case override is applied to the spindle speed before tap machining, put the set value of the override to 100%. Since the feed is synchronized, overriding the spindle speed in a tapping cycle will automatically change the feedrate. In the spindle feed speed is changed too much or spindle feed speed is changed during tap machining overload will be applied to the tapping tool, resulting in damage to the tool or in abnormal cutting.



## 1.20 Rapid Feed:

When the **RAPID** mode key on the control panel is depressed once, the mode is changed into the rapid feed mode. When axis direction select key (+X, -X, +Y, -Y, +Z(+4) or -Z(-4)) is depressed, the axis thus selected moves in the specified direction at the rapid feed speed as long as such key is kept depressed. The rapid feed speed can be set with the parameters. (See Note 1)

For safety, however, the rapid feed speed is reduced to 50% of the value set with the parameters until the zero point return has been accomplished after switching-on of the power source.

When the axis direction keys for two or three axes are put to on at a time in the rapid feed mode, the axes also moves at a time.

The rapid feed mode will be cancelled if any other mode (automatic operation, MDI, No. 1 zero point return, No. 2 zero point return, HSx1 or HSx10 or slow feed mode) is selected.

NOTE 1: Parameter: MACHINE CONSTANT NO.2



RF1 through RF 4 (X-axis through 4-axis)


Unit: mm/min (0.1 inch/min)




## 1.21 Slow Feed:

When the **JOG** mode key on the control panel is depressed once, the mode is changed into the slow feed mode. When the axis direction select key (+X,-X,+Y,-Y,+X(+4) or -Z(-4)) is depressed, the axis thus selected moves in the specified direction at the slow feed speed as long as such key is kept depressed.

The slow feed speed can be set in the range of 0 between 2000.0mm/min with the  and  keys. Such speed is displayed on the digital segment on the control panel.

 : Speed increase key

 : Speed decrease key

NOTE: Upon switching on the power source, the slow feed speed is 0mm/min. At the speed of 0mm/min, the axes will not move even if the axis direction select key is depressed.

\* When the dry run function is valid, the cutting feed speed during automatic operation is changed into the set value of the slow feed speed. If the axes stop at the cutting feed block despite the fact that the dry run function is valid, take care because the set value of the slow feed speed might possibly be left at 0mm/min.

The slow feed mode will be cancelled if any other mode (automatic operation, MDI, No.1 zero point return, No.2 zero point return, rapid feed, HSx1, or HSx10 mode) is selected.





## 1.22 Rapid Feed Speed Deceleration:

When the **RAPID REDUCE** mode key on the control panel is depressed once, the mode is changed into the rapid feed speed deceleration mode. When this mode is selected, the zero point return speed, positioning speed during the auto mode or MDI mode operation as well as the shifting of axes in the **RAPID FEED** mode are all decelerated.

The rapid feed speed deceleration mode is cleared when the **RAPID REDUCE** mode key is depressed again.

NOTE: Decelerated rapid feed speed is determined in the following manner:

$$\text{Decelerated rapid feed speed (X-axis)} = \text{RF1} \times \frac{\text{RFR}}{100}$$

RF1: Parameter (set value of rapid feed speed for X-axis)

(For Y-axis and Z-axis (or 4-axis), RF2 and RF3 (or RF4) are respectively used instead of RF1. Generally, RF1 = RF2 = RF3.)

RFR: Parameter (Deceleration rate of decelerated rapid feed speed)

The value is set in %.

Example:

If the rapid feed speed is 12 m/min. and RFR is 50%, the decelerated quick feed speed will be:

$$12 \text{ m/min} \times \frac{50}{100} = 6 \text{ m/min.}$$



### 1.23 Return to No.1 zero point

Depressing No.1 zero point return key on the operation panel will put the system into No.1 zero point return mode. Just after the machine has been switched on or if the machine coordinate system data owned inside the NC unit have been destroyed due to emergency stop etc., use this function for positioning to teach the NC unit the zero point of the machine coordinate system. Once the machine coordinate system zero point has been set, moreover, the machine can be returned to the zero point at a high speed in this mode by use of No. 1 zero point (machine coordinate system zero point) axis selection key (-X, -Y, -Z or -4) or of the all axis zero point return key.

#### a) Cradle type zero point return

With the machine positioned at the zero point when switched on, depress the negative axis direction selecting key in No.1 zero point return mode and the machine will move a little in the negative direction. After that, it will move automatically in the positive direction and will be decelerated so that No.1 zero point will be positioned. (In this case, the machine coordinate system will be set inside the NC unit.)

#### b) Straight type zero point return

Unless the machine is positioned at the zero point when switched on, depress the negative axis direction selecting key and let the machine move 100 thru 150mm. Then depress the positive key and move the machine. Thus the machine will be decelerated near to the zero point so that the zero point will be positioned. (In this case, the machine coordinate system is set inside the NC unit.)

NOTE: Soft limit and No.2 zero point are unavailable until completion of the initial zero point return, such as just after switching on the machine.



#### 1.24 Screen off

In the auto mode or MDI mode, what is displayed on the screen can be erased and blacked out. To do this, push the **SCREEN OFF** key on the auto mode menu when the position/command/graphic screen is being displayed.

WORK NO. SEARCH	WORK LIGHT	MACHINE LOCK	SINGLE BLOCK	OPTIONAL STOP	DRYRUN	BLOCK SKIP	SCREEN OFF	RESTART	← Auto mode menu
--------------------	---------------	-----------------	-----------------	------------------	--------	---------------	---------------	---------	---------------------

The screen is recovered when either menu key, reset key, run key or cursor key is pushed. Also, the screen will be recovered if any alarm is caused.

NOTE) The shape and tool path on the graphic display remain cancelled even when the screen is recovered after erasion.



## 2. Display

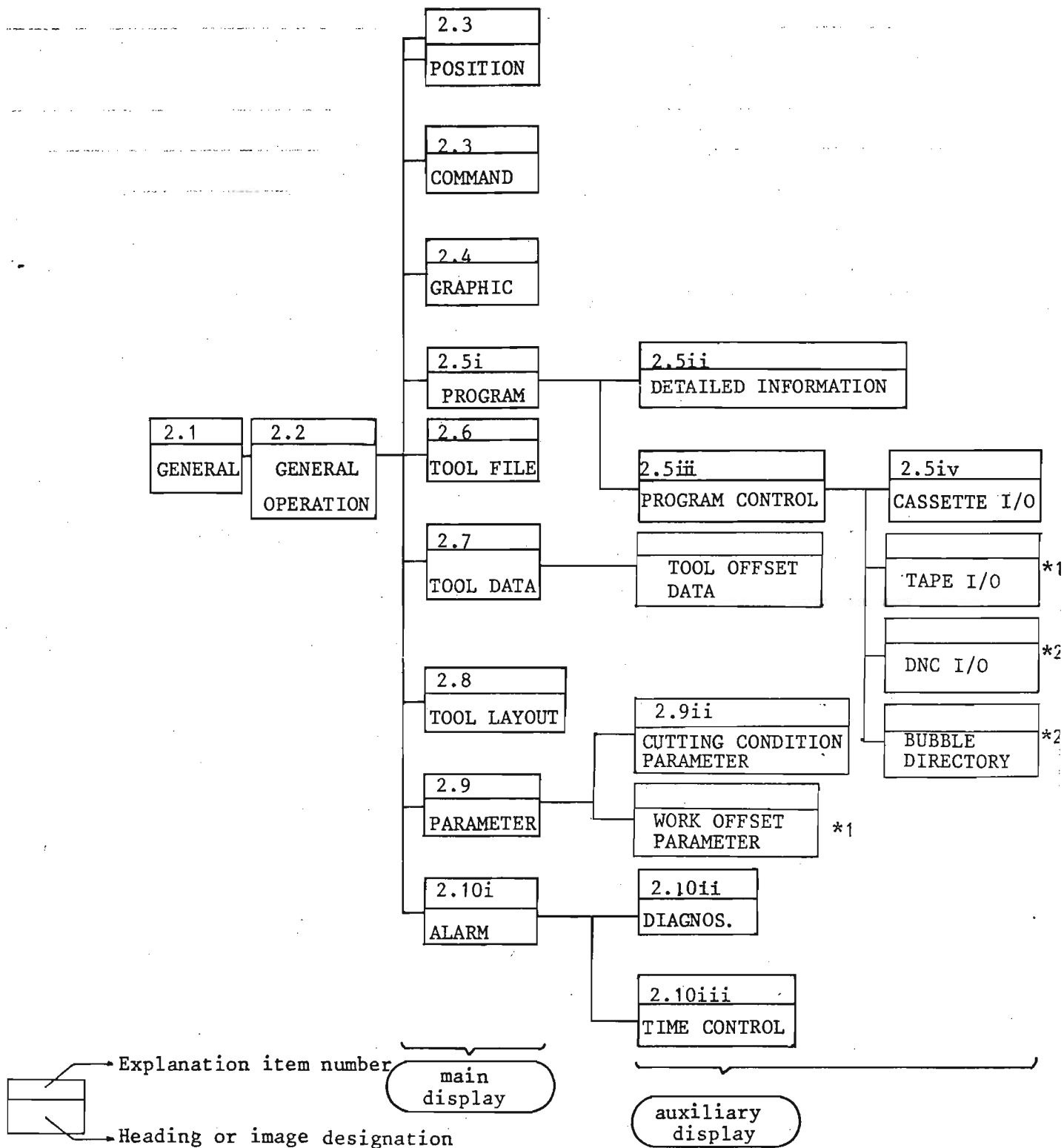
### 2.1 General

This instruction manual mainly describes the operation of displays. For display specifications, programming methods and NC operation methods using displays, see the other sections.

The present NC system is a dialogue type.

Almost all operations are displayed, therefore, progress can be made merely by answering question messages from the NC unit. For those operations which emerge from display, (including the selection of a display), however, positive performance thereof is merely required. The present NC system can be operated without any particular problem if the description of the operation display configuration diagram given on the next page, including display functions, is observed. Displays are available in 19 types, i.e. 9 main displays and 10 auxiliary. There are a total of 58 display types based on form, though their objectives and functions are identical. The main display which has an auxiliary display is limited to two types only, i.e., PROGRAM display and ALARM display. To display the main display on the CRT, first depress the **DISPLAY SELECT** key which will cause the menu to be displayed, then depress the applicable menu key. The main display selection menu cannot be displayed from the main display, not to speak of from the auxiliary display, but only by depressing the **DISPLAY SELECT** key.

The auxiliary display can be generally called out of the main display.



Operation Description/Display Configuration Diagram

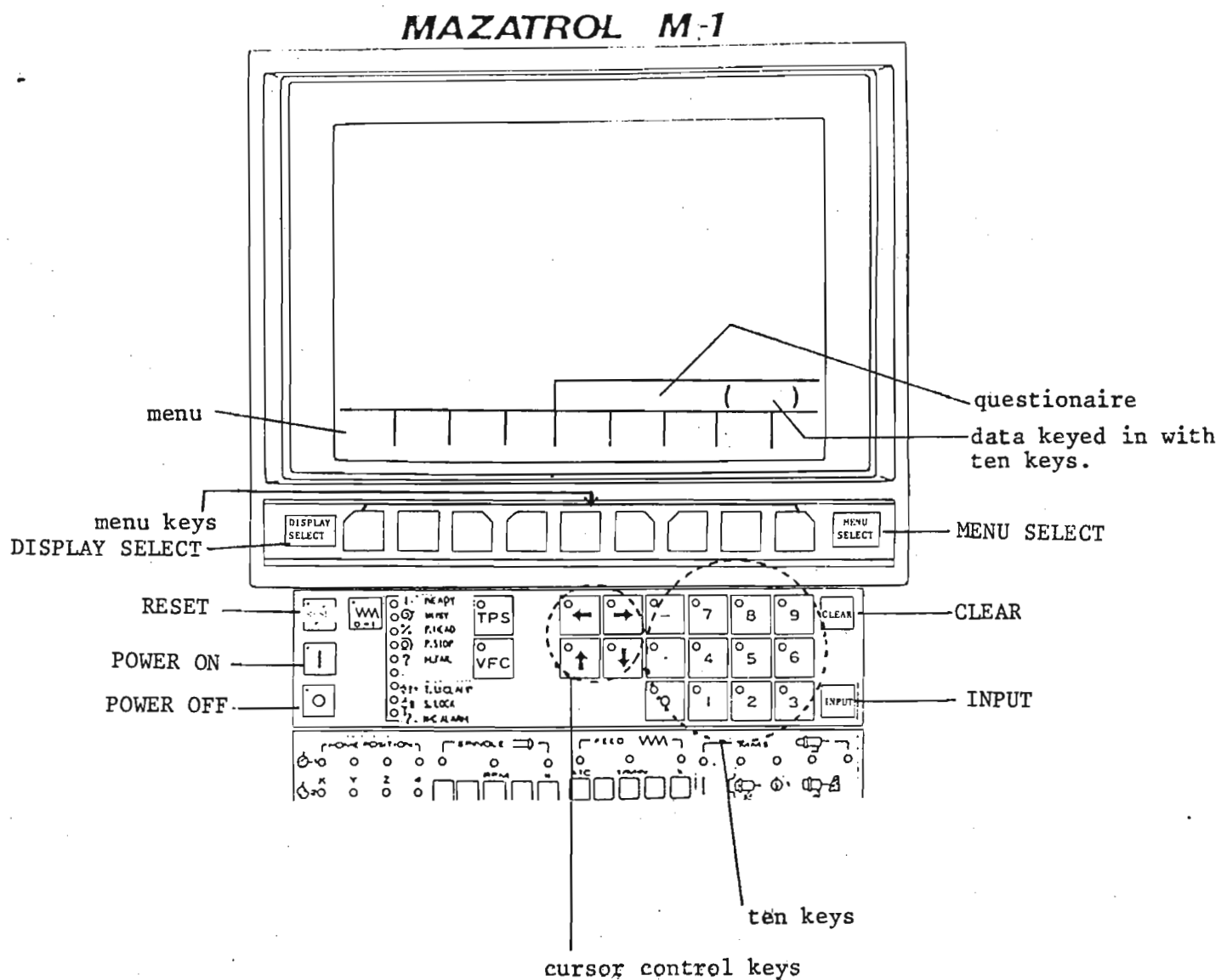
\*1 Please refer to EIA/ISO Operating Manual.

\*2 Please refer to Optional Manual.



## 2.2 General Operation

### 1) Displays and keys employed in Display operations



NOTE) After switching on the power, it takes five to ten seconds before the screen gets ready for checking of the status of the interior of the NC.



## 2) Usage

A	MENU
---	------

The menu indicates the information which can be taken for the operator's response to the question displayed. Then, the operator must select the menu which will vary from time to time, including a type of data to be inputted, a command to change the flow of operation or an instruction to put the machine into operation. On the menu, if the frame only is displayed without any information to be selected, use ten keys and others to operate the system.

(Example) Menu displayed in response to the tool name data on the tool file display

ENDMILL	FACEMILL	CHAMF. CUTTER	BALL ENDMILL		ALL ERASE	ERASE	PAGE	RETURN
---------	----------	------------------	-----------------	--	--------------	-------	------	--------

Data to be inputted  
(names and types of  
tools)

To cancel the  
registration of  
a tool

Operation controls  
PAGE: To change  
the display  
to another 32  
pieces.

RETURN: To return the  
display from  
which the tool  
file display  
has been  
called.



B	MENU keys
---	-----------

Nine keys have the same function as the menu displayed on the screen. Whenever the menu changes, as a matter of course, the function of each key will also vary.

In other words, one key will perform the functions of several types of key.

C	MENU SELECT key
---	-----------------

On the same display, a wide variety of operations and/or controls are available, so many data may be inputted for a certain item. If nine menus are insufficient, the displayed menu will be divided.

Depressing the 

MENU SELECT
-------------

 key will permit a menu not yet displayed to be displayed.



D	CURSOR CONTROL key
---	--------------------

Four keys are available to move the cursor. Every time any of the keys is depressed, the cursor will move to the next stop position(an item which can be normally inputted.)



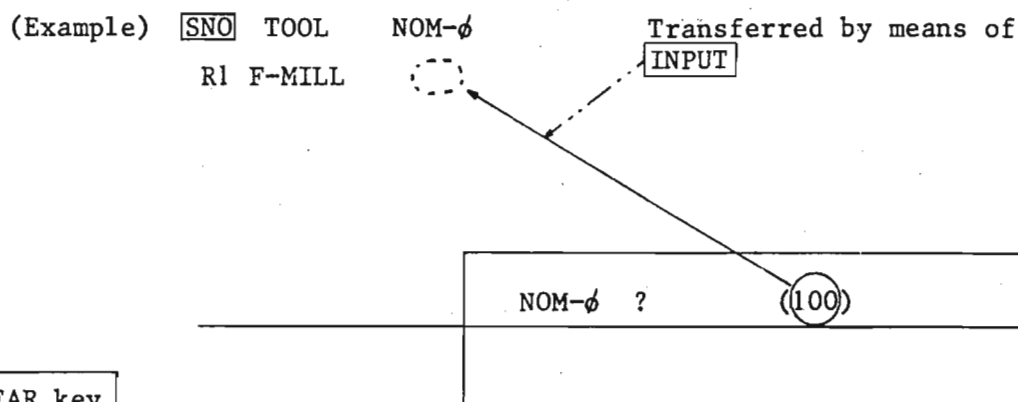


**Note :**








If the cursor is not displayed on the screen when needed (i.e. the display to which data are to be keyed in), depress  or  and the cursor will appear.

**E INPUT key**

This key is used to inform the NC unit that a numerical input or menu selection has been completed correctly. The computer in the NC unit receives the information and proceeds to execute the process (setting check, setting display for related items, menu-selected processing, etc.)



**F CLEAR key**

- o Canceling data being inputted (  )  
The data which are being inputted with ten keys (as long as the  key is not depressed) can be cleared by depressing the  key.
- o Erasing data already inputted (  +  )  
If data have been inputted for an item, which may not require an input or which cannot be inputted, depress the "Decimal point" key and  key in that order. Then, the data can be erased.
- o Erasing an alarm message (  )



An alarm message can be erased by the **CLEAR** key. (Some alarm messages, however, are not erasable. See the alarm picture.)

**G RESET key**

This key is used to initialize the NC unit. It may also be used to turn off an alarm. (See the alarm picture.)

**H DISPLAY SELECT key**

With the picture selecting menu displayed, the system is ready to receive a menu key input.

This key can be depressed, with any display or under any condition, except when the computer is executing, e.g. an external input or output is being processed or program control status being renewed.

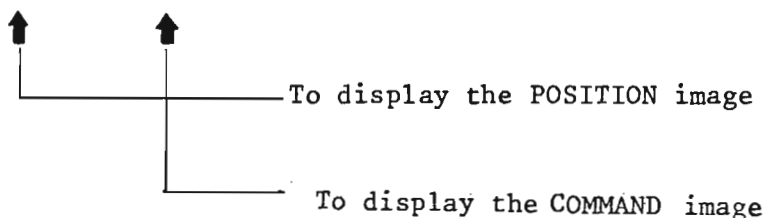
### 2.3 POSITION/COMMAND Display

Function outline	o Displaying operations to display machine operations
------------------	---

1) How to call :

- ① Depress the **DISPLAY SELECT** .
- ② For the menu displayed in the lower part of the picture, depress the key corresponding to **POSITION** or **COMMAND** .

POSITION	COMMAND	GRAPHIC	PROGRAM	TOOL FILE	TOOL DATA	TOOL LAYOUT	PAR	DIAGNOS.
----------	---------	---------	---------	--------------	--------------	----------------	-----	----------





## 2) Image

X: - 12345.678	W: 9999
Y: - 12345.678	9998
Z: - 12345.678	U: 9999
A: - 12345.678	T: 999

< ACTUAL DATA >		< TOOL > DRUM NO. 1		< LOAD METER >	
SPEED 10000	RPM	THO. 0---THO. 0		0 50 100 150 200	50 I
( 3 ) 500	CUT-SP ( ) ( )				
FR 12000.	FR/REV	UNIT 1			
1.2	COUNTER 9999 (9999)	Z-AXIS			10 I

\*\*\* POSITION \*\*\*

WAVE NO. SEARCH	WAVE LIGHT	MACHINE LOCK	SINGLE BLOCK	OPTIONAL STOP	DRYRUN	BLOCK RELEASE	SCREEN OFF	RESTART
-----------------	------------	--------------	--------------	---------------	--------	---------------	------------	---------

POSITION image

MACHINE NO. 9999(9999)		UNIT NO. 9999	
POSITION	WAVE	NEXT COMMAND	
X-12345.678	X 12345.678	C 0	
Y-12345.678	Y 12345.678	H 16	
Z-12345.678	Z 12345.678	T 32	
A-12345.678	A 12345.678	B 0	

MACHINE	REPAIR	WPC (WORK PIECE COORD.)
X-12345.678	X-12345.678	Z-12345.678
Y-12345.678	Y-12345.678	Y-12345.678
Z-12345.678	Z-12345.678	Z-12345.678
A-12345.678	A-12345.678	A-12345.678

< ACTUAL DATA >		< TOOL > DRUM NO. 1		< LOAD METER >	
SPEED 10000	RPM	THO. 0---THO. 0		0 50 100 150 200	50 I
( 3 ) 500	CUT-SP ( ) ( )				
FR 12000.	FR/REV	UNIT 1			
1.2	COUNTER 9999 (9999)	Z-AXIS			10 I

\*\*\* COMMAND \*\*\*

WAVE NO. SEARCH	WAVE LIGHT	MACHINE LOCK	SINGLE BLOCK	OPTIONAL STOP	DRYRUN	BLOCK RELEASE	SCREEN OFF	RESTART
-----------------	------------	--------------	--------------	---------------	--------	---------------	------------	---------

COMMAND image

The menu display is necessary for operating the machine.

## 3) Operation

### A Current position change

- 1 Move the cursor to the axis (x,y, z or A) to be changed.
- 2 Key in a new value and depress the **INPUT** .  
→ The new value will be displayed.

### B Parts counter change

- 1 Move the cursor to a counter to be changed (two types of values available, i.e. field-proven integrating value and setting.)

Parts count	12	(16)
	↑	↑
	Field-proven integrating value	Setting value

- 2 Key in a new value and depress the **INPUT** .

→ The display will change to the new value.



Note : The parts count is meaningful at the end unit of program only when the COUNT is set to 1.(Start counting.)

## 2.4 Graphic Display

Function Outline	<ul style="list-style-type: none"><li>o To display a programmed shape or tool path two-dimensionally(single plane display and simultaneous double plane display) or three-dimensionally.</li><li>o To permit a partial enlargement or reduction and a three-dimensional viewpoint change and</li><li>o Tracing(interlocked with the machine) can be displayed.</li></ul>
------------------	--

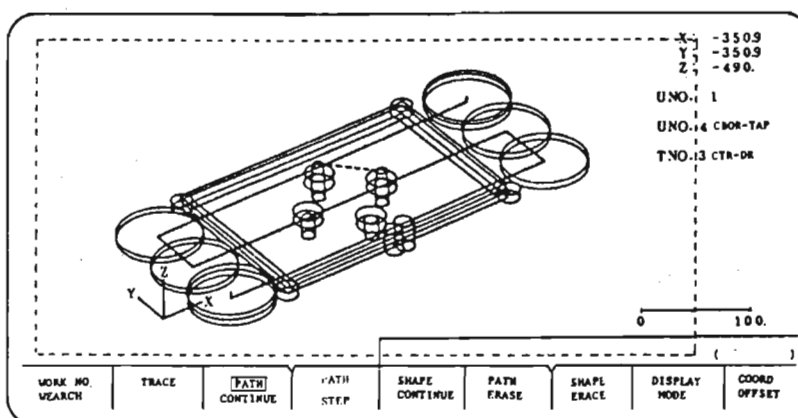
### 1) How to call :

- 1 Depress the **DISPLAY SELECT** .
- 2 Depress the key corresponding to **GRAPHIC** from the menu displayed in the lower part of the screen.

POSITION	COMMAND	GRAPHIC	PROGRAM	TOOL FILE	TOOL DATA	TOOL LAYOUT	PAR	DIAGNOS.
----------	---------	---------	---------	--------------	--------------	----------------	-----	----------



### 2) Display



(A three dimensional display)

### ① Initial display menu

WORK NO. SEARCH	TRACE	PATH CONTINUE	PATH STEP	SHAPE CONTINUE	PATH ERASE	SHAPE ERASE	DISPLAY MODE	COORD OFFSET
--------------------	-------	------------------	--------------	-------------------	---------------	----------------	-----------------	-----------------

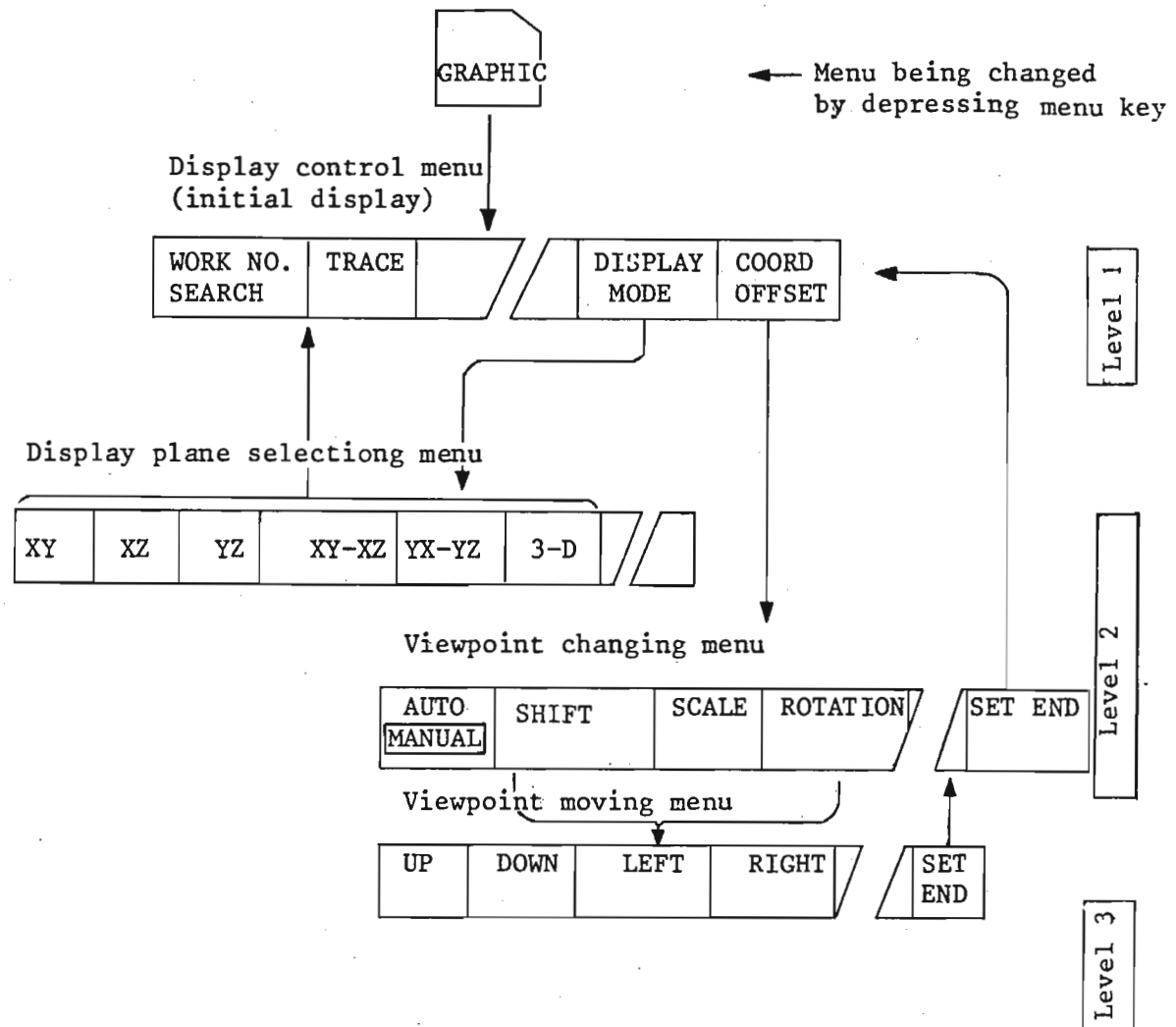


(Note 1): Upon call, the preceding graphic status is displayed.

( " 2): No tool path for a tool not subjected to the tool layout can be displayed.

### 3) Operation

This picture is displayed in a variety of forms and operations are complicated. Operational outlines are illustrated below:



All figures and other data displayed by operation on Level 1 are effected, based on the display area, scale, etc. inputted on Level 2 and 3. To change the display method, therefore, it is necessary to operate on Levels 2 and 3.



#### A SELECTING A DISPLAY PROGRAM

- (1) Depress the menu key corresponding to WORK NO. SEARCH in menu ①.
- (2) Key in a work number and depress INPUT.
  - The work number displayed will be changed.

#### B TRACE DISPLAY

- (1) Depress the menu key corresponding to TRACE in menu ①.
  - (2) Depress CYCLE START on the control panel (during the automatic operation mode.)
    - The motion of tools will be displayed according to the actual machine operation, including the automatic tool changer. (Even with the machine locked, the display operates) In a single block operation, therefore, the display will be also operated on a single step basis.
- ⇒ Unless a product shape is displayed, it will be pointless to display a tool motion. It is recommended, therefore, to perform operation E in advance.
- ⇒ It is necessary to record, beforehand, the length of a tool to be traced.
- ⇒ Too high a feedrate can result in a display showing the tool motion combined with the next block movement.

#### C CONTINUOUS TOOL PATH DISPLAY

- (1) Depress the menu key corresponding to PATH CONTINUE in menu 1.
  - The movement of a tool controlled by the program is displayed continuously until completion of the machining. This display may be changed to an intermittent display



during this period with the TOOL STEP menu beside it.

\_\_\_\_\_ displays cutting feed (yellow)

----- displays rapid feed. (yellow)

- The yellow circle or ellipse given from place to place represents the tool diameter. (In the sectional display the tool diameter is indicated with a line equivalent to the diameter.)
- The operation referred to in (1) above will cause the ground of characters PATH CONTINUE to purple. Disappearance of the purple color indicates that the display data has ended.

D	INTERMITTENT TOOL PATH DISPLAY
---	--------------------------------

(1) Depress the menukey corresponding to PATH STEP in menu.

- In hole drilling, up to the next positioning point will be displayed. In milling, up to the next tool diameter display position will be displayed. Depressing the menu key again will cause up to the next position to be displayed. Every time when the menu key is so depressed, the tool path is displayed little by little.
- During the continuous tool path display, it can not be changed to the intermittent display immediately even if the menu key is depressed. While holding the key down, wait for the menu character background to turn purple.
- During the continuous display, it may not advance even if the menukey is depressed, because the circular portion is being calculated. This is not a fault.
- The same information as that during the continuous display is displayed.



E	CONTINUOUS SHAPE DISPLAY
---	--------------------------

(1) Depress the menu key corresponding to PATH CONTINUE key in menu.

- A finished shape which has been programmed is displayed.  
Purple solid line : hole shape  
Blue solid line : contour to be milled (for the machining with removal allowance  $z$ , a thickness will appear in the three dimensional display and a sectional view.)

F	ERASE TOOL PATH
---	-----------------

(1) Depress the menu key corresponding to PATH ERASE in menu.

- Only the tool path will be erased. When both shape and tool path displays are overlapped, this operation will leave the shape only on the picture.
- This function remains available either during the tool path continuous display or during the intermittent display. It is convenient when the tool path display is too complicated to be read easily.

G	SHAPE ERASE
---	-------------

(1) Depress the menu key corresponding to SHAPE ERASE in menu ①.

- Only the shape will be erased while others remain unchanged.
- This function is available even during the shape display.

H	PLANE SELECT DISPLAY
---	----------------------

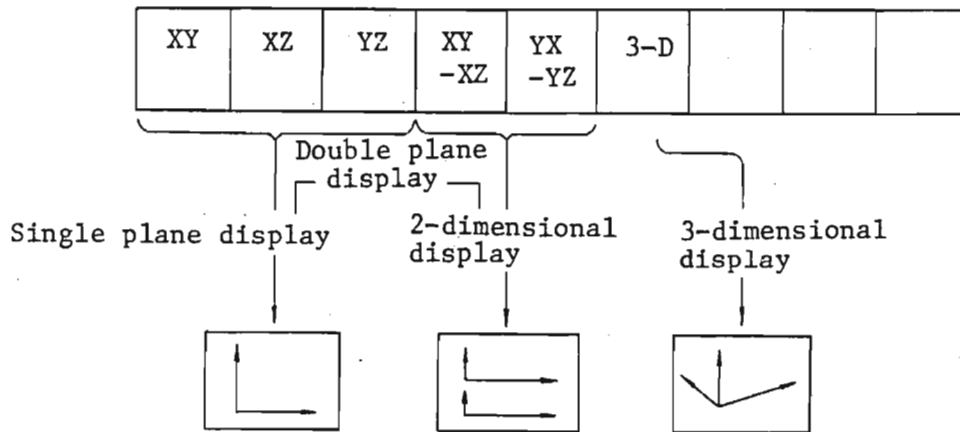
(1) Depress the menu key corresponding to DISPLAY MODE in menu ①.

- The following menu will be displayed :





Plane select menus to be displayed:



(2) Depress the menu key for a desired plane to be displayed from menu

②

→ A new coordinate axis will be displayed while the tool path will be erased.

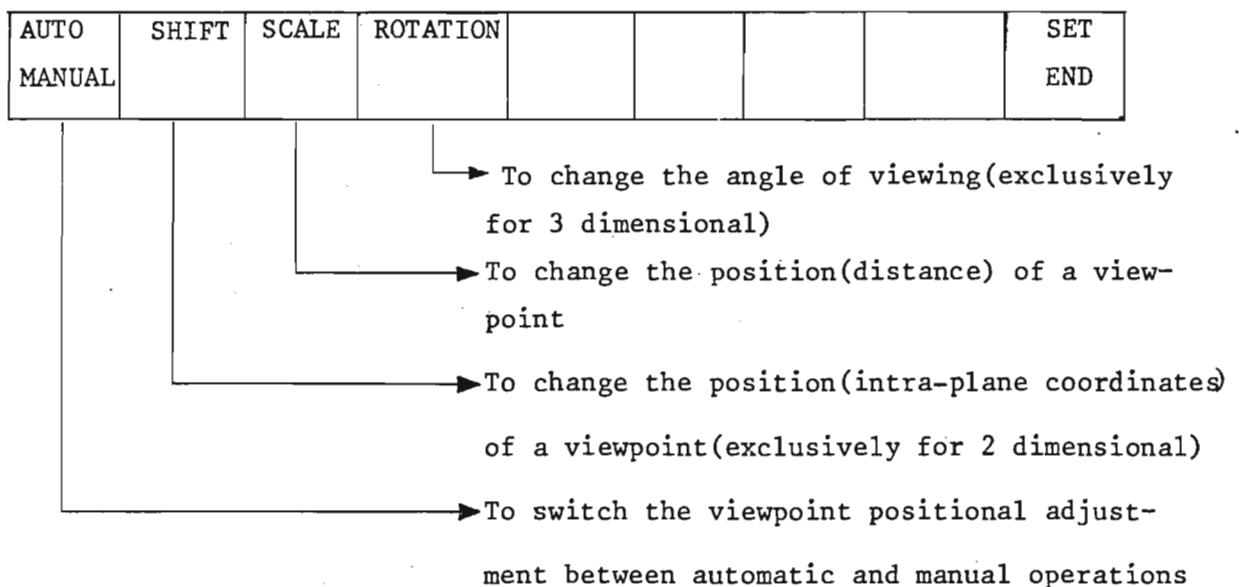
The menu will return to ①

I	CHANGE VIEWPOINT TO BE DISPLAYED
---	----------------------------------

(1) Depress the menu key corresponding to COORD OFFSET in menu ① .

→ The following menu will be displayed :

③ Menu to change a viewangle.





I-1 SELECT VIEWPOINT POSITIONAL ADJUSTMENT AUTO/MANUAL

(2) Depress the menu key corresponding to AUTO MANUAL in menu  $\diamond 3$ .

- The background of either AUTO or MANUAL characters will turn red. Thus the current status will appear.
- In the manual mode, the viewpoint can be changed.
- In the automatic operation mode, the viewpoint will automatically determined so that the tool path and the final shape will be entirely displayed. (The value set manually will subsequently be invalid. The viewpoint angle, however, will continue to be valid even if the menu key is updated at AUTO.)

I-2 CHANGE VIEWPOINT POSITION(Intra-plane coordinates)

(2) Change the viewpoint positional adjustment to the manual position.

(3) Depress the menu key corresponding to SHIFT in menu  $\diamond 3$ .

- With the 3 dimensional display plane this operation is not possible.
- The flashing cursor will appear in the center of the screen while the following menu will be displayed :

$\diamond 4$  Menu to move the viewpoint :

UP	DOWN	LEFT	RIGHT					SET END
----	------	------	-------	--	--	--	--	------------

(\*1)

(4) Depress the menu key for the motion direction in menu  $\diamond 4$ . When the viewpoint(position at which the cursor is flashing) subsequently indicates the shape or tool path, the viewpoint must be positioned near the center of the screen.

With this in mind, carry out operations.

- The cursor will move as commanded.

(5) Depress SET END in menu  $\diamond 4$ .

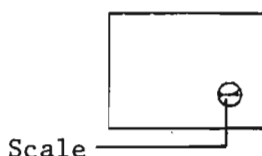
- The figure displayed on the screen will disappear and menu  $\diamond 3$  will be displayed instead.



- \*1 Moving the cursor directly with the cursor control key will produce the same result.

I-3 CHANGE VIEWPOINT POSITION(DISTANCE)

- (2) Change the viewpoint positional adjustment to the manual position.
- (3) Depress the menu key corresponding to SCALE in menu ③.
- (4) Key in the length equivalent to the scale in the lower right of the screen (but 20mm and above) and depress INPUT.



→ Both scale and axial readings will change while the figure will disappear.

The menu remains unchanged.

I-4 CHANGE VIEWPOINT ANGLE

- (2) Depress the menu key corresponding to ROTATION in menu ③.

The function is possible only when the display plane is specified as 3 dimensional. In the 2-dimensional display, the operation is not possible. A 3-dimensional figure will appear on the screen and menu ④ will be displayed.

- (3) Depress the menu key for the motion direction in menu ④ to move the viewpoint.

Together with the viewpoint move, the displayed three-dimensional object direction will be changed. (If the viewpoint is raised, for instance, the 3-dimensional object will turn toward the operator so that the top surface can be seen).

- (4) Depress the menu key corresponding to SET END in menu ④.

The displayed cubical object will disappear and menu ③ will return.

I-5 COMPLETE DISPLAY VIEWPOINT CHANGE



(2) Depress the menu key corresponding to SET END in menu ③

→ The menu will return to ① and tool path, shape, etc. will be ready for display.

## 2.5 Program

### 1. PROGRAM display

Function outline	o To display, prepare and correct a program
	o To measure coordinates. (MAZATROL Program only)

#### 1) How to call

- 1 Depress the DISPLAY SELECT .
- 2 Depress the PROGRAM from the following menu displayed in the lower part of the screen

POSITION	COMMAND	GRAPHIC	PROGRAM	TOOL FILE	TOOL DATA	TOOL LAYOUT	PAR	DIAGNOS.
----------	---------	---------	---------	--------------	--------------	----------------	-----	----------



#### 2) Display

UNO	MAT	INITIAL-Z	MULTI	PITCH-X	PITCH-T				
0	S45C	10.	0000000000	0.	0.				
UNO		X	Y	Z					
1	PRM-1	-500.	-500.	0.	-500.	4			
						0			
UNO	UNIT	DEPIN	SRV-Z	SRV-R	STM	WAL	FIN-Z	FIN-R	
2	F-MILL	0.	5.	3	3	0.			
UNO	TOOL	NON-#	APRCH-X	APRCH-T	TYPE	DEF-Z	WID-R	C-SP	
R 1	F-MILL	100. A	-60.	20.	BT-DIR-X	5.	70.	24	
FIG	PTN	PIX/CX	PIY/CY	P3X/R	P3Y	CN1	CN2	CN3	
1	SQR	0.	0.	300.	200.			CN4	
UNO	UNIT	WORK NO.							
3	SUB PRO	9000							
*** WE PROGRAM NO.1 ***									
( )									
WORK NO. SEARCH	UNIT NO. SEARCH	PROGRAM				DETAILED INFORM.	WPC MSR	PROGRAM FILE	

MAZATROL Program Screen

Menu initially displayed

WORK NO. SEARCH	UNIT NO. SEARCH	PROGRAM				DETAILED INFORM.	WPC MSR	PROGRAM FILE
--------------------	--------------------	---------	--	--	--	---------------------	---------	-----------------



While preparing a program, many other menu types will appear to permit a variety of system applications. See Section II "PROGRAMMING".

### 3) Operations

A	CHANGE DISPLAYED PROGRAM
---	--------------------------

- (1) Depress the menu key corresponding to WORK NO. SEARCH.
- (2) Key in the work number of a program to be displayed and depress INPUT

→ If the work number has been recorded, its program will be displayed from the top (UNO 0). If the work number has not been recorded, the machine will wait for a new program to be prepared and the portion where the program would be displayed will turn dark.

B	FEED IMAGES ACCORDING TO UNIT NUMBER SPECIFIED ON PROGRAM DISPLAYED
---	---

- (1) Depress the menu key corresponding to UNIT NO. SEARCH.
- (2) Key in the unit number to be displayed first and depress INPUT .

→ With the unit number specified at the top the program will be displayed.(Image can also be fed using the cursor.)

C	PREPARE(CORRECT) PROGRAM
---	--------------------------

- (1) Put the PROGRAM switch in the valid position(ENABLE).
- (2) Depress the PROGRAM .

→ The menu at the lower part of the screen will change so that an input will be possible for the item where the cursor is flashing.

→ See "PROGRAMMING".

D	CALL HELP PICTURE
---	-------------------

- (1) When the cursor is located on the line for the machining unit in the MAZATROL Program, depress the menu key corresponding to DETAILED INFORM.

→ Then, the DETAILED INFORM screen for the machining unit concerned will be displayed.



will be displayed in the lower part of the screen. (At this stage, the display has not changed yet.)

E	MESURE COORDINATES
---	--------------------

(1) Depress the menu key corresponding to WPC MSR.

→ The menu to measure coordinates will be displayed in the lower part of the screen.

⇒ For subsequent operations, see 1.7 in "PROGRAMMING".

F	CALL PROGRAM CONTROL PICTURE
---	------------------------------

(1) Depress the menu key corresponding to PROGRAM FILE

→ The display will be changed over to PROGRAM CONTROL picture.



## ii DETAILED INFORMATION Display

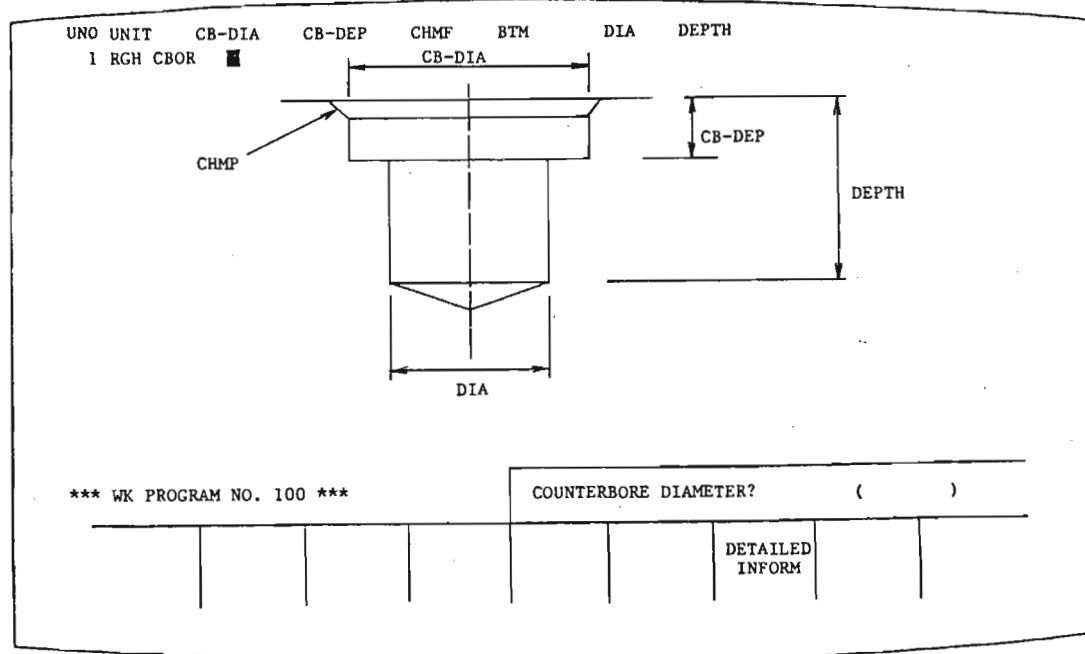
### Function Outline

To illustrate definitions of various quantities used in programming (only for machining unit of MAZATROL programs)

#### 1) How to call

- (1) Call the PROGRAM display.
- (2) Press the MENU KEY corresponding to the DETAILED INFORM when the cursor is positioned at the machining unit.

