



Alarm & Parameter Manual
for
Mazatrol M-32 Series

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CAUTION:

- *This manual is published to assist experienced personnel in the operation, maintenance and/or programming of Mazak machine tools, and is not intended to be used as training documentation.*
- *All Mazak machine tools are engineered with a number of safety devices to protect personnel and equipment from injury or damage. Operators should not, however, rely solely upon these safety devices, but should operate the machine only after fully understanding what special precautions to take by reading the following documentation thoroughly.*
- *Do not attempt to operate or perform maintenance/repair on the machine without a thorough understanding of the actions about to be taken. If any question exists, contact the nearest Mazak service center for assistance.*
- *Certain covers, doors or safety guards may be open or removed to more clearly show machine components. These items must be in place before operating the machine. Failure to comply with this instruction may result in serious personal injury or damage to the machine tool.*
- *This manual was considered complete and accurate at the time of publication, however, due to our desire to constantly improve the quality and specification of all Mazak products, it is subject to change or modification.*

ALARM & PARAMETER MANUAL

for

MAZATROL M-32 SERIES

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* NOTE: Alarms 200-399 are PLC (programmable logic control) generated for a specific machine application and may vary from machine to machine. If the error description is insufficient to correct the problem, make note and contact your regional service center for assistance.

Notes:

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Using the NC Alarm Lists	2.
Mazatrol M-32 Alarm Lists	
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Notes:

1 INTRODUCTION

1-1 PURPOSE OF THIS MANUAL

Mazak is committed to the highest levels of customer service and support. If a machine problem is encountered, contact the nearby service office of the Mazak customer support network for assistance.

Mazak machines are engineered with a number of safety devices to protect personnel and equipment from injury and damage. Operators should not, however, rely solely upon these safety devices, but should operate the machine only after fully understanding what special precautions to take by reading the machine documentation thoroughly.

[WARNING]

Do not attempt to operate or perform maintenance/repair on the machine without a thorough understanding of the actions about to be taken. If any question exists, contact the nearest Mazak service center for assistance.