#### 2) Display





### 3) Operation

#### A DEFINITION CHART DISPLAY

- ① Move the cursor to the unit position to be displayed while programming or being displayed.
- ② Press the MENU KEY corresponding to the DETAILED INFORM (If the menu of DETAILED INFORM is not displayed, display it with the menu selection key).
  - The detailed information picture corresponding to the unit will be displayed (the "DETAILED INFORM" menu is inversed while the detailed information picture is displayed).

#### B RETURN TO PROGRAM DISPLAY

- ① Move the cursor upper or lower, or press the MENU KEY corresponding to the "detailed information".
  - The PROGRAM display will come out.





### iii. Program Control

#### Function Outline

- o To display a program registration status.
- o To erase a registered program and
- o To change a work number.

#### 1) How to call:

- (1) Call the PROGRAM picture.
- (2) Depress the PROGRAM FILE key from the following menu displayed in the lower part of the screen.

WORK NO. SEARCH	UNIT NO. SEARCH	PROGRAM				DETAILED INFORM	WPC MSR	PROGRAM FILE
--------------------	--------------------	---------	--	--	--	--------------------	------------	-----------------



#### 2) Display

WORK NO.	SIZE
1	14
2	9000
3	50
4	51
5	52
6	53
7	54
8	55
9	56
10	57
11	58
12	59
13	60
14	61
15	62
16	63

USED 72 / 580 BLOCK

\*\*\* PROGRAM FILE \*\*\*

CMT I/O	RENUMBER	BUBBLE DIRECT.	PROGRAM ERASE	ALL ERASE		DNC I/O	TAPE I/O	PROGRAM
------------	----------	-------------------	------------------	--------------	--	------------	-------------	---------

Menu initially displayed.

CMT I/O	RENUMBER	BUBBLE DIRECT.	PROGRAM ERASE	ALL ERASE		DNC I/O	TAPE I/O	PROGRAM
------------	----------	-------------------	------------------	--------------	--	------------	-------------	---------



### (3) Operations

#### A CALL CASSETTE I/O DISPLAY

- (1) Depress the menu key corresponding to CMT I/O.  
→ The cassette I/O menu will be displayed in the lower part of the screen.

#### B CHANGE WORK NUMBER

- (1) Depress the menu key corresponding to RENUMBER.
- (2) Move the cursor to the position of a work number to be changed.
- (3) Key in a new work number and depress INPUT.  
→ The work number will become the one set by the work number loaded with the cursor.

#### C INDIVIDUALLY ERASE PROGRAMS

- (1) Put the PROGRAM switch to ENABLE.
- (2) Depress the menu key corresponding to PROGRAM ERASE.
- (3) Key in the work number of a program to be erased and depress INPUT.  
→ Both the specified work number and the program size will disappear.

#### D ERASE ALL PROGRAM

- (1) Throw the PROGRAM switch to ENABLE.
- (2) Depress the menu key corresponding to ALL ERASE.
- (3) Depress INPUT.  
→ All work numbers and program sizes will disappear.



E	RETURN TO PROGRAM PICTURE
---	---------------------------

(1) Depress the menu key corresponding to PROGRAM.

→ The program whose work number was displayed prior to the call of the PROGRAM CONTROL display will be displayed again from the top.



iv. CASSETTE I/O Picture

Function Outline

To transfer and check data between a cassette tape and the memory in the NC unit.

1) How to call:

- (1) Call the PROGRAM CONTROL display.
- (2) Depress the CMT I/O key from the menu displayed in the lower part of the picture.

CMT I/O	RENUMBER	BUBBLE DIRECT.	PROGRAM ERASE	ALL ERASE		DNC I/O	TAPE I/O	PROGRAM
------------	----------	-------------------	------------------	--------------	--	------------	-------------	---------



2) Display

WORK NO. SIZE		CMT I/O				
1	1	14				
2	9000	5	MODE ( 0 )			
3	50	9	WORK NO. ( 0 ) ( 0 ) ( 0 ) ( 0 )			
4	51	8	( 0 ) ( 0 ) ( 0 ) ( 0 )			
5	52	7	( 0 ) ( 0 ) ( 0 ) ( 0 )			
6	53	1	( 0 ) ( 0 ) ( 0 ) ( 0 )			
7	54	1	TOOL DATA ( 0 ) ( 0 ) ( 0 ) ( 0 )			
8	55	1	TOOL FILE ( 0 )			
9	56	1	PARAMETER ( 0 )			
10	57	1	TOOL OFFSET ( 0 )			
11	58	1	WORK OFFSET ( 0 )			
12	59	1				
13	60	1				
14	61	1				
15	62	10				
16	63	10				
USED 72 / 580 BLOCK						
*** PROGRAM FILE ***						
LOAD CMT→NC	SAVE NC→CMT	COMPARE NC=CMT	LOAD ALL PROGRAM			

Menu initially displayed

LOAD CMT→NC	SAVE INC→CMT	COMPARE INC=CMT	LOAD ALL PROGRAM					
----------------	-----------------	--------------------	---------------------	--	--	--	--	--



### 3) Operation

#### A READ, REGISTER DATA FROM CASSETTE TAPE

- (1) Load the deck with a cassette tape.
- (2) Check that the menu initially displayed is now displayed.  
→ If not, depress the **MENU SELECT** and recall the initial display menu.
- (3) Depress the menu key corresponding to **LOAD CMT-NC**.  
→ The image will change to cassette I/O while the menu will be as follows:

PROGRAM	TOOL DATA	TOOL FILE	PAR	TOOL OFFSET	WORK OFFSET	ERASE		START
---------	--------------	--------------	-----	----------------	----------------	-------	--	-------

- (4) If the data to be transferred are a program, set a work number (\*) in the parentheses. If the data are other than a program, call for the transfer of (1 or 2) in the parentheses. If the drum changer is provided, however, use a drum number to input tool data.  
→ The six columns to the left of the menu are used to control the cursor. Depressing a related menu key, therefore, will allow the cursor to move to the corresponding top position.  
The **ERASE** menu, moreover, is used to return a set work number to 0. In this case, however, all set data including the work number will return to 0. This should be remembered. A specific work number only cannot be set to zero.
- (5) For all data to be transferred, repeat procedure (4) above.
- (6) Depress the menu key corresponding to **START**.  
→ The cassette tape will start to turn and to transfer data  
→ The cursor will move to the data being transferred.
- (\*) Make the input sequence coincide with the order of data on the tape.



**B WRITE DATA IN TO CASSETTE TAPE**

Depress the menu key corresponding to SAVE NC→CMT in place of LOAD CMT→NC in operation (3) of A;"READ/REGISTER". For other operation, follow the same procedure.

\* Data are written into the tape, with priority given to the parentheses positioned in the upper part and to the left side in an identical line. This is irrespective of the work number significance.

**C CHECK CASSETTE TAPE DATA AGAINST NC DATA**

Depress the menu key corresponding to COMPARE NC→CMT in place of LOAD CMT→NC in operation (3) of A;"READ/REGISTER". For other operations, follow the same procedure.

→ A data discrepancy, if detected, would cause an alarm to be displayed on the spot, and interrupt the check.

**D READ AND REGISTER ALL PROGRAM DATA IN CASSETTE TAPE**

Depress the menu key corresponding to the PROGRAM ALL LOAD rather than LOAD CMT→NC as referred to in operation (3) of A;"READ/REGISTER" Then, do not carry out (4) and (5) but (6). In other words, depress the menu key corresponding to START.

→ Thus, the cassette tape will begin turning and all the program data in the tape will be transferred to the NC unit.

NOTE) The EIA/ISO Program can also be registered.



## 2.6 TOOL FILE Display

### Function Outline

To register and control face mills, end mills and chamfering end mills to be used.

#### 1) How to call:

- (1) Depress the **DISPLAY SELECT**.
- (2) Depress the **TOOL FILE** key from the menu displayed in the lower part of the screen.

POSITION	COMMAND	GRAPHIC	PROGRAM	TOOL FILE	TOOL DATA	TOOL LAYOUT	PAR	DIAGNOS
----------	---------	---------	---------	-----------	-----------	-------------	-----	---------

NOTE: For how to call during programming, see II "PROGRAMMING".

#### 2) Display

NO	TOOL	NOV-6	MIN-6	MAT	DEPTH	NO.	ANG.	NO.	TOOL	NOV-6	MIN-6	MAT	DEPTH	NO.	ANG.
1	F-MILL	100.	A	◆	HSS	10.	6	◆	17						
2									18						
3									19						
4									20	CHUF	20.	A	5.	HSS	◆
5									21						
6									22						
7									23						
8									24						
9	E-MILL	10.	A	◆	HSS	10.	2	◆	25						
10	E-MILL	20.	A	◆	CRD	20.	4	◆	26						
11	E-MILL	30.	A	◆	HSS	15.	3	◆	27						
12									28						
13									29						
14									30						
15									31						
16									32						
*** TOOL FILE ***															
( )															
ALL ERASE PAGE RETURN															

#### ① Menu initially displayed

						ALL ERASE		PAGE	RETURN
--	--	--	--	--	--	--------------	--	------	--------



② Menu to select a tool name

ENDMILL	FACEMILL	CHAHF CUTTER	BALL ENDMILL		ALL ERASE	ERASE	PAGE	RETURN
---------	----------	-----------------	-----------------	--	--------------	-------	------	--------

③ Menu to select a suffix

A	B	C	D	E	F	G	H	J
---	---	---	---	---	---	---	---	---

④ Menu to select a tool material

HSS	CARBIDE							
-----	---------	--	--	--	--	--	--	--

3) Operation

A	TURN PAGES
---	------------

(1) Depress the menu key corresponding PAGE in menu ① or ②.

→ The tool number not displayed will be displayed.

(Two pages are available, with one image comprising 32 tools.)

B	REGISTER AND CORRECT TOOL DATA
---	--------------------------------

(1) Move the cursor to the data desired position.

→ Depending on the type of data, the menu will vary as follows:

tool name ----- Menu ②  
nominal diameter ----- Menu ③ (with identifier keyed in)  
material ----- Menu ④  
others ----- Menu ①

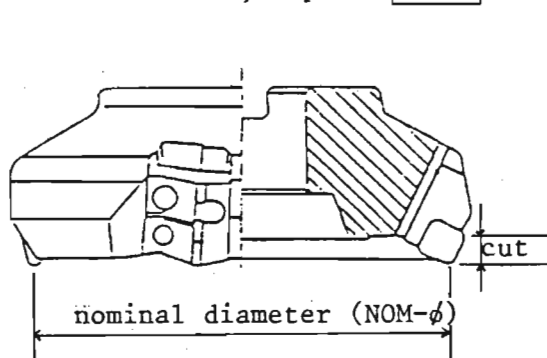
NOTE: When data are recently registered, the cursor initially will move only to a tool name position.



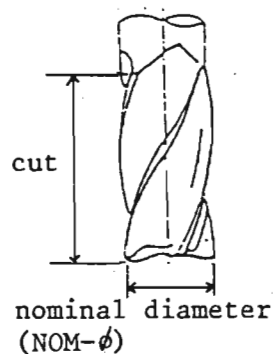


(2) Depress the menu key or key with a numerical value.

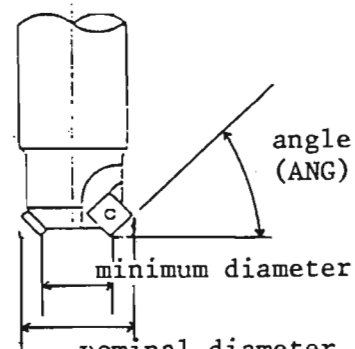
Then, depress **INPUT**.



face milling cutter  
(F-MILL)



end milling cutter  
(CHF)



nominal diameter  
(NOM-φ)  
chamfering cutter  
(CHF)

C	CANCEL TOOL REGISTRATION
---	--------------------------

(1) Move the cursor to the position of a tool number to be cancelled.

(2) Depress **ERASE** in menu and then **INPUT**.

→ Data relating to that tool will disappear from the screen.

D	ALL CANCEL TOOL REGISTRATION
---	------------------------------

(1) Push the **ALL ERASE** menu key and push the **INPUT** key.

→ Then, all the tools registered in the tool file will be cancelled.

NOTE: RETURN in menu is valid when called from the PROGRAM display.



## 2.7 Tool Data Display

### Function Outline

- o Data required for the system are displayed concerning the tools set in a tool drum. Setting is also possible.
- o To measure tool lengths.

#### 1) How to call

- (1) Depress the **DISPLAY SELECT**.
- (2) Depress the **TOOL DATA** key from the menu displayed in the lower part of the screen.

POSITION	COMMAND	GRAPHIC	PROGRAM	TOOL FILE	TOOL DATA	TOOL LAYOUT	PAR	DIAGNOS
----------	---------	---------	---------	-----------	-----------	-------------	-----	---------

#### 2) Display

DRUM NO.									
PKNO	TOOL	NOM-#	ACT-#	LENGTH	CORP.	THRUST	HF	LIFE	TIME IN CUT
1-0	E-MILL	10. A	10.	100.	0.	30	20	0'	0'
2-0	F-MILL	80. A	80.	100.	0.	*	100	0'	0'
3-0	CHF-M	25. A	*	100.	0.	*	*	0'	0'
4-0		25. A	25.	100.	0.	30	20	0'	0'
5-0	OTRER	25. A	25.	100.	0.	30	20	0'	0'
6-0	T. SENS.	10.	*	100.	*	*	*	*	*
7-0	CTR-DR	10.	*	100.	0.	*	*	0'	0'
8-0	DRILL	10.	*	100.	3.	30	30	0'	0'
9-0	BK FACE	50.	*	100.	0.	*	*	0'	0'
10-0	REAM	10.	*	100.	0.	*	*	0'	0'
11-0	TAP M	10.	10.	100.	0.	*	*	0'	0'
12-0	BOR BAR	50.	*	100.	0.	*	100	0'	0'
13-0	B-B BAR	50.	*	100.	0.	*	*	0'	0'
14-0	CHF VAC	10.	*	100.	*	*	*	*	*
15-0									
16-0									
*** TOOL DATA ***									
( )									
DRUM NO.	TEACH	TOOL CHANGE	INCR.	TOOL ASSIGN		TOOL OFFSET	PREVIOUS PAGE	NEXT PAGE	

#### Menu initially displayed

DRUM NO.	TEACH	TOOL CHANGE	INCR.	TOOL ASSIGN		TOOL OFFSET	PREVIOUS PAGE	NEXT PAGE
----------	-------	-------------	-------	-------------	--	-------------	---------------	-----------

(NOTE) Data displayed in this display relates the tools which are being loaded in to the drum. Therefore, the TOOL DATA picture is significantly affected by operations of the TOOL LAYOUT display on which a tool is deleted and/or registered.



### 3) Operations

#### A TURN PAGES

- (1) To see the data for subsequent 16 tools, depress the menu key corresponding to NEXT PAGE. To reverse the data, depress PREVIOUS PAGE.

→ With pocket No.1 displayed, depress PREVIOUS PAGE and the display will include the tool belonging to the final pocket number.

#### B CHANGE DRUM NUMBER

- (1) Depress the menu key corresponding to DRUM NO..

→ (With the NC unit set to 1 DRUM, the operation is unavailable.)

- (2) Using ten keys, input the drum number and then depress

INPUT.

→ The tool with pocket No.1 corresponding to the drum number so inputted will be displayed on the screen first.

NOTE: On this picture, only those tools which are attached to the drum specified in this operation are handled. If it is desired to operate a tool in another drum, it is necessary to change the drum number again.

#### C MEASURE TOOL LENGTH

The length of a tool can be actually measured and entered on the screen. In this case, if the tool is a drill, the cutting edge position compensation data will be also displayed automatically.

⇒ See Section "NC unit" in Section I "Operations."

#### D INPUT TOOL DATA

- (1) Place the cursor onto the item desired to be inputted.

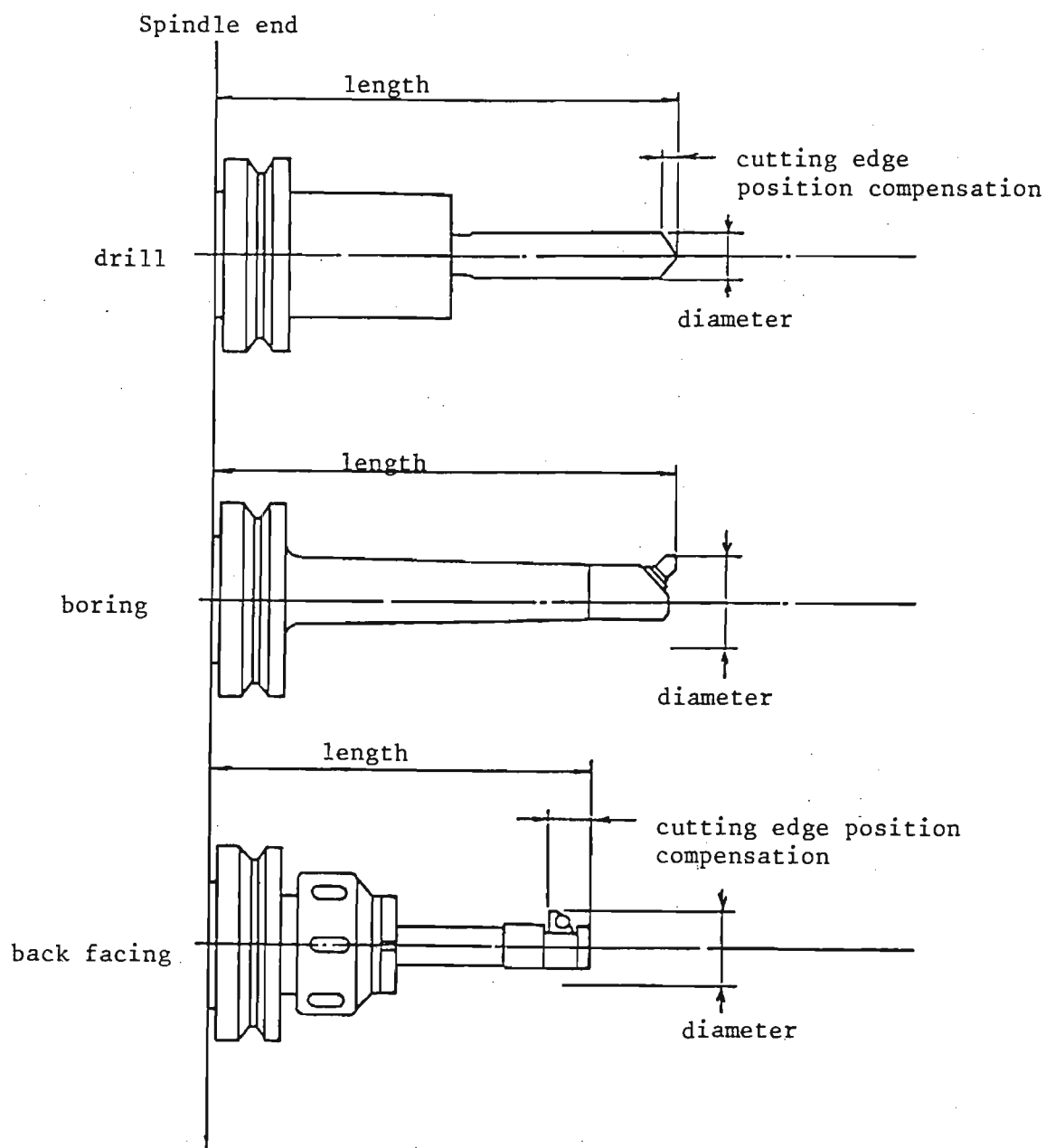
- (2) Key in numerical values and depress the INPUT.

Data name	Tool diameter	Length	Cutting edge position compensation	Thrust	Horse-power	Life (Hours)	Service (Hours)
Unit	mm	mm	mm	%	%	min.	mim.
Form	XXX,XXX	XXX,XXX	X, XX,XXX -}	XXX	XXX	XXX	XXX



NOTE: Input the tool diameter and/or length data while the menu is being inverted with INCR. menu depressed. Then, the tool diameter and/or length data so inputted will be added to the data entered previously.

NOTE: To input thrust and/or horsepower data, depress AUTO SET and the NC unit will automatically calculate and input optimum numerical values. (These values, however, are validated only while the AFC is operating).





## E TOOL EXCHANGE

Pocket Nos. for already registered tool can be exchanged with each other in the following manner:

- (1) Slide the cursor to the position where the tool is located.
  - (2) Push the menu key for "tool change".
  - (3) Key in the pocket No. for the other tool and push the SET key.
- Then, the tools registered in the two pockets will be exchanged.

## F TOOL REGISTRATION

For execution of the EIA/ISO Program, it is necessary to register the tool to be allotted to the T code (pocket No.) as part of the tool data. This function permits registration of any desired tool.

- (1) Slide the cursor to the position of the pocket No. to be registered.
- (2) Push the menu key for "tool registration".

—→ Then, the following menu will be displayed:

END MILL	FACE MILL	CHANF. CUTTER	BALL ENDMILL	OTHER TOOL	TOUCH SENSOR		NO TOOL	NEXT (1/2)
CENTER DRILL	DRILL	BACK SPOT FACER	REAMER	TAP	BORING BAR	BACK BOR.BAR	CHIP VACUUM	NEXT (2/2)

- (3) Push the menu key for the tool to be registered.
- (4) Key in the nominal diameter of the tool and push the **INPUT** key.
- (5) Enter the suffix, using a menu key.

—→ Then, the tool will be registered.

NOTE: It sometimes happens that no data is displayed when the rightmost data is entered in the course of input of data for display of the tool data screen. In such a case, change the screen into another and again call the tool data screen.



## 2.8 Tool Layout Display

### Function Outline

To display the intra-drum (tool magazine) layout of tools used in a program

To control the tools set in the drum.

#### 1) How to call:

- (1) Depress the **DISPLAY SELECT**.
- (2) Depress the **TOOL LAYOUT** key from the menu displayed in the lower part of the screen.

POSITION	COMMAND	GRAPHIC	PROGRAM	TOOL FILE	TOOL DATA	TOOL LAYOUT	PAR	DIAGNOS
----------	---------	---------	---------	-----------	-----------	-------------	-----	---------

#### 2) Display

CURRENT				NEXT			
DRUM NO. 1				WORD NO. 1			
PKNO	TOOL	NON-#	PKNO	TOOL	NON-#	PKNO	TOOL
1-0	F-MILL	100. A	17-0	0-0	F-MILL	100. A	
2-0	E-MILL	20. A	18-0	0-0	E-MILL	20. A	
3-0	CTR-DR	20. A	19-0	0-0	CTR-DR	20. A	
4-0	DRILL	10.4	20-0	0-0	DRILL	10.4	
5-0	CHOP	20. A	21-0	0-0	CHOP	20. A	
6-0	RAP N	12.	22-0	0-0	TAP N	12.	
7-0	E-MILL	30. A	23-0				
8-0	E-MILL	10. A	24-0				
9-0	DRILL	10.	25-0				
10-0			26-0				
11-0			27-0				
12-0			28-0				
13-0			29-0				
14-0			30-0				
15-0			31-0				
16-0			32-0				

\*\*\* TOOL LAYOUT \*\*\*

WORK NO.	DRUM NO.	SPARE T ERASE	PKNO CLEAR	PKNO SHIFT	PKNO ASSIGN	SPARE T ADDITION	LAYOUT FINISH	NEXT PAGE
----------	----------	------------------	---------------	---------------	----------------	---------------------	------------------	--------------

(The number of tools that can be displayed at one time is 32 pieces, including both "CURRENT" and "NEXT.")

#### ① Menu initially displayed (layout menu)

WORK NO.	DRUM NO.	SPARE T ERASE	PKNO. CLEAR	PKNO. SHIFT	PKNO. ASSIGN	SPARE TOOL	LAYOUT FINISH	NEXT PAGE
----------	----------	------------------	----------------	----------------	-----------------	---------------	------------------	--------------



## 2 Tool control menu

						TOOL ERASE	LAYOUT CANCEL	CURRENT PAGE
--	--	--	--	--	--	---------------	------------------	-----------------

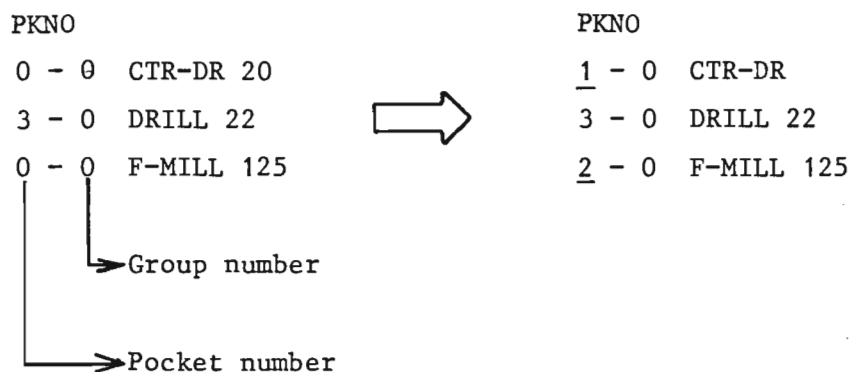
### 3) Operation

#### A DISPLAY TOOLS LAYOUT (TOOLS TO BE USED.)

- (1) Depress the menu key corresponding to WORK NO. in menu 1.  
(The operation is not required because immediately after the call, the system is ready for keying in a work number.)
- (2) Key in the work number and depress INPUT.
  - All the tools used in a specified program will be displayed on the right half of a screen, Any tool exceeding 32, however, will be displayed on another page.
  - When the drum changer is available, the tool which has the drum number specified in the program will be displayed.

#### B ALLOCATE POCKET NUMBERS TO TOOLS BEING USED (AUTOMATIC)

- (1) Depress the menu key corresponding to PKNO. ASSIGN in menu 1.  
→ From the tools to be used on the preparation side those which have pocket No.0 will be numbered sequentially from the top, except for those to which pocket numbers have been already assigned.
- (2) Depress INPUT





**C ALLOCATE POCKET NUMBERS TO TOOLS BEING USED(MANUAL)**

- (1) Place the cursor on the position of a tool pocket number to be allocated.
- (2) Key in the pocket number and depress **INPUT**.
  - Any pocket number that is already allocated cannot be keyed in redundantly.

**D RESET POCKET NUMBERS ALLOCATED**

- (1) Depress the menu key corresponding to **PKNO. CLEAR** in menu **1**.
- (2) Depress **INPUT**.
  - All pocket numbers of tools used will become 0.


**E SHIFT AND ALLOCATE POCKET NUMBERS TO TOOLS USED**

- (1) Depress the menu key corresponding to **PKNO,SHIFT** in menu **1**.
- (2) Depress **INPUT**.
  - From the tools employed, those which may coincide with any of the tools currently loaded in the drum will automatically have its pocket number allocated. (The background of a pocket number is purple.)
  - This function allows a decrease in the risk of redundantly allocating a pocket number or in the work of allocation.





F	PREPARE SPARE TOOLS
---	---------------------

- (1) Put the cursor to the position of a tool pocket number in which a spare tool is employed.
- (2) Depress the menu key corresponding to SPARE TOOL in Menu 
- (3) Depress INPUT.

→ An identical tool will appear just below the tool for which a spare tool is employed. This tool has had a group number automatically allocated together with the main tool, though its pocket number is zero. It is necessary, therefore, to input only the pocket number later.

NOTE: This function corresponds to the spare tool replacement function (optional).



### G ERASE SPARE TOOL

- (1) Fit the cursor to the position of the pocket number for a spare tool to be erased.
- (2) Depress the menu key corresponding to **TOOL ERASE** in menu ①.
- (3) Depress the **INPUT**.
  - The spare tool above the cursor will disappear from the picture.

### H ACCOPLISH LAYOUT.

- (1) Depress the menu key corresponding to **LAYOUT FINISH** in menu ①.
- (2) Depress the **INPUT**.
  - The tool to which a pocket number has been allocated will move to the position of an identical pocket number on the left side of the screen. (The status on the right side of the picture remain unchanged.)
  - If there is already a tool in the corresponding pocket number, that tool will be replaced by a new tool.

PKNO  
1 - 0 E-MILL 30A  
2 - 0  
3 - 0  
4 - 0 BOR BAR 100  
5 - 0 REAM 25

PKNO  
2 - 0 CTR-DR 20  
4 - 1 DRILL 19.6  
25 - 1 DRILL 19.6  
9 - 0 CHF-M



PKNO  
1 - 0 E-MILL 30.A  
→ 2 - 0 CTR-DR 20  
→ 3 - 0  
→ 4 - 1 DRILL 19.6  
5 - 0 REAM 25

**LAYOUT FINISH**  
PKNO  
2 - 0 CTR-DR 20  
4 - 1 DRILL 19.6  
25 - 1 DRILL 19.6  
9 - 0 CHF-M 20

- (3) With the drum change available, depress the **INPUT** once more to lay out a subsequent drum.
  - The tool being currently laid out and belonging to the subsequent drum number is displayed on the left half and the tool having a drum number next to that specified in the program on the right half.



## I ERASE DRUM-SETTING TOOL

- 1) Depress the menu key corresponding to TOOL ERASE in menu 2.
- 2) Key in the pocket number of a tool to be erased and depress INPUT.  
→ The tool with that pocket number will disappear (drum-setting tool display range).

## J CANCEL LAYOUT

- 1) Depress the menu key corresponding to LAYOUT CANCEL in menu 2.
- 2) Depress INPUT.  
→ All the tools currently loaded in the drum will disappear and the pocket number will be also reset to 0. Any other tools (on the right side of the picture) are not affected.

## K TURN EMPLOYED TOOL DISPLAYING PAGES

- 1) Depress the menu key corresponding to NEXT PAGE in menu 1.  
→ 32 tools next to the tool group currently displayed on the right side of the picture will be displayed. (Others remain unchanged.)

## L TURN PAGES TO DISPLAY TOOLS BEING LOADED INTO DRUM

- 1) Depress the menu key corresponding to CURRENT PAGE in menu 2.  
→ 32 tools next to the tool group currently displayed on the left side of the picture will be displayed. (Others remain unchanged.)

## M CHANGE DRUM NUMBER TO BE LAID OUT

- 1) Depress the menu key corresponding to DRUM NUMBER in menu 1.  
→ This operation is invalid as long as the NC unit is set to 1 drum.
- 2) Key in a drum number and depress the INPUT.  
→ The tool being currently laid out in the set drum number is displayed on the left half and the tool corresponding to the set drum number in the program on the right half.



## 2.9 Parameter Display

### 2.9-1 Cutting Condition Parameter Display

Function	o To display and register the parameters which automatically
Outline	determine the cutting condition for a specific material.
	o The cutting condition for a specific material is determined by multiplying the cutting conditions which is automatically determined for the referential material by the compensation ratio for each tool.

#### 1) How to call:

- ① Press the **DISPLAY SELECT** key.
- ② Press the **PARAMETER** key in the following menu displayed in the lower part of the screen.

POSITION	COMMAND	GRAPHIC	PROGRAM	TOOL FINE	TOOL DATA	TOOL LAYOUT	PAR	DIAGNOS.
----------	---------	---------	---------	-----------	-----------	-------------	-----	----------

#### 1 Menu initially displayed

							PREVIOUS PAGE	NEXT PAGE
--	--	--	--	--	--	--	---------------	-----------

#### 2 Menu referentially material selected

CAST IRN	DUCTILE CAST IRN	CARBON STEEL	ALLOY STEEL	STAINLES STEEL	ALMINIUM	COPPER ALLOY		OTHER
----------	------------------	--------------	-------------	----------------	----------	--------------	--	-------



### 3) Operation

A	REFERENTIAL MATERIAL REGISTER
---	-------------------------------

- (1) Place the cursor on the referential material to be registered.
- (2) Register the material to be referential (material qualitatively closest to the material to be registered.)

B	CUTTING CONDITION COMPENSATION RATIO REGISTER
---	---

- (1) Place the cursor on the tool to be compensated.
- (2) Input the applicable compensation percentage.

Note: Erasure of the registered referential material or inputting of zero as a compensating ratio is not possible. Such operation, however, will not adversely affect any other operation.





### 3) Operation

A	REGISTER PARAMETERS
---	---------------------

- (1) Place the cursor on the parameter to be registered.
- (2) Key in the value to be registered and depress **INPUT**.
- (3) Turn the power switch off and on.

B	TURN PAGES
---	------------

- (1) If a page is to scroll forward and backward, depress the **PREVIOUS PAGE** and **NEXT PAGE** keys respectively, in the menu the menu.

→ The page will change and new parameters will be displayed. Since the top page is linked with the last page, the display will appear as an endless sequence.

Note 1) For parameter specifications, see the section of parameters.

Note 2) Even if a parameter has been inputted from the display, it will not be available without turning the power switch on and off once.



## 2.10 Alarms

### i. Alarm Display

Function Outline	<ul style="list-style-type: none"><li>o To hold and display alarms which have not yet been checked</li><li>o To check alarms</li></ul>
------------------	--

#### 1) How to call:

- (1) Depress the **DISPLAY SELECT**.
- (2) Depress the **DIAGNOS** key from the following menu displayed in the lower part of the screen:

POSITION	COMMAND	GRAPHIC	PROGRAM	TOOL FILE	TOOL DATA	TOOL LAYOUT	PAR	DIAGNOS.
----------	---------	---------	---------	-----------	-----------	-------------	-----	----------



(Note) A call from the diagnosis or time control display is also possible.

#### 2) Display

TOTAL = 1

401 ILLEGAL FORMAT

\*\*\*ALARM\*\*\*

( )

							TIME CONTROL	DIAGNOS
--	--	--	--	--	--	--	--------------	---------

Menu initially displayed

							TIME CONTROL	DIAGNOS.
--	--	--	--	--	--	--	--------------	----------





### 3) Operation

A CHECK ALARM

(1) Depress the **CLEAR** or **RESET**.

→ The alarm displayed will disappear and a total number of alarms will change.

(NOTE) The method of checking (clearing) a displayed alarm varies with the type of alarm. It is not dependent upon the alarm's display color alone.

<u>How to Check</u>	<u>Type of Alarm</u>
Turn on power switch again .....	Mainly alarms Nol 1-99
<b>RESET</b> .....	" 100 ~ 199
<b>RESET</b> after eliminating cause .....	" 200 ~ 299
<b>CLEAR</b> .....	" 300 ~ 499

The information parenthesized in alarms 301 thru 399 mainly represents the location where a program error has taken place.

( \_\_, \_\_, \_\_ )

work number  
unit number  
tool sequence number or shape  
sequence number



## ii Diagnosis Display

Function Outline	<ul style="list-style-type: none"><li>o To display and write the information in memory,</li><li>o To input and output to and from a peripheral device,</li><li>o To provide servo adjustment data,</li><li>o To indicate a version number.</li></ul>
------------------	--

### 1) How to call:

- (1) Call the alarm picture.
- (2) Depress the DIAGNOS key from the following menu displayed in the lower part of the screen :

							TIME CONTROL	DIAGNOS.
--	--	--	--	--	--	--	--------------	----------

NOTE: This display can also be called from the time control display.



### 2) Display

I/O CHECK				MEMORY MONITOR (2)				MEMORY MONITOR (10)			
7654 3210				7654 3210							
H0000	0000	0000	00	MH030F00	0010	1010	2A	MD0030F00.1		42	
0001	0000	0000	00	030F01	0000	0000	00				
0002	0000	0000	00	030F02	1111	0111	F7	MD003010E-2		7681	
0003	0000	0000	00	030F03	1110	0001	E1	MD00302D0-4		-660930552	
H00F0 0000 0000 00				MH							
00F1 0000 0000 00											
00F2 0000 0000 00											
00F3 0000 0000 00											
Q0110 0000 0000 00				UH030F00 0010 1010 2A							
0111 0000 0000 00											
DROOP GRID GAIN PHASE VERSION											
X	0	0	0	1300	1-1	B01:A	1-5	D04:A	2	101:C	6 JPN:A
Y	0	0	768	4000	1-2	D01:A	1-6	D05:A	3	200:K	
Z	0	0	1536	4000	1-3	D02:A	1-7	D06:A	4	435:B	
4	0	0	2304	4000	1-4	D03:A	1-8	5	300:A		
*** DIAGNOSIS ***											
( )											
A	B	C	D	E	F	ADDR +	ADDR -	ADJ			

Menu initially displayed

A	B	C	D	E	F	ADDR +	ADDR -	ADJ
---	---	---	---	---	---	--------	--------	-----



### iii Time Control

Function Outline	o To display and reset integrated values of live time and automatic operation time
---------------------	---

#### 1) How to call:

- (1) Call the alarm display
- (2) Depress the menu key corresponding to TIME CONTROL from the following menu displayed in the lower part of the screen:

							TIME CONTROL	DIAGNOS.
--	--	--	--	--	--	--	-----------------	----------



#### 2) Display

(ACCUMULATE TIME)

POWER ON	29: 49' 56"
AUTO OPERATION	2: 11' 23"
AUTO CUTTING	1: 11' 30"
TOTAL CUTTING	0: 15' 7"

\*\*\* TIME CONTROL \*\*\*

(                      )

		TIME CONTROL	DIAGNOS.

							TIME CONTROL	DIAGNOS.
--	--	--	--	--	--	--	-----------------	----------



### 3) Operation

#### A RESET INTEGRATED TIME

(1) Move the cursor to the display position of a time to be reset.

(2) Key in the time and depress **INPUT**.

→ The display will change to the time keyed in.

→ Using the next format, key in.

hour	.	min.	.	sec.
------	---	------	---	------

Input a numerical value in the most significant unit only and no numerical values in any other unit will be required. (They will be reckoned as 0.)

(Example) **7** **3** **INPUT** same as 73:00'00"

#### B RETURN TO ALARM PICTURE

(1) Depress the **MENU SELECT**.

→ The display will change over to the alarm display.

#### C CALL DIAGNOSIS DISPLAY

(1) Depress the menu key corresponding to **DIAGNOS**.

→ The display will change to the diagnosis display.

NOTE: POWER ON time: Electrically live time

Automatic operation time: A period during an automatic operation, ranging from start to the end of a program.

Automatic machining time: A period during which the **CYCLE START** lamp is on (except for feed stop and fast feed)

Cutting time: A period during which a cutting feed continues in the automatic operation mode



### 3. APPENDIX 1 LIST OF PARAMETERS



NOTE: Parameters whose address numbers are asterisked should have their values reset after an inch/millimeter change.