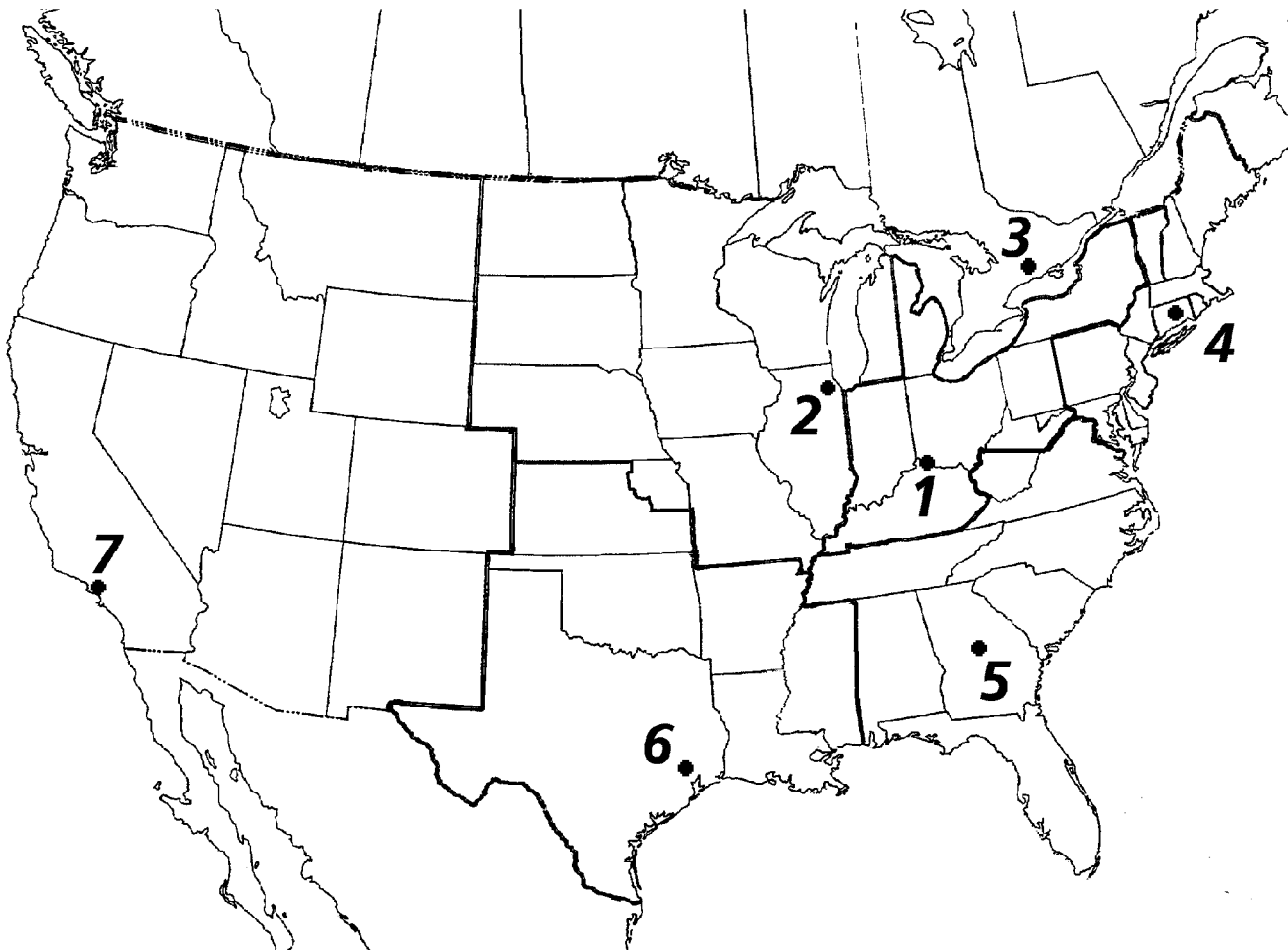
This manual is provided as a quick reference to Mazatrol CNC functions. It should, however, be used in conjunction with the programming and machine operation manuals also supplied.

[NOTE]

Basic, intermediate and advanced maintenance classes covering Mazak machines and Mazatrol CNC control systems are available at the Technical Training Center in Florence, Kentucky. These classes provide in-depth troubleshooting procedures not shown in this manual, that can be carried out only by qualified personnel.

Contact the nearest Mazak service center or the national training center for additional information.

1-2 MAZAK CUSTOMER SUPPORT NETWORK



1. North Central Technical Center (Florence, Ky.)	(606) 727-5775
Technical Training Center (Florence, Ky.)	(606) 344-9800
2. Midwest Technical Center (Chicago, Ill.)	(708) 885-8311
3. Canada Service Center (Mississauga, Ont.)	(905) 670-0201
4. East Technical Center (Hartford, CT.)	(203) 528-9511
5. Southeast Technical Center (Atlanta, Ga.)	(770) 996-1030
6. Southwest Technical Center (Houston, Tx.)	(713) 931-7770
7. West Technical Center (Los Angeles, Ca.)	(310) 327-7172

MAZAK After Hours Customer Support Hotline **(800) 231-1456**

1-3 LIST OF RELATED DOCUMENTATION

The following documentation is provided for use with machining centers. Please use the *Manual Evaluation* form supplied in this manual for any comments and suggestions for improvement. Thank you for your interest.

Machine Manuals:

Operating manual

Maintenance manual

Mechanical parts list

Electric wiring diagram

Manuals for various options

Mazatrol M-32 NC Unit Manuals:

M-32 Operating manual

M-32 Programming manual

Manuals for various optional functions

Notes:

2. USING THE NC ALARM LISTS

If a machine failure occurs, or in the event of NC misoperation, the appropriate alarm number and message will be displayed in the alarm display area of the CRT screen.