PARAMETERS, Cutting No. 1 (1/4)

Address	Setting	Minimum Unit	Setting Range	Description
A1	100	0.01	0 ~ 999	Tool material quality factor for drills
A2	200	0.01	0 ~ 999	
A3	100	0.01	0 ~ 999	Tool material quality factor for reamers
A4	180	0.01	0 ~ 999	
A5	100	0.01	0 ~ 999	Tool material quality factor for taps
A6	100	0.01	0 ~ 999	
A7	50	0.01	0 ~ 999	Tool material quality factor for boring bars
A8	100	0.01	0 ~ 999	
A9	50	0.01	0 ~ 999	Tool material quality factor for back facing bars
A10	100	0.01	0 ~ 999	
A11	20	0.01	0 ~ 999	Tool material quality factor for face milling cutters
A12	100	0.01	0 ~ 999	
A13	100	0.01	0 ~ 999	Tool material quality factor for end milling cutters and chamfering cutters
A14	400	0.01	0 ~ 999	
B1	100	0.01	0 ~ 999	Work material quality factor for drills and spot drills
B2	72	0.01	0 ~ 999	
B3	100	0.01	0 ~ 999	
B4	68	0.01	0 ~ 999	
B5	48	0.01	0 ~ 999	
B6	240	0.01	0 ~ 999	
B7	200	0.01	0 ~ 999	
B8	100	0.01	0 ~ 999	Work material quality factor for reamers
B9	78	0.01	0 ~ 999	



## PARAMETERS, Cutting No. 1 (2/4)

Address	Setting	Minimum Unit	Setting Range	Description
B10	78	0.01	0 ~ 999	Work material quality factor for reamers
B11	80	0.01	0 ~ 999	
B12	80	0.01	0 ~ 999	
B13	143	0.01	0 ~ 999	
B14	180	0.01	0 ~ 999	
B15	100	0.01	0 ~ 999	Work material quality factor for taps
B16	75	0.01	0 ~ 999	
B17	100	0.01	0 ~ 999	
B18	88	0.01	0 ~ 999	
B19	75	0.01	0 ~ 999	
B20	225	0.01	0 ~ 999	
B21	225	0.01	0 ~ 999	
B22	100	0.01	0 ~ 999	Work material quality factor for boring bars
B23	88	0.01	0 ~ 999	
B24	100	0.01	0 ~ 999	
B25	80	0.01	0 ~ 999	
B26	80	0.01	0 ~ 999	
B27	225	0.01	0 ~ 999	
B28	150	0.01	0 ~ 999	
B29	100	0.01	0 ~ 999	Work material quality factor for back facing bars
B30	88	0.01	0 ~ 999	
B31	100	0.01	0 ~ 999	
B32	80	0.01	0 ~ 999	
B33	80	0.01	0 ~ 999	
B34	225	0.01	0 ~ 999	
B35	150	0.01	0 ~ 999	



## PARAMETERS, Cutting No. 1 (3/4)

Address	Setting	Minimum Unit	Setting Range	Description
B36	100	0.01	0 ~ 999	Work material quality factor for milling cutters
B37	95	0.01	0 ~ 999	
B38	135	0.1	0 ~ 999	
B39	75	0.1	0 ~ 999	
B40	90	0.1	0 ~ 999	
B41	600	0.01	0 ~ 999	
B42	200	0.01	0 ~ 999	
B43	100	0.01	0 ~ 999	Work material quality factor for end milling cutters and chamfering cutters
B44	80	0.01	0 ~ 999	
B45	90	0.01	0 ~ 999	
B46	85	0.01	0 ~ 999	
B47	90	0.01	0 ~ 999	
B48	350	0.01	0 ~ 999	
B49	200	0.01	0 ~ 999	
C1	85	0.01	0 ~ 999	Tool diameter factor for drills
C2	100	0.01	0 ~ 999	
C3	90	0.01	0 ~ 999	Tool diameter factor for taps 1
C4	0	0.01	0 ~ 999	
C5	0	0.01	0 ~ 999	
C6	260	0.01	0 ~ 999	Tool diameter factor for taps 2
C7	800	0.01	0 ~ 999	
C8	680	0.01	0 ~ 999	
C9	89	0.01	0 ~ 999	Tool diameter factor for boring bars 1
C10	0	0.01	0 ~ 999	
C11	44	0.01	0 ~ 999	Tool diameter factor for boring bars 2
C12	80	0.01	0 ~ 999	





## PARAMETERS, Cutting No. 1 (4/4)

Address	Setting	Minimum Unit	Setting Range	Description
D1	120	0.01	0 ~ 999	Diameter notch factor for boring bars
D2	110	0.01	0 ~ 999	
D3	100	0.01	0 ~ 999	
D4	100	0.01	0 ~ 999	Diameter notch factor for end milling cutters
D5	95	0.01	0 ~ 999	
D6	80	0.01	0 ~ 999	
E1	125	0.01	0 ~ 999	Axial notch factor for face milling cutters
E2	100	0.01	0 ~ 999	
E3	100	0.01	0 ~ 999	Axial notch factor for end milling cutters
E4	90	0.01	0 ~ 999	
E5	80	0.01	0 ~ 999	
F1	100	0.01	0 ~ 999	L/D factor for drills
F2	90	0.01	0 ~ 999	
F3	70	0.01	0 ~ 999	
CJ1	20	1	0 ~ 999	Spot drill factor
CJ2	25	1	0 ~ 999	Drill factor
CJ3	14	1	0 ~ 999	Reamer factor
CJ4	16	0.01	0 ~ 999	Back facing bar factor 1
CJ5	36	1	0 ~ 999	Back facing bar factor 2
CJ6	90	1	0 ~ 999	Face mill factor
CJ7	20	1	0 ~ 999	End mill factor
CJ8	30	1	0 ~ 999	Chamfering cutter factor



## PARAMETERS, Cutting No. 2 (1/6)

Address	Setting	Minimum Unit	Setting Range	Description
G1	200	0.001	0 ~ 999	Spot drill factor
G2	0	-	0 ~ 999	(Not used)
G3	150	0.001	0 ~ 999	Chamfering cutter factor
H1	100	0.01	0 ~ 999	Tool material quality factor for end milling cutters
H2	83	0.01	0 ~ 999	
I1	100	0.01	0 ~ 999	Work material quality factor for drills
I2	100	0.01	0 ~ 999	
I3	90	0.01	0 ~ 999	
I4	80	0.01	0 ~ 999	
I5	80	0.01	0 ~ 999	
I6	100	0.01	0 ~ 999	
I7	80	0.01	0 ~ 999	
I8	100	0.01	0 ~ 999	Work material quality factor for reamers
I9	100	0.01	0 ~ 999	
I10	100	0.01	0 ~ 999	
I11	100	0.01	0 ~ 999	
I12	80	0.01	0 ~ 999	
I13	100	0.01	0 ~ 999	
I14	140	0.01	0 ~ 999	
I15	100	0.01	0 ~ 999	Work material quality factor for boring bars
I16	100	0.01	0 ~ 999	
I17	100	0.01	0 ~ 999	
I18	100	0.01	0 ~ 999	
I19	100	0.01	0 ~ 999	
I20	100	0.01	0 ~ 999	
I21	100	0.01	0 ~ 999	



## PARAMETERS, Cutting No. 2 (2/6)

Address	Setting	Minimum Unit	Setting Range	Description
I22	100	0.01	0 ~ 999	Work material quality factor for back facing bars
I23	100	0.01	0 ~ 999	
I24	63	0.01	0 ~ 999	
I25	60	0.01	0 ~ 999	
I26	60	0.01	0 ~ 999	
I27	100	0.01	0 ~ 999	
I28	100	0.01	0 ~ 999	
I29	100	0.01	0 ~ 999	Work material quality factor for face milling cutters
I30	73	0.01	0 ~ 999	
I31	75	0.01	0 ~ 999	
I32	75	0.01	0 ~ 999	
I33	60	0.01	0 ~ 999	
I34	100	0.01	0 ~ 999	
I35	120	0.01	0 ~ 999	
I36	100	0.01	0 ~ 999	Work material quality factor for end milling cutters
I37	93	0.01	0 ~ 999	
I38	70	0.01	0 ~ 999	
I39	70	0.01	0 ~ 999	
I40	50	0.01	0 ~ 999	
I41	100	0.01	0 ~ 999	
I42	120	0.01	0 ~ 999	
J1	130	0.0001	0 ~ 999	Tool diameter factor for drills 1
J2	76	0.0001	0 ~ 999	
J3	46	0.0001	0 ~ 999	
J4	16	0.001	0 ~ 999	Tool diameter factor for drills 2
J5	71	0.001	0 ~ 999	



## PARAMETERS, Cutting No. 2 (3/6)

Address	Setting	Minimum Unit	Setting Range	Description
J6	180	0.001	0 ~ 999	Tool diameter factor for drills 2
J7	34	0.0001	0 ~ 999	Tool diameter factor for boring bars 1
J8	0	0.0001	0 ~ 999	
J9	30	0.001	0 ~ 999	Tool diameter factor for boring bars 2
J10	200	0.001	0 ~ 999	
J11	50	0.0001	0 ~ 999	Tool diameter factor for back facing bars 1
J12	0	0.0001	0 ~ 999	
J13	0	0.01	0 ~ 999	Tool diameter factor for back facing bars 2
J14	40	0.01	0 ~ 999	
K1	50	0.01	0 ~ 999	Diameter notch factor for boring bars
K2	70	0.01	0 ~ 999	
K3	100	0.01	0 ~ 999	
K4	86	0.01	0 ~ 999	Diameter notch factor for end milling cutters
K5	100	0.01	0 ~ 999	
K6	86	0.01	0 ~ 999	
K7	56	0.01	0 ~ 999	
L1	33	0.01	0 ~ 999	Axial notch factor for face milling cutters
L2	100	0.01	0 ~ 999	
L3	100	0.01	0 ~ 999	Axial notch factor for end milling cutters
L4	70	0.01	0 ~ 999	
L5	50	0.01	0 ~ 999	
M1	100	0.01	0 ~ 999	L/D factor for drills
M2	90	0.01	0 ~ 999	
M3	80	0.01	0 ~ 999	
N1	82	0.001	0 ~ 999	Work material quality factor relating to power of drills
N2	51	0.001	0 ~ 999	



## PARAMETERS, Cutting No. 2 (4/6)

Address	Setting	Minimum Unit	Setting Range	Description
N3	53	0.001	0 ~ 999	Work material quality factor relating to power of drills
N4	71	0.001	0 ~ 999	
N5	57	0.001	0 ~ 999	
N6	8	0.001	0 ~ 999	
N7	46	0.001	0 ~ 999	
N8	71	0.001	0 ~ 999	Work material quality factor relating to boring bar power
N9	37	0.001	0 ~ 999	
N10	57	0.001	0 ~ 999	
N11	71	0.001	0 ~ 999	
N12	63	0.001	0 ~ 999	
N13	13	0.001	0 ~ 999	
N14	51	0.001	0 ~ 999	
N15	57	0.001	0 ~ 999	Work material quality factor relating to power of face and end milling cutters
N16	32	0.001	0 ~ 999	
N17	57	0.001	0 ~ 999	
N18	77	0.001	0 ~ 999	
N19	71	0.001	0 ~ 999	
N20	17	0.001	0 ~ 999	
N21	51	0.001	0 ~ 999	
01	(190) 243	1	0 ~ 9999	Spindle speed range 1
02	(2415) 3087	1	0 ~ 9999	Spindle speed range 2
03	(3150) 4000	1	0 ~ 9999	Spindle speed range 3
04	(39) 22	0.001	0 ~ 999	Constant torque range (range 1) power calculation factor 1
05	1000	0.001	0 ~ 9999	Constant torque range (range 1) power calculation factor 2



## PARAMETERS, Cutting No. 2 (5/6)

Address	Setting	Minimum Unit	Setting Range	Description
06	(75) 55	0.1	0 ~ 999	Constant horsepower range (range 2) power calculation factor (= horsepower)
07	(181) 170	100	0 ~ 999	Range 3 power calculation factor 1
08	1000	-0.001	0 ~ 999	Range 3 power calculation factor 2
09	90	0.01	0 ~ 999	Machine efficiency
P1	130	0.01	0 ~ 999	Work material quality factor relating to drill thrust
P2	130	0.01	0 ~ 999	
P3	222	0.01	0 ~ 999	
P4	240	0.01	0 ~ 999	
P5	240	0.01	0 ~ 999	
P6	130	0.01	0 ~ 999	
P7	240	0.01	0 ~ 999	
P8	10	100	0 ~ 999	Maximum allowable thrust
FK1	26	0.001	0 ~ 999	Reamer factor relating to feed 1
FK2	16	0.01	0 ~ 999	Reamer factor relating to feed 2
FK3	30	0.01	0 ~ 999	Face mill factor relating to feed
FK4	31	0.0001	0 ~ 999	End mill factor relating to feed 1
FK5	24	0.001	0 ~ 999	End mill factor relating to feed 2
FK6	4000	1	0 ~ 9999	Drill factor relating to power
FK7	1000	1	0 ~ 9999	Boring bar, face mill and end mill factors relating to power
FK8	5795	0.01	0 ~ 9999	Factor relating to thrust 1
FK9	118	0.01	0 ~ 999	Factor relating to thrust 2
FKA	0	-	0 ~ 9999	(Not used)
Q1	386	0.01	0 ~ 9999	Face and end milling cutter factors relating to roughness
Q2	274	0.01	0 ~ 9999	





# PARAMETERS, Spot Machining

Address	Setting	Minimum Unit	Setting Range	Description
INZ			0 ~ 999	(Not used)
* DR1	10 20	0.1 inch 1 mm	0 ~ 99	Maximum spot drill diameter (spot drill diameter value automatically determined)
DR2	3	1 rev.	0 ~ 9	Spindle turning (DR2) component, factor to determine a dwelling time
* DR3	4 10	0.01 inch 0.1 mm	0 ~ 99	Spot drill diameter allowance
DR4	0	10 inch/ min 100 mm/min	0 ~ 9	MAZATROL: Z-axis feeding rate in back facing (0.5 mm/rev. for 0)  EIA/ISO : G77 (back facing cycle) Z-axis feeding rate (Z-axis is fed according to the rate determined by the program when the setting is zero.)
DR5	3	1	0 ~ 9	Factor to determine a drilling cycle (drill cycle, high-speed deep hole cycle, deep hole cycle).  Hole depth/hole diameter ≤ DR5 ... Drill cycle  DR5 < Hole depth/hole diameter ≤ DR6 ... High-speed deep hole cycle  DR6 < Hole depth/Hole diameter ... Deep hole cycle
DR6	5	1	0 ~ 9	
* DR7	13 32	0.1 inch 1 mm	0 ~ 99	Maximum diameter for one-shot drilling
* DR8	18 45	0.1 inch 1 mm	0 ~ 99	Maximum diameter for double-shot drilling
* DR9	20 50	0.1 inch 1 mm	0 ~ 99	Maximum diameter for triple-shot drilling
* DL1	4 10	0.01 inch 0.1 mm	0 ~ 99	Overtravel in drilling a hole and in tapping a bottom hole
* DL2	2 5	0.01 inch 0.1 mm	0 ~ 99	Hole depth clearance in drilling a bottom hole not drilled





## PARAMETER, Spot Machining

Address	Setting	Minimum Unit	Setting Range	Description
* DL3	4 10	0.1 inch 1 mm	0 ~ 99	Center hole diameter value fixed
DL4	3	0.1	0 ~ 10	Cut depth factor per cycle of drilling (Al) $q = \text{Tool diameter} \times \text{DL4}$
DL5	5	0.1	0 ~ 10	Cut depth factor per cycle of drilling (other material) $q = \text{Tool diameter} \times \text{DL5}$
CC1	3	1 rev.	0 ~ 9	Spindle (CC1) turning component, factor to determine the time of tapping a hole on the bottom for chamfering cutters
* CC2	4 10	0.01 inch 0.1 mm	0 ~ 99	Chamfering cutter diameter interference allowance
EM1	0		0 ~ 9	(Not used)
EM2	3	1 rev.	0 ~ 9	Spindle (EM2) turning component, factor to determine the time of dwelling a hole on the bottom with an end milling cutter
EM3	60	1%	0 ~ 100	Factor to determine the stroke of a cut per cycle of machining with an end milling cutter, tool diameter $\times$ EM3/100
* EM4	2 6	0.01 inch 0.1 mm	0 ~ 99	End milling standard finish allowance
EM5	0		0 ~ 99	(Not used)
* EM6		0.1 inch 1 mm		MAZATROL: Bottom hole diameter allowance in positioning an end milling cutter on the Z-axis  EIA/ISO : Bottom hole diameter allowance in positioning on Z-axis in G71 and G72 (roundness cycle)
BR1	3	1 rev.	0 ~ 9	Time of dwelling a hole on the bottom boring
* BR2	4 10	0.01 inch 0.1 mm	0 ~ 99	Relief on XY plane in rapidly feeding the Z-axis during boring



## PARAMETERS, Spot Machining

Address	Setting	Minimum Unit	Setting Range	Description
* BR3	2 5	0.01 inch 0.1 mm	0 ~ 99	MAZATROL: Relief during working of boring.  EIA/ISO: G76 (fine boring } Relief cycle) G87 (back boring } on Z axis cycle)
Boring Bar BR4	0		0 = +X 1 = -X 2 = +Y 3 = -Y	MAZATROL: Relief on XY plane in rapid feeding of Z-axis during boring  EIA/ISO : Direction of relief on XY plane in rapid feeding of Z-axis in G75 and G76 (fine boring cycle)
BR5	2 5	0.01 inch 0.1 mm	0 ~ 99	MAZATROL: Amount of bottom finish in boring  EIA/ISO : Amount of bottom finish in G75 (fine boring cycle)
BR6	3	1 sec.	0 ~ 99	Chip remover dwell time
TP1	5	1	0 ~ 9	Number of threads imperfectly tapped
TP2	2	1 rev.	0 ~ 9	Tapper elongation allowance
TP3	3	1 rev.	0 ~ 99	Number of revolutions until the spindle stops after receipt of the SPINDLE STOP command
* BB1	4 10	0.01 inch 0.1 mm	0 ~ 99	Relief on XY plane in rapidly feeding a back bore on the Z-axis
BB2	0		0 = +X 1 = -X 2 = +Y 3 = -Y	MAZATROL: Direction of relief on XY plane in rapid feeding of a back bore on Z-axis  EIA/ISO : Direction of relief on XY plane in rapid feeding of Z-axis in G87 (back boring cycle)
* RM1	8 20	0.001 inch 0.01 mm	0 ~ 999	Prereaming drill diameter determinant (drilling)



# PARAMETERS, Spot Machining

Address	Setting	Minimum Unit	Setting Range	Description
RM2	40 100	0.001 inch 0.01 mm	0 ~ 999	Prereaming drill diameter determinant (boring)
* RM3	40 100	0.001 inch 0.01 mm	0 ~ 999	Prereaming drill diameter determinant (end milling)
* RM4	1 2	0.001 inch 0.01 mm	0 ~ 999	Prereaming boring/end milling diameter determinant (boring and end milling)
* RM5	8 20	0.001 inch 0.01 mm	0 ~ 999	Prereaming end mill diameter determinant (end milling cutter)
BS1	3	1 rev.	0 ~ 9	Back facing dwell time
* BS2	2 5	0.1 inch 1 mm	0 ~ 99	Positioning clearance (spot machining only)
BTD				<div>7 6 5 4 3 2 1 0</div> <ul style="list-style-type: none"> <li>G73, G74 tapping cycle M code is output after dwelling at hole bottom.</li> <li>G73, G74 tapping cycle Dwelling at dwelling after output of M code</li> <li>G73, G74 tapping cycle Dwelling after return to the R point</li> <li>Back boring cycle Bottom finish: 1, Yes; 0, No</li> <li>End mill (roundness) Shortcut in finish bit 0 ~ 2,4 1, Yes; 0, No</li> </ul>
* PS1	40 100	0.0001 inch 0.001 mm	0 ~ 999	One-directional positioning overrun on the X-axis
* PS2	40 100	0.0001 inch 0.001 mm	0 ~ 999	One-directional positioning overrun on the Y-axis
PS3	0		0 = +X 1 = -X	One-directional positioning overrun in direction X
PS4	0		0 = +Y 1 = -Y	One-directional positioning overrun in direction Y

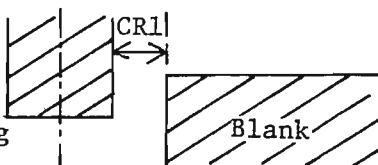
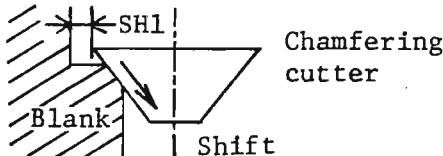
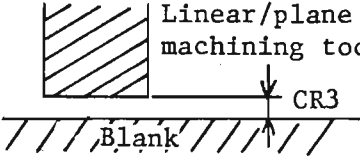


# PARAMETERS, Spot Machining

Address	Setting	Minimum Unit	Setting Range	Description
* PY1	40 100	0.001 inch 0.01 mm	0 ~ 999	Reamer bottom hole depth overrun
PY2	0			One directional positioning valid/invalid (O/f) <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">8</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">7</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">6</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">5</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">4</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">3</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">2</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">1</div> <div style="border: 1px solid black; padding: 2px;">0</div> </div> <div style="margin-left: 100px;">             Spot              Drill              Reamer              Tap              Back facing              Boring              Back bore              Chamfering              End mill           </div>
* PY3	1 2	0.01 inch 0.1 mm	0 ~ 999	MAZATROL: Pecking relief in high speed deep hole cycle EIA/ISO : Pecking relief in G73 (high speed deep hole cycle)
* PY4	4 10	0.01 inch 0.1 mm	0 ~ 999	MAZATROL: Pecking relief in deep hole cycle EIA/ISO : Pecking relief in G74 (deep hole cycle)
PY5	0			(Not used)
PY6	0			(Not used)
PY7	0			(Not used)
PY8	0			(Not used)

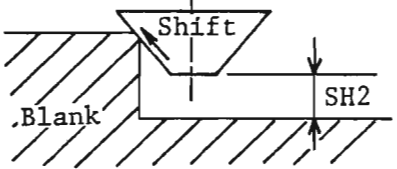
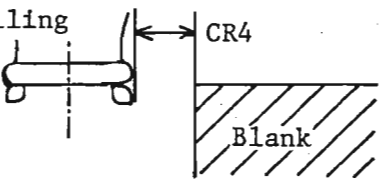
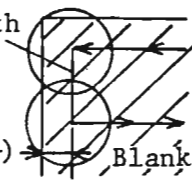
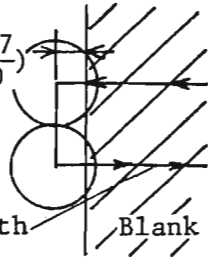


# PARAMETERS, Linear and Plane Machining (1/3)

Address	Setting	Minimum Unit	Setting Range	Description																
CRC	0			(Not used)																
* CR1	20 50  3	0.01 inch 0.1 mm	0 ~ 999	End mill diameter positioning clearance  End milling cutter      Blank																
CR2	0			(Not used)																
* AR3	2 6	0.01 inch 0.1 mm		Diameter standard finish allowance (at roughness 4) <table><tr><td>Roughness</td><td>1~3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>Finish allowance</td><td>0</td><td>AR3</td><td>0.7 xAR3</td><td>0.7<sup>2</sup> xAR3</td><td>0.7<sup>3</sup> xAR3</td><td>0.7<sup>4</sup> xAR3</td><td>0.7<sup>5</sup> xAR3</td></tr></table>	Roughness	1~3	4	5	6	7	8	9	Finish allowance	0	AR3	0.7 xAR3	0.7 <sup>2</sup> xAR3	0.7 <sup>3</sup> xAR3	0.7 <sup>4</sup> xAR3	0.7 <sup>5</sup> xAR3
Roughness	1~3	4	5	6	7	8	9													
Finish allowance	0	AR3	0.7 xAR3	0.7 <sup>2</sup> xAR3	0.7 <sup>3</sup> xAR3	0.7 <sup>4</sup> xAR3	0.7 <sup>5</sup> xAR3													
AR5	0			(Not used)																
* AZ3	2 6	0.01 inch 0.1 mm		Spindle standard finish allowance(at roughness 4) <table><tr><td>Roughness</td><td>1~3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>Finish allowance</td><td>0</td><td>AZ3</td><td>0.7 xAZ3</td><td>0.7<sup>2</sup> xAZ3</td><td>0.7<sup>3</sup> xAZ3</td><td>0.7<sup>4</sup> xAZ3</td><td>0.7<sup>5</sup> xAZ3</td></tr></table>	Roughness	1~3	4	5	6	7	8	9	Finish allowance	0	AZ3	0.7 xAZ3	0.7 <sup>2</sup> xAZ3	0.7 <sup>3</sup> xAZ3	0.7 <sup>4</sup> xAZ3	0.7 <sup>5</sup> xAZ3
Roughness	1~3	4	5	6	7	8	9													
Finish allowance	0	AZ3	0.7 xAZ3	0.7 <sup>2</sup> xAZ3	0.7 <sup>3</sup> xAZ3	0.7 <sup>4</sup> xAZ3	0.7 <sup>5</sup> xAZ3													
AZ5	0			(Not used)																
* SH1	4 10	0.01 inch 0.1 mm	0 ~ 999	Chamfering cutter interference shift clearance (diameter)  Blank      Shift      Chamfering cutter																
* CR3	20 50	0.01 inch 0.1 mm	0 ~ 999	Axial positioning clearance  Linear/plane machining tool      CR3      Blank																
RCR	7	10%	0 ~ 9	Determinant of cutting width per cycle of face milling and end milling with main unit  Cutting stroke R = Tool diameter x $\frac{\text{RCR}}{10}$																



# PARAMETERS, Linear and Plane Machining (2/3)

Address	Setting	Minimum Unit	Setting Range	Description
* SH2	4 10	0.01 inch 0.1 mm	5 ~ 40	Chamfering cutter interference shift clearance (axial) 
* CR4	40 100	0.01 inch 0.1 mm	0 ~ 999	Face milling cutter diameter positioning clearance Face milling cutter 
CR5	2	10%	1 ~ 9	Clearance for shape compensation in calculating tool paths of end mill main unit Tool path  (Tool diameter x $\frac{CR5}{10}$ )
CR6	6	10%		Pocket milling cut width determinant per cycle Cutting stroke R = Tool diameter x $\frac{CR6}{10}$
CR7	1	10%		Clearance for shape compensation of tool path in face mill round stroke (Tool diameter x $\frac{CR7}{10}$ )  Tool path Blank
S1	5	1/1	1 ~ 20	Cutting rapid feed factor, Cutting fast feedrate (/rev.) = currently effective feedrate x S1
Changed S2	→ ③ to 1	10%	0 ~ 9	End mill Z-axial cutting feed factor (but going 10 when set to 0) Z-axial feedrate (/rev.) = currently effective feedrate x S2/10





# PARAMETERS 3D - EIA/ISO (1/2)

Address	Setting	Minimum Unit	Setting Range	Description
T01				3D Tolerance 1
T02				Tolerance 2
T03				Tolerance 3
T04				Tolerance 4
T05				Tolerance 5
T06				Tolerance 6
T07				Tolerance 7
T08				Tolerance 8
T09				Tolerance 9
DG1				(Not used)
DG2				(Not used)
CA1				(Not used)
CA2				(Not used)
CA3				(Not used)
CH1				(Not used)
CHC				(Not used)
OP1				(Not used)
OP2				<div> <div>76543210</div> <div> <div>↙Tape puncher (1, EIA; 0, ISO)</div> <div>↙Tool length offset (1, Valid to any desired axis; 0, Valid to Z-axis only)</div> <div>↙Tool position offset (1, H code command; 0, D code command)</div> <div>↙Tool diameter offset (1, Tool data valid; 0, Invalid)</div> </div> </div>
OP3				# code during of EIA code punching
OP4				(Not used)
OP5				(Not used)
OP6				(Not used)
OP7				(Not used)
OP8				(Not used)





PARAMETERS 3D - EIA/ISO (2/2)

Address	Setting	Minimum Unit	Setting Range	Description
OP9				(Not used)
OP10				(Not used)
OP11				(Not used)
OP12				(Not used)
OP13				(Not used)
OP14				(Not used)
OP15				(Not used)
OP16				(Not used)
OP17		0.001 mm 0.0001 inch	-999 ~ 999	Amount of one-directional positioning on Z-axis (G60)
OP18		0.001° 0.001 mm 0.0001 inch	-999 ~ 999	Amount of one-directional positioning on A-axis (G60)
OP19				(Not used)
OP20			0 ~ 65535	No. of feeds before starting of punching of program in punch output
OP21			0 ~ 65535	No. of space between program No. and data in punch output
OP22			0 ~ 65535	No. of feeds after completion of punching of last program in punch output
OP23	16			Tape reader      Setting    Baud rate baud rate                    16            4800 32            2400 64            1200
OP24	16			Tape puncher      128            600 baud rate            256            300 512            150



## PARAMETERS, Measurements (1/2)

Address	Setting	Minimum Unit	Setting Range	Description
* TM1		0.0001 inch 0.001 mm	0 ~ 9999999	Distance between spindle end at No. 1 zero point on the Z-axis and table face
* TM2		0.0001 inch 0.001 mm	0 ~ 9999999	Distance between spindle end at No. 1 zero point on the Z-axis and surface of tool length measurement
* TM3	40 100	0.1 inch/min 1 mm/min	0 ~ 9999999	Tool length measurement skip speed
* TM4	14173 36000	0.0001 inch 0.001 mm	0 ~ 9999999	Tool length measurement deceleration distance limit
* TM5		0.1 inch/min 1 mm/min	0 ~ 9999999	Tool length measurement fast feedrate (from measurement starting point to sensor on)
* TS1		0.0001 inch 0.001 mm	0 ~ 9999999	Touch sensor probe offset X
* TS2		0.0001 inch 0.001 mm	0 ~ 9999999	Touch sensor probe offset Y
* TS3		0.0001 inch 0.001 mm	0 ~ 9999999	Touch sensor measurement compensation X
* TS4		0.0001 inch 0.001 mm	0 ~ 9999999	Touch sensor measurement compensation Y
* TS5		0.0001 inch 0.001 mm	0 ~ 9999999	Touch sensor maximum measurement move
* TS6		0.1 inch 1 mm/min		MMS skip speed
TS7				(Not used)
* SK1		0.0001 inch 0.001 mm	0 ~ ±9999999	Tool length measurement, measurement starting point X coordinate
* SK2		0.0001 inch 0.001 mm	0 ~ ±9999999	Tool length measurement, measurement starting point Y coordinate





# PARAMETERS, Machine Multipliers 1

Address	Setting	Minimum Unit	Setting Range	Description
GDR	11			<div> <div> 76543210 </div> <div> Set to 0 </div> <div> G00 dry run (1: available 0: unavailable) </div> <div> (1: 3 axes 0: 4 axes) </div> <div> Number of pulses manually generated (1: 1 pulse 0: 3 pulses) </div> <div> Manual pulse generator (1: available 0: unavailable) </div> <div> No. 2 zero point returning function (1: unavailable 0: available) </div> </div>
* IMC			0: milli-meter 1: inch	Inch/millimeter changeover
OTM			0 ~ 4	How to stop at the stroke end: 0 or 1: Linear deceleration stop 2: Velocity loop step stop (unguaranteed) 3: Velocity loop step stop (guaranteed) 4: Position loop step stop (unguaranteed)
Y00				Bubble memory (0: None, 1: 128 KB, 2: 512 KB, 3: 1 MB)
TLN		1 pc.	~ 80	Max. number of tools accommodated in magazine
Y02			0: without changing the drum 1: with the drum changed	Drum changing function available/unavailable

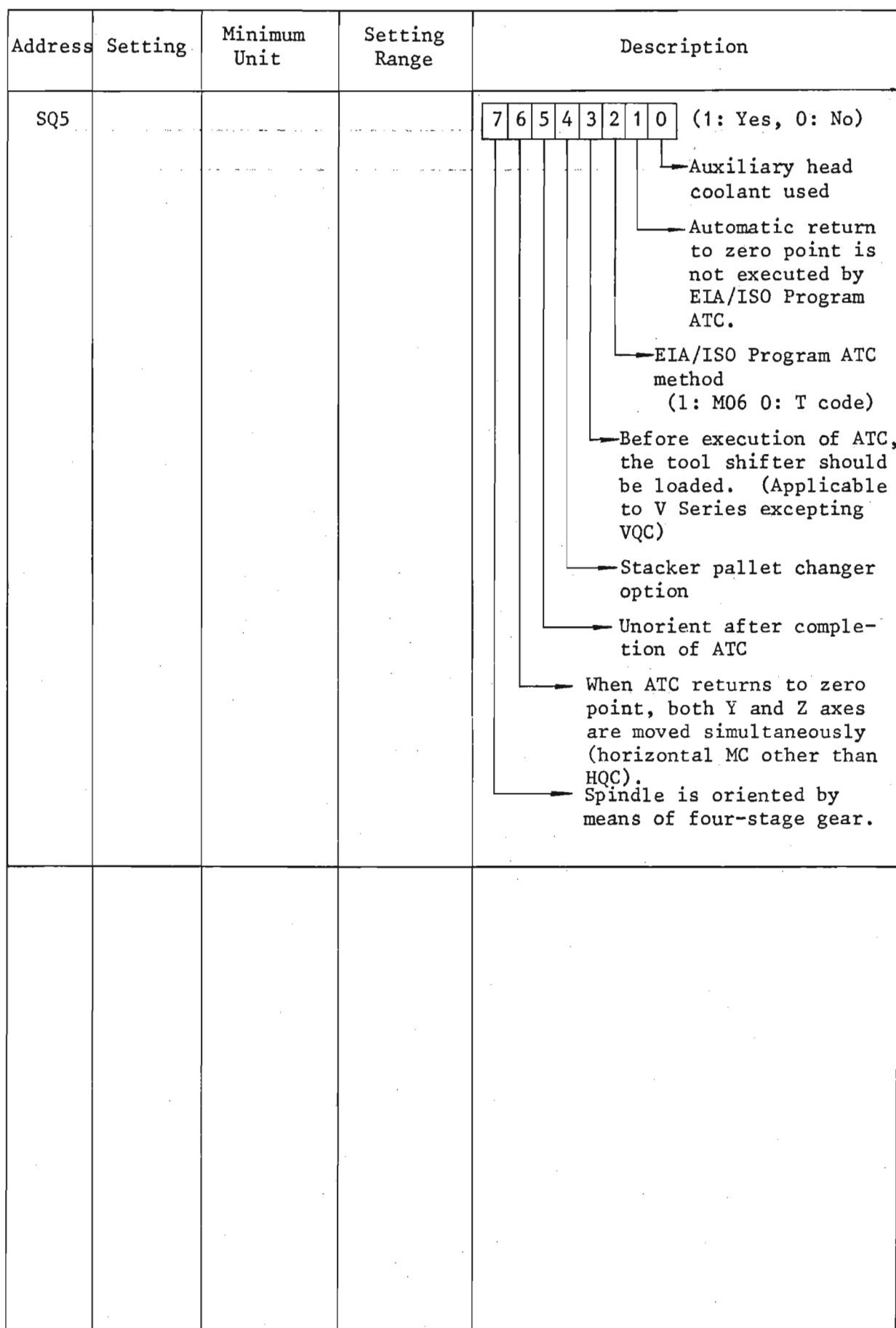




Address	Setting	Minimum Unit	Setting Range	Description
SQ1				<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">7 6 5 4 3 2 1 0</div> <div>(1: Yes, 0: No)</div> </div> <ul style="list-style-type: none"> <li>→ With two pallet changes</li> <li>→ Feed hold stopping upon detection of pallet gap</li> <li>→ Auto coolant door option</li> <li>→ Door interlock used</li> <li>→ Multi-layer pallet used</li> <li>→ End signal is given to PC by means of external control.</li> <li>→ Program is ended by single block signal from external control.</li> <li>1: M code decimals of M70-89 are given to the external device.</li> <li>0: B code BCD is given to the external device.</li> </ul>
SQ2				<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">7 6 5 4 3 2 1 0</div> <div>(1: Yes, 0: No)</div> </div> <ul style="list-style-type: none"> <li>→ Tap coolant is used (ON-M52)</li> <li>→ 2nd air blast is used (ON-M53)</li> <li>→ (1: 2nd air blast 0: Air blast for removal of chips)</li> <li>→ ATC air blast</li> <li>→ With NC rotary table option</li> <li>→ 5° index table used</li> <li>→ Condition of end are inverted by means of the additional index table.</li> <li>→ Machining of high workpieces (H-12 only)</li> </ul>



Address	Setting	Minimum Unit	Setting Range	Description																																																																																	
SQ3				<table><tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td><td>(1: Yes, 0: No)</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Operation end lamp (illuminated upon receiving of M00 or M012)</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Dai-Showa-produced MMS used</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Swining type tool measuring table</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>FLEX robot attached</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Additional I/O board used</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Pallet changer for Mino-Kamo used</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>M100 and M101 are used as additional index table commands.</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Alarm 79 (NEXT TOOL NO. DATA ERROR) is ignored.</td></tr></table>	7	6	5	4	3	2	1	0	(1: Yes, 0: No)									Operation end lamp (illuminated upon receiving of M00 or M012)									Dai-Showa-produced MMS used									Swining type tool measuring table									FLEX robot attached									Additional I/O board used									Pallet changer for Mino-Kamo used									M100 and M101 are used as additional index table commands.									Alarm 79 (NEXT TOOL NO. DATA ERROR) is ignored.
7	6	5	4	3	2	1	0	(1: Yes, 0: No)																																																																													
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SQ4				<table><tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td><td>(1: Yes, 0: No)</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>FR-SX</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Four V-20 pallet changers</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Recessing tool used</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X-axis is returned to second zero point upon execution of ATC.</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Spindle speed: 10,000 r.p.m.</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Auxiliary head option (YMS type)</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Three drum changers (YMS type)</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Abnormal temperature alarm cancellation</td></tr></table>	7	6	5	4	3	2	1	0	(1: Yes, 0: No)									FR-SX									Four V-20 pallet changers									Recessing tool used									X-axis is returned to second zero point upon execution of ATC.									Spindle speed: 10,000 r.p.m.									Auxiliary head option (YMS type)									Three drum changers (YMS type)									Abnormal temperature alarm cancellation
7	6	5	4	3	2	1	0	(1: Yes, 0: No)																																																																													
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								Abnormal temperature alarm cancellation																																																																													







Address	Setting	Minimum Unit	Setting Range	Description
CS 0				FX 84A 0 - 7FFF Check sum value,, 8000 - FFFF 10000 - 17FFF " 18000 - 1FFFF " 20000 - 27FFF " 28000 - 2FFFF " 30000 - 37FFF " 38000 - 3FFFF " 40000 - 47FFF " 48000 - 4FFFF " 50000 - 57FFF " 58000 - 5FFFF " FX 84A-1 70000 - 77FFF " 78000 - 7FFFF " D0000 - D7FFF " D8000 - DFFFF " E0000 - E7FFF " E8000 - EFFFF " F0000 - F7FFF "
CS 1				
CS 2				
CS 3				
CS 4				
CS 5				
CS 6				
CS 7				
CS 8				
CS 9				
CS10				
CS11				
CS12				
CS13				
CS14				
CS15				
CS16				
CS17				
CS18				
CS19				ROM address when check sum error is caused
CS20				Error data
CS21				
CS22				
CS23				
CS24				
CS25				
CS26				
CS27				



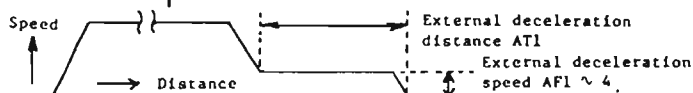
# PARAMETERS, Machine Multipliers 2 (1/6)

Address	Setting	Minimum Unit	Setting Range	Description
* LX1		0.0001 inch 0.001 mm	0 ~ ±9999999	<p>Software limit</p>
* LY1		"	"	
* LZ1		"	"	
* LX2		"	"	
* LY2		"	"	
* LZ2		"	"	
* LX3		"	"	
* LY3		"	"	
* LZ3		"	"	
* LX4		"	"	
* LY4		"	"	
* LZ4		"	"	
* ZP1	0	"	"	Machine zero point coordinates X (upon return to zero point, with a machine coordinate system set)
* ZP2	0	"	"	Machine zero point coordinates Y (upon return to zero point, with a machine coordinate system set)
* ZP3	0	"	"	Machine zero point coordinates Z (upon return to zero point, with a machine coordinate system set)
* ZP4	0	"	"	Machine zero point coordinates 4 (upon return to zero point, with a machine coordinate system set)
* RP1		"	"	No. 2 zero point coordinate X (machine coordinate system basis)
* RP2		"	"	No. 2 zero point coordinate Y (machine coordinate system basis)
* RP3		"	"	No. 2 zero point coordinate Z (machine coordinate system basis)



# PARAMETERS, Machine Multipliers 2 (2/6)

Address	Setting	Minimum Unit	Setting Range	Description
* RP4		0.0001 inch 0.001 mm	0 ~ 9999999	No. 2 zero point coordinate 4 (machine coordinate system basis)
* ZS1		"	0 ~ 99999	Zero point shift stroke X
* ZS2		"	"	Zero point shift stroke Y
* ZS3		"	"	Zero point shift stroke Z
* ZS4		"	"	Zero point shift stroke 4
* ZC1		0.1 inch/ min 1 mm/min	0 ~ 500	Dog type zero point return creep speed (velocity after deceleration) X
* ZC2		"	"	Dog type zero point return creep speed (velocity after deceleration) Y
* ZC3		"	"	Dog type zero point return creep speed (velocity after deceleration) Z
* ZC4		"	"	Dog type zero point return creep speed (velocity after deceleration) 4
ZD1			1: + direction 2: - direction	Zero point returning direction X
ZD2			"	Zero point returning direction Y
ZD3			"	Zero point returning direction Z
ZD4			"	Zero point returning direction 4
* AF1		0.1 inch/ min 1 mm/min		External deceleration speed X
* AF2		"		External deceleration speed Y
* AF3		"		External deceleration speed Z
* AF4		"		External deceleration speed 4 (Manual mode: operating upon return to No. 2 zero point) (Automatic mode: operating upon move to G00)





## PARAMETERS, Machine Multipliers 2 (3/6)

Address	Setting	Minimum Unit	Setting Range	Description
* RF1		0.1 inch/ min 1 mm/min	0 ~ 20000	Fast feedrate X
* RF2		"	"	Fast feedrate Y
* RF3		"	"	Fast feedrate Z
* RF4		"	"	Fast feedrate 4
RT1		1 m sec.	0 ~ 999	Fast feedrate constant X
RT2		"	"	Fast feedrate constant Y
RT3		"	"	Fast feedrate constant Z
RT4		"	"	Fast feedrate constant 4
RFR		1%	0 ~ 100	Fast feedrate deceleration speed
* SFC		0.1 inch/ min 1 mm/min	0 ~ 6000	Clamping speed in cutting feed
STC		1 m sec.	0 ~ 999	Cutting feed time constant
SMP		-	bit 0: unavail- able bit 1: avail- able	bit 0 (for stand) bit 1 (spindle at 10,000 rpm) bit 2 (pitch error compensation) bit 3 (with power on, SPHDL, FED ... 100 (automatic) 0 (manual)) (0: available 1: unavailable)
GH4		1 rpm	0 ~ 9999	Gear H(4) or H(3) or H(2): Spindle speed upper limit
GH3		"	"	Gear M(3) or M(2) or L(1): Spindle speed upper limit
GH2		"	"	Gear ML(2) or L(1): Spindle speed upper limit
GH1		"	"	Gear L(1): Spindle speed upper limit



# PARAMETERS, Machine Multipliers 2 (4/6)

Address	Setting	Minimum Unit	Setting Range	Description
GL4		1 rpm	0 ~ 9999	Gear H(4) or H(3) or H(2): Spindle speed lower limit
GL3		"	"	Gear M(3) or M(2) or L(1): Spindle speed lower limit
GL2		"	"	Gear ML(2) or L(1): Spindle speed lower limit
GL1		"	"	Gear L(1): Spindle speed lower limit
SPI		"	"	Spindle inching speed
SPO				Spindle speed factor upon gear shift:  $\text{Set value} = \frac{\text{Spindle motor speed upon gear shift}}{\text{Spindle motor maximum speed}} \times 4095$
GYN			2 ~ 4	Single speed number of speeds
EX2		1 rpm		Stepped value of spindle manual velocity switch (10 rpm at 0)
MA1		-		Servo constant X
MA2		-		Servo constant Y
MA3		-		Servo constant Z
MA4		-		Servo constant 4
				<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">7</div> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">6</div> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">5</div> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">4</div> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">3</div> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">2</div> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">1</div> <div style="border: 1px solid black; padding: 2px;">0</div> </div> <div style="margin-left: 20px;"> <p>→ Servo off error correction (0: available 1: unavailable)</p> <p>→ Type of axis (0: linear axis 1: rotary axis)</p> <p>→ Motor turning speed (0: CW, 1: CCW)</p> <p>→ Initial backlash direction (0: -, 1: +)</p> </div>



# PARAMETERS, Machine Multipliers 2 (5/6)

Address	Setting	Minimum Unit	Setting Range	Description																
BL1		0.001 mm	0 ~ 999	Backlash compensation stroke X (available upon move to G00)																
BL2		"	"	Backlash compensation stroke Y (available upon move to G00)																
BL3		"	"	Backlash compensation stroke Z (available upon move to G00)																
BL4		"	"	Backlash compensation stroke 4 (available upon move to G00)																
MC1		-		Servo factor X																
MC2		-		Servo factor Y																
MC3		-		Servo factor Z																
MC4		-		Servo factor 4																
				<table border="1"><tr><td>F</td><td>E</td><td>D</td><td>C</td><td>B</td><td>A</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr></table> <div><div></div><div></div></div> <div>T x 8</div> <div>Linear zone</div> <div>0: 16000      4: 32000</div> <div>1: 4000      5: 64000</div> <div>2: 8000      6: 128000</div> <div>3: 16000      7: 16000</div>	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0					
MD1		0.001 mm	0 ~ 65535	Backlash compensation stroke X (available upon move to G01)																
MD2		"	"	Backlash compensation stroke Y (available upon move to G01)																
MD3		"	"	Backlash compensation stroke Z (available upon move to G01)																
MD4		"	"	Backlash compensation stroke 4 (available upon move to G01)																
AT1	0	0.0001 inch 0.001 mm	0 ~ 65530	External deceleration distance (Automatic: upon move to G00) (Manual: positioning before AT1 at speed AF1 thru AF4 in that order upon return to No. zero point)																
AT2		0.001sec	0~10000	Time study, M code execution time																



PARAMETERS, Machine Multipliers 2 (6/6)

[illegible]



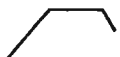

# PARAMETERS, Machine Multipliers 3 (1/5)

Address	Setting	Minimum Unit	Setting Range	Description	
FM1	100	1%	0 ~ 999	AFC spindle Face milling cutter M1	AFC spindle Horsepower (%) $= M1 + M2 (D - M3)$ where Maximum value 100% Minimum value M1 (D<M3)
* FM2	0 0	0.1%/0.1 inch 0.1%/mm	"	" M2	
* FM3	20 50	0.1 inch 1 mm	"	" M3	
EM1	20	1%	"	AFC spindle End milling cutter M1	D: Tool diameter Inclination M2 (N2)
* EM2	102 40	0.1%/0.1 inch 0.1%/mm	"	" M2	
* EM3	4 10	0.1 inch 1 mm	"	" M3	
BM1	40	1%	"	AFC spindle Boring bar M1	AFC Z-axis Thrust (%) $= N1 + N2 (D - N3)$ where Maximum value 100% Minimum value N1 (D<N3)
* BM2	51 20	0.1%/0.1 inch 0.1%/mm	"	" M2	
* BM3	8 20	0.1 inch 1 mm	"	" M3	
DM1	30	1%	"	AFC spindle Drill M1	D: Tool diameter
* DM2	114 45	0.1%/0.1 inch 0.1%/mm	"	" M2	
* DM3	4 10	0.1 inch 1 mm	"	" M3	
DN1	30	1%	"	AFC Z-axis Drill N1	
* DN2	51 20	0.1%/0.1 inch 0.1%/mm	"	" N2	
* DN3	4 10	0.1 inch 1 mm	"	" N3	





# PARAMETERS, Machine Multipliers 3 (2/5)

Address	Setting	Minimum Unit	Setting Range	Description
EN1	30	1%	0 ~ 999	AFC Z-axis End milling cutter N1
* EN2	51 20	0.1%/ 0.1 inch 0.1%/mm	"	" N2
* EN3	4 10	0.1 inch 1 mm	"	" N3
AC1	0			(Not used)
AC2	0			(Not used)
AC3	0			(Not used)
MP1	7	-		bit 0 [Feed AFC (0: unavailable, 1: available)] bit 1 [Spindle AFC (0: unavailable, 1: available)] bit 2 [Spindle performance curves (0:  , 1:  )]
MP2	50	1%		Spindle AFC minimum value (clamp value)
MP3	50	1%		Feed AFC minimum value (clamp value)
MP4	5	1 sec.		Maximum clamp time at minimum AFC (an excess would result in a feed hold)
MP5	1	1%		AFC override stepped value
MP6	10	1%		AFC insensible zone upper
MP7	10	1%		AFC insensible zone lower
MP8				(Not used)
MP9				(Not used)
MPA				(Not used)
MPB				(Not used)



# PARAMETERS, Machine Multipliers 3 (3/5)

Address	Setting	Minimum Unit	Setting Range	Description
TH0		-	0: unavailable 1: available	Thermal displacement compensation available/unavailable switch bit 0 (X), bit 1 (Y), bit 2 (Z)
TH1		0.1 $\mu\text{m}/^{\circ}\text{C}$	0 ~ $\pm 399$	Thermal displacement coefficient $X_1$
TH2		"	"	" $X_2$
TH3		"	"	" $Y_1$
TH4		"	"	" $Y_2$
TH5		"	"	" $Z_1$
TH6		"	"	" $Z_2$
				Compensation data $\Delta X$ : $\Delta X = X_1(T_{X1}-T_0) + X_2(T_{X2}-T_0)$ where, input signals; $T_{X1}, T_{X2}$ X-axis temperature $T_{Y1}, T_{Y2}$ Y-axis temperature $T_{Z1}, T_{Z2}$ Z-axis temperature $T_0$ Reference temperature
TH7				(Not used)
TH8				(Not used)
TH9				(Not used)
THA				(Not used)
THB				(Not used)
THC				(Not used)
THD				(Not used)
THE				(Not used)
THF				(Not used)
* A1X		0,0001 inch 0,001 mm	0 ~ $\pm 9999999$	External control position No.1
* A1Y		"	"	
* A1Z		"	"	



## PARAMETERS, Machine Multipliers 3 (4/5)

	Address	Setting	Minimum Unit	Setting Range	Description
*	A14		0,0001 inch 0,001 mm	0~±9999999	
*	A2X		"	"	External control position No.2
*	A2Y		"	"	
*	A2Z		"	"	
*	A24		"	"	
*	A3X		"	"	External control position No.3
*	A3Y		"	"	
*	A3Z		"	"	
*	A34		"	"	
*	A4X		"	"	External control position No.4
*	A4Y		"	"	
*	A4Z		"	"	
*	A44		"	"	
*	A5X		"	"	External control position No.5
*	A5Y		"	"	
*	A5Z		"	"	
*	A54		"	"	
*	A6X		"	"	External control position No.6
*	A6Y		"	"	
*	A6Z		"	"	
*	A64		"	"	
*	A7X		"	"	External control position No.7
*	A7Y		"	"	
*	A7Z		"	"	
*	A74		"	"	
*	A8X		"	"	External control position No.8



## PARAMETERS, Machine Multipliers 3 (5/5)

Address	Setting	Minimum Unit	Setting Range	Description
* A8Y		0.0001 inch 0.001 mm	0~+99999999	External control position No.8
* A8Z		"	"	
* A84		"	"	
DP0				Parameter for DNC
DP1				
DP2				
DP3				
DP4				
DP5				
DP6				
DP7				
DP8				
DP9				
DPA				
DPB				
DPC				
DPD				
DPE				
DPF				



# PARAMETERS, Pitch Error Compensation

Address	Setting	Minimum Unit	Setting Range	Description
				<p>(i) With the zero point taken for the reference point, reckon compensation stroke thereof as 0.</p> <p>(ii) In the case of rotary axis, compensate so that the stroke will be zero with a turn made.</p> <p>(iii) A minimum interval of measurements is to be set on the fast feedrate set.</p> <p>A compensating operation is to be effected every 35 microseconds.</p> <p>At a fast feedrate of 12 m/min.,</p> <p>Min. = 12 m/min. x 35 msec. = 7 mm</p>
PP1		0.001 mm	60000	Pitch error compensation interval X
PP2		"	"	Pitch error compensation interval Y
PP3		"	"	Pitch error compensation interval Z
PP4		"	"	Pitch error compensation interval 4
PZ1			0 ~ 127	Pitch error compensation reference point number (X)
PZ2			"	Pitch error compensation reference point number (Y)
PZ3			"	Pitch error compensation reference point number (Z)
PZ4			"	Pitch error compensation reference point number (4)
PSL		-	0 ~ 15	Pitch error compensation available/unavailable switch bit 0 (X), bit 1 (Y), bit 2 (Z), bit 3 (4)
0 127		0.001 mm	-128 ~ 127	Each compensation stroke; Incremental stroke



#### 4. APPENDIX 2. LIST OF ALARMS



No.	Message	Description
0	1 5 10 15 20 25 29	No. 0
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
1		No. 1
ENGLISH	SERVO LAG EXCESS X AXIS	P1
GERMAN	ZU GROSSE ABWEICHUNG X ACHSE	P2
FRENCH	ECART TROP IMPORTANT AXE X	P3
SPANISH	EXCESO ERROR EN SERVO EJE X	Occurrence
ITALIAN	ERRORE IUSEG ECCESSIVO ASSEX	Servo amplifier/detector
DUTCH	TE GROTE AFWIJKing SERVO X-AS	Status of Stop
SWEDISH	FOR STOR EFTERSLAPN SERVO X	Emergency stop
NORWAY	HOYT SERVOSLEP X AKSE	How to Release
		Switch off once and then on the machine again.
2		No. 2
ENGLISH	SERVO LAG EXCESS Y AXIS	P1
GERMAN	ZU GROSSE ABWEICHUNG Y ACHSE	P2
FRENCH	ECART TROP IMPORTANT AXE	P3
SPANISH	EXCESO ERROR EN SERVO EJE Y	Occurrence
ITALIAN	ERRORE INSEG ECCESSIVO ASSEY	Servo amplifier/detector
DUTCH	TE GROTE AFWIJKing SERVO Y-AS	Status of Stop
SWEDISH	FOR STOR EFTERSLAPN SERVO Y	Emergency stop
NORWAY	HOYT SERVOSLEP Y AKSE	How to Release
		Switch off once and then on the machine again.