If an alarm display appears, refer to the Alarm List to locate and eliminate the cause of the alarm. One or more alarm numbers and messages may be displayed, depending on the particular status of an alarm. In the event an alarm occurs, it is highly recommended that the operator call up the DIAGNOSIS (ALARM) display and check if any other alarms exist.

2-1 MACHINE STATUS INDICATOR LAMPS

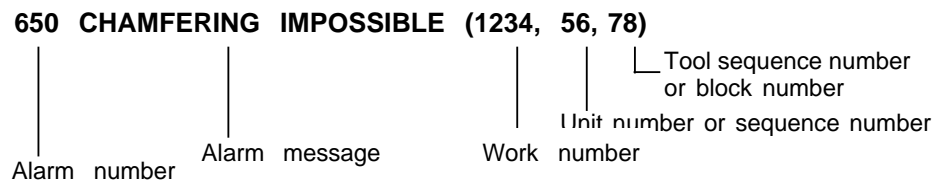
Either one or both of the following two lamps light up in the event of alarm:

?M. FAIL Lights up in the event of a machine failure.

?NC ALARM Lights up in the event of trouble with the MAZATROL CNC.

2-2 ALARM DISPLAY & CLEARING PROCEDURE

Alarms are displayed in the following format:



Alarms are displayed with the background BOLD or DIM. An alarm displayed bold indicates a major error, while an alarm displayed dim indicates a relatively minor error.

EMERGENCY STOP

BOLD Alarm display

ILLEGAL THREAD ANGLE

DIM Alarm display

H : Alarm displayed in the highlighted status (reversed display)

Clear the display with the *RESET* key .

N : Alarm displayed in the normal-brightness status (reversed display)

Clear the display with either the *CLEAR* key or the *M. FAIL CLEAR* key.

2-3 NC ALARM LIST STRUCTURE

Alarm description and clearing information is given as shown below:

①	②	(, ⑤ ,)
Cause	③	Type of error
		⑤
		Stopped status
Action	④	Clearing procedure
		⑦
		Display
		⑧

- ① Alarm number
- ② Alarm message
- ③ Cause of alarm
- ④ Action to be taken to eliminate the cause
- ⑤ Type of error

Code	Type	Description
A	Operation	Machine operation error such as a wrong key being pressed.
B	Registered data	The program or tool data includes an error(s).
C	Servo	Malfunctioning of the servo control mechanism
D	Spindle	Malfunctioning of the spindle control mechanism
E	NC equipment	System (hardware/software) error
F	Machine (PLC)	Machine failure
G	External I/O unit	Malfunctioning of external I/O unit

- ⑥ Stopped status

Code	Status
H	Emergency stop
I	Reset stop
J	Single-block stop
K	Feed stop (hold)
L	Operation continued

⑦ Clearing procedure

Code	Procedure
M	Power off → Eliminate cause → Power back on
N	Eliminate cause → Power off → Power back on
O	Eliminate cause → Press the <i>RESET</i> key
P	Press the <i>RESET</i> key
Q	Eliminate cause → Press the <i>M. FAIL CLEAR</i> key
R	Press the <i>M. FAIL CLEAR</i> key
S	Press the <i>CLEAR</i> key

⑧ Display

See the description of (3) above.

⑨ See Note 1.

Notes:

1. If a program related alarm display appears, that portion of the program in which the alarm has occurred will be displayed within the parentheses next to the alarm message. The meaning of each code in parentheses on the Alarm List is listed in the table below.

Code	Meaning
WNO.	Work number (MAZATROL or EIA/ISO)
UNO.	Unit number (MAZATROL)
SNO.	Tool sequence number (MAZATROL)
NNO.	Sequence number (EIA/ISO)
BNO.	Block number (EIA/ISO)
blank	No display, or intra-system alarm processing code

2. The stopped status (Ⓢ), clearing procedure (⑦), and display color (Ⓢ) for some types of alarms depend on whether the alarm-encountered program is on the foreground (program selected on the POSITION display) or on the background (program selected on the WK. PROGRAM display). The above mentioned three types of information for the latter case are indicated with parentheses in the Alarm List.
3. Alarms related to the machine and control systems use alarm code numbers from 200 to 399. Please check the “Alarm Table” in the specific machine electrical manual for detailed information.