No.	Message	Description	No.	
3	1 5 10 15 20 25 29		3	
ENGLISH	SERVO LAG EXCESS Z AXIS	A lag of the machine to follow a commanded move value on the Z-axis has exceeded the rating.	P1	
GERMAN	ZU GROSSE ABWEICHUNG Z ACHSE		P2	
FRENCH	ECART TROP IMPORTANT AXE Z		P3	
SPANISH	EXCESO ERROR EN SERVO EJE Z		Occurrence	Servo amplifier/detector
ITALIAN	ERRORE INSEG ECCESSIVO ASSEZ		Status of Stop	Emergency stop
DUTCH	TE FROTE AFWIJ KING SERVO Z-AS		How to Release	Switch off once and then on the machine again.
SWEDISH	FOR STOR EFTERSLAPN SERVO Z			
NORWAY	HOYT SERVOSLEP Z AKSE			
4			4	
ENGLISH	SERVO LAG EXCESS 4TH AXIS	A lag of the machining to follow commanded move values on fourth axis has exceeded the rating.	P1	
GERMAN	ZU GROSSE ABWEICHUNG 4 ACHSE		P2	
FRENCH	ECART TROP IMPORTANT AXE 4		P3	
SPANISH	EXCESO ERROR EN SERVO EJE 4		Occurrence	Servo amplifier/detector
ITALIAN	ERRORE INSEG ECCESSIVO 4ASSE		Status of Stop	Emergency stop
DUTCH	TE FROTE AFWIJ KING SERVO 4-AS		How to Release	Switch off once and then on the machine again.
SWEDISH	FOR STOR EFTER SERVO 4:E AXEL			
NORWAY	HOYT SERVOSLEP 4-AKSE			
5			5	
ENGLISH	SERVO OSCILLATION X AXIS	Upon move on the X-axis, the machine does not stop at a specified position but overruns or underruns repeatedly.	P1	
GERMAN	X ACHSE SERVO MOTOR VIBRIERT		P2	
FRENCH	ERREUR DU SERVO AXE X		P3	
SPANISH	OSCILACION SERVO EJE X		Occurrence	Servo amplifier/detector
ITALIAN	OSCILLAZIONE SERVO ASSE X		Status of Stop	Emergency stop
DUTCH	OSCILLATIE SERVO X-AS		How to Release	Switch off once and then on the machine again.
SWEDISH	SVANGNING SERVO X-AXEL			
NORWAY	SERVO OSCILLERING X AKSE			





No.	Message	Description
6	1 5 10 15 20 25 29	No. 6
ENGLISH	SERVO OSCILLATION Y AXIS	Upon move on the Y-axis, the machine does not stop at a specified position but goes and returns too far for repeatedly.
GERMAN	Y ACHSE SERVO MOTOR VIBRIERT	P1
FRENCH	ERREUR DU SERVO AXE Y	P2
SPANISH	OSCILACION SERVO EJE Y	P3
ITALIAN	OSCILLAZIONE SERVO ASSE Y	Occurrence Servo amplifier/detector
DUTCH	OSCILLATIE SERVO Y-AS	Status of Stop Emergency stop
SWEDISH	SVANGNING SERVO Y-AXEL	How to Release Switch off once and then on the machine again.
NORWAY	SERVO OSCILLERING Y AKSE	
7		No. 7
ENGLISH	SERVO OSCILLATION Z AXIS	Upon movement on the Z-axis, the machine does not stop at a specified position but goes and returns too far repeatedly.
GERMAN	Z ACHSE SERVO MOTOR VIBRIERT	P1
FRENCH	ERREUR DU SERVO AXE Z	P2
SPANISH	OSCILACION SERVO EJE Z	P3
ITALIAN	OSCILLAZIONE SERVO ASSE Z	Occurrence Servo amplifier/detector
DUTCH	OSCILLATIE SERVO Z-AS	Status of Stop Emergency stop
SWEDISH	SVANGNING SERVO Z-AXEL	How to Release Switch off once and then on the machine again.
NORWAY	SERVO OSCILLERING Z AKSE	
8		No. 8
ENGLISH	SERVO OSCILLATION 4TH AXIS	Upon move on fourth axis, the machine does not stop at specified position but goes and returns too far repeatedly.
GERMAN	4.ACHSE SERVO MOTOR VIBRIERT	P1
FRENCH	ERREUR DU SERVO AXE 4	P2
SPANISH	OSCI LACION SERVO EJE 4	P3
ITALIAN	OSCILLAZIONE SERVO 4ASSE	Occurrence Servo amplifier/detector
DUTCH	OSCILLATIE SERVO 4-AS	Status of Stop Emergency stop
SWEDISH	SVANGNING SERVO 4:E AXEL	How to Release Switch off once and then on the machine again.
NORWAY	SERVO OSCILLERING 4.AKSE	



No.	Message	Description
9	1 5 10 15 20 25 29	No. 9
ENGLISH	DETECTING NO SIGNAL X AXIS	In response to a command from the NC unit, no feedback signal is available from the X-axis resolver.
GERMAN	X UBERWACHUNG KEIN SIGNAL	P1
FRENCH	PAS DE SIGNAL DETECT. AXE X	P2
SPANISH	SENAL NO DETECTADA EN EJE X	P3
ITALIAN	NESSUN SEGNALE RILEV. ASSE X	Occurrence
DUTCH	GEEN SIGNAALDETECTIE X-AS	Servo amplifier/detector
SWEDISH	INGEN SIGNAL FRAN X-AXEL	Status of Stop
NORWAY	IKKE SIGNAL FRA X AKSE	Emergency stop
		How to Release
		Switch off once and then on the machine again.
10		No. 10
ENGLISH	DETECTING NO SIGNAL Y AXIS	In response to an NC command, no feedback signal is available from the Y-axis resolver.
GERMAN	Y UBERWACHUNG KEIN SIGNAL	P1
FRENCH	PAS DE SIGNAL DETECT. AXE Y	P2
SPANISH	SENAL NO DETECTABA EN EJE Y	P3
ITALIAN	NESSUN SEGNALE RILEV ASSE Y	Occurrence
SWEDISH	GEEN SIGNAALDETECTIE Y-AS	Servo amplifier/detector
SWEDISH	INGEN SIGNAL FRAN Y-AXEL	Status of Stop
NORWAY	IKKE SIGNAL FRA Y AKSE	Emergency stop
		How to Release
		Switch off once and then on the machine again.
11		No. 11
ENGLISH	DETECTING NO SIGNAL Z AXIS	In response to an NC command, no feedback signal is available from the Z-axis resolver.
GERMAN	Z UBERWACHUNG KEIN-SIGNAL	P1
FRENCH	PAS DE SIGNAL DETECT. AXE Z	P2
SPANISH	SENAL NO DETECTADA EN EJE Z	P3
ITALIAN	NESSUN SEGNALE RILEV. ASSE Z	Occurrence
DUTCH	GEEN SIGNAALDETECTIE Z-AS	Servo amplifier/detector
SWEDISH	INGEN SIGNAL FRAN Z-AXEL	Status of Stop
NORWAY	IKKE SIGNAL FRA Z AKSE	Emergency stop
		How to Release
		Switch off once and then on the machine again.



No.	Message	Description	No.	
12	1 5 10 15 20 25 29		12	
ENGLISH	DETECTING NO SIGNAL 4TH AXIS	In response to an NC command, no feedback signal is available from the fourth axis resolver.	P1	
GERMAN	4.UBERWACHUNG KEIN SIGNAL		P2	
FRENCH	PAS DE SIGNAL DETECT. AXE 4		P3	
SPANISH	SENAL NO DETECTADA EN EJE 4		Occurrence	Servo amplifier/detector
ITALIAN	NESSUN SEGNALE RILEV. 4 ASSE		Status of Stop	Emergency stop
DUTCH	GEEN SIGNAALDETECTIE 4-AS		How to Release	Switch off once and then on the machine again.
SWEDISH	INGEN SIGNAL FRAN 4:E AXEL			
NORWAY	IKKE SIGNAL FRA 4.AKSE			
13			13	
ENGLISH	DRIVE ALARM X AXIS	In the X-axis servo amplifier, the thermal relay has tripped or the no-fuse breaker has functioned.	P1	
GERMAN	SERVO ALARM X ACHSE	An error on the X-axis is excessively significant or the feedback signal from the resolver has become unavailable.	P2	
FRENCH	ALARME SYST. ENTRAIN. AXE X		P3	
SPANISH	SERVO TRANSMISION SLARM EJE X		Occurrence	Servo amplifier/detector
ITALIAN	ALLARME SERVO ASSE X		Status of Stop	Emergency stop
DUTCH	ALARM AANERIJVING X-AS		How to Release	Switch off once and then on the machine again.
SWEDISH	DRIVNINSALARM X-AXEL			
NORWAY	DRIFT ALARM X AKSE			
14			14	
ENGLISH	DRIVE ALARM Y AXIS	In the Y-axis servo amplifier, the thermal relay has tripped or the no-fuse breaker has functioned.	P1	
GERMAN	SERVO ALARM Y ACHSE	An error on the Y-axis is excessively significant or the feedback signal from the resolver has become unavailable.	P2	
FRENCH	ALARME SYST. ENTRAIN. AXE Y		P3	
SPANISH	SERVO TRANSMISION ALARM EJE Y		Occurrence	Servo amplifier/detector
ITALIAN	ALLARME SERVO ASSE Y		Status of Stop	Emergency stop
DUTCH	ALARM AANDRIJVING Y-AS		How to Release	Switch off once and then on the machine again.
SWEDISH	DRIVNINSALARM Y-AXEL			
NORWAY	DRIFT ALARM Y AKSE			



No.	Message	Description	No.	
15	1 5 10 15 20 25 29		15	
ENGLISH	DRIVE ALARM Z AXIS	In the Z-axis servo amplifier, the thermal relay has tripped or the no-fuse breaker has functioned. An error on the Z-axis is excessively significant or the feedback signal from the resolver has become unavailable.	P1	
GERMAN	SERVO ALARM Z ACHSE		P2	
FRENCH	ALARME SYST. ENTRAIN. AXE Z		P3	
SPANISH	SERVO TRANSMISION ALARM EJE Z		Occurrence	Servo amplifier/detector
ITALIAN	ALL ARME SERVO ASSE Z		Status of Stop	Emergency stop
DUTCH	ALARM AANDRIJVING Z-AS		How to Release	Switch off once and then on the machine again.
SWEDISH	DRIVNINGSALARM Z-AXEL			
NORWAY	DRIFT ALARM Z AKSE			
16			16	
ENGLISH	DRIVE ALARM 4TH AXIS	In the fourth axis servo amplifier, the thermal relay has tripped or the no-fuse breaker has functioned. An error on fourth axis is excessively significant or the feedback signal from the resolver has become unavailable.	P1	
GERMAN	SERVO ALARM 4. ACHSE		P2	
FRENCH	ALARME SYST. ENTRAIN. AXE 4		P3	
SPANISH	SERVO TRANSMISION ALARM EJE 4		Occurrence	Servo amplifier/detector
ITALIAN	ALLARME SERVO 4ASSE		Status of Stop	Emergency stop
DUTCH	ALARM AANDRIJVING 4-AS		How to Release	Switch off once and then on the machine again.
SWEDISH	DRIVNINGSALARM 4:E AXEL			
NORWAY	DRIFT ALARM 4.AKSE			
17			17	
ENGLISH	MCU MALFUNCTION	The watchdog timer (which is normally reset repeatedly in a cycle shorter than the monitoring period) to detect an abnormality in hardware has not been reset, with the servo control unit (MCU) malfunctioning.	P1	
GERMAN	MCU FEHLER		P2	
FRENCH	MALFONCTION MCU		P3	
SPANISH	MALFUNCIONAMIENTO MCU		Occurrence	Abnormality in NC unit
ITALIAN	MALFUNZIONAMENTO MCU		Status of Stop	Emergency stop
DUTCH	MCU-STORING		How to Release	Switch off once and then on the machine again.
SWEDISH	MCU DEFEKT			
NORWAY	FEIL MCU			



No.	Message	Description	No.	
18	1 5 10 15 20 25 29		18	
ENGLISH	NMI POWER OFF	With the machine switched off, CPUs 1 and 2 have malfunctioned and the watchdog timer (which detects an abnormality in hardware and is normally reset repeatedly) has not been reset.	P1	
GERMAN	NMI KEIN STROM		P2	
FRENCH	PAS.D'ALIMENTATION NMI		P3	
SPANISH	NO LLEGA CORRIENTE AL NMI		Occurrence	Abnormality in NC unit
ITALIAN	NESSUNA ALIMENTAZ. AL NMI		Status of Stop	Emergency stop
DUTCH	NMI-STROOMONDERVREKING		How to Release	Switch off once and then on the machine again.
SWEDISH	NMI SPANNING FRAN			
NORWAY	NMI STROM AV			
19			19	
ENGLISH	NMI EMERGENCY STOP (PROGRAM)	With an emergency stop effected on a software basis, the watchdog timer (which is normally reset repeatedly to detect an abnormality in hardware) has not been reset.	P1	
GERMAN	NMI NOT AUS (PROGRAMM)		P2	
FRENCH	ARRET D'URGENCE (PROG.) NMI		P3	
SPANISH	PARADA EMERGENCIA (PROG. NMI)		Occurrence	Abnormality in NC unit
ITALIAN	ARRESTO D'EMERGENZA NMI(RROG)		Status of Stop	Emergency stop
DUTCH	NMI-NOODSTOP (PROGRAMMA)		How to Release	Turn on RESET after releasing the cause of trouble.
SWEDISH	NMI NODSTOPP (PROGRAM)			
NORWAY	NMI NODSTOPP (PROGRAM)			
20			20	
ENGLISH	NMI EMERGENCY STOP	With the emergency stop button depressed on the control panel or high tension board, the watchdog timer (which is normally reset repeatedly to detect an abnormality in hardware) has not been reset.	P1	
GERMAN	NMI NOT AUS		P2	
FRENCH	ARRET D'URGENCE NMI		P3	
SPANISH	PADA DE EMERGENCIA NMI		Occurrence	Abnormality in NC unit
ITALIAN	ARRESTO D'EMERGENZA NMI		Status of Stop	Emergency stop
DUTCH	NMI-NOODSTOP		How to Release	Turn on RESET after releasing the cause of trouble.
SWEDISH	NMI NODSTOPP			
NORWAY	NMI NODSTOPP			



No.	Message	Description	No.	
21	1 5 10 15 20 25 29		21	
ENGLISH	NMI WATCH DOG ALARM	Main CPU has malfunctioned and the watchdog timer (which is normally reset repeatedly to detect an abnormality in hardware) has not been reset.	P1	
GERMAN	NMI UBERWACHUNGS ALARM		P2	
FRENCH	ALARME SURVEILLANCE NMI		P3	
SPANISH	ALARMA CONTROLADOR NMI		Occurrence	Abnormality in NC unit
ITALIAN	ALLARME SORVEGLIANZA NMI		Status of Stop	Emergency stop
DUTCH	NMI-BEWAKINGSALARM		How to Release	Switch off once and then on the machine again.
SWEDISH	NMI OVERVAKNING ALARM			
NORWAY	NMI ENDESTOPP			
22			22	
ENGLISH	NMI SUM CHECK ERROR	The results to which the data in the main CPU system memory were added upon starting of the NC differ from what have been registered.	P1	
GERMAN	NMI SPEICHER PARITY		P2	
FRENCH	PARITE MEMOIRE NMI		P3	
SPANISH	PARIDAD DE MEMORIA NMI		Occurrence	Abnormality in NC unit
ITALIAN	PARITA' DI MEMOTIA NMI		Status	Emergency stop
DUTCH	NMI-GEHEUGENP ARITEIT		How to Release	Switch off once and then on the machine again.
SWEDISH	NMI MINNESPARITET			
NORWAY	NMI LARGER PARITET			
23			23	
ENGLISH	NMI BATTERY ALARM	Voltage of the battery connected to the system circuit board has dropped below rated value.	P1	
GERMAN	NMI BATTERIE ALARM		P2	
FRENCH	ALARME BATTERIE NMI		P3	
SPANISH	ALARMA DE BATERIA NMI		Occurrence	Abnormality in NC unit
ITALIAN	ALLARME BATTERIA NMI		Status of Stop	Emergency stop
DUTCH	NMI-BATTERIJALARM		How to Release	Turn on RESET after releasing the cause of trouble.
SWEDISH	NMI BATTERIALARM			
NORWAY	NMI BATTERIALARM			



No.	Message	Description		
24	1 5 10 15 20 25 29		No.	24
ENGLISH	NMI MEMORY GUARD	With the CPU malfunctioning or the self-diagnosis function operating (data writing function), data have been entered in the ROM area or in the address area where no memory exists.	P1	
GERMAN	NMI SPEICHER SCHUTZ		P2	
FRENCH	PROTECTION MEMOIRE NMI		P3	
SPANISH	PROTECCION DE MEMORIA NMI		Occurrence	Abnormality in NC unit
ITALIAN	PROTEZIONE MEMORIA NMI		Status of Stop	Emergency stop
DUTCH	NMI-GEHEUGENBESCHERMING		How to Release	Switch off once and then on the machine again.
SWEDISH	NMI MINNESSKYDD			
NORWAY	NMI PROGRAMBESKYTT.			
25			No.	25
ENGLISH	NMI SERVO DRIVE ALARM	In any of X-, Y-, Z- and 4th axis servo amplifiers, the thermal relay has tripped or the no-fuse breaker has functioned. On any of the X, Y, Z and 4th axis, an error is excessively significant or the feedback signal from the resolver has become unavailable.	P1	
GERMAN	NMI SERVO ALARM		P2	
FRENCH	ALARME SERVO NMI		P3	
SPANISH	ALARMA SERVO NMI		Occurrence	Servo amplifier/detector
ITALIAN	ALLARME SERVO NMI		Status of Stop	Emergency stop
DUTCH	NMI SERVO-AANDRIJVINGALARM		How to Release	Switch off once and then on the machine again.
SWEDISH	NMI ALARM SERVODRIVNING			
NORWAY	NMI SERVO DRIFT ALARM			
26			No.	26
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description
27	1 5 10 15 20 25 29	No. 27
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
28		No. 28
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
29		No. 29
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release





No.	Message	Description	No.	
100	1 5 10 15 20 25 29			100
ENGLISH	TOOL DATA ERROR (INCOMPLETE)	A pocket number whose tool layout has not been completed is specified. On the tool data picture, some of the tools registered have not had data inputted yet. This alarm will be released by inputting deficient data.	P1	
GERMAN	FEHLENDE WERKZEUGDATEN		P2	
FRENCH	ERR. INFORMATIONS OUTILS		P3	
SPANISH	LISTA DE UTILES INCOMPLETA		Occurrence	Machining program defective
ITALIAN	LISTA UTENSILI INCOMPLETA		Status of Stop	Feed hold
DUTCH	GEREEDSCHAPSDATA (ONVOLLEDIG)		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	VERKTYGSDATAFEL (OFULLSTAND)			
NORWAY	VKT.DATA FEIL (UFULLSTENDIG)			
101			No.	101
ENGLISH	STORED STROKE LIMIT +X	Upon move, the axis reaches the stroke limit restricted area which has been set with parameters. (positive X-axis) The alarm can be turned off by moving along the X-axis in the negative direction by using the handle or by manual feed.	P1	
GERMAN	WEGBEGRENZUNG X ENDE NC		P2	
FRENCH	FIN DE COURSE SOFT X		P3	
SPANISH	LIMITE CARRERA MEMORIZADA X		Occurrence	Machining program defective
ITALIAN	FINECORSIA MEMORIZZATO X		Status of Stop	Feed hold
DUTCH	SOFT-EINDSCHAKELAAR X		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	LAGRAD RORELSEBEGRANSNING X			
NORWAY	ENDEBEGRENSNING X			
102			No.	102
ENGLISH	STORED STROKE LIMIT -X	Upon move, the axis reaches the stroke limit restricted area which has been set with parameters. (X-axis negative direction) The alarm can be turned off by moving along the X-axis in the positive direction by handle or by manual feed.	P1	
GERMAN	WEGBEGRENZUNG -X ENDE NC		P2	
FRENCH	FIN DE COURSE SOFT -X		P3	
SPANISH	LIMITE CARRERA MEMORIZADA -X		Occurrence	Machining program defective
ITALIAN	FINECORSIA MEMORIZZATO -X		Status of Stop	Feed hold
DUTCH	SOFT-EINDSCHAKELAAR -X		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	LAGRAD RORELSEBEGRANSNING -X			
NORWAY	ENDEVEGRENSNING -X			



No.	Message	Description	No.	
103	1 5 10 15 20 25 29 ENGLISH STORED STROKE LIMIT +Y	Upon move, the axis reaches the stroke limit restricted area which has been set with parameters. (Y-axis positive direction) The alarm can be turned off by moving along the Y-axis in the negative direction by handle or by manual feed.	No.	103
GERMAN	WEGBEGRENZUNG +Y ENDE NC		P1	
FRENCH	FIN DE COURSE SOFT +Y		P2	
SPANISH	LIMITE CARRERA MEMORIZADA +Y		P3	
ITALIAN	FINECORSE MEMORIZZATO +Y		Occurrence	Machining program defective
DUTCH	SOFT-EINDSCHAKELAAR +Y		Status of Stop	Feed hold
SWEDISH	LAGRAD ROELSEBEGRANSNING +Y		How to Release	Turn on RESET after eliminating the cause.
NORWAY	ENDEBEGRENSNING +Y			
104	ENGLISH STORED STROKE LIMIT -Y	Upon move, the axis reaches the stroke limit restricted area which has been set with parameters. (Y-axis negative direction) The alarm can be turned off by moving along the Y-axis in the positive direction by handle or by manual feed.	No.	104
GERMAN	WEGBEGRENZUNG -Y ENDE NC		P1	
FRENCH	FIN DE COURSE SOFT -Y		P2	
SPANISH	LIMITE CARRERA MEMORIZADA -Y		P3	
ITALIAN	FINECOSA MEMORIZZATO -Y		Occurrence	Machining program defective
DUTCH	SOFT-EINDSCHAKELAAR -Y		Status of Stop	Feed hold
SWEDISH	LAGRAD ROELSEBEGRANSNING -Y		How to Release	Turn on RESET after eliminating the cause.
NORWAY	ENDEBEGRENSNING -Y			
105	ENGLISH STORED STROKE LIMIT +Z	Upon move, the axis reaches the stroke limit restricted area which has been set with parameters. (Z-axis positive direction) The alarm can be turned off by moving along the Z-axis in the negative direction by handle or by manual feed.	No.	105
GERMAN	WEGBEGRENZUNG +Z ENDE NC		P1	
FRENCH	FIN DE COURSE SOFT +Z		P2	
SPANISH	LIMITE CARRERA MEMORIZADA +Z		P3	
ITALIAN	FINECOSA MEMORIZZATO +Z		Occurrence	Machining program defective
DUTCH	SOFT-EINDSCHAKELAAR +Z		Status of Stop	Feed hold
SWEDISH	LAGRAD ROELSEBEGRANSNING +Z		How to Release	Turn on RESET after eliminating the cause.
NORWAY	ENDEBEGRENSNING +Z			



No.	Message	Description	No.	
106	1 5 10 15 20 25 29 ENGLISH STORED STROKE LIMIT -Z GERMAN WEGBEGRENZUNG-Z ENDE NC FRENCH FIN DE COURSE SOFT-Z SPANISH LIMITE CARRERA MEMORIZADA -Z ITALIAN FINECORSO MEMORIZZATO -Z DUTCH SOFT-EIUDSCHAKELAAR -Z SWEDISH LAGRAD RORELSEBEGRANSNING -Z NORWAY ENDEBEGRENSNING -Z	Upon move, the axis reaches the stroke limit restricted area which has been set with parameters. (Z-axis negative direction) The alarm can be turned off by moving along the Z-axis in the positive direction by handle or by manual feed.	No. 106 P1 P2 P3 Occurrence Status of Stop How to Release	Machining program defective Feed hold Turn on RESET after eliminating the cause.
107	ENGLISH VELOCITY COMMAND ZERO GERMAN GESCHWINDIGKEIT NULL FRENCH COMMANDE VELOCITE ZERO SPANISH ORDEN DE VELOCIDAD ITALIAN COMANDO VELOCITA' ZERO DUTCH SNELHEIDSSIGNAAL NUL SWEDISH RORELSEORDER NOLL NORWAY HASTIGHETSKOMMANDO NULL	No feedrate or 0 is specified by the initial CUT FEED command. Specify the feedrate.	No. 107 P1 P2 P3 Occurrence Status of Stop How to Release	Machining program defective Feed hold Press CLEAR.
108	ENGLISH PC DATA ERROR GERMAN PC DATEN FEHLER FRENCH ERREUR DE DONNEES PC SPANISH ERROR DE DATOS PC ITALIAN ERROR NEI DATI PC DUTCH PC-DATA FOUTIEF SWEDISH PC DATAFEL NORWAY PC DATA FEIL	The data transferred from PC to NC are incorrect.	No. 108 P1 P2 P3 Occurrence Status of Stop How to Release	Machine/high voltage panel Feed hold Turn on RESET after eliminating the cause.



No.	Message	Description
109	1 5 10 15 20 25 29	No. 109
ENGLISH	OVER TRAVEL +X	P1
GERMAN	ENDBEGRENZUNG +X	P2
FRENCH	FIN DE COURSE +X	P3
SPANISH	FUERA DE CARRERA +X	Occurrence
ITALIAN	OLTRECORSA +X	Machine/high voltage panel
DUTCH	OVERSCHRIJD. EINDSCHAKEL +X	Status of Stop
SWEDISH	OVERRORELSE +X	Feed hold
NORWAY	ENDEBRYTER +X	How to Release
		Turn on RESET after eliminating the cause.
110		No. 110
ENGLISH	OVER TRAVEL +Y	P1
GERMAN	ENDBEGRENZUNG +Y	P2
FRENCH	FIN DE COURSE +Y	P3
SPANISH	FUERA DE CARRERA +Y	Occurrence
ITALIAN	OLTRECORSA +Y	Machine/high voltage panel
DUTCH	OVERSCHRIJD. EINDSCHAKEL +Y	Status of Stop
SWEDISH	OV ERRORELSE +Y	Feed hold
NORWAY	ENDEBRYTER +Y	How to Release
		Turn on RESET after eliminating the cause.
111		No. 111
ENGLISH	OVER TRAVEL +Z	P1
GERMAN	ENDBEGRENZUNG +Z	P2
FRENCH	FIN DE COURSE +Z	P3
SPANISH	FUERA DE CARRERA +Z	Occurrence
ITALIAN	OLTRECORSA +Z	Machine/high voltage panel
DUTCH	OVERSCHRIJD. EINDSCHAKEL. +Z	Status of Stop
SWEDISH	OVERRORELSE +Z	Feed hold
NORWAY	ENDEBRYTER +Z	How to Release
		Turn on RESET after eliminating the cause.



No.	Message	Description	No.	
112	1 5 10 15 20 25 29		112	
ENGLISH	OVER TRAVEL +4TH	After movement along the axis, the stroke limit switch at the positive end of the fourth axis is activated. The alarm can be turned off by moving along the fourth axis in the negative direction by handle or by manual feed.	P1	
GERMAN	ENDBEGRENZUNG +4		P2	
FRENCH	FIN DE COURSE +4		P3	
SPANISH	FUERA DE CARRERA +4 EJE		Occurrence	Machine/high voltage panel
ITALIAN	OLTRECORSA +4		Status of Stop	Feed hold
DUTCH	OVERSCHRIJD. EINDSCHAKEL +4		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	OVERRORELSE +4			
NORWAY	ENDEBRYTER +4			
113			113	
ENGLISH	OVER TRAVEL -X	After movement along the axis, the stroke limit switch at the negative end of the X-axis is activated. The alarm can be turned off by moving along the X-axis in the positive direction by handle or by manual feed.	P1	
GERMAN	ENDBEGRENZUNG -X		P2	
FRENCH	FIN DE COURSE -X		P3	
SPANISH	FUERA DE CARRERA -X		Occurrence	Machine/high voltage panel
ITALIAN	OLTRECORSA -X		Status of Stop	Feed hold
DUTCH	OVERSCHRIJD. EINDSCHAKEL. -X		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	OVERRORELSE -X			
NORWAY	ENDEBRYTER -X			
114			114	
ENGLISH	OVER TRAVEL -Y	After movement along the axis, the stroke limit switch on the negative end of the Y-axis is activated. The alarm can be turned off by moving along the Y-axis in the positive direction by handle or by manual feed.	P1	
GERMAN	ENDBEGRENZUNG -Y		P2	
FRENCH	FIN DE COURSE -Y		P3	
SPANISH	FUERA DE CARRERA -Y		Occurrence	Machine/high voltage panel
ITALIAN	OLTRECORSA -Y		Status of Stop	Feed hold
DUTCH	OVERSCHRIJD. EINDSCHAKEL -Y		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	OVERRORELSE -Y			
NORWAY	ENDEBTYTER -Y			



No.	Message	Description	No.	
115	1 5 10 15 20 25 29		115	
ENGLISH	OVER TRAVEL -Z	After movement along the axis, the stroke limit switch on the negative end of the Z-axis is activated. The alarm can be turned off by moving along the Z-axis in the positive direction by handle or by manual feed.	P1	
GERMAN	ENDBEGRENZUNG -Z		P2	
FRENCH	FIN DE COURSE -Z		P3	
SPANISH	FUERA DE CARRERA -Z		Occurrence	Machine/high voltage panel
ITALIAN	OLTRECORSA -Z		Status of Stop	Feed hold
DUTCH	OVERSCHRIJD.EINDSCHAKEL.-Z		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	OVERRORELSE -Z			
NORWAY	ENDEBRYTER -Z			
116			116	
ENGLISH	OVER TRAVEL -4TH	After movement along the axis, the stroke limit switch at the negative end of the fourth axis is activated. The alarm can be turned off by moving along fourth axis in the positive direction by handle or by manual feed.	P1	
GERMAN	ENDBEGRENZUNG -4		P2	
FRENCH	FIN DE COURSE -4		P3	
SPANISH	FUERA DE CARRERA -4 EJE		Occurrence	Machine/high voltage panel
ITALIAN	OLTRECORSA -4		Status of Stop	Feed hold
DUTCH	OVERSCHRIJD.EINDSCHAKEL. -4		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	OVERRORELSE -4			
NORWAY	ENDEBRYTER -4			
117			117	
ENGLISH	HELICAL INTERPOL. DATA ERROR	The path which is drawn at a specified pitch in helical cutting does not pass the specified terminal. The alarm can be turned off by reviewing and correcting the input data (coordinates, pitch, etc.)	P1	
GERMAN	SCHRAUBENLINIEN EINGABEFehler		P2	
FRENCH	ERREUR DONNEES INTERP. HELIC.		P3	
SPANISH	ERROR DATOS INTERP HELICOIDAL		Occurrence	Machine/high voltage panel
ITALIAN	ERRORI DATI INTERP. ELICOID.		Status of Stop	Feed hold
DUTCH	SCHROEFVORM. INTERP. DATAFOUT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	SPIRALINTERPOLERING DATAFEL			
NORWAY	SKRUEINTERPOL. DATAFEIL			



No.	Message	Description	No.	
118	1 5 10 15 20 25 29		118	
ENGLISH	PARAMETER ERROR (PP1-4,PZ1-4)	Parameters for correcting a pitch error (PP1~4, PZ1~4) are not set properly. The alarm can be turned off by reviewing and correcting the parameters set.	P1	
GERMAN	PARAM FEHLER (PP1-4,PZ1-4)		P2	
FRENCH	ERREUR PARAM. (PP1-4,PZ1-4)		P3	
SPANISH	ERROR PARAM. (PP1-4,PZ1-4)		Occurrence	Machine/high voltage panel
ITALIAN	ERRORE PARAM (PP1-4,PZ1-4)		Status of Stop	Feed hold
DUTCH	PARAMETERFOUT (PP1-4,PZ1-4)		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	PARAMETERFEL (PP1-4,PZ1-4)			
NORWAY	PARAMETERFEIL (PP1-4, PZ1-4)			
119			119	
ENGLISH	STOP PROX MALFUNCTION	During the measurement of a tool length, no skip signal is available after the SKIP DECELERATE signal has appeared.	P1	
GERMAN	MESS.HALT SENSOR ES DEFECT		P2	
FRENCH	MALF.ARRET PALPEUR MESUR.		P3	
SPANISH	MALFUNCION PROX TOPE MSR		Occurrence	Machine/high voltage panel
ITALIAN	MALF.PROX MISURA		Status of Stop	Feed hold
DUTCH	STRING EINDSCH. MEETUITR.		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	MATSTATIV STOPP AVKANN DEFECT			
NORWAY	MAAL.STOP FEIL(BRYTERFEIL)			
120			120	
ENGLISH	T-MSR DATA INEFFECTIVE	After measuring a tool length, the tool has not been automatically changed. The alarm can be turned off by setting coordinates after carrying out an ATC once.	P1	
GERMAN	WKZLAENGENWERT N.GESPEICHERT		P2	
FRENCH	DONNEES MES.UTIL INEFFECT.		P3	
SPANISH	DATOS INEFECTIVOS T-MSR		Occurrence	Machine/high voltage panel
ITALIAN	DATI INEFFETTIVI MIS. UT		Status of Stop	Feed hold
DUTCH	DATAGEREEDSCH-MET.WERKEN NT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	VERKTYGSH DATA INTE AKTIV			
NORWAY	INEFEFKTKVE DATA VKT.MAALING			



No.	Message	Description	No.	
121	1 5 10 15 20 25 29		No.	121
ENGLISH	TOOL MEASURING STAND NOT OUT	The measuring block has not come out upon measurement of a tool length.	P1	
GERMAN	NRKZG MESSTAND NICHT		P2	
FRENCH	DISPOS.DE MESURE NON SORTI		P3	
SPANISH	MEDIDOR DE UTIL NO SALIO		Occurrence	Machine/high voltage panel
ITALIAN	DISPOS.MIS.UT.NON USCITO		Status of Stop	Feed hold
DUTCH	GER-MEETTOESTEL NIET UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	MATSTATIV FOR VERKT INTE UTE			
NORWAY	VKT.MAALESTASJON IKKE UTE			
122			No.	122
ENGLISH	DECELERATION PROX MALF.	Upon measurement of a tool length, the SKIP signal has appeared although the SKIP DECELERATE signal is unavailable.	P1	
GERMAN	EILGANGUMSCHALT ES DEFECT		P2	
FRENCH	MALF.INT.DECELERATION		P3	
SPANISH	MAL.PROX DECELER		Occurrence	Machine/high voltage panel
ITALIAN	MAL.DECELERAZ.PROX		Status of Stop	Feed hold
DUTCH	STOR.AFREM-EINDSCH.		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	STOPP AVKANN DEFECT			
NORWAY	DEFECT NEDBREMSING			
123			No.	123
ENGLISH	CYCLE-START ON COMMAND DPL	The automatic operation has been started with a display other than POSITION, COMMAND and GRAPHIC.	P1	
GERMAN	ZYKLUS-START AN KOMAND ANZEIGE		P2	
FRENCH	DEPART CYCLE SUR VISUA COMMAND		P3	
SPANISH	EMPUJ.CICLO-SALIDA EN MANDO		Occurrence	Operator
ITALIAN	C-START NON POSSIBILE		Status of Stop	RESET
DUTCH	CYCL.ST.ONMOG.M/DIT SCHERM		How to Release	CLEAR ON
SWEDISH	C-START VID KOMMAND			
NORWAY	ELLER SYKL.START PAA KOMMANDO			





No.	Message	Description	
124	1 5 10 15 20 25 29	No.	124
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	



No.	Message	Description	No.	
200	1 5 10 15 20 25 29		No.	200
ENGLISH	THERMAL SENSOR EXCEED	The thermal sensor for FX-27 has sensed the temperature of above 55 or 65°C. (The CPU is very likely to run out of order.)	P1	
			P2	
			P3	
			Occurrence	Machine/high voltage panel
			Status of Stop	Feed hold
			How to Release	Turn on RESET after eliminating the cause.
201			No.	201
ENGLISH	HYDRAULIC PRESSURE TOO LOW	Hydraulic pressure has dropped for 2 or more consecutive seconds. (After the lapse of one minute, the spindle stops moving.)	P1	
GERMAN	ZU NIEDRIGER HYDR DRUCK		P2	
FRENCH	PRESSION HYDRAUL.TROP BASSE		P3	
SPANISH	PRESION HIDRAULICA BAJA		Occurrence	Machine/high voltage panel
ITALIAN	PRESSIONE IDRAULICA BASSA		Status of Stop	Feed hold
DUTCH	HYDRAULISCHE DRUK IS TE LAAG		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	FOR LAGT HYDRAULTRYCV			
NORWAY	FOR LAVT HYDR.TRYKK			
202			No.	202
ENGLISH	DRUM INDEX PROX OFF MALF.	With the MAGAZINE-IN-POSITION proximity switch OFF, the TOOL LOAD/UNLOAD command has been given. Or the proximity switch was turned off while the command is being given. (The tool can be neither loaded nor unloaded.)	P1	
GERMAN	MAGAZIN INDEX ENDS.AUS FEHLER		P2	
FRENCH	MALF INT INDEX MAG POS AR		P3	
SPANISH	MALF INT PROX DIVI TAM EN OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX.MAGAZZINO UT.		Status of Stop	Feed hold
DUTCH	STORING NAB-SCH.MAG-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	DEF NLB FRAN FOR INDEXN MAGAS			
NORWAY	TROMMEL INDEKS BRYTER AV FEIL			



No.	Message	Description	No.	
203	1 5 10 15 20 25 29		203	
ENGLISH	ARM 0° PROX ON MALF.	Even with the arm swung 45° the 0° proximity switch has not been turned off for 5 consecutive seconds or more after being commanded. (CRT display only)	P1	
GERMAN	ARM ROTATION ENDS AN FEHLER		P2	
FRENCH	MALF INT ROT BRAS 0 POSMA		P3	
SPANISH	MALF PROX ROTA BRA 0 ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX ROTAZ.BRACCIO 0 ON		Status of Stop	Feed hold
DUTCH	STORING NAB-SCH.ARM 0 -AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	VAXLARARH 0 DEF NLB TILL			
NORWAY	ARM 0 FEIL VEDR, BRYTER PAA			
204			204	
ENGLISH	ARM 0° PROX OFF MALF.	Although the arm has returned to 0°, the 0° proximity switch has not been turned ON for 5 consecutive or more seconds after being commanded. (The completion signal does not return while the automatic tool changer stops operating on the way.)	P1	
GERMAN	ARM ROTATION ENDS.AUS FEHLER		P2	
FRENCH	MALF INT ROT BRAS 0 POS AR		P3	
SPANISH	MALF PROX POTA BRA 0 OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX ROTAZ.BRACC.O OFF		Status of Stop	Feed hold
DUTCH	STORING NAB-SCH.ARM 0 -UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	VAXLARARM 0 DEF NLB FRAN			
NORWAY	ARM 0 FEIL VEDR.BRYTER AV			
205			205	
ENGLISH	ARM 45° PROX ON MALF.	Although the arm has returned to 0°, the 45° proximity switch has not been turned off for 5 or more consecutive seconds after being commanded. (CRT display only)	P1	
GERMAN	ARM 45 ENDSCHALT.AN FEHLER		P2	
FRENCH	MALF INT ROT BRAS 45 POS MA		P3	
SPANISH	MALF PROX ROTA BRA 45 ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX ROTAZ BRA 45 ON		Status of Stop	Feed hold
DUTCH	STORING NAB-SCH.ARM 45 -AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	VAXLARARM 45 DEF NLB TILL			
NORWAY	ARM 45 FEIL VEDR. BRYTER PAA			



No.	Message	Description
206	1 5 10 15 20 25 29	No. 206
ENGLISH	ARM 45° PROX OFF MALF.	Although the arm has swung 45°, the 45° proximity switch has not been turned off for 5 or more consecutive seconds after being commanded. (The completion signal does not return while the automatic tool changer stops operating on the way.)
GERMAN	ARM 45 ENDSCHALT.AUS FEHLER	P1
FRENCH	MALF INT ROT BRAS 45 POS AR	P2
SPANISH	MALF PROX ROTA BRA 45 OFF	P3
ITALIAN	MALF PROX ROTAZ BRA 45 OFF	Occurrence Machine/high voltage panel
DUTCH	STORING NAB-SCH.ARM 45 -UIT	Status of Stop Feed hold
SWEDISH	VAXLARARM 45 DEF NLB FRAN	How to Release Turn on RESET after eliminating the cause.
NORWAY	ARM 45 FEIL VEDR.BRYTER AV	
207		No. 207
ENGLISH	ARM 0° PROX ON MALF.	Although the arm has swung 180°, the 0° (180°) proximity switch did not turn off for 5 or more consecutive seconds after being commanded. (CRT display only)
GERMAN	ARM ROTATION ENDS.AN FEHLER	P1
FRENCH	MALF INT ROT BRAS 0 POS MA	P2
SPANISH	MALF PROX ROTA BRA 0 ON	P3
ITALIAN	MALF PROX ROTAZ.BRA.0 ON	Occurrence Machine/high voltage panel
DUTCH	STORING NAB-SCH.ARM 0 -AAN	Status of Stop Feed hold
SWEDISH	VAXLARARM 0 DEF NLB TILL	How to Release Turn on RESET after eliminating the cause.
NORWAY	ARM 0 BRYTER PAA FEIL	
208		No. 208
ENGLISH	ARM 0° PROX OFF MALF.	Although the arm has returned to 0°, the 0° (180°) proximity switch did not turn on for 5 or more consecutive seconds after commanded. (The completion signal does not return while the automatic tool changer stops operating on the way.)
GERMAN	ARM ROTATION ENDS.AUS FEHLER	P1
FRENCH	MALF INT ROT BRAS 0 POS AR	P2
SPANISH	MALF PROX ROTA BRA 0 OFF	P3
ITALIAN	MALF PROX ROTAZ.BRA.0 OFF	Occurrence Machine/high voltage panel
DUTCH	STORING NAB-SCH.ARM 0 -UIT	Status of Stop Feed hold
SWEDISH	VAXLARARM 0 DEF NLB FRAN	How to Release Turn on RESET after eliminating the cause.
NORWAY	ARM 0 BRYTER AV FEIL	



No.	Message	Description
209	1 5 10 15 20 25 29 ENGLISH ARM 180° PROX ON MALF. GERMAN ARM 180 ENDSCHALT.AN FEHLER FRENCH MALF INT ROT BRAS 180 POS MA SPANISH MALF PROX ROTA BRA 180 ON ITALIAN MALF PROX ROTAZ.BRA.180 ON DUTCH STORING NAB-SCH.ARM 180 -AAN SWEDISH VAXLARARM 180 DEF NLB TILL NORWAY ARM 180 BRYTER PAA FEIL	Although the arm has returned to 0°, the 180° proximity switch did not turn off for 5 or more consecutive seconds after commanded. (CRT display only)
		No. 209
		P1
		P2
		P3
		Occurrence Machine/high voltage panel
		Status of Stop Feed hold
		How to Release Turn on RESET after eliminating the cause.
210	ENGLISH ARM 180° PROX OFF MALF. GERMAN ARM 180 ENDSCHALT.AUS FEHLER FRENCH MALF INT ROT BRAS 180 POS AR SPANISH MALF PROX ROTA BRA 180 OFF ITALIAN MALF PROX ROTAZ.BRA 180 OFF DUTCH STORING NAB-SCH.ARM 180 -UIT SWEDISH VAXLARARM 180 DEF NLB FRAN NORWAY ARM 180 BRYTER AV FEIL	Although the arm has swung 180°, the 180° proximity switch did not turn on for 5 or more consecutive seconds after being commanded. (The completion signal does not return while the automatic tool changer stops operating on the way.)
		No. 210
		P1
		P2
		P3
		Occurrence Machine/high voltage panel
		Status of Stop Feed hold
		How to Release Turn on RESET after eliminating the cause.
211	ENGLISH ARM REVERSE PROX ON,OFF MALF. GERMAN ARM RU.WART ES AN.AUS FEHLER FRENCH MALF INT.RO INV BRS POS MAAR SPANISH MALF PROX ROTA INV BRA ON/OFF ITALIAN MALF PROX ROTA INV BRA ON/OFF DUTCH STOR.NAB-SCH.ARM-ACHT.A/U SWEDISH VAXLARARM RB TILL,FRAN DEF NORWAY ARM REVERS BRYTER PAA FEIL	When the arm which is positioned at RETRACT (IN) end swings 180°, the arm-reversing proximity switch did not operate for 10 or more consecutive seconds after being commanded. (The completion signal does not return while the automatic tool changer stops operating on the way.)
		No. 211
		P1
		P2
		P3
		Occurrence Machine/high voltage panel
		Status of Stop Feed hold
		How to Release Turn on RESET after eliminating the cause.



No.	Message	Description
212	1 5 10 15 20 25 29	No. 212
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
213		No. 213
ENGLISH	ARM RETRACT PROX ON MALF.	P1
GERMAN	ARM HUB RUCK ES AN FEHLER	P2
FRENCH	MALF INT RETR BRAS POS MA	P3
SPANISH	MALF PROX RETRACT BRA ON	Occurrence
ITALIAN	MALF PROX RETRACT BRA ON	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.ARM-TERUG-AAN	Status of Stop
SWEDISH	VAXLARARM RETUR DEF NLB TILL	Feed hold
NORWAY	ARM TILBAKE BRYTER PAA FEIL	How to Release
		Turn on RESET after eliminating the cause.
214		No. 214
ENGLISH	ARM RETRACT PROX OFF MALF.	P1
GERMAN	ARM HUB AUSFA.ES AN FEHLER	P2
FRENCH	MALF INT RETR BRAS POS AR	P3
SPANISH	MALF PROX RETRACT BRA OFF	Occurrence
ITALIAN	MALF PROX RETRACT BRA OFF	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.ARM-TERUG-UIT	Status of Stop
SWEDISH	VAXLARARM RETUR DEF NLB FRAN	Feed hold
NORWAY	ARM TILBAKE BRYTER AV FEIL	How to Release
		Turn on RESET after eliminating the cause.



No.	Message	Description		
215	1 5 10 15 20 25 29		No.	215
ENGLISH	ARM EXTEND PROX ON MALF.	With the arm positioned at RETRACT (IN) end, the arm extend proximity switch did not turn off for or more consecutive seconds.	P1	
GERMAN	ARM HUB AUSFA.ES AN FEHLER		P2	
FRENCH	MALF INT EXT BRAS POS MA		P3	
SPANISH	MALF PROX SALIDA BRAZO ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX ESTENS.BRA.ON		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.ARM-UITL.-AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	VAXLARARM UT DET NLB TILL			
NORWAY	ARM UT BRYTER PAA FEIL			
216			No.	216
ENGLISH	ARM EXTEND PROX OFF MALF.	With the arm positioned at EXTEND (OUT) end, the arm extend proximity switch did not turn on for 5 or more consecutive seconds. (The completion, signal does not return while the automatic tool changer stops operating on the way.)	P1	
GERMAN	ARM HUB AUSFA.ES AUS FEHLER		P2	
FRENCH	MALF INT EXT BRAS POS AR		P3	
SPANISH	MALF PROX SALIDA BRAZO OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX ESTENS.BRA.OFF		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.ARM-UITL.-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	VAXLARARM UT DEF NLB FRAN			
NORWAY	ARM UT BRY TER AV FEIL			
217			No.	217
ENGLISH	TOOL LOAD PROX ON MALF.	With the shifter positioned at UNLOAD end, the tool load proximity switch did not turn off for 5 or more consecutive seconds after being commanded.	P1	
GERMAN	NZ.LADER ENDS.AN FEHLER		P2	
FRENCH	MALF INT CHAR OUT POS MA		P3	
SPANISH	MALF PROX CARGA UTIL ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX CARICO UT.ON		Status of Stop	Feed hold
CUTCH	STOR.NAB-SCH.GER.LAD.-AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	LADDA VERKTYG DEF NLB TILL			
NORWAY	VKT.LADING BRYTER PAA FEIL			



No.	Message	Description
218	1 5 10 15 20 25 29	No. 218
ENGLISH	TOOL LOAD PROX OFF MALF.	P1
GERMAN	WZ.LADER ENDS.AUS FEHLER	P2
FRENCH	MALF INT CHAR OUT POS AR	P3
SPANISH	MALF PROX CARGA UTIL OFF	Occurrence
ITALIAN	MALF PROX CARICO UT.OFF	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.GER.LAD.-UIT	Status of Stop
SWEDISH	LADDA VERKTYG DEF NLB FRAN	Feed hold
NORWAY	VKT. LADING BRYTER AV FEIL	How to Release
		Turn on RESET after eliminating the cause.
219		No. 219
ENGLISH	TOOL UNLOAD PROX ON MALF.	P1
GERMAN	WZ.ENTLADER ENDS.AN FEHLER	P2
FRENCH	MALF INT DECH OUT POS MA	P3
SPANISH	MALF PROX DESCARGA UTIL ON	Occurrence
ITALIAN	MALF PROX SCARICO UT.ON	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.GER.AFLAD.-A	Status of Stop
SWEDISH	VERKTYG URLADDA DEF NLB TILL	Feed hold
NORWAY	VKT.FJERNE BRYTER PAA-FEIL	How to Release
		Turn on RESET after eliminating the cause.
220		No. 220
ENGLISH	TOOL UNLOAD PROX OFF MALF.	P1
GERMAN	NZ.ENTLADER ENDS.AUS FEHLER	P2
FRENCH	MALF INT DECH OUT POS AR	P3
SPANISH	MALF PROX DESCARGA UTIL OFF	Occurrence
ITALIAN	MALF PROX SCARICO UT.OFF	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.GER.AFLAD.-U	Status of Stop
SWEDISH	VERKTYG URLADDA DEF NLB FRAN	Feed hold
NORWAY	VKT.FJERNE BRYTER AV FEIL	How to Release
		Turn on RESET after eliminating the cause.





No.	Message	Description
221	1 5 10 15 20 25 29	No. 221
ENGLISH	SPINDLE ORIENT PROX ON MALF.	P1
GERMAN	SPINDELORIENT ENDS.AN FEHLER	P2
FRENCH	MALF INT OR BROCHE POS MA	P3
SPANISH	MALF PROX ORIEN-HUSILLO ON	Occurrence
ITALIAN	MALF PROX ORIEN.MANDR.ON	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.SPILORIEN.-AAN	Status of Stop
SWEDISH	SPINDELORIENT DEF NLB TILL	Feed hold
NORWAY	SPNDL.ORIENT.BRYTER PAA FEILR	How to Release
		Turn on RESET after eliminating the cause.
222		No. 222
ENGLISH	SPINDLE ORIENT PROX OFF MALF.	P1
GERMAN	SPINDELORIENT ENDS.AUS FEHLER	P2
FRENCH	MALF INT OR BROCHE POS AR	P3
SPANISH	MALF PROX ORIEN-HUSILLO OFF	Occurrence
ITALIAN	MALF PROX ORIEN.MANDR OFF	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.SPILORIEN.-UIT	Status of Stop
SWEDISH	SPINDELORIENT DEF NLB FRAN	Feed hold
NORWAY	SPNDL.ORIENT.BRYTER AV FEIL	How to Release
		Turn on RESET after eliminating the cause.
223		No. 223
ENGLISH	ORIENT PIN RET PROX ON MALF.	P1
GERMAN	NICHT ORIENT ENDS.AN FEHLER	P2
FRENCH	MALF INT N-OR BROCHE POS MA	P3
SPANISH	MALF PROX PIN OREN HUSI ON	Occurrence
ITALIAN	MALF PROX ORIENT PIN RET ON	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.ORIENT-PEN-AAN	Status of Stop
SWEDISH	DEF NLB T FOR ORIENTSTIFT RET	Feed hold
NORWAY	ORIENT.BOLT BRYTER PAA FEIL	How to Release
		Turn on RESET after eliminating the cause.



No.	Message	Description
224	1 5 10 15 20 25 29	No. 224
ENGLISH	ORIENT PIN RET PROX OFF MALF.	P1
GERMAN	NICHT ORIENT ENDS.AUS FEHLER	P2
FRENCH	MALF INT N-OR BROCHE POS AR	P3
SPANISH	MALF PROX PIN ORIEN HUSI OFF	Occurrence
ITALIAN	MALF PROX ORIENT PIN RET OFF	Machine/high voltage panel
DUTCH	STOR NAB-SCH.ORIENT-PEN-UIT	Status of Stop
SWEDISH	DEF NLB F FOR ORIENTSTIFT RET	Feed hold
NORWAY	ORIENT.BOLT BRYTER AV-FEIL	How to Release
		Turn on RESET after eliminating the cause.
225		No. 225
ENGLISH	TOOL CLAMP PROX ON MALF.	P1
GERMAN	WZ.SPANNEN ENDS.AN FEHLER	P2
FRENCH	MALF INT BLOC OUTIL POS MA	P3
SPANISH	MALF PROX AMARRE UTIL ON	Occurrence
ITALIAN	MALF PROX BLOCCAGGIO UT.ON	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.GER.-KLEM-AAN	Status of Stop
SWEDISH	VERKTYG SPANNA DEF NLB TILL	Feed hold
NORWAY	VKT.LASS BRYTER PAA FEIL	How to Release
		Turn on RESET after eliminating the cause.
226		No. 226
ENGLISH	TOOL CLAMP PROX OFF MALF.	P1
GERMAN	WZ.SPANNEN ENDS.AUS FEHLER	P2
FRENCH	MALF INT BLOC OUTIL POS AR	P3
SPANISH	MALF PROX AMARRE UTIL OFF	Occurrence
ITALIAN	MALF PROX BLOCCAGGIO UT.OFF	Machine/high voltage panel
DUTCH	STOR.NAB-SCH.GER.-KLEM-UIT	Status to Release
SWEDISH	VERKTYG SPANNA DEF NLB FRAN	Feed hold
NORWAY	VKT.LAAS BRYTER AV FEIL	How to Release
		Turn on RESET after eliminating the cause.



No.	Message	Description
227	1 5 10 15 20 25 29	No. 227
ENGLISH	TOOL UNCLAMP PROX ON MALF.	With a tool clamped, the tool unclamping proximity switch did not turn off for 5 or more consecutive seconds after being commanded.
GERMAN	WZ ENTSPANNEN ENDS.AN FEHLER	P1
FRENCH	MALF INT DEBLOC OUTIL POS MA	P2
SPANISH	MALF PROX SOLTAR UTIL ON	P3
ITALIAN	MALF PROX SBLOCCAGGIO UT ON	Occurrence Machine/high voltage panel
DUTCH	STOR.NAB-SCH.GER.-ONTKL.-A	Status of Stop Feed hold
SWEDISH	VERKTYG LOSSA DEF NLB TILL	How to Release Turn on RESET after eliminating the cause.
NORWAY	VKT. LOS BRYTER PAA FEIL	
228		No. 228
ENGLISH	TOOL UNCLAMP PROX OFF MALF.	With a tool unclamped, the tool unclamping proximity switch did not turn on for 5 or more consecutive seconds after being commanded.
GERMAN	WZ ENTSPANNEN ENDS.AUS FEHLER	P1
FRENCH	MALF INT DEBLOC OUTIL POS AR	P2
SPANISH	MALF PROX SOLTAR UTIL OFF	P3
ITALIAN	MALF PROX SBLOCCAGGIO UT OFF	Occurrence Machine/high voltage panel
DUTCH	STOR.NAB-SCH.GER.-OUTKL.-U	Status of Stop Feed hold
SWEDISH	VERKTYG LOSSA DEF NLB FRAN	How to Release Turn on RESET after eliminating the cause.
NORWAY	VKT.LOS BRYTER AV FEIL	
229		No. 229
ENGLISH	HIGH GEAR PROX ON MALF.	With the gear shifted to the LOW or NEUTRAL position, the high-speed gear proximity switch did not turn off for 20 or more consecutive seconds after being commanded.
GERMAN	O-DREHZ.ENDS.AN FEHLER	P1
FRENCH	MALF INT SEL.GAMME M POS MA	P2
SPANISH	MALF PROX SELEC GAMA ALTA ON	P3
ITALIAN	MALF PROX GAMMA ALTA ON	Occurrence Machine/high voltage panel
DUTCH	STOR.NAB-SCH.H-GAMMA-AAN	Status of Stop Feed hold
SWEDISH	HOG VAXEL DEF NLB TILL	How to Release Turn on RESET after eliminating the cause.
NORWAY	HOYT GEAR BRYTER PAA FEIL	



No.	Message	Description	No.	230
230	1 5 10 15 20 25 29 ENGLISH HIGH GEAR PROX OFF MALF. GERMAN O-DREHZ.ENDS.AUS FEHLER FRENCH MALF INT SEL.GAMME M POS AR SPANISH MALF PROX SELEC GAMA ALTA OFF ITALIAN MALF PROX GAMMA ALTA OFF DUTCH STOR.NAB-SCH.H-GAMMA-UIT SWEDISH HOG VAXEL DEF NLB FRAN NORWAY HOYT GEAR BRYTER AV FEIL	With the gear shifted to the HIGH position, the high-speed gear proximity switch did not turn on for 20 or more consecutive seconds after being commanded. (The completion signal does not return while the gear stops being shifted on the way.)	No. P1 P2 P3 Occurrence Status of Stop How to Release	Machine/high voltage panel Feed hold Turn on RESET after eliminating the cause.
231	ENGLISH MIDDLE GEAR PROX ON MALF. GERMAN M-DREHZ.ENDS.AN FEHLER FRENCH MALF INT SEL.GAMME H POS MA SPANISH MALF PROX ESLEC GAMA MADIA ON ITALIAN MALF PROX GAMMA MEDIA ON DUTCH STOR.NAB-SCH.M-GAMMA-AAN SWEDISH MELLANVAXEL DEF NLB TILL NORWAY MIDTRE GEAR BRYTER PAA FEIL	With the gear shifted to the HIGH/LOW or NEUTRAL position, the middle-speed gear proximity switch did not turn off for 20 or more consecutive seconds after being commanded.	No. P1 P2 P3 Occurrence Status of Stop How to Release	Machine/high voltage panel Feed hold Turn on RESET after eliminating the cause.
232	ENGLISH MIDDLE GEAR PROX OFF MALF. GERMAN M-DREHZ.ENDS.AUS FEHLER FRENCH MALF INT SEL.GAMME H POS AR SPANISH MALF PROX SELEC GAMA MEDI OFF ITALIAN MALF PROX GAMMA MEDIA OFF DUTCH STOR.NAB-SCH.M-GAMMA-UIT SWEDISH MELLANVAXEL DEF NLB FRAN NORWAY MIDTRE GEAR BRYTER AV FEIL	With the gear shifted to the MIDDLE position, the middle speed gear proximity switch did not turn on for 20 consecutive seconds after being commanded. (The completion signal does not return while the gear stops being shifted on the way.)	No. P1 P2 P3 Occurrence Status of Stop How to Release	Machine/high voltage panel Feed hold Turn on RESET after eliminating the cause.



No.	Message	Description		
233	1 5 10 15 20 25 29		No.	233
ENGLISH	NEUTRAL GEAR PROX ON MALF.	With the gear shifted to the HIGH or LOW (or MIDDLE) position, the neutral gear proximity switch did not turn off for 20 or more consecutive seconds after being commanded.	P1	
GERMAN	NEUTRAL ENDS.AN FEHLER		P2	
FRENCH	MALF INT SEL.NEUFRE POS MA		P3	
SPANISH	MALF PROX SELEC GAMA NEU ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX GAMMA NEUTRA ON		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.N-GAMMA-AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	NEUTRAL VAXEL DEF NLB TILL			
NORWAY	NOYTRAL GEAR BRYTER PAA FEIL			
234			No.	234
ENGLISH	NEUTRAL GEAR PROX OFF MALF.	With the gear shifted (L → H, H → L) or to the NEUTRAL position, the neutral proximity switch did not turn on for 20 or more consecutive seconds after being commanded. (The completion signal does not return while the gear stops being shifted on the way.)	P1	
GERMAN	NEUTRAL ENDS.AUS FEHLER		P2	
FRENCH	MALF INT SEL.NEUFRE POS AR		P3	
SPANISH	MALF PROX SELEC GAMA NEU OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX GAMMA NEUTRA OFF		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.N-GAMMA-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	NEUTRAL VAXEL DEF NLB FRAN			
NORWAY	NOYTRAL GEAR BRYTER AV-FEIL			
235			No.	235
ENGLISH	LOW GEAR PROX ON MALF.	With the gear shifted to the HIGH or NEUTRAL (or MIDDLE) position, the low-speed gear proximity switch did not turn on for 20 or more consecutive seconds after being commanded.	P1	
GERMAN	U-DREHZ.ENDS.AN FEHLER		P2	
FRENCH	MALF INT SEL GAMME B POS MA		P3	
SPANISH	MALF PROX SELEC GAMA BAJA ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX GAMMA BASSA ON		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.L-GAMMA-AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	LAG VAXEL DEF NLB TILL			
NORWAY	LAVT GEAR BRYTER PAA FEIL			



No.	Message	Description	No.	
236	1 5 10 15 20 25 29		No.	236
ENGLISH	LOW GEAR PROX OFF MALF.	With the gear shifted to the LOW position, the low-speed gear proximity switch did not turn on for 20 or more consecutive seconds after being commanded. (The completion signal does not return while the gear stops being shifted on the way.)	P1	
GERMAN	U-DREHZ.ENDS.AUS FEHLER		P2	
FRENCH	MALF INT.SEL.GAMME B POS AR		P3	
SPANISH	MALF PROX SELEC GAMA BAJA OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX GAMMA BASSA OFF		Status of Stop	Feed hold
DUTCH	STOR NAB-SCH.L-GAMMA-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	LAG VAXEL DEF NLB FRAN			
NORWAY	LAVT GEAR BRYTER AV FEIL			
237			No.	237
ENGLISH	IND TABLE CLAMP PROX ON MALF.	With the index table unclamped, the index table clamping proximity switch did not turn off or 10 or more consecutive seconds after being commanded. (The fourth axis does not move.)	P1	
GERMAN	INDEXTISCH KLEM ES AN FEHLER		P2	
FRENCH	MALF INT BL TABLE INDX POS MA		P3	
SPANISH	MALF PROX AMAR MESA GIRA ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX BLOCC.TAVOLA ON		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.KL.DR-TAF-AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	INDEXBORD LASA DEF NLB TILL			
NORWAY	IND.BORD LAAS BRYTER PAA FEIL			
238			No.	238
ENGLISH	IND TABLE CLAMP PROX OFF MALF.	With the index table clamped, the index table clamping proximity switch did not turned on for 10 or more consecutive seconds after being commanded. (Neither X, Y nor Z axis moves.)	P1	
GERMAN	INDEXTISCH KLEM ES AUS FEHLER		P2	
FRENCH	MALF INT BL TABLE INDX POS AR		P3	
SPANISH	MALF PROX AMAR MESA GIRA OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX BLOCC.TAVOLA OFF		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.KL.DR-TAF-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	INDEXBORD LASA DEF NLB FRAN			
NORWAY	IND.BORD LAAS BRYTER AV FEIL			



No.	Message	Description	No.	
239	1 5 10 15 20 25 29		No.	239
ENGLISH	PALLET CLAMP PROX ON MALF.	With the pallet unclamped, the pallet clamping proximity switch did not turn off for 6 or more consecutive seconds after being commanded.	P1	
GERMAN	PALETTEN KLEM ES AN FEHLER		P2	
FRENCH	MALF INT BL PALLETTE POS MA		P3	
SPANISH	MALF PROX AMARRE PALLET ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX BLOCC PALLET ON		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH. KL.PALLET-AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	PALETTBORD LASA DEF NLB TILL			
NORWAY	PALETT LAAS BRYTER PAA-FEIL			
240			No.	240
ENGLISH	PALLET CLAMP PROX OFF MALF.	With the pallet clamped, the pallet clamping proximity switch did not turn on for 6 or more consecutive seconds after being commanded. (The completion signal does not return while the operation of clamping the pallet is not completed.)	P1	
GERMAN	PALETTEN KLEM ES AUS FEHLER		P2	
FRENCH	MALF INT BL PALLETTE POS AR		P3	
SPANISH	MALF PROX AMARRE PALLET OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX BLOCC PALLET OFF		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.KL.PALLET-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	PALETTBORD LASA DEF NLB FRAN			
NORWAY	PALETT LAAS BRYTER AV FEIL			
241			No.	241
ENGLISH	PALLET UNCLAMP PROX ON MALF.	With the pallet clamped, the pallet unclamping proximity switch did not turn off for 6 or more consecutive seconds after being commanded.	P1	
GERMAN	PALETTEN ENTSPA ES AN FEHLER		P2	
FRENCH	MALF INT.DEBL PALLET POS MA		P3	
SPANISH	MALF PROX SOLTER PALLET ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX SBLOCC.PALLET ON		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.ONTKL.PAL.-A		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	LOSSA PALETTBORD DEF NLB TILL			
NORWAY	PALETT LOS BRYTER PAA FEIL			



No.	Message	Description	No.	242
242	1 5 10 15 20 25 29		No.	242
ENGLISH	PALLET UNCLAMP PROX OFF MALF.	With the pallet unclamped, the pallet unclamping proximity switch did not turned on for 6 or more consecutive seconds after being commanded. (The completion signal does not return while the operation of unclamping is not completed.)	P1	
GERMAN	PALETTEN ENTSPA ES AUS FEHLER		P2	
FRENCH	MALF INT DEBL PALLET POS AR		P3	
SPANISH	MALF PROX SOLTAR PALLET OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX SBLOCC.PALLET OFF		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.OUTKL.PAL.-U		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	PALETT LOSSA DEF NLB FRAN			
NORWAY	PALETT LOS BRYTER AV FEIL			
243			No.	243
ENGLISH	SPINDLE RPM MALF.	Within 3. seconds of giving the SPINDLE RUN command, the SPINDLE SPEED ZERO (SZ) signal was detected. Or the SPINDLE SPEED ZERO (SZ) signal was detected while the spindle was running.	P1	
GERMAN	SPINDEL-DREHZAHL FEHLER		P2	
FRENCH	MALF VITESSE DE BROCHE		P3	
SPANISH	MALF REVOLUCIONES HUSILLO		Occurrence	Machine/high voltage panel
ITALIAN	MALF ROTAZIONE MANDRINO		Status of Stop	Feed hold
DUTCH	STORING SPILSUELHEIDSBEREIK		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	DEF SPINDELVARVTAL			
NORWAY	PINDELTURT.FEIL			
244			No.	244
ENGLISH	ORIENT MALF. 1	With no command, the ORIENT ALIVE signal appeared.	P1	
GERMAN	SPINDELORIENTIERUNG FEHLER 1		P2	
FRENCH	MALF ORIENT.1		P3	
SPANISH	MALF ORIENTACION HUSILLO 1		Occurrence	Machine/high voltage panel
ITALIAN	MALF ORIENTAM.MANDRIND 1		Status of Stop	Feed hold
DUTCH	STORING SPILORIENTATIE 1		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	ORIENTERING DEFECT 1			
NORWAY	ORIENT.FEIL 1			



[illegible]



No.	Message	Description	No.	
248	1 5 10 15 20 25 29		248	
ENGLISH	ATC ARM VALVE OFF MALF.	Both arm-retracting and -extending solenoid valves turned off. (CRT display only)	P1	
GERMAN	ATC ARM VENTIL ES AUS FEHLER		P2	
FRENCH	MALF SOL.BRAS CHANG.POS AR		P3	
SPANISH	MALF SOL BRAZO CAMBIADOR OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF ELETTRIVALV.BRACCIO OFF		Status of Stop	Feed hold
DUTCH	STOR.GER-WISSELARMVENT.-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	VAXLARARM DEF VENTIL FRAN			
NORWAY	VKT.ARM VENTIL AV FEIL			
249			249	
ENGLISH	DRUM OR TABLE MOTOR MALF.	An alarm signal was given by the magazine controller. Or the table motor became overheated. (Discontinuance on the way)	P1	
GERMAN	MAGAZIN ODER INDEXTISCH MOTOR		P2	
FRENCH	MALF MAGAS.OUT OU MOT TABLE		P3	
SPANISH	MALF MOTOR DE TAMBOR O DE MESA		Occurrence	Machine/high voltage panel
ITALIAN	MALF MOTORE TAMBORO O TAVOLA		Status of Stop	Feed hold
DUTCH	STORING MAG-OF TAFFLMOTOR		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	MOTOR FOR MAGAS EL BORD DEF			
NORWAY	TRML ELR BORD MOTORFEIL			
250			250	
ENGLISH	ARM HOME POSIT PROX ON MALF.	With the arm standing by or extended, the stationary proximity switch did not turn off for 5 or more consecutive seconds after being commanded.	P1	
GERMAN	ARM ENDPOS.ENDS.AN FEHLER		P2	
FRENCH	MALF INT LOCAL BRAS POS MA		P3	
SPANISH	MALF PROX BRAZO REPOSO ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX BRACCIO RIPOSO ON		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.EINDP.ARM-AAN		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	NLB FOR VAXLARA UTGANGSL DEF			
NORWAY	ARM REF.PKT.BRYTER PAA FEIL			



No.	Message	Description	No.	
251	1 5 10 15 20 25 29		No.	251
ENGLISH	SPINDL MOTOR CONTROLLER MALF.	An alarm signal was given by the spindle controller.	P1	
GERMAN	SPINDELMOTOR KONTROLLER ALARM		P2	
FRENCH	MALF CONTR.MOTEUR BROCHE		P3	
SPANISH	MALF CONTROLAD.MOTOR HUSILLO		Occurrence	Machine/high voltage panel
ITALIAN	MALF CONTROLLO MOTORE MANDR		Status of Stop	Feed hold
DUTCH	STORING SPILMOTORBESTURING		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	STYRNING SPINDELMOTOR DEF			
NORWAY	SPINDEL MOTOR KONTROLLER FEIL			
252			No.	252
ENGLISH	MACHINE FUSE MALF.	The circuit protector turned off or the power circuit fuse blew out. (First 20 VQC models only)	P1	
GERMAN	MASCHINEN SICHERUNGEN ALARM		P2	
FRENCH	DEFAILLANCE FUSIBLE MACHINE		P3	
SPANISH	FUSIBLE MAQUINA		Occurrence	Machine/high voltage panel
ITALIAN	MALF FUSIBILI MACCNINA		Status of Stop	Feed hold
DUTCH	STORING MACHINESMELTVEILIGH		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	DEF MASKINSÄKRING			
NORWAY	MASKIN SIKR.FEIL			
253			No.	253
ENGLISH	MOTOR THERM. TRIP MACH.-FUSE	The motor thermal relay (OL) tripped or the protector tripped. (A machine fuse alarm is also included.)	P1	
GERMAN	MOTOR ÜBERHITZUNG, SICHERUNG		P2	
FRENCH	DECL.PROT.THERM, FUSIBLE		P3	
SPANISH	DESCONEXION TERMICO MOTOR		Occurrence	Machine/high voltage panel
ITALIAN	PROTEZIONE TERMICA MOTORE		Status of Stop	Feed hold
DUTCH	STORING THERMOST RELATS MOTOR		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	TERMOUTLOSNING MOTOR			
NORWAY	MOTOR TERMOVERN MASKIN SIKR.			





No.	Message	Description
257	1 5 10 15 20 25 29 ENGLISH MAIN TRANSFORMER OVERHEAT GERMAN HAUPT TRANSFORMAT.UEBERHITET FRENCH SURCHAUF,TRANSFO.PRINCIPAL SPANISH SOBRE-TEMP.TRANSFORMAOR ITALIAN SOVRATEMP.TRASFORM.PRINCIP. DUTCH OVERHITTING VAN HOOFDTRANSFO SWEDISH OVERHETTNING HUVUDTRANSF NORWAY HOVEDTRANSFORMATOR OVERHETET	The main power trans- former overheated to 120°C or more, or the intra- panel temperature rose to 55°C or more.
		No. 257
		P1
		P2
		P3
		Occurrence Machine/high voltage panel
		Status of Stop Feed hold
		How to Release Turn on RESET after eliminating the cause.
258	ENGLISH HD DRIVE MALF. (MAGAZINE) GERMAN HD SERVO ALARM (MAGAZIN) FRENCH CH ALARME SERVO MAGASIN SPANISH MAL ACCION.CABEZAL (ALMACEN) ITALIAN MALF SERVO IDRAV (MAGAZZINO) DUTCH HD SERVO-ALARM (MAGAZIJN) SWEDISH HD DEF DRIVNING (MAGASIN) NORWAY HD SERVOALARM (MAGASIN)	An alarm signal was given by the magazine controller (HD control- ler).
		No. 258
		P1
		P2
		P3
		Occurrence Machine/high voltage panel
		Status of Stop Feed hold
		How to Release Turn on RESET after eliminating the cause.
259	ENGLISH PS DRIVE MALF. (INDEX T) GERMAN PS SERVO ALARM (INDEX) FRENCH PS ALARME SERVO INDEX SPANISH MAL ACCION M PS (DIVISION,T) ITALIAN PS ALLARME SERVO (TAV.INDEX) DUTCH PS SERVO-ALARM (DRAAITAFEL) SWEDISH PS DEF DRIVNING (INDEX) NORWAY PS SERVO FEIL (INDEKS)	The table motor (PS motor) overheated.)
		No. 259
		P1
		P2
		P3
		Occurrence Machine/high voltage panel
		Status of Stop Feed hold
		How to Release Turn on RESET after eliminating the cause.





No.	Message	Description	No.	263
263	1 5 10 15 20 25 29		No.	263
ENGLISH	T-MEAS. STAND IN RS ON MALF.	Although the arm returned, the arm retracting proximity switch did not turn off for 5 or more consecutive seconds after being commanded.	P1	
GERMAN	WZ MESSTAND EIN RR AN FEHLER		P2	
FRENCH	MALF INT RETR DISP MESUPOS MA		P3	
SPANISH	MALF INT DIS MEDI DENTRO ON		Occurrence	Machine/high voltage panel
ITALIAN	MALF DISP MISURA UT ON (INT)		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH INZW.MTSTD-A		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	NLB T MATSTATIV IN DEF TILL			
NORWAY	V-MAALING INNE RS PAA FEIL			
264			No.	264
ENGLISH	T-MEAS. STAND IN RS OFF MALF.	Although the arm returned, the arm retracting proximity switch did not turn on for 5 or more consecutive seconds after being commanded.	P1	
GERMAN	WZ MESSTAND EIN RR AUS FEHLER		P2	
FRENCH	MALF INT RETR DISP MESUPOS AR		P3	
SPANISH	MALF INT DIS MEDI DENTRO OFF		Occurrence	Machine/high voltage panel
ITALIAN	MALF DISP MISURA UT OFF(IN)		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH INZW.MTSTD-U		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	NLB T MATSTATIV IN DEF FRAN			
NORWAY	V-MAALING INNE RS AV FEIL			
265			No.	265
ENGLISH	MMS MALF.	A certain fault occurred in the MMS unit and necessary signals were not given.	P1	
GERMAN	MAZAK MESS SYSTEM ALARM		P2	
FRENCH	DEFAILLANCE DISPOS.DE MESURE		P3	
SPANISH	MALF SISTEMA DE MEDISION MAZAK		Occurrence	Machine/high voltage panel
ITALIAN	MALF DISP DI MISURA		Status of Stop	Feed hold
DUTCH	STORING MMS		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	MMS DEF			
NORWAY	MMS FEIL			

[illegible]





No.	Message	Description	No.	
269	1 5 10 15 20 25 29		No.	269
ENGLISH	PALLET DOOR ALARM	The pallet door did not open and close properly.	P1	
GERMAN	PALLETEN TUR ALARM		P2	
FRENCH	ALARME PALETTE PORTE		P3	
SPANISH	ALARMA P-PALLET		Occurrence	Machine/high voltage panel
ITALIAN	ALLARME PORTA PALLET		Status of Stop	Feed hold
DUTCH	PALLETDEUR-ALARM		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	ALARM PALETTDORR			
NORWAY	PALETT DOR ALARM			
270			No.	270
ENGLISH	PALLET CHANGER ALARM	The pallet door developed a fault during changing position.	P1	
GERMAN	PALLETEN WECHSEL ALARM		P2	
FRENCH	ALARME PALETTE CHANGER		P3	
SPANISH	ALARMA CAMBIO PALLET		Occurrence	Machine/high voltage panel
ITALIAN	ALLARME CAMBIO PALLET		Status of Stop	Feed hold
DUTCH	PALLETWISSEL-ALARM		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	ALARM PALETTVAXLARE			
NORWAY	PALETT SKIFTER ALARM			
271			No.	271
ENGLISH	MAGZN CVR CLOSE PROX ON FLT	Although the magazine cover opened, the magazine cover closing proximity switch did not turned off for 5 or more consecutive seconds after being commanded.	P1	
GERMAN	MAGZN ABDECK.GESCHL.ENDS.AN		P2	
FRENCH	DETECT.PROX.DEFECT.PORTE FERM		P3	
SPANISH	MAL SENSOR CERRAR ALMACEN I		Occurrence	Machine/high voltage panel
ITALIAN	MALF PROX SPORTELO MAGAZZ.ON		Status of Stop	Feed hold
DUTCH	STOR.NAB-SCH.SL-MAG-DEUR-A		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	MAGASINSKAPA STANGA NLB T DEF			
NORWAY	MAG.DEKSEL LUKKET BRYTER PAA			





No.	Message	Description	No.	
275	1 5 10 15 20 25 29		275	
ENGLISH	SPINDLE TOOL DETECTOR OFF	Although the spindle tool number was set to "0", a tool was detected in the spindle during loading a tool. (CRT display only)	P1	
GERMAN	SPINDEL W.K.Z.DETektor.AUS		P2	
FRENCH	DETECT.D'OUTIL BROCHE ARRET.		P3	
SPANISH	DETECTOR UTIL HUSILLO O		Occurrence	Machine/high voltage panel
ITALIAN	RIVELATORE UT.MANDRINO OFF		Status of Stop	Feed hold
DUTCH	SPILGEREEDSCH.DETECTOR-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	SPINOELVERKTYG AVKANNARE FRAN			
NORWAY	SPINDEL VKT.DETektor AV			
276			No.	276
ENGLISH	MAGAZINE TOOL DETECTOR OFF	During unloading a tool, another tool was found in the pocket to which the former was to be returned. (CRT display only)	P1	
GERMAN	MAGZN.W.K.Z.DETektor.AUS		P2	
FRENCH	DETECT.D'OUTIL MAGASIN ARRET.		P3	
SPANISH	DETECTOR UTIL ALMACEN O		Occurrence	Machine/high voltage panel
ITALIAN	RIVELATORE UT.MAGAZZ.OFF		Status of Stop	Feed hold
DUTCH	MAG.GEREEDSCH.DETECTOR-UIT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	MAGASINSVERKTYG AVKANNARE F			
NORWAY	MAGASIN VKT.DETektor AV			
277			No.	277
ENGLISH	TOOL LIFE OVER (FH PB)	The cumulative service hours of a tool have exceeded the service life of that tool.	P1	
GERMAN	ZU ZIELE WERKZ.STAND(FH PB)		P2	
FRENCH	DEPASS.VIE DE L'OUT.(FH PB)		P3	
SPANISH	PASA EL VIDA DEL UTIL (FH PB)		Occurrence	Machine/high voltage panel
ITALIAN	ECCESS.TEMPO VITA UTEN(FH PB)		Status of Stop	Single block
DUTCH	LEV.GEREEDSCH.OVERSCH(FH PB)		How to Release	Turn on FHD and RESET after eliminating the cause.
SWEDISH	FOR STORT INGREPPSTID (FH PB)			
NORWAY	FOR MANGE ST.TID(FH PB)			



No.	Message	Description
278	1 5 10 15 20 25 29	No. 278
ENGLISH	TOOL BREAKAGE (FH PB)	(1) A tool is found broken as the result of performing the tool breakage detecting operation with M35 commanded in the automatic operation mode.
GERMAN	WERKZEUGSCHADEN (FH PB)	(2) A tool already broken has been set on the spindle (on an ATC basis).
FRENCH	DOMMAGE D'OUTIL (FH PB)	
SPANISH	AVERIA UTIL (FH PB)	
ITALIAN	MALFUNZIONAM.UTENSILE(FH PB)	
DUTCH	GEREEDSCHAP-STORING (FH PB)	
SWEDISH	VERKTYGS BROTT (FH PB)	
NORWAY	VERKTOYBRUDD (FH PB)	
279		No. 279
ENGLISH	TOOL NO DATA FALT	A discrepancy existed between the next tool number data during the preceding automatic tool change process and the number data of a tool currently being changed.
GERMAN	FEHLER VON WERKZEUGDATEN	
FRENCH	DONN.ERR DS UNITE COMES T	
SPANISH	ERROR DATOS EN NO.UTIL	
ITALIAN	ERRORE DATI UTENSILI	
DUTCH	FOUTIEF GEREEDSCHAPSNUMMER	
SWEDISH	DATAFFL VERKTYGSNUMMER	
NORWAY	FEIL VKT.NUMMER DATA	
280		No. 280
ENGLISH	TOOL UNCLAMP MISSOPER.	In the automatic operation mode or with the SJOG or spindle run push-button depressed or not in the ORIENT mode, the tool unclamping switch turned on.
GERMAN	W.K.Z.ENTSCHP.FALSCH BEDIE.	This alarm can be turned off by turning on the FEED HOLD switch after turning off the tool unclamping switch or by using the RESET button.
FRENCH	MAUVA.OPERA.D'INCRAMPON D'OUT	
SPANISH	MAL-FUN.SOLTAR UTIL	
ITALIAN	MANCANZA SBLOCCAGGIO UTENSILE	
DUTCH	FOUT.BEDIEN.GER-ONTKLEMING	
SWEDISH	VERKTYG LOSSA FELFUNKTION	
NORWAY	FEILBETJENING VERKTOY LOS	



No.	Message	Description	No.	281
281	1 5 10 15 20 25 29		No.	281
ENGLISH	SPINDLE START MISSOPER.	With the gear shifted to the NEUTRAL position, the spindle started. This alarm can be turned off by turning on the FEED HOLD switch or by using the RESET button.	P1	
GERMAN	SPINDEL START FALSCH BEDIE.		P2	
FRENCH	MAUVA.OPERA.DE DEPART DE BROCH		P3	
SPANISH	MAL-FUN.COMIENZO CICLO		Occurrence	Machine/high voltage panel
ITALIAN	MANCANZA START MANDRINO		Status of Stop	Feed hold
DUTCH	FOUT SPILSTART-BEDIENING		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	FELFUNKTION SPINDEL START			
NORWAY	FEILBETJENING SPINDEL START			
282			No.	282
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
283			No.	283
ENGLISH	TOOL CHANGE MISSOPER.	To change a tool manually, the Z-axis was not available at the zero point (V series) or the Y-axis was not available at the zero point. (H series) This alarm can be turned off by turning on the FEED HOLD switch or by using the RESET button.	P1	
GERMAN	W.K.Z.WECHSEL FALSCH BEDIE.		P2	
FRENCH	MAUVA.OPERA.DE CHANG.D'OUTIL		P3	
SPANISH	MAL CAMBIO UTIL		Occurrence	Machine/high voltage panel
ITALIAN	MANCANZA CAMBIO UTENSILE		Status of Stop	Feed hold
DUTCH	FOUT.BEDIEN.GER-WISSEL		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	FELFUNKTION VERKTYGSVAXLING			
NORWAY	FEILBETJENING VERKTOYSKIFTING			



No.	Message	Description
284	1 5 10 15 20 25 29	No. 284
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
285		No. 285
ENGLISH	SPECIAL TOOL MISSOPER.	P1
GERMAN	SPEZIEL W.K.Z.FALSCH BEDIE	P2
FRENCH	MAUVA.OPERA.D'OUTIL SPECIAL	P3
SPANISH	MAL CAMBIO UTIL ESPECIAL	Occurrence
ITALIAN	MANCANZA CAMBIO UT SPECIALE	Machine/high voltage panel
DUTCH	FOUT.BEDIEN.SPEC.GEREEDSCH	Status of Stop
SWEDISH	FELFUNKTION SPECIALVERKTYG	Feed hold
NORWAY	FEILBETJENING SPESIALVERKTOY	How to Release
		Turn on RESET after eliminating the cause.
286		No. 286
ENGLISH	PALLET CHANGE MISSOPER.	P1
GERMAN	PALLET WECHSEL FALSCH BEDIE	P2
FRENCH	MAUVA.OPERA.DE CHANG.DE PALLET	P3
SPANISH	MAL CAVBIO PALLET	Occurrence
ITALIAN	MANCANZA CAMBIO PALLET	Machine/high voltage panel
DUTCH	FOUT.BEDIEN.PALLETWISSEL	Status of Stop
SWEDISH	FELFUNKTION PALETTVAXLARE	Feed hold
NORWAY	FEILBETJENING PALETTSKFTING	How to Release
		Turn on RESET after eliminating the cause.



No.	Message	Description	No.	
287	1 5 10 15 20 25 29		287	
ENGLISH	ZERO RETURN MISSOPER.	Without all axes returning to the zero point after switching on or making a machine emergency stop the STL push button was depressed. This alarm can be turned off by returning all axes to their zero points.	P1	
GERMAN	NULL ZURUCK FALSCH BEDIE.		P2	
FRENCH	MAUVA.OPERA.DE RETOUR AU ZERO		P3	
SPANISH	EJES NO ESTAN A CERO		Occurrence	Machine/high voltage panel
ITALIAN	MANCANZA RITORNO A ZERO		Status of Stop	Feed hold
DUTCH	FOUT.NULPUNTAANVARING		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	NOLLPUNKT RET FELFUNKTION			
NORWAY	FEILBETJENING RETUR NULLPUNKT			
288			No.	288
ENGLISH	PLUS MOTION MISSOPER.	After switching on or making a machine emergency stop, the spindle was made to run in the positive direction without being moved in the negative direction. (VQC and HQC only) This alarm can be turned off by turning on the FEED HOLD switch or by the RESET switch.	P1	
GERMAN	PLUS RICHTUNG FALSCH BEDIE.		P2	
FRENCH	MAUVA.OPERA DE MOUVEMENT POSIT		P3	
SPANISH	MAL-FUN.DIRECCION+		Occurrence	Machine/high voltage panel
ITALIAN	MANCANZA MOVIMENJO+		Status of Stop	Feed hold
DUTCH	FOUT.VERPLAATS.PLUS-RICHT		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	PLUSRORELSE FELFUNKTION			
NORWAY	FEILBETJENING PLUSS BEVEGELSE			
289			No.	289
ENGLISH	INDEX COMMAND MISSOPER.	Although 5° indexing was specified, no degree other than 5° was specified. (H series) This alarm can be turned off by turning on the FEED HOLD switch or by the RESET button.	P1	
GERMAN	INDEX BEFEHL FALSCH BEDIE.		P2	
FRENCH	MAUVA.OPERA.DE COMMANDE D'OUT.		P3	
SPANISH	VALOR DIVISION ERRONEO		Occurrence	Machine/high voltage panel
ITALIAN	MANCANZA COMANDE INDEX		Status of Stop	Feed hold
DUTCH	FOUT.BEDIENING INDEX		How to Release	Turn on RESET after eliminating the cause.
SWEDISH	INDEXORDER FELFUNKTION			
NORWAY	FEILBETJENING INDEKSKOMMANDO			



No.	Message	Description
290	1 5 10 15 20 25 29	No. 290
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
291		No. 291
ENGLISH	TOOL INTERLOCK MISSOPER.	P1
GERMAN	W.K.Z.VERBLOK FALSCH BEDIE.	P2
FRENCH	MAUVA.OPERA.D'ENGRENAGE D'OUT	P3
SPANISH	MAL-FUN.BLOQUEO UTIL	Occurrence
ITALIAN	MANCANZA INTERBL.UTENSILE	Machine/high voltage panel
DUTCH	FOUT.BEDIEN.GER.GREND-INR.	Status of Stop
SWEDISH	VERKTYGSBLOCKERING FELFUNKT	Feed hold
NORWAY	FEILBETJENING VKT.FORRIGLING	How to Release
		Turn on RESET after eliminating the cause.
292		No. 292
ENGLISH	TOOL SELECT MISSOPER.	P1
GERMAN	W.K.Z.WAHREN FALSCH BEDIE.	P2
FRENCH	MAUVA.OPERA.DE SELECT.D'OUTIL	P3
SPANISH	MAL-FUN.SELEC.UTIL	Occurrence
ITALIAN	MANCANZA SELEZIONE UTENSILE	Machine/high voltage panel
DUTCH	FOUT.BEDIEN.GEREEDSCH-KEUZE	Status of Stop
SWEDISH	VERKTYGSFAL FELFUNKTION	Feed hold
NORWAY	FEILBETJENING VERKTOYVALG	How to Release
		Turn on RESET after eliminating the cause.





No.	Message	Description
293	1 5 10 15 20 25 29	No. 293
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
294		No. 294
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
295		No. 295
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release



No.	Message	Description
296	1 5 10 15 20 25 29	No. 296
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
297		No. 297
ENGLISH	EXTERNAL MISSOPR. NO.1	P1
GERMAN	FALSCH BEDINUNG AUSSERHAL NR.1	P2
FRENCH	MAUVA.OPERA.DU DEHORS NO.1	P3
SPANISH	MAL-FUN.EXTERIOR NO.1	Occurrence
ITALIAN	MANCANZA ESTERNA NO.1	Machine/high voltage panel
DUTCH	FOUT.EXTERNE BEDIEN.NR.1	Status of Stop
SWEDISH	EXTERN FELOPERATION NR.1	Feed hold
NORWAY	FEILBETJENING EKSTERNT NR.1	How to Release
		Turn on RESET after eliminating the cause.
298		No. 298
ENGLISH	EXTERNAL MISSOPR. NO.2	P1
GERMAN	FALSCH BEDINUNG AUSSERHAL NR.2	P2
FRENCH	MAUVA.OPERA.DU DEHORS NO.2	P3
SPANISH	MAL-FUN.EXTERIOR NO.2	Occurrence
ITALIAN	MANCANZA ESTERNA NO.2	Machine/high voltage panel
DUTCH	FOUT.EXTERNE BEDIEN.NR.2	Status of Stop
SWEDISH	EXTERN FELOPERATION NR.2	Feed hold
NORWAY	FEILBETJENING EKSTERNT NR.2	How to Release
		Turn on RESET after eliminating the cause.

[illegible]



No.	Message	Description	No.	
300	1 5 10 15 20 25 29		No.	300
ENGLISH	SYSTEM ERROR	This error occurs during processing inside the system. It may happen when a complicated process is being performed, because the CPU has a limited capability.	P1	Error information
GERMAN	SYSTEM FEHLER		P2	"
FRENCH	ERREUR SYSTEME		P3	"
SPANISH	ERROR DEL SISTEMA		Occurrence	Interior of system
ITALIAN	ERRORE DEL SISTEMA		Status of Stop	Block stop
DUTCH	SYSTEEM FOUT		How to Release	Depress CANCEL button.
SWEDISH	SYSTEMFEL			
NORWAY	SYSTEM FEIL			
301			No.	301
ENGLISH	PROGRAM NOT ON FILE	With an unregistered work program number specified, the automatic operation start was commanded. Or a check was attempted on a graphic picture.	P1	
GERMAN	PROGRAMM NICHT GESPEICHERT		P2	
FRENCH	PROGRAMME NON ENREGISTRE		P3	WNO.
SPANISH	NO REGISTRADO EL PROGRAMA		Occurrence	Machining program
ITALIAN	PROGRAMMA NON REGISTRATO		Status of Stop	Block stop
DUTCH	PROGRAMMA NIET IN REGISTER		How to Release	Depress CANCEL button.
SWEDISH	PROGRAM INTE I FIL			
NORWAY	PROGRAM IKKE LAGRET			
302			No.	302
ENGLISH	NO PITCH IN MULTI WORKPIECES	Although many work pieces are machined in a command unit, no pitch was specified.	P1	
GERMAN	KEIN ABSTAND BEI MEHR.THILE		P2	UNO.
FRENCH	PAS DE DIST.ENTR.PCES MULT.		P3	WNO.
SPANISH	ERROR DATOS PIEZAS MULTIPLES		Occurrence	Machining program
ITALIAN	MANCA IL PASSO LAV.MULTIPLO		Status of Stop	Block stop
DUTCH	GEEN AFSTAND IN MEERV.WERKST		How to Release	Depress CANCEL button.
SWEDISH	INGEN DELN VID FLARBETSSTYCK			
NORWAY	INGEN AVST.VED MULTI ABBSTK.			



No.	Message	Description
303	1 5 10 15 20 25 29	No. 303
ENGLISH	NO TOOL DATA IN PROGRAM	The machining program
GERMAN	KEINE WERKZEUG DATEN IN PROG.	contained the unit with
FRENCH	PROGR.NE CONT.PAS INF.OUT	no tool development data.
SPANISH	PROGRAM SIN INFOR DE UTILES	No. TSNO.
ITALIAN	MANCANO DATI UT NEL PROGRAM	P2 UNO.
DUTCH	PROGR.ZONDER GEREEDSCH GEG	P3 WNO.
SWEDISH	INGA VERKTYGSDATA I PROGRAM	Occurrence Machining program
NORWAY	INGEN VKT.DATA I PROGRAM	Status of Stop Block stop
		How to Release Depress CANCEL button.
304		No. 304
ENGLISH	NO FIGURE IN PROGRAM	The machining program has
GERMAN	OHNE FIGUR IN PROGRAMM	contained the unit with
FRENCH	PAS DE FIGURE DANS PROGRAMME	no shape specification
SPANISH	FALTA INFOR CONFIG EN PROG.	data.
ITALIAN	MANCA LA FIGURA NEL PROGRAMMA	No. UNO.
DUTCH	GEEN FIG-BESCHR.IN PROGRAMMA	P2 UNO.
SWEDISH	INGEN BILD I PROGRAM	P3 WNO.
NORWAY	PROGRAM MANGLER TALL-DATA	Occurrence Machining program
		Status of Stop Block stop
		How to Release Depress CANCEL button.
305		No. 305
ENGLISH	MISSING INPUT DATA (POINT)	In a spot machining unit,
GERMAN	FEHLT DATEN (PUNKT)	insufficient unit data
FRENCH	MANQUE D'INFORMATION(POINT)	was inputted.
SPANISH	FALTA DE INFORMACION(PUNTOS)	No. UNO.
ITALIAN	MANC DATI INGRESSO(PUNTO)	P2 UNO.
DUTCH	FOUTIEVE INGAVE(PUNT-BEW.)	P3 WNO.
SWEDISH	INGANGSDATA SAKNS(PUNKT)	Occurrence Machining program
NORWAY	MANGLENDE INPUT DATA(PUNKT)	Status of Stop Block stop
		How to Release Depress CANCEL button.



No.	Message	Description			
306	1 5 10 15 20 25 29	In a linear machining unit, insufficient unit data was inputted.	No.	306	
ENGLISH	MISSING INPUT DATA (LINE)		P1		
GERMAN	FEHLT DATEN (LINIE)		P2	UNO.	
FRENCH	MANQUE D'INFORMATION (LIGNE)		P3	WNO.	
SPANISH	FALTA DE INFORMACION (LINEA)		Occurrence	Machining program	
ITALIAN	MANC DATI INGRESSO (LINEA)		Status of Stop	Block stop	
DUTCH	FOUTIEVE INGAVE (LIJN-BEW)		How to Release	Depress CANCEL button.	
SWEDISH	INGANGSDATA SAKNAS (RAT)				
NORWAY	MANGLENDE INPUT DATA (LINJE)				
307		In a plane machining unit, insufficient unit data was inputted.	No.	307	
ENGLISH	MISSING INPUT DATA (FACE)		P1		
GERMAN	FEHLT DATEN (FLACH)		P2	UNO.	
FRENCH	MANQUE D'INFORMATION (FACE)		P3	WNO.	
SPANISH	FALTA DE INFORMACION (PLANEA)		Occurrence	Machining program	
ITALIAN	MANC.DATI INGRESSO (FACCIA)		Status of Stop	Block stop	
DUTCH	FOUTIEVE INGAVE (VLAK-BEW)		How to Release	Depress CANCEL button.	
SWEDISH	INGANGSDATA SAKNAS (YTA)				
NORWAY	MANGLENDE I NPUT DATA (PLAN)				
308		In a spot machining unit, insufficient tool development data was inputted.	No.	308	
ENGLISH	MISSING TOOL DATA FOR POINT		P1		
GERMAN	FEHLT DATEN DER W.K.Z (PUNKT)		P2	UNO.	
FRENCH	MANQUE D'INFORM OUTIL (POINT)		P3	WNO.	
SPANISH	FALTA INFOR UTIL MECA.PUNTOS		Occurrence	Machining program	
ITALIAN	MANC.DATI UTENS (PUNTO)		Status of Stop	Block stop	
DUTCH	ONTBR GERSCH-GEDEV.PUNT-BEW.		How to Release	Depress CANCEL button.	
SWEDISH	VERKTYGSDATA SAKNAS FOR PUNKT				
NORWAY	MANGLENDE VKT.DATA FOR PUNKT				



No.	Message	Description	No.	
309	1 5 10 15 20 25 29 ENGLISH MISSING TOOL DATA FOR LINE GERMAN FEHLT DATEN DER W.K.Z(LINIE) FRENCH MANQUE D'INFORM.UTIL(LIGNE) SPANISH FALTA INFOR UTIL MECA.LINEA ITALIAN MANC.DATI UTENS(LINEA) DUTCH ONTBR.GERSCH-GEDEV.LIJN-BEW SWEDISH VERKTYGSDATA SAKNAS FOR RAT NORWAY MANGLENDE VKT.DATA FOR LINJE	In a linear machining unit, insufficient tool development data was inputted.	No.	309
			P1	
			P2	UNO.
			P3	WNO.
			Occurrence	Machining program
			Status of Stop	Block stop
			How to Release	Depress CANCEL button.
310	ENGLISH MISSING TOOL DATA FOR FACE GERMAN FEHLT DATEN DER W.K.Z(FLACH) FRENCH MANQUE D'INFORM.UTIL(FACE) SPANISH FALTA INFOR UTIL MECA.PLANO ITALIAN MANC.DATI UTENS (FACCIA) DUTCH ONTBR.GERSCH-GEDEV.VLAK-BEW. SWEDISH VERKTYGSDATA SAKNAS FOR PLAN NORWAY MANGLENDE VKT.DATA FOR PLAN	In a plane machining unit, insufficient tool development data was inputted.	No.	310
			P1	TSNO.
			P2	UNO.
			P3	WNO.
			Occurrence	Machining program
			Status of Stop	Block stop
			How to Release	Depress CANCEL button.
311	ENGLISH WPC UNIT INCOMPLETE GERMAN AGP EINH NICHT VOLLSTAENDIG FRENCH UNITE DE CDP INCOMPLETE SPANISH ERROR DATOS UNI.COORDENADAS ITALIAN FASE PEZZO INCOMPLETA DUTCH WSK-EENHELD NIET VOLLEDIG SWEDISH OFULLSTANDIG KOORDINATENHET NORWAY GRUNNL.KOORDSYST.UFULLST.	In the FRM (fundamental coordinate system setting) unit, insufficient unit data was inputted.	No.	311
			P1	
			P2	UNO.
			P3	WNO.
			Occurrence	Machining program
			Status of Stop	Block stop
			How to Release	Depress CANCEL button.



No.	Message	Description	No.	312
312	1 5 10 15 20 25 29		No.	312
ENGLISH	SUB PROGRAM OVER NESTING	Subprograms were over-nested. (Nesting is limited to two.)	P1	
GERMAN	UNTERPROGRAMM NESTING VOLL		P2	
FRENCH	DEPAS.CAP.ARRANG.PROG.AUX		P3	WNO.
SPANISH	MEMORIA SATURADA		Occurrence	Machining program
ITALIAN	ANNIDAMENTO SOTTOPR.PIENO		Status of Stop	Block stop
DUTCH	STAPELGEH.SUB-PROGR.OVERLAD		How to Release	Depress CANCEL button.
SWEDISH	FOR MANGA NIVAER UNDERPROGRAM			
NORWAY	SUBPROGRAM OVERFORGRENET			
313			No.	313
ENGLISH	OFS UNIT INCOMPLETE	In the OFS (auxiliary coordinate system setting) unit, insufficient unit data was inputted.	P1	
GERMAN	KOR EINH NICHT VOLLSTAENDIG		P2	UNO.
FRENCH	UNITE DE COMPENS.INCOMPLETE		P3	WNO.
SPANISH	ERROR DATOS UNI.CORRECTORES		Occurrence	Machining program
ITALIAN	FASE OFFSET IMCOMPLETA		Status of Stop	Block stop
DUTCH	CORRECT.-EENH.NIET VOLLEDIG		How to Release	Depress CANCEL button.
SWEDISH	NOLLPUNKTSFORFLYTT OFULLSTAND			
NORWAY	DATAFEIL I KOMP.ENHET			
314			No.	314
ENGLISH	DATA ERROR IN M CODE UNIT	In the M code unit, no data was inputted.	P1	
GERMAN	DATEN FEHLER IN M-CODE		P2	UNO.
FRENCH	DONN.ERR.DS UNITE COMES M		P3	WNO.
SPANISH	ERROR DATOS UNI.FUNCIONES M		Occurrence	Machining program
ITALIAN	ERRORE NELLA FASE CODICE M		Status of Stop	Block stop
DUTCH	FOUT.GEGEV.IN M-CODE EENH		How to Release	Depress CANCEL button.
SWEDISH	DATAFEL I M-KODENS ENHET			
NORWAY	DATAFEIL I M KODE ENHET			





No.	Message	Description		
315	1 5 10 15 20 25 29		No.	315
ENGLISH	DATA ERROR IN MAN. PROG. UNIT	In a single action unit program, insufficient data was inputted.	P1	
GERMAN	FEHLER DER KONVEN.PROGRAMM		P2	UNO.
FRENCH	ERREUR DU PROGRAMME CONUENTON		P3	WNO.
SPANISH	ERROR DATOS UNI.PROG CONVEN.		Occurrence	Machining program
ITALIAN	ERRORE NELLA FASE PROGR.MAN		Status of Stop	Block stop
DUTCH	FOUT.GEGEV.MAN-PROG EENH.		How to Release	Depress CANCEL button.
SWEDISH	DATAFEL I MANUELL PROGRAMENH			
NORWAY	DATAFEIL I MAN.PROG.ENHET			
316			No.	316
ENGLISH	DATA ERROR IN USER MACRO	In a user macro program, insufficient data was inputted.	P1	
GERMAN	FEHLER DER USER MACRO		P2	UNO.
FRENCH	ERREUR D'INFORMATION MACRO		P3	WNO.
SPANISH	ERROR DATOS EN USER MACROS		Occurrence	Machining program
ITALIAN	ERRORE NEI DATI DELLE MACRO		Status of Stop	Block stop
DUTCH	FOUT.GEGEV.IN MACRO-PROGR		How to Release	Depress CANCEL button.
SWEDISH	DATAFEL I MAKROPROGRAM			
NORWAY	DATAFEIL I MAKRO PROG.			
317			No.	317
ENGLISH	MIS-SET G CODE	A G code other than the registered G codes was specified.	P1	FSNO.
GERMAN	FEHLER DER G CODE EINGABE		P2	UNO.
FRENCH	ERREUR D'INTRODUCTION CODE G		P3	WNO.
SPANISH	UTILIZADION ERRONEA CODIGO G		Occurrence	Machining program
ITALIAN	ERRORE CODICE G		Status of Stop	Block stop
DUTCH	FOUT INGAVE VAN G-CODE		How to Release	Depress CANCEL button.
SWEDISH	FEL G-KOD			
NORWAY	FEILANGITT G-KODE			

[illegible]



No.	Message	Description
321	1 5 10 15 20 25 29	No. 321
ENGLISH	LINE/FACE CUTTING PAR. ERROR	Parameter settings on the
GERMAN	FEHLER PARAME.(LINIE/FLACH)	parameter line/face
FRENCH	ERREUR PARAM.POUR LIGNE/FACE	machining picture exceed-
SPANISH	ERROR PARAM.MECA LINEA/PLANE	ed the allowable range.
ITALIAN	ERRORE PARAM.LAVOR.LIN/FACC	* The term, "Parameter Number", signifies the sequence of display on the parameter line/face machining picture.
DUTCH	FOUT.PARAM.V.LIJN/VLAKBEW	
SWEDISH	PARAMETERFEL RAT/PLAN-VEARBET	
NORWAY	LINJE/PLAN MASKIN.PARAM.FEIL	
		No. 321
		P1 Parameter number *
		P2
		P3
		Occurrence Parameter spot machining
		Status of Stop Block stop
		How to Release Depress CANCEL button.
322		No. 322
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
323		No. 323
ENGLISH	PARAMETER ERROR (GYN)	A numerical value other
GERMAN	FEHLER PARAME.(GYN)	than 2, 3 and 4 was set
FRENCH	ERREUR PARAM.(GYN)	as the parameter (GYN:
SPANISH	ERROR PARAM.(GYN)	number of gear speeds)
ITALIAN	ERROR PARAMETRI(GYN)	on the Parameter, Machine
DUTCH	FOUT.PARMETER(GYN)	Multipliers 2 display.
SWEDISH	PARAMETERFEL(GYN)	Occurrence Parameter, machine multiplier 2
NORWAY	PARAMETERFEIL(GYN)	
		Status of Stop Block stop
		How to Release Depress CANCEL button.

[illegible]



No.	Message	Description
327	1 5 10 15 20 25 29 ENGLISH DESIGNATED UNIT NO. NOT FOUND GERMAN KEINE BESTIMMTEN EINHEIT NR. FRENCH PAS DE NO.DE UNITE DESIGNE. SPANISH UTILIZACION ERRONEA UNID NO. ITALIAN NO FASE RICHIESTA NON TROVATO DUTCH GEVRAAGD EENH-NR NIET GEVOND. SWEDISH ANGIVEN ENHET NR.HITTAS INTE NORWAY ANGITT ENHETSNR IKKE FUNNET	In the program restart function, a specified unit number was not found in the program for a specified work number (WNO).
No.	327	
P1		
P2	UNO.	
P3	WNO.	
Occurrence	Machining program	
Status of Stop	Block stop	
How to Release	Depress CANCEL button.	
328	ENGLISH DESIGNATED SNO. NOT FOUND GERMAN KEINE BESTIMMTEN SEQUENZ NR. FRENCH PAS DE NO. DE SEQUENCE DESIGNE SPANISH UTILIZACION ERRONEA SEQ.NO. ITALIAN NO SEQ.RECHIESTA NON TROVATO DUTCH GEVRAAGD SEO-NR NIET GEVOND SWEDISH ANGIVET SEKVENSNR.HITTAS INTE NORWAY ANGITT SEKVENSNR INNE FUNNET	In the program restart function, a specified tool sequence number (TSNO) was not found in the unit with a specified unit number (UNO) of the program with a specified work number (WNO).
No.	328	
P1	TSNO.	
P2		
P3	WNO.	
Occurrence	Machining program	
Status of Stop	Block stop	
How to Release	Depress CANCEL button.	
329	ENGLISH	
No.	329	
P1		
P2		
P3		
Occurrence		
Status of Stop		
How to Release		



No.	Message	Description														
330	1 5 10 15 20 25 29 ENGLISH NO TOOL LAYOUT GERMAN OHNE W.K.Z BESCHREIBUNG FRENCH PAS DE DESCRIPTION D'OUTILS SPANISH FALTA DESCRIPCION DE UTILES ITALIAN MANCA DISPOSIZIONE UTENSILI DUTCH GEEN GEREEDSCHAPS BESCHRIJVING SWEDISH INGEN VERKTYGSLAYOUT NORWAY INGEN VERKTOYPLAN	On the tool data picture, no tool was registered or was there any trace of a tool layout operation.														
		<table><tr><td>No.</td><td>330</td></tr><tr><td>P1</td><td></td></tr><tr><td>P2</td><td></td></tr><tr><td>P3</td><td>WNO.</td></tr><tr><td>Occurrence</td><td>Tool layout</td></tr><tr><td>Status of Stop</td><td>Block stop</td></tr><tr><td>How to Release</td><td>Depress CANCEL button.</td></tr></table>	No.	330	P1		P2		P3	WNO.	Occurrence	Tool layout	Status of Stop	Block stop	How to Release	Depress CANCEL button.
No.	330															
P1																
P2																
P3	WNO.															
Occurrence	Tool layout															
Status of Stop	Block stop															
How to Release	Depress CANCEL button.															
331	ENGLISH NO TOOL IN MAGAZINE GERMAN KEIN WZ.AN GEFRAGTEM M.PLATZ FRENCH PAS D'OUT.DANS LA POCHE DES SPANISH FALTA DEL UTIL EN EL TAMBOR ITALIAN MANCANZA UT.NE MAGAZZINO DUTCH GEEN GEREEDSCHAP IN MAGAZIJN SWEDISH INGET VERDTYG I MAGASIN NORWAY VERKTOY MANGLER I MAGASINET	The tool programmed in the machining program was not registered in the tool data picture. This alarm can be turned off by performing a tool layout operation for the related work number on the tool layout display.														
		<table><tr><td>No.</td><td>331</td></tr><tr><td>P1</td><td>TSNO.</td></tr><tr><td>P2</td><td>UNO.</td></tr><tr><td>P3</td><td>WNO.</td></tr><tr><td>Occurrence</td><td>Tool data, machining program</td></tr><tr><td>Status of Stop</td><td>Block stop</td></tr><tr><td>How to Release</td><td>Depress CANCEL button.</td></tr></table>	No.	331	P1	TSNO.	P2	UNO.	P3	WNO.	Occurrence	Tool data, machining program	Status of Stop	Block stop	How to Release	Depress CANCEL button.
No.	331															
P1	TSNO.															
P2	UNO.															
P3	WNO.															
Occurrence	Tool data, machining program															
Status of Stop	Block stop															
How to Release	Depress CANCEL button.															
332	ENGLISH EXCEED ENDMILL DIAMETER GERMAN ZUGROSSE DIA DES SCHAFTFASER FRENCH TROP GRAND DIA DE FRAISE BOUT SPANISH FRESA FRONTAL MUY GRANDE ITALIAN DIAMETRO FRESA ECCESSIVO DUTCH DIAM.VINGERFREES TE GROOT SWEDISH FOR STOR ANDFRASDIAMETER NORWAY FOR STOR ENDEFRES DIA.	The specified tool had too large a diameter. (Examples: End milling cutter grove unit, round unit)														
		<table><tr><td>No.</td><td>332</td></tr><tr><td>P1</td><td>TSNO.</td></tr><tr><td>P2</td><td>UNO.</td></tr><tr><td>P3</td><td>WNO.</td></tr><tr><td>Occurrence</td><td>Machining program</td></tr><tr><td>Status of Stop</td><td>Block stop</td></tr><tr><td>How to Release</td><td>Depress CANCEL button.</td></tr></table>	No.	332	P1	TSNO.	P2	UNO.	P3	WNO.	Occurrence	Machining program	Status of Stop	Block stop	How to Release	Depress CANCEL button.
No.	332															
P1	TSNO.															
P2	UNO.															
P3	WNO.															
Occurrence	Machining program															
Status of Stop	Block stop															
How to Release	Depress CANCEL button.															



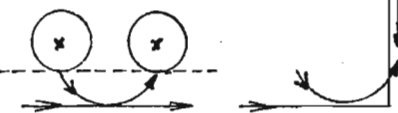
No.	Message	Description	
333	1 5 10 15 20 25 29 ENGLISH TOOL DATA INPUT PROCESS ERROR GERMAN WERKZEUGEINGABEFEHLER FRENCH MAL PROCEDE INTRO INFOR.UTIL SPANISH ERROR EN DATOS DE VTILES ITALIAN ERRORE DI PROCESSO DATI UT. DUTCH FOUTIEVE INGAVE V.GEREEDSCH SWEDISH FELAKTIG INLASN VERKTYGSDATA NORWAY VKT.DATA INPUT PROSESSFEIL	Some data were not inputted into the tool data or into the tool file display.	No. 333
			P1 TSNO.
			P2 UNO.
			P3 WNO.
			Occurrence Tool file, tool data
			Status of Stop Block stop
			How to Release Depress CANCEL button.
334			No. 334
ENGLISH			P1
			P2
			P3
			Occurrence
			Status of Stop
			How to Release
335			No. 335
ENGLISH			P1
			P2
			P3
			Occurrence
			Status of Stop
			How to Release



No.	Message	Description	No.	
336	1 5 10 15 20 25 29			336
ENGLISH	RADIAL DEPTH OF CUT ZERO	In the line/face machining unit tool development data, 0 has inputted as the radial depth of cut (radially cutting stroke per cycle). (With the radial depth of cut set to 0, machining will not stop because no cutting is actually being performed, no matter how many times a work piece may be cut radially.)	P1	TSNO.
GERMAN	RADIAL SPANTIEFE NULL		P2	UNO.
FRENCH	LARGEUR DE COUPE 0 EN R		P3	WNO
SPANISH	ANCHURA DE LA PASADA ES CERO		Occurrence	Machining program
ITALIAN	PROFOND DI PASS RAD ZERO		Status of Stop	Block stop
DUTCH	RADIALE SNIJDIEPTE-R IS NUL		How to Release	Depress CANCEL button.
SWEDISH	RADIELLT SKARDJUP NOLL			
NORWAY	RADIELL KUTTDYBDE ER NULL			
337			No.	337
ENGLISH	Z DEPTH OF CUT ZERO	In the line/face machining unit tool development data, 0 has been inputted as the Z depth of cut (Z-axis cutting stroke per cycle). (With the Z depth of cut set to zero, machining will not stop because cutting is not actually performed, no matter how many time a work may be cut Z-axially.)	P1	TSNO.
GERMAN	Z SPANTIEFE NULL		P2	UNO.
FRENCH	PROF DE COUPE 0 EN AXE Z		P3	WNO.
SPANISH	PROF,DE CADA DORTE ES CERO		Occurrence	Machining program
ITALIAN	PROFOND DI PASS Z ZERO		Status of Stop	Block stop
DUTCH	AXIALE SNIJDIEPTE-Z IS NUL		How to Release	Depress CANCEL button.
SWEDISH	SKARDJUP Z NOLL			
NORWAY	KUTTDYBDE ER NULL			
338			No.	338
ENGLISH	FINISH DEPTH OF CUT ZERO	Although a finish tool was available for a line/face machining unit in the program, 0 was inputted as the finish allowance.	P1	
GERMAN	KEINE BEARBEITUNGSZUGABE		P2	UNO.
FRENCH	PAS DE SUREPASS		P3	WNO.
SPANISH	BEARBETN.FINSV.-Z ES CERO		Occurrence	Machining program
ITALIAN	PROFOND PASS FINIT ZERO		Status of Stop	Block stop
DUTCH	NABEW.OVERMAAT IS NUL		How to Release	Depress CANCEL button.
SWEDISH	FINSKAR NOLL			
NORWAY	INTET ARB.MONN FINBEARBEIDING			





No.	Message	Description	No.	
339	1 5 10 15 20 25 29		No.	339
ENGLISH	TOOL DIAMETER ZERO	A specified tool had a tool diameter of zero inputted.	P1	TSNO.
GERMAN	KEIN WRKZGDURCHMESSER		P2	UNO.
FRENCH	PAS DE D'OUTIL		P3	WNO.
SPANISH	DIA CERO DEL UTIL		Occurrence	Machining program
ITALIAN	DIAMETRO UTENSILE ZERO		Status of Stop	Block stop
DUTCH	GEREEDSCHAPSDIAMETER IS NUL		How to Release	Depress CANCEL button.
SWEDISH	VERKTYGSDIAMETER NOLL			
NORWAY	INGEN VERKTOYDIAM.			
340			No.	340
ENGLISH	TOOL TRESPASSING IMPOSSIBLE	Upon finish machining in a line/face machining unit, a tool path is usually so calculated that a tool will both enter and exit on an arc basis. An interference with any shape before or after the tool would result in this alarm.	P1	TSNO.
GERMAN	UNMOGLICH EINBRE CHEN		P2	UNO.
FRENCH	PASSAGE D'OUTIL IMPOSSIBLE		P3	WNO.
SPANISH	PASO IMPOSIBLE DEL UTIL		Occurrence	Machining program
ITALIAN	PASSAGGIO UTENS.IMPOSSIBILE		Status of Stop	Block stop
DUTCH	DOORGANG GEREEDSCHAP ONMOGEL		How to Release	Depress CANCEL button..
SWEDISH	VERKTYGSRÖRELSE OMOJLIG			
NORWAY	UMULIG VERKTOYBANE			
		(Interference of this portion)		
				
341			No.	341
ENGLISH	CHAMFERING IMPOSSIBLE	In chamfering with a chamfering cutter, cutting was impossible due to an interference with the wall or bottom, or the specified chamfering cutter had inappropriate tool data.	P1	TSNO.
GERMAN	UNMOGLICHES ABSCHRAGEN		P2	UNO.
FRENCH	CHANFREINAGE IMPOSSIBLE		P3	WNO.
SPANISH	CHAFLAN IMPOSIBLE		Occurrence	Tool file, tool data machining program
ITALIAN	SMUSSO IMPOSSIBILE		Status of Stop	Block stop
DUTCH	AFSCHUINING ONMOGELIJK		How to Release	Depress CANCEL button.
SWEDISH	FASNING OMOJLIG			
NORWAY	FASING UMULIG			





No.	Message	Description		
345	1 5 10 15 20 25 29		No.	345
ENGLISH	STOCK REMOVAL Z TOO SMALL	In a line/face machining unit, the Z removal allowance was smaller than the Z finish allowance.	P1	
GERMAN	AUFMASS Z ZU KLEIN		P2	UNO.
FRENCH	SUREP.MAT.TROP PET.EN Z		P3	WNO.
SPANISH	CRECES EN Z MUY GRANDES		Occurrence	Machining program
ITALIAN	SOVRAMET Z TROPPO PICCOLO		Status of Stop	Block stop
DUTCH	TE GROTE MATERIAALTOESLAG-Z		How to Release	Depress CANCEL button.
SWEDISH	MATERIALAVVERKNING Z FOR LITE			
NORWAY	ARBEIDSMONN Z FOR LITEN			
346			No.	346
ENGLISH	STOCK REMOVAL R TOO SMALL	In a line/face machining unit, the removal radius was smaller than the radial finish allowance.	P1	
GERMAN	AUFMASS RAD.ZU KLEIN		P2	UNO.
FRENCH	SUREP.MAT.TROP PET.EN R		P3	WNO.
SPANISH	CRECES EN R MUY PEQUENAS		Occurrence	Machining program
ITALIAN	SOVRAMET.R TROPPO PICCOLO		Status of Stop	Block stop
DUTCH	TE KLEINE MATERIAALTOESLAG-R		How to Release	Depress CANCEL button.
SWEDISH	MATERIALAVVERKN R FOR LITEN			
NORWAY	ARBEIDSMONN RADIELT FOR LITE			
347			No.	347
ENGLISH	R DEPTH OF CUT TOO LARGE	In a line/face machining unit, the depth of a radial cut was larger than the tool diameter. (The depth of cut per cycle is limited to the maximum tool diameter.)	P1	TSNO.
GERMAN	FADIAL SPANTIEFE ZU GROSS		P2	UNO.
FRENCH	PROF.DE COUPE TR.IMP.EN R		P3	WNO.
SPANISH	PROF PASADA R MUY GRANDES		Occurrence	Machining program
ITALIAN	PROF.DI PASSATA R TROPPO GRA		Status of Stop	Block stop
DUTCH	TE GROTE SNIJDIEPTE IN R		How to Release	Depress CANCEL button.
SWEDISH	SKARDJUP R FOR STORT			
NORWAY	RADIELL KUTTDYBDE FOR STOR			

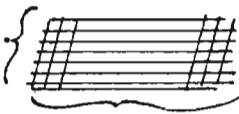
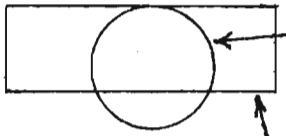


No.	Message	Description	
348	1 5 10 15 20 25 29	No.	348
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
349		No.	349
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
350		No.	350
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
351		No.	351
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	



No.	Message	Description	
352	1 5 10 15 20 25 29	No.	352
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
353		No.	353
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
354		No.	354
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	



No.	Message	Description	No.	
355	1 5 10 15 20 25 29		355	
ENGLISH	HOLE NUMBER OVER (>500)	<p>In a point machining unit, shape data were defined beyond the definable number of points per unit (500 points when inputted.)</p> <p>(Defining a grid of 20 vertical and 30 horizontal holes will result in an error.)</p> <p>20 pcs.  30 pcs.</p> <p>Total of holes: 20 x 30 = 600</p>	P1	
GERMAN	ZU ZIELE LOCHER ( 500)		P2	UNO.
FRENCH	DEPASS.NOMBR.ALESAG.( 500)		P3	WNO.
SPANISH	EXCESIVO NUMERO AGUJEROS		Occurrence	Machining program
ITALIAN	ECESSIVO NUMERO FORI( 500)		Status of Stop	Block stop
DUTCH	AANT.BORING.OVERSCHR.( 500)		How to Release	Depress CANCEL button.
SPANISH	FOR STORT ANTAL HAL( 500)			
NORWAY	FOR MANGE HULL( 500)			
356			356	
ENGLISH	UNDEFINED CORNER AT SPT/FPT	<p>In the graphic definition of a line machining center, right or left unit or chambering right or left unit, corner R/C has been specified at the starting or ending point.</p>	P1	FSNO.
GERMAN	FEHLER VON R.FASEN IN SPR/END		P2	UNO.
FRENCH	ERREUR DE R AU POINT DEP/ARRI		P3	WNO.
SPANISH	CHF SIN DEFINIR AL PC/PF		Occurrence	Machining program
ITALIAN	ANGOLO NON DEFINITO PART/ARR		Status of Stop	Block stop
DUTCH	ONBESCHR.HOEK AAN SPR/EPT		How to Release	Depress CANCEL button.
SWEDISH	ODEFINIER HORN I STARTP/ANDP			
NORWAY	UDEFINERT HJORNE VED SPT/FPT			
357			357	
ENGLISH	OFFSET ERROR	<p>Since a graphic shape is too fine for a tool diameter, machining has been impossible as programmed. Select a tool with a smaller diameter.</p> <p> Tool</p> <p>LIN IN unit Specified shape</p>	P1	
GERMAN	FEHLER DER KOMPENSATION		P2	UNO.
FRENCH	ERREUR DE COMPENSATION		P3	WNO
SPANISH	ERROR DE CORRECTOR		Occurrence	Machining program
ITALIAN	ERRORE DI OFFSET		Status of Stop	Block stop
DUTCH	COMPENSATIEFOUT		How to Release	Depress CANCEL button.
SWEDISH	KOMPENSERINSFEL			
NORWAY	KOMPENSASJONSFEIL			

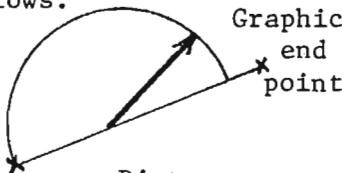
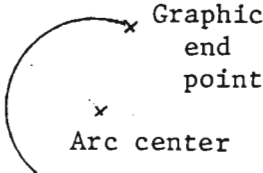


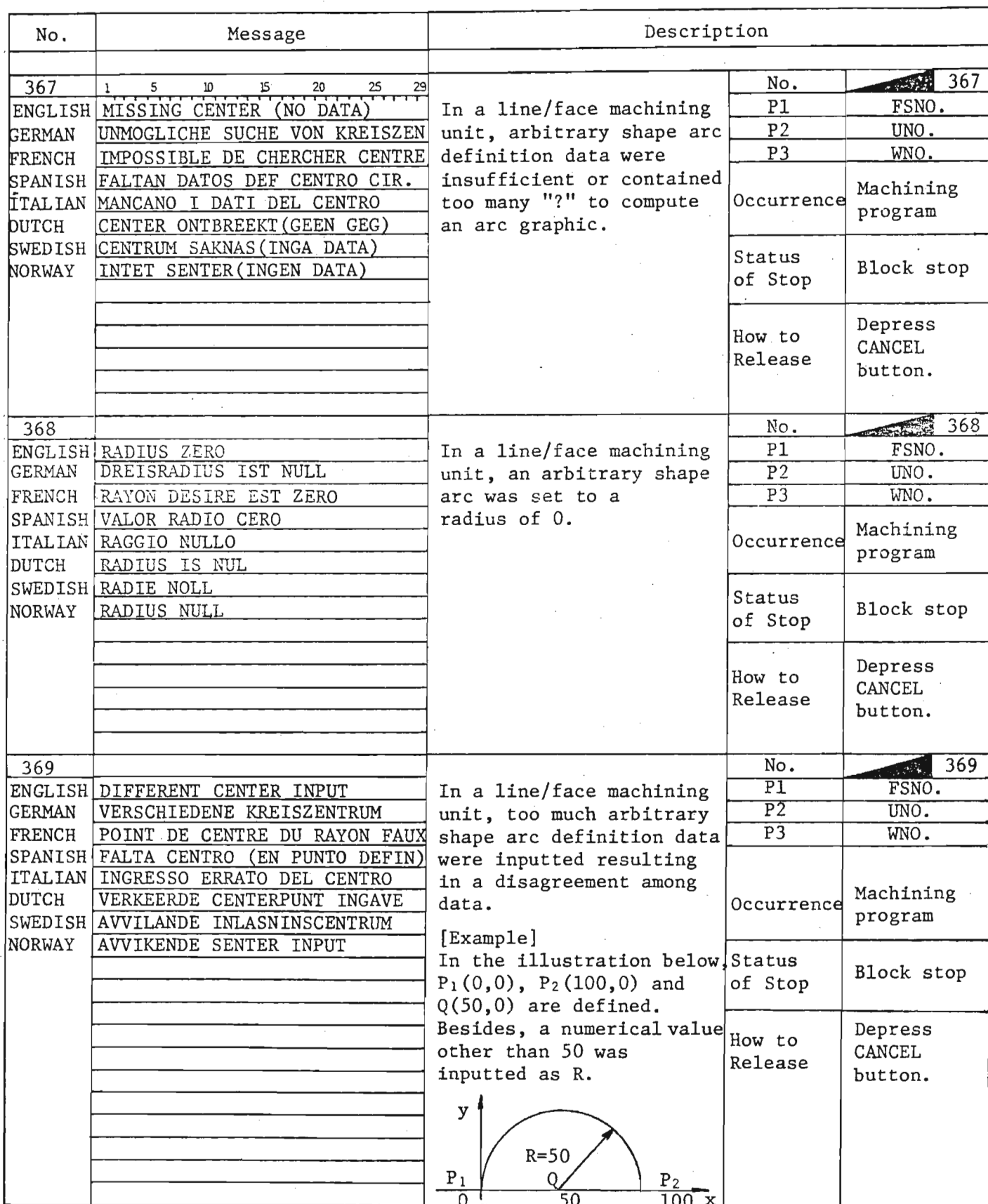
No.	Message	Description
358	1 5 10 15 20 25 29 ENGLISH UNDEFINED CORNER GERMAN FEHLER VON R.FASEN FRENCH ERREUR DE R AU POINT SPANISH ESQUINA INDEFINDO ITALIAN ANGOLO NON DEFINITO DUTCH ONBESCHREVEN HOEK SWEDISH ODEFINIERAT HORN NORWAY UDEFINERT HJORNE	An inappropriate corner R/C has been specified.
		No. 358 P1 FSNO. P2 UNO. P3 WNO. Occurrence Machining program Status of Stop Block stop How to Release Depress CANCEL button.
359	ENGLISH POINT CUTTING PATTERN ERROR GERMAN FEHLER FIGUR(PUNKT) FRENCH ERREUR CONFIG USINGE(POINT) SPANISH ERROR MODELO PROG.DE PUNTOS ITALIAN ERRORE LAVOR.FIGURA FORI DUTCH FOUT.FIGUURBESCHR.PUNTBW. SWEDISH PUNKTBEARBETNINGSBILD FEL NORWAY FEIL I HULLMONSTER PUNKT	Point machining shape data were defined inappropriately.
		No. 359 P1 FSNO. P2 UNO. P3 WNO. Occurrence Machining program Status of Stop Block stop How to Release Depress CANCEL button.
360	ENGLISH SQUARE CAN NOT BE DEFINED GERMAN FEHLER FIGUR DES VIERECK FRENCH ERREUR DEFINITION CARRE SPANISH DEFINI.DEL RECTANGULO IMPOS ITALIAN QUADRATO NON DEFINIBILE DUTCH VIERK.KAN NIET BESCHR.WORD. SWEDISH FYRKANT KAN INTE DEFINIERAS NORWAY FIRKANT IKKE DEFINERBAR	With the shape pattern set to SQUARE, a shape cannot be defined with an input value. Review all starting point input values, diagonal points and corner R/C.
		No. 360 P1 FSNO. P2 UNO. P3 WNO. Occurrence Machining program Status of Stop Block stop How to Release Depress CANCEL button.

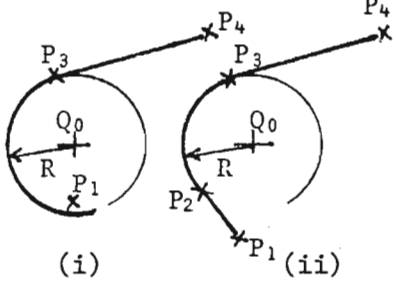
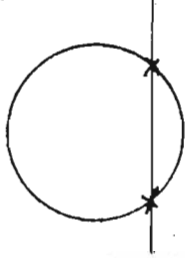
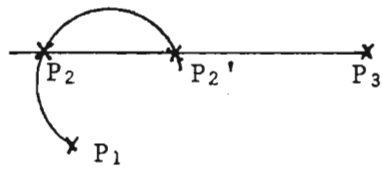
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No.	Message	Description	No.	364
364	1 5 10 15 20 25 29		P1	FSNO.
ENGLISH	INPUT DATA EXCEEDED	In a line/face machining unit, excessive arbitrary shape data were inputted so that a contradiction occurred with redundant data.	P2	UNO.
GERMAN	ZU VIELE EINGABE DATEN		P3	WNO.
FRENCH	TROP D'INFORMATION		Occurrence	Machining program
SPANISH	EXCESO DE DATOS		Status of Stop	Block stop
ITALIAN	DATI INGRESSO ECCESSIVI		How to Release	Depress CANCEL button.
DUTCH	OVERDREVEN GEGEVENS			
SWEDISH	INGANSDATA OVERSKRIDNA			
NORWAY	FOR MANGE INPUT DATA			
365			No.	365
ENGLISH	ILLEGAL RADIUS	In a line/face machining unit, arbitrary shape arc definition data (starting point coordinates, end point coordinates and radius) did not agree as follows:	P1	FSNO.
GERMAN	FEHLER VON KREISRADIUS		P2	UNO.
FRENCH	RAYON TROP PETIT		P3	WNO.
SPANISH	RADIO INCORRECTO		Occurrence	Machining program
ITALIAN	RAGGIO ILLEGALE		Status of Stop	Block stop
DUTCH	FOUTIEVE RADIUS		How to Release	Depress CANCEL button.
SWEDISH	OTILLATEN RADIE			
NORWAY	UKORREKT RADIUS			
		 <p>Distance between two points is larger than twice the radius (diameter).</p>		
366			No.	366
ENGLISH	NO DESIGNATED POINT ON CIRCLE	In a line/face machining unit, the preceding graphic did not include an end point on the circumference determined by the arbitrary shape arc definition data.	P1	FSNO.
GERMAN	OHNE PUNKT AM KREIS		P2	UNO.
FRENCH	POINT D'ARRIVEE OU RAYON FAUX		P3	WNO.
SPANISH	NO HAY PUNTO EN EL CIRCULO		Occurrence	Machining program
ITALIAN	MANCA PUNTO SUL CERCHIO		Status of Stop	Block stop
DUTCH	PUNT AAND.ONTBR.OP CIRKEL		How to Release	Depress CANCEL button.
SWEDISH	INGEN PROGR PUNKT PA CIRKELN			
NORWAY	INTET PUNKT PAA SIRKEL			
		 <p>Preceding graphic end point</p> <p>Arc center</p>		

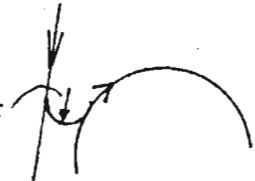


No.	Message	Description
370	1 5 10 15 20 25 29 ENGLISH POINT INSIDE CIRCLE GERMAN ES GIEBT PUNKT IN DEM KREIS FRENCH UN AUTRE POINT DANS LE CERCLE SPANISH OTRO PUNTO DENTRO DE CIRCULO ITALIAN UN ALTRO PUNTO NEL CERCHIO DUTCH ANDER PUNT IN CIRKEL SWEDISH PUNKT INNANFOR CIRKELN NORWAY PUNKT INNE I SIRKEL	With coordinates of P <sub>2</sub> and P <sub>3</sub> taken for (?,?,) (i), the tangential line passing P <sub>1</sub> cannot be drawn. 
371	ENGLISH ILLEGAL <P> GERMAN P UNPASSEND FRENCH P INADECAT SPANISH INCORRECTO P ITALIAN ILLEGALE P DUTCH FOUTIEVE P SWEDISH OTILLATEN P NORWAY UGYLDIG P	In the illustration below, for example, UP or DOWN should be inputted as P data. Nevertheless, RIGHT or LEFT was inputted. 
372	ENGLISH DATUM <P> NECESSARY GERMAN BENOTIGE P EINGABE FRENCH NECESSITE D'INTRODUIRE P SPANISH NECESITO DATOS P ITALIAN DATO P NECESSARIO DUTCH DATA P IS NODIG SWEDISH REFERENS P ERFODRAS NORWAY DATUM P NODVENDLG	The crossover point with the arc cannot be determined without P data (right or left or up or down). 



No.	Message	Description	No.	
373	1 5 10 15 20 25 29		373	
ENGLISH	TWO POINTS OVERLAPPED	Both starting and end points were given as identical coordinates.	P1	FSNO.
GERMAN	ZWEI PUNKTE IN GLEICHER POS.		P2	UNO.
FRENCH	POINT D'ARIVEE MEME POINT DEP		P3	WNO.
SPANISH	2 PUNTOS EN EL MISMO SITIO		Occurrence	Machining program
ITALIAN	DUE PUNTI SOVRAPPOSTI		Status of Stop	Block stop
DUTCH	TWEE SAMENVALLENDE PUNTEN		How to Release	Depress CANCEL button.
SWEDISH	2 PUNKTER OVERKLAPP VARANDRA			
NORWAY	TO SAMMENFALLENDE PUNKTER			
374			374	
ENGLISH	PARALLEL LINES	Two straight lines are parallel so that their crossing point cannot be obtained.	P1	FSNO.
GERMAN	LINIE PARALLEL		P2	UNO.
FRENCH	LIGNES PARALLELES		P3	WNO.
SPANISH	LINEAS PARALELAS		Occurrence	Machining program
ITALIAN	LINEE PARALLELE		Status of Stop	Block stop
DUTCH	PARALLELE LIJNEN		How to Release	Depress CANCEL button.
SWEDISH	PARALLELLA LINJER			
NORWAY	PARALLELLE LINJER			
375			375	
ENGLISH	NO INTERSECTION	In a line/face machining unit, arbitrary shape data were insufficient or a contradiction existed among data so that no crossover point could be obtained graphically.	P1	FSNO.
GERMAN	OHNE SCHNITTPUNKT		P2	UNO.
FRENCH	PAS DE POINT CROISE		P3	WNO.
SPANISH	NO HAY PUNTO DE INTERSECCION		Occurrence	Machining program
ITALIAN	NESSUNA INTERSEZIONE		Status of Stop	Block stop
DUTCH	GEEN SNIJPUNT		How to Release	Depress CANCEL button.
SWEDISH	INGEN SKARNINGSPUNKT			
NORWAY	INGEN KRYSNING			



No.	Message	Description	No.	376
376	1 5 10 15 20 25 29		No.	376
ENGLISH	SMOOTHING FIGURE IMPOSSIBLE	<p>Due to a contradiction in the corner radius or graphic definition before and after, a shape cannot be machined smoothly at the corner radius.</p> <p>In the illustration given at below, the corner radius is extremely small or large.</p>  <p>Corner R</p>	P1	FSNO.
GERMAN	KEINE GLATTE FIGUR		P2	UNO.
FRENCH	PAS DE CONFIGURATION LISSE		P3	WNO.
SPANISH	CONFIGURA UNIFORME IMPOSSIBLE		Occurrence	Machining program
ITALIAN	CONFIGURAZ.UNIFORME IMPOSS		Status of Stop	Block stop
DUTCH	EFFEN OVERGANG ONMOGELIJK		How to Release	Depress CANCEL button.
SWEDISH	MJUK OVERGANG OMOJLIG			
NORWAY	KONTURGLATTING UMULIG			
377			No.	377
ENGLISH	REPEAT FIGURE INAPPROPRIATE	<p>In defining an arbitrary shape of the line/face machining unit, a contradiction occurred in the graphic rotation/shift data.</p>	P1	FSNO.
GERMAN	WIEDERHOLKONTUR NICHT MOGLICH		P2	UNO.
FRENCH	REPETITION FIGURE IMPOSSIBLE		P3	WNO.
SPANISH	IMPOSSIBLE REPETIR FIGURA		Occurrence	Machining program
ITALIAN	RIPETIZIONE FIGURA IMPOSSIB.		Status of Stop	Block stop
DUTCH	FIGUURHERHALING ONMOGELIJK		How to Release	Depress CANCEL button.
SWEDISH	UPPREPAD FIGUT OTILLATEN			
BORWAY	GJENTAGELSE AV KONTUR UMULIG			
378			No.	378
ENGLISH	DATA ERROR IN MAN. PROG. UNIT	<p>Data have been insufficiently inputted in a program with manual program mode unit.</p>	P1	FSNO.
GERMAN	KONV EING FORMAT FEHLER		P2	UNO.
FRENCH	ERREUT DU PROGRAMME CONUENTON		P3	WNO.
SPANISH	ERROR DE PROGRAM.CONVENC.		Occurrence	Machining program
ITALIAN	MANCANZA PROGRAM.MANUALE		Status of Stop	Block stop
DUTCH	ONTBREK.MANUELE PROGRAM.		How to Release	Depress CANCEL button.
SWEDISH	PROG.MANUELT ENHET OTILLATEN			
NORWAY	DATAFEIL I MAN.PROG.ENHET			



No.	Message	Description	No.	
379	1 5 10 15 20 25 29			379
ENGLISH	DESIGN. IDENTIC POS.(G41,G42)	On the offset plane in the G41 and G42 modes, the same coordinate value as that for the preceding point was specified.	P1	FSNO.
GERMAN	ERREICHT POS NOCHMAL(G41,G42)		P2	UNO.
FRENCH	PAS DE POINT D'ARIVE(G41,G42)		P3	WNO.
SPANISH	DESIGN.IDENTICO POS.(G41,G42)		Occurrence	Machining program
ITALIAN	DESIGN.IDENTIC POS.(G41,G42)		Status of Stop	Block stop
DUTCH	ZELFDE POSIT.-AAND.(G41,G42)		How to Release	Depress CANCEL button.
SWEDISH	PROGR IDENT LAGEN (G41,G42)			
NORWAY	IDENTISK ANGITT POS.(G41,G42)			
380			No.	380
ENGLISH	MANUAL PROG. UNIT FORMAT ERR.	Manual program unit format error	P1	FSNO.
GERMAN	KONV EINH FORMAT FEHLER		P2	UNO.
FRENCH	ERR.DE FORMAT DE PROG.CONV.		P3	WNO.
SPANISH	ERROR FORMA PROGRAM.CONVENC.		Occurrence	Machining program
ITALIAN	ERRORE DI FORMATO FASE SING		Status of Stop	Block stop
DUTCH	FOUT.FORM.MAN.PROGR-EENH		How to Release	Depress CANCEL button.
SWEDISH	FORMATFEL PROG.MANUELT ENHET			
NORWAY	FORMATFEIL I ENHETSNR.			
381			No.	381
ENGLISH	MOUNT(VALLEY) SHAPE ERROR	In a pocket, peak or valley shape unit, no second graphic (inside graphic) was defined.	P1	FSNO.
GERMAN	OHNE I NNERE KONTUR		P2	UNO.
FRENCH	ERR.DE FORME ELEV.(RENFONC.)		P3	WNO.
SPANISH	ERROR FORMA MONTE(VALLE)		Occurrence	Machining program
ITALIAN	ERRORE CONTORNO MONTE(VALLE)		Status of Stop	Block stop
DUTCH	FOUTIEVE FIG-VERHOOG/VERZ.		How to Release	Depress CANCEL button.
SWEDISH	FORMGEL KLACK(FICKA)			
NORWAY	FEIL VED KONTUR			



No.	Message	Description	No.	382
382	1 5 10 15 20 25 29		No.	382
ENGLISH	DEFINED SHAPE TOO SMALL	In a pocket, peak or valley shape unit, the graphic was too small for the tool diameter.	P1	FSNO.
GERMAN	KONTUR IST ZU KLEIN		P2	UNO.
FRENCH	FORME TROP PETITE		P3	WNO.
SPANISH	FORMA MUY PEQUENAS		Occurrence	Machining program
ITALIAN	CONTORNO TROPPO PICCOLO		Status of Stop	Block stop
DUTCH	BESCHR.FIGUUR IS TE KLEIN		How to Release	Depress CANCEL button.
SWEDISH	DEFINIERAD FORM FOR LITEN			
NORWAY	DEFINERT KONTUR FOR LITEN			
383			No.	383
ENGLISH	(VALLEY) SHAPE TOO SMALL	In a pocket or valley shape unit, the valley graphic was too small for the tool to enter into the valley. Change the tool or program the pocket machining unit.	P1	FSNO.
GERMAN	(VERT.)KONTUR IST ZU KLEIN		P2	UNO.
FRENCH	(RENFONC.)FORME TROP PETITE		P3	WNO.
SPANISH	(VALLE)FORMA MUY PEQUENAS		Occurrence	Machining program
ITALIAN	CONTORNO TROPPO PICC.(VALLE)		Status of Stop	Block stop
DUTCH	VERZ.FIGUUR IS TE KLEIN		How to Release	Depress CANCEL button.
SWEDISH	FOR LITEN FORM (FICKA)			
NORWAY	DYBDE KONTUR FOR LITEN			
384			No.	384
ENGLISH	TOOL CAN'T PASS	No tool can enter the graphic in a pocket, peak or valley unit.	P1	FSNO.
GERMAN	W.K.Z.KANN NICHT HINEIN		P2	UNO.
FRENCH	PASSAGE D'OUTIL IMPOSSIBLE		P3	WNO.
SPANISH	PASO IMPOSIBLE DIL UTIL		Occurrence	Machining program
ITALIAN	PASSAGGIO UTENS.IMPOSSIBILE		Status of Stop	Block stop
DUTCH	GEREEDSCHAP KAN NIET DOOR		How to Release	Depress CANCEL button.
SWEDISH	VERKTYGET KAN INTE PASSERA			
NORWAY	IKKE PLASS FOR VERKTOYET			



No.	Message	Description	
385	1 5 10 15 20 25 29	No.	385
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
386		No.	386
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
387		No.	387
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
388		No.	388
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	





No.	Message	Description	
389	1 5 10 15 20 25 29	No.	389
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
390		No.	390
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
391		No.	391
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
392		No.	392
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	



No.	Message	Description	
393	1 5 10 15 20 25 29	No.	393
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
394		No.	394
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
395		No.	395
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	
396		No.	396
ENGLISH		P1	
		P2	
		P3	
		Occurrence	
		Status of Stop	
		How to Release	



No.	Message	Description
397	1 5 10 15 20 25 29	No. 397
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
398		No. 398
ENGLISH	POINT NUMBER EXCEEDED (>200)	P1
GERMAN	ZU VIELE KONTURDATEN( 200)	P2
FRENCH	DEPAS.NOMB.POINTS( 200)	P3
SPANISH	EXCESIVO NUMERO PUNTOS( 200)	Occurrence
ITALIAN	ECESSIVO NOM.PUNTI( 200)	Status of Stop
DUTCH	TE VEEL PUNTEN( 200)	How to Release
SWEDISH	ANTAL PUNKTEROVERSKR( 200)	
NORWAY	FOR MANGE PUNKTER ( 200)	
399		No. 399
ENGLISH	MISSING INPUT DATA	P1
GERMAN	UNVOLLENDET	P2
FRENCH	MANQUE D'INFORMATION	P3
SPANISH	FALTA DE DATOS	Occurrence
ITALIAN	MANCANZA DATI INGRESSO	Status of Stop
DUTCH	OUTBREKENDE INGAVE-DATA	How to Release
SWEDISH	INGANGSDATA SAKNAS	
NORWAY	MANGLENDE INPUT DATA	



No.	Message	Description		
400	1 5 10 15 20 25 29		No.	400
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
401		An inputted format differed from that specified.	No.	401
ENGLISH	ILLEGAL FORMAT		P1	
GERMAN	FALSCHER FORM DER EINGABE		P2	
FRENCH	FORMAT NON AUTORISE		P3	
SPANISH	FORMATO PROHIBIDO		Occurrence	Key input
ITALIAN	FORMATO ILLEGALE		Status of Stop	Operation continued
DUTCH	ONGEORLOOFT FORMAAT		How to Release	Depress CANCEL button.
SWEDISH	OTILLÄTT FORMAT			
NORWAY	UGYLDIG FORMAT			
402		An inputted value exceeded the range of settings.	No.	402
ENGLISH	ILLEGAL NUMBER INPUT		P1	
GERMAN	FALSCHER ANZAHL ZAHLEN		P2	
FRENCH	NOMBRE NON AUTORISE		P3	
SPANISH	NUMERO PROHIBIDO		Occurrence	Key input
ITALIAN	NUMERO ILLEGALE		Status of Stop	Operation continued
DUTCH	ON GEORLOOFT AANTAL-INGAVE		How to Release	Depress CANCEL button.
SWEDISH	INLÄSN AV OTILLÄTT DIFFER			
NORWAY	GYLDIG TALL INPUT			



No.	Message	Description
403	1 5 10 15 20 25 29 ENGLISH PROGRAM TOO LARGE GERMAN ZU LANGES PROGRAMM FRENCH PROGRAMME TROP LONG SPANISH PROGRAMA DEMASIADO LARGO ITALIAN PROGRAMMA TROPPO LUNGO DUTCH OVERSCHR.PROGR.-CAPACITEIT SWEDISH FOR STORT PROGRAM NORWAY PROGRAM FOR STORT	A limit of 250 lines per program exceeded.
		No. 403 P1 P2 P3 Occurrence Key input Status of Stop Operation continued How to Release Depress CANCEL button.
404	ENGLISH MEMORY CAPACITY EXCEEDED GERMAN PROGRAM SPEICHER VOLL FRENCH DEPASSEMENT CAPACITE MEMOIRE SPANISH NO HAY ESPACIO DE MEMORIA ITALIAN MEMORIA PIENA DUTCH OVERSCHR.GEHEUG.-CAPACITEIT SWEDISH MINNESKAPACITETEN OVERSKRIDEN NORWAY PROGRAMLAGER FULLT	A program storage limit (totalled at 580 lines) was exceeded.
		No. 404 P1 P2 P3 Occurrence Key input Status of Stop Operation continued How to Release Depress CANCEL button.
405	ENGLISH ILLEGAL EDIT CONDITION GERMAN FALSCH EDITION POSITION FRENCH CONDITION DEDITION NON AUTOR SPANISH NO SE PUEDE REDACTAR POR AHORA ITALIAN CONDIZIONE DI EDIT ILLEGALE DUTCH ON GEROOPLOOGDE UITGAVE SWEDISH OTILLATET FORH FOR REDIGERING NORWAY UGYLDIG REDIGERING	During the automatic operation, an uneditable program search and preparation was attempted. The program that can be edited during automatic operation must satisfy the following requirements: (1) It is not the main program being executed. (2) It has a work number of less than 9000. (3) The program has been registered finally. © Reprogram
		No. 405 P1 P2 P3 Occurrence Key input Status of Stop Operation continued How to Release Depress CANCEL button.



No.	Message	Description
406	1 5 10 15 20 25 29 ENGLISH MEMORY PROTECT GERMAN EINGABE GESPEPPT FRENCH PROTECTION MEMOIRE SPANISH MEMORIA PROTEGIDA ITALIAN MEMOTIA PROTETTA DUTCH GEHEUGEN BESCHERMING SWEDISH MINNESSKYDD NORWAY STYRINGEN LAAST	With the re-programming switch (PROGRAM) positioned at LOCK, a program preparation was attempted.
		No. 406 P1 P2 P3 Occurrence Key input Status of Stop Operation continued How to Release Depress CANCEL button.
407	ENGLISH DESIGNATED DATA NOT FOUND GERMAN OHNE VORHANDEN. FRENCH PAS D'INFORMATION DESIGNEE. SPANISH NO ENCONTRADO ITALIAN DATO CERCATO NON TROVATO DUTCH GEVRAAGDE DATA NIET GEVONDEN SWEDISH ANGIVNA DATA HITTAS INTE NORWAY ANGITTE DATA EKSISTERER IKKE	When a work number of WPC is searched, no related data was found.
		No. 407 P1 P2 P3 Occurrence Key input Status of Stop Operation continued How to Release Depress CANCEL button.
408	ENGLISH PROGRAM ERROR GERMAN PROGRAMM FEHLER FRENCH ERREUR DE PROGRAMMATION SPANISH ERROR DE PROGRAMA ITALIAN ERRORE DI PROGRAMMA DUTCH PROGRAMMA-FOUT SWEDISH PROGRAMFEL NORWAY PROGRAM FEIL	The information stored in the program storage area was destroyed.
		No. 408 P1 P2 P3 Occurrence Status of Stop Operation continued How to Release Depress CANCEL button.



No.	Message	Description	No.	
409	1 5 10 15 20 25 29		No.	409
ENGLISH	ILLEGAL INSERTION	With the cursor positioned at the unit data while preparing a program, a one-line-insertion was performed. The data that can be inserted are limited to tool sequence and shape sequence data.	P1	
GERMAN	FALSCHES EINFUGEN		P2	
FRENCH	INSERTION ERRONEE		P3	
SPANISH	INSERCIÓN INCORRECTA		Occurrence	Key input
ITALIAN	INSERZIONE ILLEGALE		Status of Stop	Operation continued
DUTCH	ONGEORLOOFDE INLASSING		How to Release	Depress CANCEL button.
SWEDISH	OTILLATET TILLAGG			
NORWAY	UGYLDIG TILFOYELSE			
410			No.	410
ENGLISH	ILLEGAL DELETION	Erasure of data with UNO-0 (common unit) was attempted.	P1	
GERMAN	FALSCHES ENTRERNEN		P2	
FRENCH	ANNULATION ERRONEE		P3	
SPANISH	ANULACIÓN INCORRECTA		Occurrence	Machining program
ITALIAN	CANCELLAZIONE ILLEGALE		Status of Stop	Operation continued
DUTCH	ONGEORLOOFD WEGLATEN		How to Release	Depress CANCEL button.
SWEDISH	OTILLATEN RADERING			
NORWAY	UGYLDIG FJERNING			
411			No.	411
ENGLISH	ILLEGAL UNIT MOVE	Movement of a unit before UNO-0 (common unit) or of the UNO-0 was attempted. With the cursor positioned at other than the unit data, the unit was operated.	P1	
GERMAN	FALSCHES VERSCHIEBEN EINHEIT		P2	
FRENCH	DEPLAC.UNITE DE PROGR ERRON		P3	
SPANISH	DESPLAZA UNI PROGRA.INCORR.		Occurrence	Programme unit moved
ITALIAN	MOVIMENTO FASE ILLEGALE		Status of Stop	Operation continued
DUTCH	ONGEORLOOF.EENH.VERPLAATS		How to Release	Depress CANCEL button.
SWEDISH	OTILLATEN RORELSEENHET			
NORWAY	UGYLDIG OMFLYTING			



No.	Message	Description			
412	1 5 10 15 20 25 29 ENGLISH WPC NESTING OVER GERMAN ZU VIELE AGP WIEDERHOLUNGEN FRENCH TROP DE DREPETITON CDP SPANISH DEMASIADAS REPETIC.DE CDP ITALIAN TROPPE RIPETIZ.ZERO PEZZO DUTCH WSK-STAPELGEHEUG.OVERLADEN SWEDISH UPPROP FOR MANGA NIVAER NORWAY PROGRAM OVERFORGRENING	Subprograms were over-nested (upon WPC search). Nesting subprograms is limited to 2.	No.	412	
			P1		
			P2		
			P3		
			Occurrence		
			Status of Stop		Operation continued
			How to Release		Depress CANCEL button.
413	ENGLISH PROGRAM OVER GERMAN ZU VIELE PROGRAMM NR. FRENCH TROP DE NOMBRE DE PROGRAMMES SPANISH EXCESIVO NO.DE PROGRAMAS ITALIAN TROPPI NUMERI DI PROGRAMMA DUTCH AAN TAL PROGRAMMAS OVERSCHRED SWEDISH FOR MANGA PROGRAM NORWAY PROGRAM FULLT	An attempt was made to register the 17th program beyond the maximum number of registerable programs.	No.	413	
			P1		
			P2		
			P3		
			Occurrence		Key input
			Status of Stop		Operation continued
			How to Release		Depress CANCEL button.
414	ENGLISH AUTO CALCULATION IMPOSSIBLE GERMAN AUTO NICHT BERECHNUNG FRENCH AUTO OPERATION IMPOSSIBLE SPANISH CALCULO AUTOMATICO IMPOSIBLE ITALIAN CALCOLO AUTOMATICO IMPOSSIB DUTCH AUTOMAT.BEREKENING ONMOGEL SWEDISH AUTOMATISK BERAKNING OMOJLIG NORWAY UMULIG AUTO BEREGNING	Neither peripheral speed nor feedrate can be automatically calculated. Recheck parameter cutting No. 1 thru 3.	No.	414	
			P1		
			P2		
			P3		
			Occurrence		Key input
			Status of Stop		Operation continued
			How to Release		Depress CANCEL button.





No.	Message	Description	No.	
415	1 5 10 15 20 25 29		No.	415
ENGLISH	MIS-SET G CODE	Undefined G codes were commanded.  [G codes available] G00, G01, G02, G03, G04, G17, G18, G19, G28, G30, G40, G41, G42, G90, G91, G94, G95	P1	
GERMAN	FEHLER DER G CODE EINGABE		P2	
FRENCH	ERREUR D'INTRODUCTION CODE G		P3	
SPANISH	ERROR EN IN TRODUC CODIGO G		Occurrence	Machining program
ITALIAN	ERRORE CODICE G		Status of Stop	Operation continued
DUTCH	VERKEERD GEPLAATSTE G-CODE		How to Release	Depress CANCEL button.
SWEDISH	FEL G-KOD			
NORWAY	FEILINNGITT G-KODE			
416			No.	416
ENGLISH	AUTO PROCESS DIA EXCEEDED	The point machining unit data had a discrepancy, so that an automatic tool development was impossible.	P1	
GERMAN	ZU GROSSER F.AUTO-PROZESS		P2	
FRENCH	FRET TR.GRAND EN MODE AUT		P3	
SPANISH	BROCA MUY GRANDE MODA AUTO		Occurrence	Key input, machining program
ITALIAN	DIA.ECCESSIVO PROC.AUTOM.		Status of Stop	Operation continued
DUTCH	TE GROTE VOOR AUTOM.BEWERK.		How to Release	Depress CANCEL button.
SWEDISH	AUTOHANTERING DIAM OVERSKRID			
NORWAY	FOR STOR AUTO PROSESS DIA			
417			No.	417
ENGLISH	BACK BORING DIA TOO LARGE	Point machining and back boring unit data have contradictions so that tools cannot develop automatically.	P1	
GERMAN	ZU GROSSER RUCKSENKEN		P2	
FRENCH	LAMAGE ARR.TROP GRAND		P3	
SPANISH	LAMADO TRASERO MUY GRANDE		Occurrence	Key input, machining program
ITALIAN	DIA ALES.ROV.TROPPO GRANDE		Status of Stop	Operation continued
DUTCH	ACHTERW.DOTTER- TE GROOTDE		How to Release	Depress CANCEL button.
SWEDISH	FOR STOR DIAM FRANVANO HAL BEA			
NORWAY	FOR STOR DIA BAKBORING			



No.	Message	Description	No.	
418	1 5 10 15 20 25 29 ENGLISH ILLEGAL TAP DIA OR PITCH GERMAN GEWINDE -STG. ZU GROSS FRENCH DEPACEM,CAP.TARAUDAGE SPANISH O PASO DE MACHO EXCESIVO ITALIAN DIA MASCH.O PASSO ILLEGALE DUTCH ONGEORLOOGDE TAPO OF-SPOED SWEDISH OTILLATEN GANGDIAM EL STIGN NORWAY UGYLDIG TAPPDIA ELR STIGN.	The point machining/tap unit data have a contradiction such as in tap name so that tools cannot develop automatically.	No. 418 P1 P2 P3 Occurrence Status of Stop How to Release	Key input, machining program Operation continued Depress CANCEL button.
419	ENGLISH AUTO TAP PROCESS IMPOSSIBLE GERMAN AUTO GEWINDE EINH.NI.EINGABE FRENCH AUTO UNITE RARADAGE IMPOSSIB SPANISH PROC ROSCADO AUTO IMPOSSIBLE ITALIAN PROC.MASCH.AUTO IMPOSSIBILE DUTCH ONMOGEL.AUTOM.TAPBEWERKING SWEDISH AUT BESTAMN FOR GANGN OMOJLIG NORWAY AUTO GJENGEPROCESS UMULIG	The point machining/tap unit tap name data has a contradiction so that tap requirements (pitch, chamfering stroke, etc.) cannot be determined automatically.	No. 419 P1 P2 P3 Occurrence Status of Stop How to Release	Key input, machining program Operation continued Depress CANCEL button.
420	ENGLISH DISIGNATION OVERLAP GERMAN PROGRAMM UBERSCHNEIDUNG FRENCH DESIG.PROGR.REDOUBLES SPANISH INFO DUPLICADA EN EL PROGRAMA ITALIAN SOVRAPP.DESIGNAZ.PROGRAMMA DUTCH OVERLAPPENDE GEGEVENS SWEDISH DUBBELBESTAMNING NORWAY OVERLAPP PROHRAMDATA	On the tool layout display, an attempt was made to assign a pocket number which had already been assigned to a tool. Or on the program file control display, during renumbering, an attempt was made to specify an already registered work number.	No. 420 P1 P2 P3 Occurrence Status of Stop How to Release	Program file control, tool layout key input Operation continued Depress CANCEL button.



No.	Message	Description	No.	
421	1 5 10 15 20 25 29		No.	421
ENGLISH	SPARE TOOL GROUP NO. ERROR	On the tool layout picture, another group number was inputted as a preliminary tool group number.	P1	
GERMAN	ERSATZWKRZGGRUPPE OHNE NUMMER		P2	
FRENCH	ERR.NO.DU GROUPE OUT.RECH.		P3	
SPANISH	ERROR NO.DE GRUPO UTIL REPUE		Occurrence	Key input, tool layout
ITALIAN	ERRORE NO.GRUPO UT.SING.		Status of Stop	Operation continued
DUTCH	FOUT.VERV.GER.GROEPSNUMMER		How to Release	Depress CANCEL button
SWEDISH	FEL GRUPPNR.RESERVVERKTYG			
NORWAY	RESERVEVKT.GRUPPE UTEN NUMMER			
422			No.	422
ENGLISH	SUBPROGRAM RECALL LIMIT	Subprograms were over-nested (during tool layout). The maximum allowable subprogram nesting cycles is 2.	P1	
GERMAN	UNTERPROGRAMM ZU OFT		P2	
FRENCH	DEPAS.NOMB.APPELS PR.AUXI		P3	
SPANISH	LIMITE DE REPETIC.DE SUBPROG.		Occurrence	Work number search operation, tool layout
ITALIAN	LIMITE CHIAMATE SOTTOPROGR.		Status of Stop	Operation continued
DUTCH	OVERSCHR.AANT.SUB-PROGR OPR		How to Release	Depress CANCEL button.
SWEDISH	GRANS UPPROP UNDERPROGRAM			
NORWAY	SUBPROGRAM OPPKALL GRENSE			
423			No.	423
ENGLISH	EXCEEDED MAX NUMBER OF TOOLS	On the tool layout display, the number of tools employed in a specified program exceeded the maximum number of tools storable in a drum (to be set as parameter machine multiplier No. 1 TLN) when a used number is searched.	P1	
GERMAN	MAX.ANZAHL WERKZ UBERSCHRI		P2	
FRENCH	DEPASS.NBRE D'OUTILS MAXIM.		P3	
SPANISH	LIMITE DE NO.DE UTILES		Occurrence	Work number search operation, tool layout
ITALIAN	AN.UTENSILI ECCESSIVO		Status of Stop	Operation continued
DUTCH	OVERSCHR.AANTAL GEREEDSCH.		How to Release	Depress CANCEL button.
SWEDISH	MAX.ANTAL VERKTYG OVERSKRIDET			
NORWAY	FOR MANGE VERKTOY			



No.	Message	Description
424	1 5 10 15 20 25 29 ENGLISH ALL POCKET NO.'S NOT ASSIGNED GERMAN EINIGE WZ.PLATZ NR.NI.FG. FRENCH NO.S DE POCHE NON ASSIGNES SPANISH HAY BOLSILLOS NO ASIGNADOS ITALIAN NON TUTTI I POSTI UT.ASEGN DUTCH ALLE PLAATSNUM.NIET TOEGEW SWEDISH NR.PA VERKTYGSFASTEN SAKNAS NORWAY IKKE ALLE VKT.LOMMER ANGITT	On the tool layout display, some tools do not yet have their pocket numbers determined at layout completion.
		No. 424
		P1
		P2
		P3
		Occurrence Layout completion, tool layout
		Status of Stop Operation continued
		How to Release Depress CANCEL button
425	ENGLISH DATA ERROR (RUN AWAY CHECK) GERMAN DATEN FEHLER IN PROGRAMM FRENCH ERR.DE DONN.DE PROGR. SPANISH ERROR DATOS PROGRAMACION ITALIAN ERRORE NEI DATI DUTCH FOUTIEVE GEG.IN PROGRAMMA SWEDISH DATAFEL(JAMFORANDE KONTROLL) NORWAY DATAFEIL(PROGRAM)	Program data are inappropriate as values for input data. Check data for a possible contradiction with those before and after.
		No. 425
		P1
		P2
		P3
		Occurrence Key input, machining program
		Status of Stop Operation continued
		How to Release Depress CANCEL button.
426	ENGLISH PROGRAM DATA MISSING GERMAN FEHLENDE PROGRAMMDATEN FRENCH MANQUE DE DONNEES DE PROGRAM. SPANISH DATOS INCOMPLETO ITALIAN DATI PROGRAMMA INCOMPLETT DUTCH ON TBREKENDE PROGR.GEGEVENS SWEDISH PROGRAMDATA SAKNAS NORWAY MANGLENDE PROGRAMDATA	Since some of the unit data have not been inputted in preparing a machining program, tool sequence data cannot be developed automatically.
		No. 426
		P1
		P2
		P3
		Occurrence Machining program
		Status of Stop Operation continued
		How to Release Depress CANCEL button.



No.	Message	Description
427	1 5 10 15 20 25 29 ENGLISH PARAMETER ERROR GERMAN FEHLER PARAMETER FRENCH ERREUR PARAMETRE SPANISH ERROR DE PARAMETRO ITALIAN ERRORE NEI PARAMETRI DUTCH FOUTIEVE PARAMETER SWEDISH PARAMETERFEL NORWAY PARAMETER FEIL	No. 427 P1 P2 P3 Occurrence Status of Stop How to Release
428	ENGLISH TOOL DATA CHANGE NOT ALLOWED GERMAN WKZ DAT.WECHS JETZT UNMOGLICH FRENCH MODIF.DE DONN.UTIL NON AUT SPANISH PROHIBIDO CAMBIO DE DATOS UTIL ITALIAN MODIF.DATI UT.IMPOSSIBILE DUTCH ONGEORL.VERAND.GER-GEDEV. SWEDISH AND.AV VERK.DATA INTE TILLA NORWAY FORANDRING VKT.DATA UMULIG	No. 428 P1 P2 P3 Occurrence Key input, tool data Status of Stop Operation continued How to Release Depress CANCEL button.
429	ENGLISH MEASURING NOT ALLOWED GERMAN WKZ LAENGENMESSUNG UNMOGLICH FRENCH MES.DE LONG.NON AUTORISE SPANISH PROHIBIDA MEDICION DE UTIL ITALIAN MISURA IMPOSSIBILE DUTCH ONGEORLOOFDE GER-METING SWEDISH MATNING INTE TILLATEN NORWAY VERKT.LENGDEMAALING UMULIG	No. 429 P1 P2 P3 Occurrence Tool data, program Status of Stop Operation continued How to Release Depress CANCEL button.
		<p>Main requirements for coordinate measurement:</p> <p>(1) The machine must not be in automatic operation.</p> <p>(2) A tool must be mounted in the spindle.</p> <p>(3) The tool data for the spindle tool must already have been set.</p> <p>Main requirements for tool length measurement:</p> <p>(1) The machine must not be in automatic operation.</p> <p>Some of the requirements specified above have not been satisfied.</p>



No.	Message	Description
430	1 5 10 15 20 25 29	No. 430
ENGLISH	ILLEGAL TOOL DESIGNATED	In programming a line/face machining unit, an attempt was made to input unusable tool.
GERMAN	FALSCHER W.K.Z. GEWÄHLT.	
FRENCH	DÉSIGNATION D'OUTIL ILLÉGAL	
SPANISH	DESIGNACIÓN UTIL INCORRECTA	
ITALIAN	DESIGNAZIONE UTENS. ILLEGALE	
DUTCH	VERKEERDE GEREEDSCHAPSKEUZE	
SWEDISH	OTILLÄTET VERKTYG BESTÄMT	
NORWAY	UGYLDIG BERKTOY ANGITT	
		Unit Name
		Applicable Tool
		Line center, face milling cutter, end mill face, line right, line left, line outside, line inside, pocket mill, pocket peak, pocket valley, end mill groove
		Face milling cutter, and milling cutter
		End milling cutter
		Chamfering right, chamfering left, chamfering inside, Chamfering outside
		Chamfering cutter
		Occurrence
		Key input, machining program
		Status of Stop
		Operation continued
		How to Release
		Depress CANCEL button.
431		No. 431
ENGLISH	USE ARBITRARY FIGURE	An arbitrary shape only may be inputted in each line center, line right, line left, chamfering right, chamfering left and end mill groove unit. (All the units enumerated above are to have undefined shapes, in principle.)
GERMAN	FERTIGE FORM EINGEBEN	
FRENCH	UTILISER.FIGURE ARBITRAIRE	
SPANISH	USE FIGURA ARBITRARIA	
ITALIAN	USARE RIGURA ARBITRARIA	
DUTCH	GEbruikt-WILLEKEURIGE FIGUUR	
SWEDISH	ANVÄND GODTYCKLIG FIGUR	
NORWAY	ANGI ARB.STYKKETS FORM	
		No. 431
		P1
		P2
		P3
		Occurrence
		Key input, machining program
		Status of Stop
		Operation continued
		How to Release
		Depress CANCEL button.
432		No. 432
ENGLISH	DATA CHANGE NOT ALLOWED	Data cannot be changed because the machine is in automatic operation or for any other reason.
GERMAN	DATENWECHSEL JETZT UNMÖGLICH	
FRENCH	MODIF.DONN.NON AUTORISÉ	
SPANISH	PROHIBIDO CAMBIO DE DATOS	
ITALIAN	MODIF.DATI IMPOSSIBILE	
DUTCH	ONGEÖORLOOFDE DATAWIJZIGING	
SWEDISH	DATAÄNDRING INTE TILLÅTEN	
NORWAY	DATAFORÄNDRING IKKE MULIG	
		No. 432
		P1
		P2
		P3
		Occurrence
		Status of Stop
		Operation continued
		How to Release
		Depress CANCEL button.

No.	Message	Description
433	1 5 10 15 20 25 29	No. 433
ENGLISH	DATA INADEOUATE	P1
GERMAN	DATENEINGABE NICHT MOEGlich	P2
FRENCH	DONNEES INADEQUATES	P3
SPANISH	DATOS INADECUADOS	Occurrence
ITALIAN	DATI NON ADEGUATI	Key input, machining program
DUTCH	GEGEVENS ONGESCHIKT	Status of Stop
SWEDISH	ORIKTIGA DATA	Operation continued
NORWAY	DATA IKKE TILSTREKKELIG	How to Release
		Depress CANCEL button.
434		No. 434
ENGLISH	NO ASSIGNED TOOL IN TOOL FILE	P1
GERMAN	KEIN WZ IM WZ.REGISTER	P2
FRENCH	PAS D'OUTIL DESIGN.DS.REGISTR	P3
SPANISH	EL UTIL NO ESTA REGISTRADO	Occurrence
ITALIAN	MANCA ASSEGN.UT.NELL'ELENCO	Key input, machining program
DUTCH	GEEN TOEGEW.GER.IN GER-REG.	Status of Stop
SWEDISH	INGET TILLD.VERK.I VERKT. F	Operation continued
NORWAY	INTET VERKT.I REGISTERET	How to Release
		Depress CANCEL button.
435		No. 435
ENGLISH	PROGRAM CHECK NOT ALLOWED	P1
GERMAN	PROGRAMMPRUEF JETZT UNMOEGlich	P2
FRENCH	VERIFIC.PROGR.NON AUTORISE	P3
SPANISH	PROHIBIDA APROVACION PROGRAMA	Occurrence
ITALIAN	VERIFICA PROGR.IMPOSSIBILE	Graphic check operation, program
DUTCH	ONMOGELIJKE PROGRAMMAKONTROLE	Status of Stop
SWEDISH	PROGR.KONTR.INTE TILLATEN	Operation continued
NORWAY	PROGRAMKONTROLL IKKE MULIG	How to Release
		Depress CANCEL button.



No.	Message	Description	No.	
436	1 5 10 15 20 25 29		No.	436
ENGLISH	DESIGN. T-NO. NOT MEASURABLE	To input a measuring tool pocket number in the automatic tool length measurement mode, an unmeasurable tool number was specified. (Tools capable of an automatic tool length measurement) spot, drill, back facing tool, reamer and tap.	P1	
GERMAN	WRKZG NICHT AUTOMAT.MESSBAR		P2	
FRENCH	OUTIL DISIGN.NON MESURABLE		P3	
SPANISH	INMEDIBLE UTIL ESTA ASIGNADO		Occurrence	Automatic tool measurement, tool data
ITALIAN	UT.DESIGN.NON MISURABILE		Status of Stop	Operation continued
DUTCH	GEVR.GER-SCHAP NIET MEETBAAR		How to Release	Depress CANCEL button.
SWEDISH	ANGIVET T-NR.INTE MATBART			
NORWAY	ANGITT VKT.NR KAN IKKE MALES			
437			No.	437
ENGLISH	NO NOM.-DIA DATA IN PROGRAM	When a work number search or layout completion was to be done on the tool layout display, a tool without a nominal diameter was registered in the specified program.	P1	
GERMAN	OHNE NON.DUTCHM.DATA IN PROG.		P2	
FRENCH	OUTIL SANS DIA-NOMIN DS PROGR		P3	
SPANISH	SIN DIAMETRO NOMINAL DE UTIL		Occurrence	Work number search/ layout completion, tool layout
ITALIAN	MANCA DATO DIA NOM.IN PROGR.		Status of Stop	Operation continued
DUTCH	NON- ONTBREEKT IN PROGRAMMA		How to Release	Depress CANCEL button.
SWEDISH	INGEN NOMINELL DIAM.IPROGR.			
NORWAY	UTEN NOM.DIA,DATA I PROGRAM			
438			No.	438
ENGLISH	BUBBLE ERROR	Bubble memory hardware has failed.	P1	
			P2	
			P3	
			Occurrence	Within the system
			Status of Stop	Operation continued
			How to Release	Depress CANCEL button





No.	Message	Description														
439	1 5 10 15 20 25 29 ENGLISH LOAD IMPOSSIBLE (PROTECT) GERMAN KEINE EINGABE (SCHUTZ) FRENCH INTR. IMPOSS. (PROTECT.) SPANISH CARGA IMPOSIBLE (PROTECION) ITALIAN CARICAM. IMPOSSIBILE (PROTEZ) DUTCH INGAVE ONMOGELIJK (BESCHERM) SWEDISH LADDN. OMOJL. (PROTEDTION) NORWAY INNGIVELSE UMULIG (LAAST)	<table><tr><td>No.</td><td>439</td></tr><tr><td>P1</td><td></td></tr><tr><td>P2</td><td></td></tr><tr><td>P3</td><td></td></tr><tr><td>Occurrence</td><td>Loading operation, CMT I/O</td></tr><tr><td>Status of Stop</td><td>Operation continued</td></tr><tr><td>How to Release</td><td>Depress CANCEL button.</td></tr></table>	No.	439	P1		P2		P3		Occurrence	Loading operation, CMT I/O	Status of Stop	Operation continued	How to Release	Depress CANCEL button.
No.	439															
P1																
P2																
P3																
Occurrence	Loading operation, CMT I/O															
Status of Stop	Operation continued															
How to Release	Depress CANCEL button.															
440	ENGLISH LOAD IMPOSSIBLE (SIZE OVER) GERMAN KEIN EINGABE (UMFANG ZU GROS) FRENCH INTR. IMPOSS. (DEPASS CAP) SPANISH CARGA IMPOSIBLE (COBRE-TAMNO) ITALIAN CARIC. IMPOSS. (DIMENS. ECCES) DUTCH INGAVE ONMOG. (OVERSCHER-CAP) SWEDISH LADDN. OMOJL. (PROG. FOR ST) NORWAY FOR MANGE DATA (LAGER FULLT)	<table><tr><td>No.</td><td>440</td></tr><tr><td>P1</td><td></td></tr><tr><td>P2</td><td></td></tr><tr><td>P3</td><td></td></tr><tr><td>Occurrence</td><td>Loading operation, CMT I/O</td></tr><tr><td>Status of Stop</td><td>Operation continued</td></tr><tr><td>How to Release</td><td>Depress CANCEL button.</td></tr></table> <p>When an attempt is made to load a machining program in the memory of the NC unit using a cassette I/O device, the specified program was too large (exceeding 250 lines) to be read into the memory.</p>	No.	440	P1		P2		P3		Occurrence	Loading operation, CMT I/O	Status of Stop	Operation continued	How to Release	Depress CANCEL button.
No.	440															
P1																
P2																
P3																
Occurrence	Loading operation, CMT I/O															
Status of Stop	Operation continued															
How to Release	Depress CANCEL button.															
441	ENGLISH LOAD IMPOSSIBLE (TOO MANY) GERMAN KEIN EINGABE (ZU VIEL NUMMER) FRENCH INTRO. IMPOSS. (TROP DE NO.) SPANISH CARGA IMPOSIBLE NUMERICAMENTE ITALIAN CARIC. IMPOSS. (TROPPI NUM.) DUTCH TNGAVE ONMOG. (TE VEEL NUM.) SWEDISH LADDNING OMOJLIG (FOR MANGA) NORWAY DATA INN UMULIG (FOR STORT NR)	<table><tr><td>No.</td><td>441</td></tr><tr><td>P1</td><td></td></tr><tr><td>P2</td><td></td></tr><tr><td>P3</td><td></td></tr><tr><td>Occurrence</td><td>Loading operation, CMT I/O</td></tr><tr><td>Status of Stop</td><td>Operation continued</td></tr><tr><td>How to Release</td><td>Depress CANCEL button.</td></tr></table> <p>When an attempt is made to load a machining program in the memory of the NC unit using a cassette I/O device, 16 programs had already been registered so that a new program could not be field.</p>	No.	441	P1		P2		P3		Occurrence	Loading operation, CMT I/O	Status of Stop	Operation continued	How to Release	Depress CANCEL button.
No.	441															
P1																
P2																
P3																
Occurrence	Loading operation, CMT I/O															
Status of Stop	Operation continued															
How to Release	Depress CANCEL button.															



No.	Message	Description
442	1 5 10 15 20 25 29 ENGLISH CONTENTS ARE NOT COINCIDENT GERMAN INHALT GANZ VERSCHIEDEN FRENCH CONTENU NE COINCIDENT PAS SPANISH LOS CONTENIDOS NO COINCIDIDOS ITALIAN I CONTEN.NON SONO COINCID. DUTCH INHOUD STEM NIET OVEREEN SWEDISH INNEHALL OVERENSSTAMMER INTE NORWAY INNHOLD IKKE SAMMENFALLENDE	Comparing a cassette tape with the NC memory through a cassette I/O device disclosed a complete difference of data. (The number of program lines was wrong.)
		No. 442 P1 P2 P3 Occurrence Comparison CMT I/O Status of Stop Operation continued How to Release Depress CANCEL button.
443	ENGLISH CMT FORMAT ERROR GERMAN KASSETTENSYSYSTEM FORMATFEHLER FRENCH ERR.DE FORMAT SYST.CASSET. SPANISH ERROR FORMATO CMT ITALIAN ERRORE DI FORMATO REGISTRAT. DUTCH FOUT.FORMAAT-CASSETTESYST. SWEDISH FORMATFEL KASSETTBANDSPELARE NORWAY FORMATFEIL KASSETTSYSTEM	The format recorded in the cassette tape does not coincide.
		No. 443 P1 P2 P3 Occurrence CMT I/O Status of Stop Operation continued How to Release Depress CANCEL button.
444	ENGLISH DATA ARE NOT COINCIDENT GERMAN INHALT TEILWEISE VERSCHIEDEN FRENCH DONNEES NE COINCIDENT PAS SPANISH LOS DATOS NO COINCIDIDOS ITALIAN DATI NON DOINCIDENTI DUTCH GEGEVENS STEMMEN NIET OVEREEN SWEDISH NORWAY DATA ER IKKE SAMMENFALLENDE	Comparing the cassette tape with the NC memory using a cassette I/O device disclosed a discrepancy in some of the data.
		No. 444 P1 P2 P3 Occurrence Comparison CMT I/O Status of Stop Operation continued How to Release Depress CANCEL button.



No.	Message	Description	No.	
445	1 5 10 15 20 25 29 ENGLISH ILLEGAL ADDRESS DESIGNED	Unusable address was designated.	No.	445
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
446	ENGLISH PROG. SOFTWARE NOT COINCIDENT GERMAN PROG.SOFTWARE NICHT TREFFEN FRENCH PROG.SOFTWARE NON COINCIDENT SPANISH PROG.SOFTWARE NO COINCIDEN ITALIAN PROG.SOFTWARE NON COINCIDENT DUTCH PROGR.SOFTW.STEMT NIET OVER. SWEDISH PROG.MJUKVARA OVERKNSS.INTE NORWAY PROGR.SOFTWARE IKKE FULLST.	Revising a version resulted in a partial change of the program data structure. (For example, certain data were added to a certain unit.) As a result, an old machining program could not be used, as is. Before using any program, therefore, check it fully.	No.	446
			P1	
			P2	
			P3	
			Occurrence	Machining program
			Status of Stop	Operation continued
			How to Release	Depress CANCEL button.
447	ENGLISH DISIGNATID FILE NOT FOUND GERMAN GEWAHLTE DATEN NICHT DEFUNDEN FRENCH REGIST.CHOISI PAS TROUVE SPANISH MEMORIA PEDIDA NO APARECE ITALIAN DATO CERCATO NON TROVATO DUTCH GEKOZEN REGISTER NIET GEVOND SWEDISH AVGIVEN FIL HITTAS INTE NORWAY ANGITT DATALAGER FINNES IKKE	In CMT I/O, a specified file was not recorded on the cassette tape. This error, however, takes place only when the specified file is recorded on the tape in an order different from that already recorded.  Tape WNO.2 WNO.1  1 and 2 are specified in that order, although 2 has no specified file.	No.	447
			P1	
			P2	
			P3	
			Occurrence	CMT I/O
			Status of Stop	Operation continued
			How to Release	Depress CANCEL button.



No.	Message	Description	No.	
448	1 5 10 15 20 25 29		No.	448
ENGLISH	CMT MALFUNCTION	Cassette tape data had an error when loaded or compared through CMT I/O. (A check sum, for instance, was found out of coincidence.)	P1	
GERMAN	KASSETTENSYSYSTEM UBERSPIELFEHL		P2	
FRENCH	MALF.SYSTEME A CASSETTES		P3	
SPANISH	MALFUNCION CMT		Occurrence	Load/ comparison, CMT I/O
ITALIAN	MALFUNZ.REGISTR.CASSETTE		Status of Stop	Operation continued
DUTCH	STORING CASSETTESYSYSTEM		How to Release	Depress CANCEL button.
SWEDISH	DEFEKT BANDSPELARE			
NORWAY	FEIL I KASSETTSYSTEM			
449		No cassette tape was loaded.	No.	449
ENGLISH	CASSETTE TAPE MIS-EQUIPPED		P1	
GERMAN	KASSETTENFEHLER		P2	
FRENCH	UTIL.LECT.CASS.ERRONEE		P3	
SPANISH	CINTA CASSET MAL EQUIPADA		Occurrence	CMT I/O
ITALIAN	ERRORE REGISTR.CASSETTE		Status of Stop	Operation continued
DUTCH	CASSETTE VERKEERD BEDIENT		How to Release	Depress CANCEL button.
SWEDISH	INGEN KASSETTAPE			
NORWAY	KONTROLLER KASSETTEN			
450		A cassette tape has been protected (the protective tip removed) and cannot be saved.	No.	450
ENGLISH	MEMORY WRITING PROTECT		P1	
GERMAN	KASSETTEUBERSPIEL SCHUTZ		P2	
FRENCH	LANG.PROT.MAM.CASSETTE		P3	
SPANISH	PROTECC ESCRIBIR EN MEMORIA		Occurrence	Cassette tape, CMT I/O
ITALIAN	PROTEZ.MEMORIA SCRITTURA		Status of Stop	Operation continued
DUTCH	BESCHERMING CASSETTE-OPNAME		How to Release	Depress CANCEL button.
SWEDISH	MINNESSKYDD			
NORWAY	KASSETT KAN IKKE OVERSPILLES			



No.	Message	Description	No.	
451			No.	451
ENGLISH	MISSING DRUM CHANGE UNIT	With parameter Y02 going 1 (drum changed), a drum change unit is unavailable in the program which has searched for a workpiece number on the tool layout picture.	P1	
GERMAN	FEHLENDE TROMELWECHSELEINHEIT		P2	
FRENCH	PAS DE CHANGEUR DE TAMBOUR		P3	
SPANISH	FALTA UNIDAD CAMBIO TAMBORES		Occurrence	Tool layout
ITALIAN	DIMENTICATO CAMBIO TAMBUR		Status of Stop	
DUTCH	GEEN MAGAZIJNWISSELAAR		How to Release	Depress CANCEL button
SWEDISH	MAGASINSVAEXL.EJ PROGRAMMERAD			
NORWAY	MANGLENDE TROMMELSKIFTE			
452			No.	452
ENGLISH	NO SHAPE DATA IN THE UNIT	To copy a shape and a unit, no shape data have been inputted in the unit specified.	P1	
GERMAN	KEINE KONTURPROGRAMMIERUNG		P2	
FRENCH	UNITE SANS DONNEES DU PROFILE		P3	
SPANISH	SIN DATOS DE TORMA EN UNIDAD		Occurrence	Program picture
ITALIAN	MANCANO DATI PROFILO		Status of Stop	
DUTCH	GEEN FIGUURGEDEV.IN EENHEID		How to Release	Depress CANCEL button
SWEDISH	FORMDATA SAKNAS			
NORWAY	INGEN FORM DATA			
453			No.	453
ENGLISH	SELECTED SHAPE INADEQUATE	To copy a shape, the data of such a shape type that can not be specified in the unit has tried to be copied.	P1	
GERMAN	GEWAHLTE KONTUR UNMOEGlich		P2	
FRENCH	SELECTION D'UN PROFILE ERRONE		P3	
SPANISH	FORMA SELECCIONADA INADECUADA		Occurrence	Program picture
ITALIAN	PROFILO NON ADEGUATO		Status of Stop	
DUTCH	VERKEERDE FIGUURKEUZE		How to Release	Depress CANCEL button
SWEDISH	VALD FORM FELAKTIGT			
NORWAY	VALGT FORM IKKE KORREKT			
454			No.	454
ENGLISH	CURSOR POSITION INADEQUATE	With the cursor out of position, a shape and a unit have tried to be copied.	P1	
			P2	
			P3	
			Occurrence	Program picture
			Status of Stop	
			How to Release	Depress CANCEL button

[illegible]





No.	Message	Description	No.	
465	1 5 10 15 20 25 29 ENGLISH OPERATION NOT ALLOWED	Processing request has come when the DNC can not move because the NC unit has started operation.	No.	465
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
466	ENGLISH DNC SYSTEM ERROR	Error has been caused in NC when data processing is being executed between the NC and target (host computer).	No.	466
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
467	ENGLISH WORK NO. NOT FOUND	The first significant data has the address other than "0" when the setting of the work No. has been omitted upon paper tape input.	No.	467
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
468	ENGLISH TAPE ERROR	Upon tape punching, tape is not set or tape is insufficient.	No.	468
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	





No.	Message	Description	No.	
469	1 5 10 15 20 25 29 ENGLISH NOT FOUND EIA/ISO OPTION	Operation associated with EIA has been executed when no EIA option is available.	No. 469	
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
470	ENGLISH TAPE READER ERROR	Power to tape reader is not switched on or cable is not connected.	No. 470	
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
471	ENGLISH TAPE PUNCHER ERROR	Power to tape puncher is not switched on or cable is not connected.	No. 471	
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
472	ENGLISH BLOCK CHARACTER > 64	During EIA/ISO, data in one block have exceeded 64 characters.	No. 472	
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
473	1 5 10 15 20 25 29 ENGLISH CODE & EIA CODE OVERLAPPED	Data (parameter OP3) set as the # code during EIA is equal to the code for another EIA.	No.	473
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
474	MAZATROL WORK NO. DESIGNATED	The work No. designated upon use of tape puncher happens to be a program in the MAZATROL language.	No.	474
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
475	NOM.-DIA. INPUT PROCESS ERROR	The nominal diameter is not entered when the suffix and tool length are inputted for display of the tool data screen.	No.	475
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
476	NOT FOUND ADDRESS OF DATA	During programming, the data was entered without specifying the address in the course of input of FRM.	No.	476
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description
477	1 5 10 15 20 25 29	No. 477
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
478		No. 478
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
479		No. 479
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
500	NOT FOUND SEQUENCE OR BLOCK NO.	No. 500
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release



No.	Message	Description	No.	
501	1 5 10 15 20 25 29 ENGLISH 64 CHARACTERS OVER	Data in one block have exceeded 64 characters.	No.	501
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
502	ENGLISH SUB PROGRAM CALL ERROR	Data necessary for sub-program call command has not been set.	No.	502
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
503	ENGLISH SUB PROGRAM NESTING OVER	Data necessary for sub-program call command is too great.	No.	503
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
504	ENGLISH NOT FOUND WORK NO. (RAM)	The work No. specified is not found on the RAM memory.	No.	504
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
505	1 5 10 15 20 25 29 ENGLISH SYSTEM ERROR (TASK)	Error has been caused during data processing.	No.	505
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
506	ENGLISH NOT FOUND WORK NO. (BUBBLE)	Work No. specified is not present on the bubble memory.	No.	506
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
507	ENGLISH NOT ABLE TO CALL MAZATROL PRG	During EIA/ISO, MAZATROL program can not be called as sub-program.	No.	507
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
508	ENGLISH		No.	508
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
509	1 5 10 15 20 25 29		No.	509
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
510			No.	510
ENGLISH	NO START-POINT OF OFFSET FIG	During EIA/ISO, the starting point of the specified offset graphic can not be determined.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
511			No.	511
ENGLISH	G41, G42 FORMAT ERROR	The block where G41 and G42 or G40 is present is in the arc mode.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
512			No.	512
ENGLISH	TOOL DIA OFFSET IMPOSSIBLE	More than two blocks of the original graphic are cancelled by tool offset.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
513	1 5 10 15 20 25 29		No.	513
ENGLISH	NO FINAL POINT (G41, G42 MODE)	The terminal point on the current plane can not be determined because of the change of the coordinate plane.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
514			No.	514
ENGLISH	NO MOVEMENT COMMAND	No movement block is available.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
515			No.	515
ENGLISH	ILLEGAL OFS-FIG INPUT PROCESS	During EIA/ISO, data for offset graphic is insufficient.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
516			No.	516
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description
517	1 5 10 15 20 25 29	No. 517
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
518		No. 518
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
519		No. 519
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
520		No. 520
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release





No.	Message	Description	No.	
550	1 5 10 15 20 25 29		No.	550
ENGLISH	FORMAT ERROR (EIA/ISO)	The format of the numerical data in the EIA/ISO program is incorrect.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
551			No.	551
ENGLISH	ILLEGAL DATA INPUT	Numerical falling out of the specified range has been entered.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
552			No.	552
ENGLISH	VARIABLE NOT ABLE TO READ	Data can not be read from the specified # variables.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
553			No.	553
ENGLISH	ILLEGAL DATA INPUT	Data specified can not be processed.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
554	1 5 10 15 20 25 29 ENGLISH ILLEGAL G CODE INPUT	The specified G code does not exist.	No.	554
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
555	ENGLISH IMPOSSIBLE G CODE INPUT	The combination of the specified G code is impossible.	No.	555
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
556	ENGLISH NOT FOUND EOB (END OF BLOCK)	There is no end of block (EOB) among data in one block.	No.	556
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
557	ENGLISH		No.	557
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description
558	1 5 10 15 20 25 29	No. 558
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
559		No. 559
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
560		No. 560
ENGLISH	DIVISION ZERO ERROR (MACRO)	P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
561		No. 561
ENGLISH	MACRO OVERFLOW	P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release



No.	Message	Description	No.	
562	1 5 10 15 20 25 29 ENGLISH MACRO UNDERFLOW	The result of operation has exceeded the allowable limit of the variable. ( $< - (231-1)$ )	No.	562
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
563	ENGLISH MACRO PROGRAM ERROR	The macro instruction block lacks necessary data.	No.	563
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
564	ENGLISH MACRO TOOL DATA ILLEGAL INPUT		No.	564
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
565	ENGLISH SQUARE ERROR	Error was caused in calculation of a square root.	No.	565
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
566	1 5 10 15 20 25 29		No.	566
ENGLISH	UNDEFINED MACRO VARIABLE	An unusable macro variable has been designated.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
567			No.	567
ENGLISH	NOT FOUND USERMACRO OPTION	User macro function as option is unavailable.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
568			No.	568
ENGLISH	BCD DATA INPUT PROCESS ERROR	Error was caused upon input of BCD (binary code) data.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
569			No.	569
ENGLISH	TOOL NO INPUT ERROR (DIA)	The specified tool No. does not allow the reference to the tool diameter data.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description
570	1 5 10 15 20 25 29 ENGLISH TOOL NO. INPUT ERROR (LENGTH)	The specified tool No. does not allow the refer- ence to the tool length data.
		No. 570
		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
571		No. 571
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
572		No. 572
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release
573		No. 573
ENGLISH		P1
		P2
		P3
		Occurrence
		Status of Stop
		How to Release



No.	Message	Description		
574	1 5 10 15 20 25 29 ENGLISH NOT FOUND PROGRAM NO.	The program No. is not specified upon calling of a sub-program.	No.	574
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
575	ENGLISH ILLEGAL P DATA INPUT ERROR	Work No. exceeding 9999 was specified as the program No. upon calling of a sub-program.	No.	575
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
576	ENGLISH SUB PROGRAM NESTING OVER	More than eight-fold nesting has been commanded with the sub-program (including user macro).	No.	576
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
577	ENGLISH G10 INPUT PROCESS ERROR	Upon receiving of G10 command, any of the data X, Y, Z and A was lacking.	No.	577
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
578	1 5 10 15 20 25 29 ENGLISH G10 FORMAT ERROR	For G10 command, a numerical greater than 7 has been entered in P.	No.	578
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
579	ENGLISH ILLEGAL M/B CODE INPUT ERROR	Upon input of the M code or B code, a numerical greater than 99999999 has entered.	No.	579
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
580	ENGLISH ILLEGAL D/H CODE INPUT ERROR	A numerical greater than 127 or negative was entered by means of the D code or H code.	No.	580
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
581	ENGLISH ILLEGAL G CODE INPUT	The user macro G code was given although the effective parameter (OP1) for the user macro was not set.	No.	581
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	





No.	Message	Description	No.	
582	1 5 10 15 20 25 29		No.	582
ENGLISH	SYSTEM ERROR (EIA/ISO)	Error was caused in the course of data processing during EIA/ISO.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
583			No.	583
ENGLISH	MACRO PROGRAM NESTING OVER	Upon calling of user macro modal, more than four-fold nesting was ordered.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
584			No.	584
ENGLISH	ILLEGAL RADIUS	1. In G02, G03, the radius R can not be found from I, J and K commands.	P1	
			P2	
			P3	
			Occurrence	
		2. In G45-G48, other than 1/4 and 3/4 circles was specified.	Status of Stop	
			How to Release	
585			No.	585
ENGLISH	G02, G03 INPUT PROCESS ERROR	1. In the arc command of the R command, the input data is insufficient.	P1	
			P2	
			P3	
			Occurrence	
		2. The R command is present for one-revolution arc.	Status of Stop	
			How to Release	



No.	Message	Description	No.	
586	1 5 10 15 20 25 29 TOOL LENGTH OFS FORMAT ERROR	1. Tool length offset was executed during execution of the arc command	No.	586
ENGLISH		2. Tool length offset was cancelled during execution of the arc command	P1	
		3. The amount of tool length offset has changed during execution of the arc command.	P2	
		4. In setting of a desired axis, the offset of two axes was going to be executed at a time.	P3	
			Occurrence	
			Status of Stop	
			How to Release	
587	SELECT PLANE MODE CHANGE ERR	In the G41, G42 mode, the plane selection mode has been changed.	No.	587
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
588	CUTTER COMPENSATION FORMAT ERR	1. G41→G42 or G42→G41 command not thorough G40 was given.	No.	588
ENGLISH		2. In G41 or G42, a command for G54-G59 was given or ATC was going to be executed in G41 or G42.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
589	EXT.COORDINATE INPUT ERROR	During input of external coordinate system input, a numerical other than mm -7.999 through 7.999 and inch -0.7999 through 0.7999 was entered.	No.	589
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
590	1 5 10 15 20 25 29		No.	590
ENGLISH	G31 FORMAT ERROR	The block which ordered G31 or the previous block was in the G41 or G42 mode.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
591			No.	591
ENGLISH	G60 FORMAT ERROR	G60 was specified in the G41 or G42 mode.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
592			No.	592
ENGLISH	TOOL POSITION OFS FORMAT ERR	Arc command other than 1/4 arc and 3/4 arc was specified in the tool position offset.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
593			No.	593
ENGLISH	G02, G03 FORMAT ERROR	1. Either I, J and K or R is not specified in the G02, G03 command.  2. During execution of G02, G03 command, the diameter correction mode has been changed.	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
594	1 5 10 15 20 25 29 ENGLISH FIXED CYCLE INPUT PROCESS ERR	In the fixed cycle, the input data was insuffici- ent.	No.	594
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
595	ENGLISH FIXED CYCLE FORMAT ERROR 1	G71, G72 Hole diameter P < Diameter D *2 Hole diameter P < Lower hole diameter Q Radius D ≤	No.	595
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
596	ENGLISH FIXED CYCLE FORMAT ERROR 2	G73, G83 Cut Q > 0	No.	596
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
597	ENGLISH TOOL-DIA. OFFSET IS NEGATIVE	The data put in the off set No. indicated by D _____ is negative.	No.	597
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
598	1 5 10 15 20 25 29 ENGLISH SUBPRO CALL & ATC IN A BLOCK	The sub-program call/return (G22, 23, M98, 99) and ATC (T code or M06) were specified in the same block.	No. 598	
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
599	G22, 23 & M98, 99 IN ONE BLOCK	G22, 23 and M98, 99 were specified in the same block.	No. 599	
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
ENGLISH			No.	
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
ENGLISH			No.	
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description	No.	
900	1 5 10 15 20 25 29		No.	900
ENGLISH			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
901			No.	901
ENGLISH	USERMACRO USER ALARM NO.1	Displayed by NC alarm data in user macro	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
902			No.	902
ENGLISH	USERMACRO USER ALARM NO.2	Displayed by NC alarm data in user macro	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
903			No.	903
ENGLISH	USERMACRO USER ALARM NO.3	Displayed by NC alarm data in user macro	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description		
904	1 5 10 15 20 25 29		No.	904
ENGLISH	USERMACRO USER ALARM NO.4	Displayed by NC alarm data in user macro	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
905			No.	905
ENGLISH	USERMACRO USER ALARM NO.5	Displayed by NC alarm data in user macro	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
906			No.	906
ENGLISH	USERMACRO USER ALARM NO.6	Displayed by NC alarm data in user macro	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
907			No.	907
ENGLISH	USERMACRO USER ALARM NO.7	Displayed by NC alarm data in user macro	P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



No.	Message	Description		
908	1 5 10 15 20 25 29 ENGLISH USERMACRO USER ALARM NO.8	Displayed by NC alarm data in user macro	No.	908
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
909	ENGLISH USERMACRO USER ALARM NO.9	Displayed by NC alarm data in user macro	No.	909
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
910	ENGLISH USERMACRO USER ALARM NO.10	Displayed by NC alarm data in user macro	No.	910
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	
911	ENGLISH		No.	911
			P1	
			P2	
			P3	
			Occurrence	
			Status of Stop	
			How to Release	



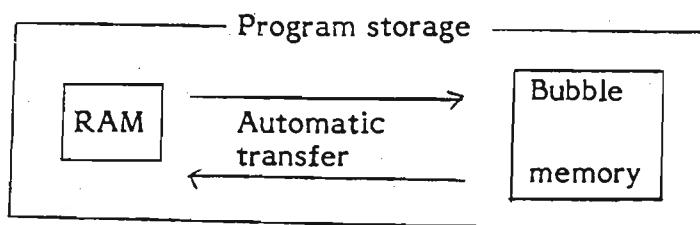


## 5. BUBBLE MEMORY (OPTION)

### 5-1 Bubble Memory Usage

The maximum number of blocks stored in RAM is 580 for the Mazatrol M-1. When more blocks are required for programming, bubble memory has to be utilized. When more storage is required, bubble memory can be used to expand the storage capacity greater than 580 blocks (including sub-programs).

Since bubble memory transfer is automatic, there is no operational procedure necessary to use bubble memory.



Push the Menu key **Bubble Directory** on the CRT to check the contents of the bubble memory. All program numbers and the number of used blocks are displayed on the C.R.T.

1	WORK NO.	SIZE	WORK NO.	SIZE	WORK NO.	SIZE	WORK NO.	SIZE	WORK NO.	SIZE
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
USED		01580	0 - 20290							
*** PROGRAM FILE ***										
PAGE 1/2										
( )										
PROGRAM ERASE	ALL ERASE									PAGE

Part or all of the programs in the bubble memory can be erased by pressing the appropriate menu key on the CRT.



## 5-2 Automatic Program Transfer

- (1) Program transfer time between RAM and Bubble Memory is approximately 10 seconds maximum.
- (2) When a program is called for by Work No. Search and the program is not in the RAM, it is transferred to the RAM from the Bubble Memory.
- (3) Program transfer between RAM and Bubble Memory is performed according to the program storage order when the number of unused blocks is less than 250 or the number of programs stored is more than 15.
- (4) A program being executed (machining) and a program in the process of being entered are not transferred to Bubble Memory.
- (5) A program has already been stored in RAM when automatic operation, programming & graphic display are being performed.
- (6) The message, "RAM/BUBBLE MEMORY TRANSFER" is displayed on the CRT during program transfer.



### 5.-3 Bubble Memory Precautions

- (1) It is not possible to search for a program stored in Bubble Memory during automatic operation.
- (2) During background programming, a program must not be edited when a sub-program of the main program is being automatically transferred from Bubble Memory to RAM.
- (3) When a program has been transferred from Bubble Memory to RAM, the program still remains in the Bubble Memory. In other words, the program is stored in two different memories.
- (4) When a program with a sub-program is to be run, prior to machining, the entire program contents must be transferred to RAM.



#### 5-4 Bubble Memory TYPE

There are 3 kinds of bubble memory classified according to the memory capacity.

	Bubble memory printed circuit board number	Memory capacity (KB)	Max. number of blocks	Parameter set value (Y Q O)	Max. number of programs
1	Fx 124	128	2370	1	128
2	Fx 144	512	10050	2	128
3	Fx 154	1024	20290	3	128
Standard	RAM	24	580	0	16

#### 5-5 Initial Bubble Memory Setting

Bubble memory printed circuit board is installed in the NC control unit.

Parameter Y Q O is set according to the Bubble Memory capacity.

Erasure of bubble memory

Printed circuit board is installed between Fx04-1 and Fx27 control unit.

Contents of the bubble memory are made permanently unusable if the incorrect parameter is set.

Bubble memory is completely erased when a new bubble memory printed circuit board is installed or parameter Y Q O is input.

**Note:** The CRT will be locked by pressing "Work No. Search" or "Input" when bubble memory is not used and the parameter Y Q O is set at 0.



## 6. Mirror image (Option)

Mirror image function with respect to X or Y axis can be used for point machining, line machining, face machining and all kinds of arbitrary machining by M code command.

- a) M90: Mirror image cancel
- b) M91: Mirror image, X-axis
- c) M92: Mirror image, Y-axis

When M91 and M92 are simultaneously commanded, the point of symmetry is the new work zero pint.

Note 1: Mirror image is not effective unless it is commanded by M code.

Note 2: Be sure to cancel mirror image by M90 command.

Note 3: Workpiece graphic display and tool path are not shown when mirror image is used.

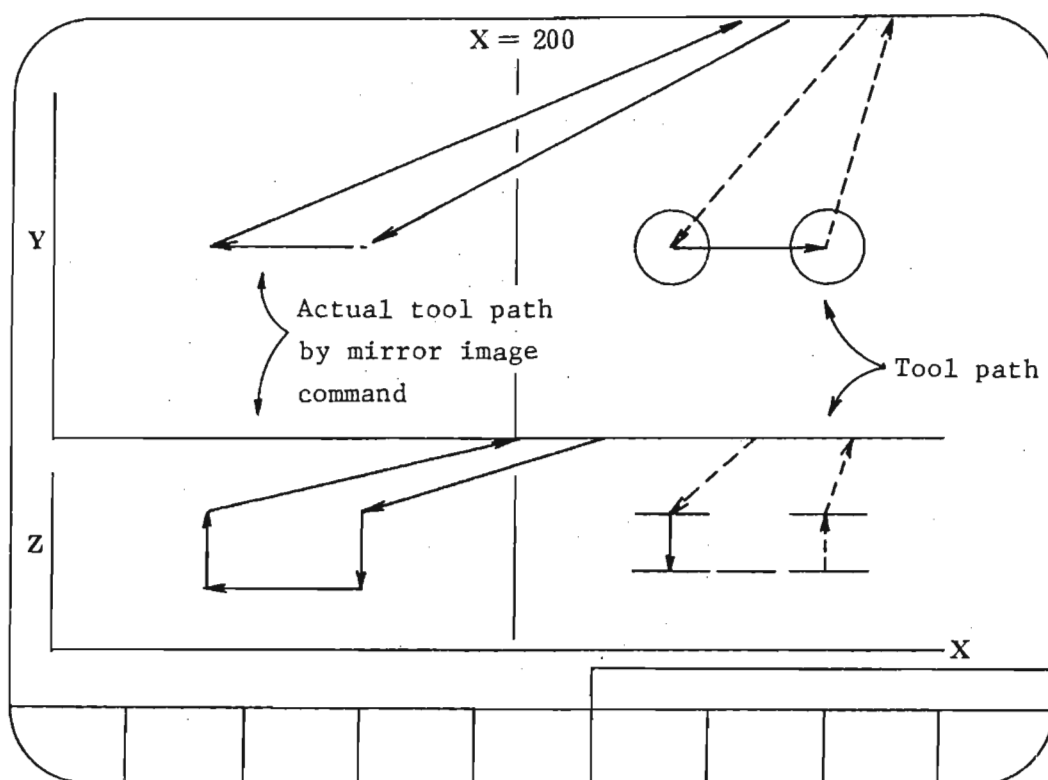
Note 4: Do not command axis shift in the first sequence of arbitrary machining when arbitrary machining follows the mirror image M code command.

### (EXAMPLE)

UNQ	MAT	INITIAL-Z	MULTI	PITCH X	PITCH Y				
0	PC	50	000000000000	0	0				
UNQ	UNIT	X	Y	Q	Z				
1	FRM-1	-200	-200	0	-200				
UNQ	UNIT	M1	M2	M3	M4	M5	M6	M7	M8
2	M CODE	91							
UNQ	UNIT	TOOL	NOM- $\phi$						
3	MANU PRO	END MILL	20.A						
SNQ	G	G	DATA 1	DATA 2	DATA 3	DATA 4	DATA 5	DATA 6	SM/B
1									500 M3
2	0	X3	Y30	Z10					
3	1 94			Z-10	F250				
4		X60			f500				
5	0			Z10					
UNQ	UNIT	M1	M2	M3	M4	M5	M6	M7	M8
4	M CODE	90							
UNQ	UNIT	CONTL.	NUMBER						
5	END	0	0						



# GRAPHIC DISPLAY





## 7. Time study function

Machining time is shown on the CRT after the tool path check.

It is indicated at the lower right corner of the CRT. (Ex.999999: 59'59'')

### (1) Parameter for time study

Parameter setting (2)

Parameter	Contents
AT2	M code execution time (minimum increment : 0.01 sec.)
AT3	B code execution time (minimum increment : 0.01 sec.)
AT4	ATC execution time (minimum increment : 0.01 sec.)

### (2) Remarks

a) A signal is sent to the NC unit when the probe touches the workpiece. However, in the case of performing a time study, the signal is sent to the NC unit when the probe reaches a position which is set as a limit of the probe range.

b) The following are not included for time study calculation.

Drum changing time

Dwell time

M code execution time is included only for one M code command. If more are programmed in the same block of information, their execution time will not be included.



# INSTRUCTION MANUAL

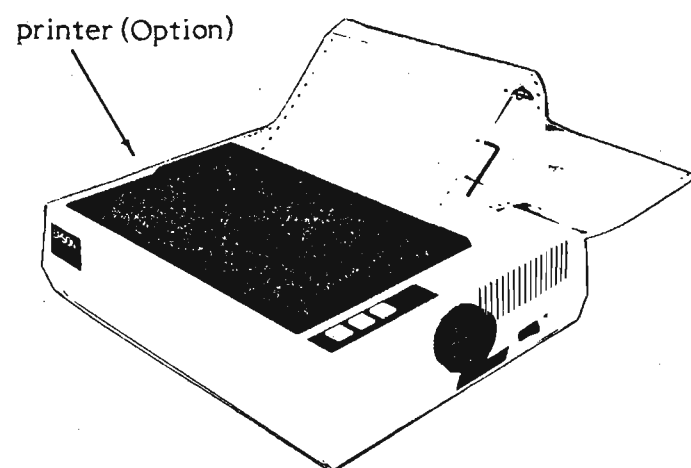
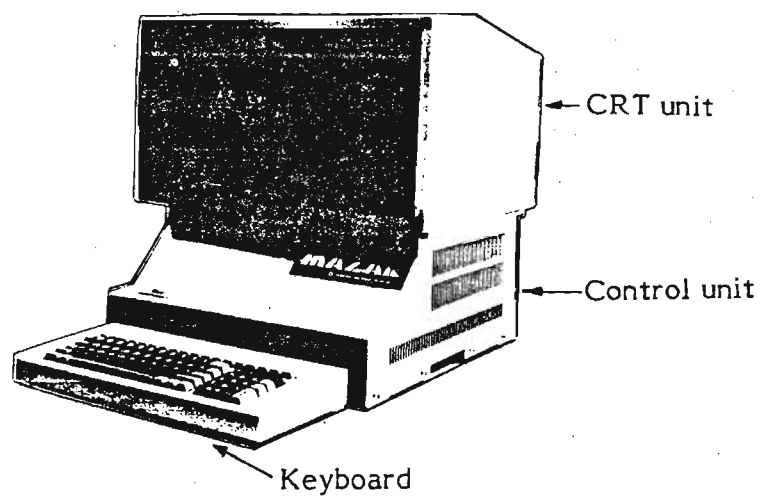
FOR

MAZAK CAM SYSTEM (Option)





## PICTURE





This Instruction Manual covers operating procedures of MAZAK CAM SYSTEM software which can be handled almost in the same manner as the software for MAZATROL M1. Therefore, materials described here shall be restricted to those which differ from MAZATROL M1.

## 1. SYSTEM START

Start the system as follows after turning the power on.

- 1) Insert the system diskette into the drive "0" slot. (See Fig. 1.1.)
- 2) Press (BOOT) on the keyboard.

After the steps 1) and 2) above, the program is read from the diskette and the system starts operation.

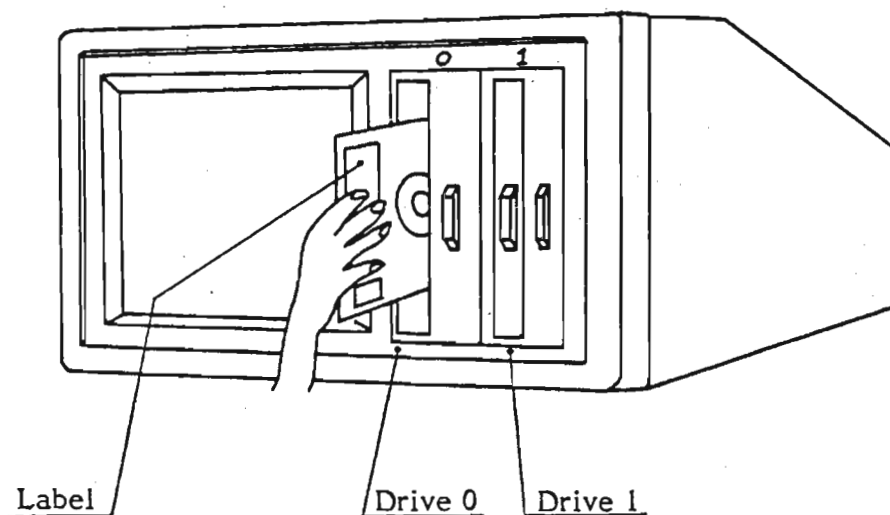


Fig. 1.1

Insert the system diskette into the disk drive unit with the label side facing to the right (i.e., the label faces the door of the disk drive unit).



## **2. TO PROGRAM MACHINING CYCLE**

When the system starts, the screen displays the system version (see appendix). Select the screen display mode using the menu keys for the desired programming. Operations for the selected screen display are the same as the operations for MAZATROL M1. Note that some screen modes are not available on this system although provided on MAZATROL M1.

## **3. SCREEN MODES AND FUNCTIONS NOT PROVIDED ON THIS SYSTEM**

- 1) Following screen modes are not available on this system.
  - a) Position
  - b) Command
  - c) Diagnose (alarm, time and memory monitor)
  - d) Parameter (pitch error)
  - e) Graphic trace function
  - f) Background programming
  - g) Detailed information
  - h) DNC function
- 2) For parameters, all the display modes except pitch error compensation are available.
- 3) The system has no (RESET) key. To reset the system, press (CL) while pressing "CTRL".

## **4. JOB TERMINATION**

After completing the job, follow the procedure below instead of directly turning the power off.

- 1) Press the CRT display selection key to get the screen selection menus.
- 2) Press "EXIT".
- 3) A message "EXIT" appears in reverse video.
- 4) Press "EXIT" again.



The operation above saves the data currently registered in the memory, such as machining programs and tool data. These data will be lost by ending the operation without following the procedure above, directly turning the power off, for instance.

## **5. SYSTEM START-UP AFTER ENDING OPERATION**

The system operation can be resumed without loading the system program from the diskette, if you have ended the operation in the manner as indicated in section 4 and the power has not yet been turned off.

Simply press (G) and (RETURN) in succession.

(In this case, it is not necessary to set the system diskette in the disk drive unit.)

## **6. CAUTIONS**

- 1) The operation is ended any time irrespective of the state of the system by pressing (C) while pressing (CTRL).  
In this case, the system operation can be resumed by pressing (BOOT).  
However, the data registered in the memory will be lost.
- 2) Never enter the parameters of this system into the NC unit. (Note that it is possible to enter the parameters into the NC unit.) Since many parameters used on the NC are not used on this system, the NC might fail to function when the parameters of this system are entered into the NC.



## APPENDIX

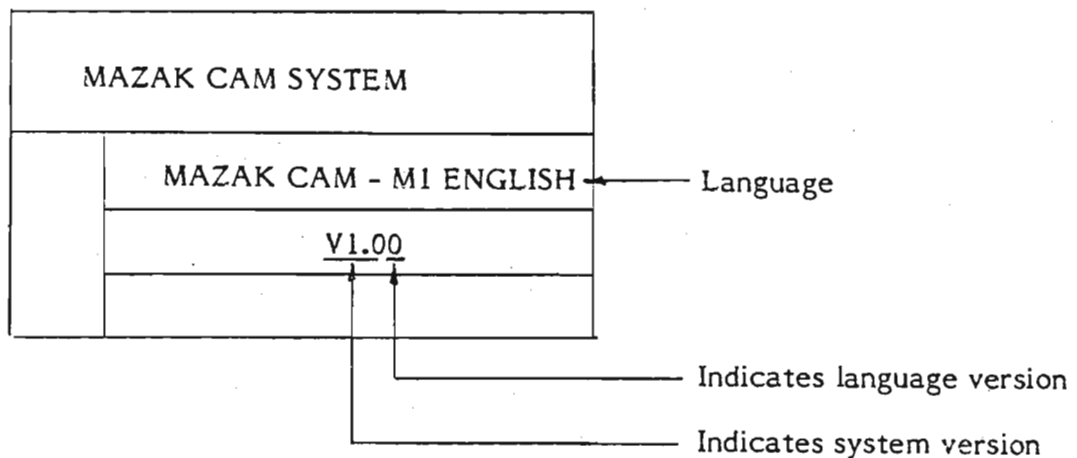
### SYSTEM START-UP DISPLAY

The CRT displays the following information at system start-up.

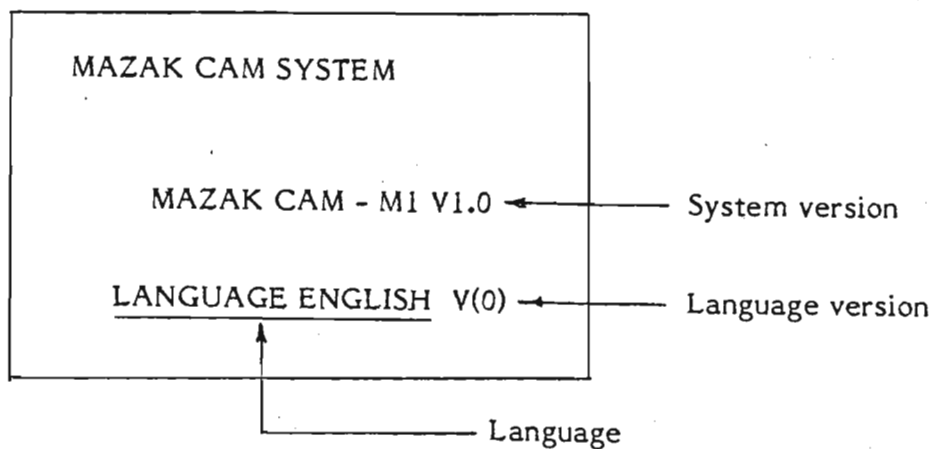
- Program name
- Software version
- Language
- Language version

These are same as written on the diskette label.

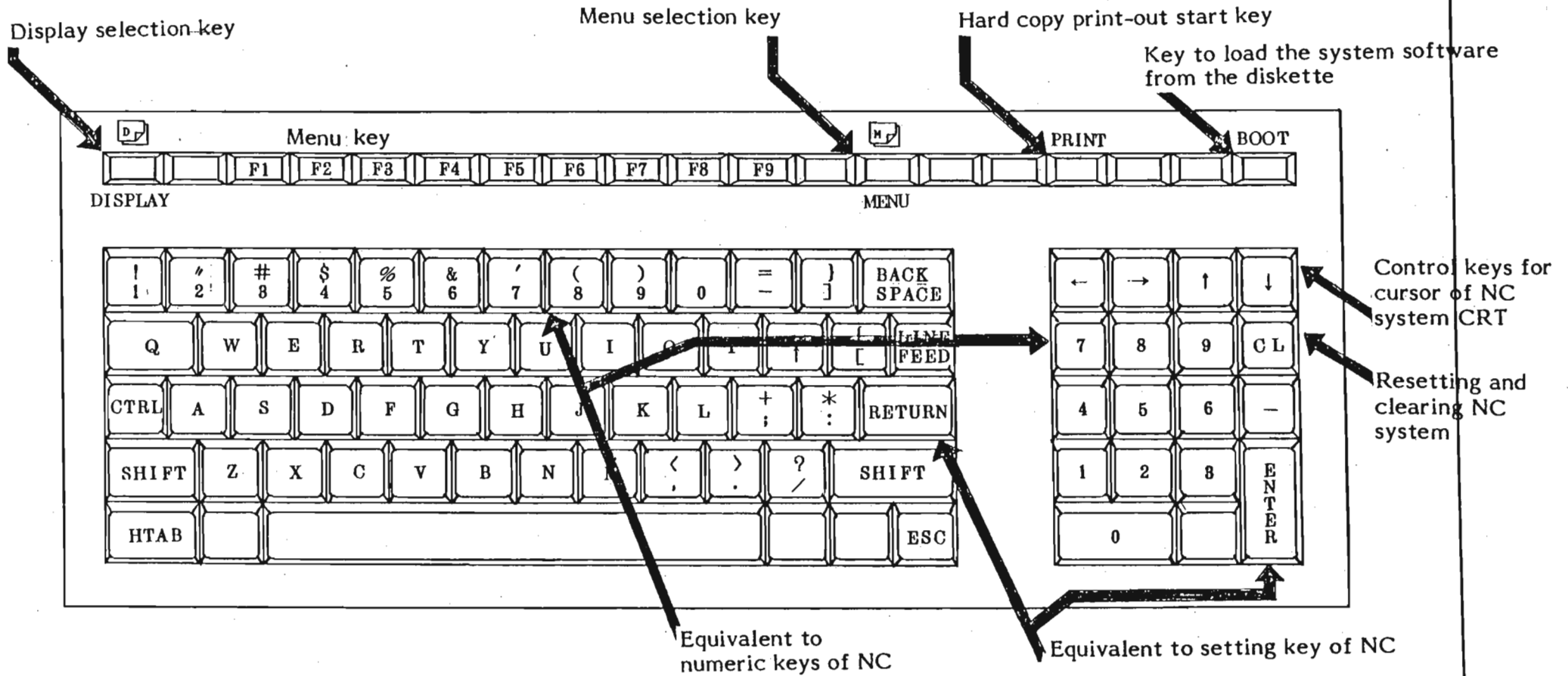
#### Diskette Label



#### Display



# MAZAK CAM SYSTEM





1. After inserting the diskette into the disk drive, press (BOOT).
2. *The system will then be ready for programming.*
3. Programs can be entered using the keys shown above: each key corresponds to the key used on an NC unit (some of the keys are not used.)  
Program a workpiece referring to the above key layout.  

(F1) - (F9)	:	Keys used for selecting menus on the lower part of the CRT display.
(-), (0) - (9), (.)	:	Same as numeric keys on the NC operation panel
(←), (→), (↑), (↓)	:	Cursor control keys
(CL)	:	Reset and cancel
(RETURN), (ENTER)	:	Setting keys
4. Pressing (RESET) commands the printer to print out a hard copy of the selected display.



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