Notes:

3. MAZATROL M-32B ALARM LISTS

3-1 NC SYSTEM CPU ERRORS

000	(, ,)	
Cause	Type of error	
	Stopped status	
Action	Clearing procedure	
	Display	

003	MEMORY PARITY	(, ,)
Cause	Type of error	
The contents of the memory within the NC system (operation instructions or data) have been destroyed.	E	
	Stopped status	
	H	
Action	Clearing procedure	
Please contact the nearest MAZAK service center.	M	
	Display	
	H	

001	WATCH DOG 1	(, ,)
Cause	Type of error	
The NC system was not able to process data within unit processing time.	E	
	Stopped status	
	H	
Action	Clearing procedure	
Please contact the nearest MAZAK service center.	M	
	Display	
	H	

004	MEMORY GUARD	(, ,)
Cause	Type of error	
A defect(s) is encountered in the system software or custom option software.	E	
	Stopped status	
	H	
Action	Clearing procedure	
Please contact the nearest MAZAK service center.	M	
	Display	
	H	

002	SYSTEM ERROR	(, ,)
Cause	Type of error	
A problem has occurred in the NC system software.	E	
	Stopped status	
	H	
Action	Clearing procedure	
Please contact the nearest MAZAK service center.	M	
	Display	
	H	

005	ZERO DIVISION	(, ,)
Cause	Type of error	
Illegal data (such as zero-division) is included in either the parameter, machining program or other data.	B	
	Stopped status	
	H	
Action	Clearing procedure	
Check the parameter set, machining program etc. for correctness.	N	
	Display	
	H	

006	SYSTEM LOADING ERROR	(, ,)
Cause	The system software stored on the floppy disk has been destroyed . Or a malfunction has occurred in the floppy disk unit.	Type of error
		G
		Stopped status
Action	The floppy disk or the disk unit (including the card) needs replacing. Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

007	SUM CHECK (CRC) ERROR	(, ,)
Cause	The contents of the system software and/or custom software have been destroyed.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

008	BATTERY ALARM	(, ,)
Cause	The battery provided to retain parameters, machining programs and other types of data within the NC system has reached the minimum voltage level permissible or has run down.	Type of error
		E
		Stopped status
		L
Action	Make sure to check the machining data for possible loss and that the battery is recharged or replaced. For battery recharging or replacement, refer to the relevant description given in the Maintenance Manual.	Clearing procedure
		P
		Display
		N

009	SPNDL.CONTROL. (IC MAC 012) ALARM	(, ,)
Cause	The IC MAC 012 on the control printed-circuit board has not correctly operated.	Type of error
		D
		Stopped status
		H
Action	Replace the SF-CA card.	Clearing procedure
		M
		Display
		H

010	SPNDL SPEED ERROR	(, ,)
Cause	The difference between the designated speed and the motor speed has exceeded the required value because of: ① Spindle overload ② Speed detection encoder error ③ Card malfunction	Type of error
		D
		Stopped status
		H
Action	For ① above, reduce the load. For ② above, replace the speed detection encoder. For ③ above, replace the FS-CA card.	Clearing procedure
		M
		Display
		H

011	WATCH DOG 1	(, ,)
Cause	The NC system was not able to process data within unit processing time.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

012	SYSTEM ERROR	(, ,)
Cause		Type of error
An error(s) has occurred in the software of the NC system.		E
		Stopped status
		H
Action		Clearing procedure
Please contact the nearest MAZAK service center.		M
		Display
		H

015	ZERO DIVISION	(, ,)
Cause		Type of error
Illegal data (such as zero-division data) is included in either the parameter set, machining program or other types of data.		B
		Stopped status
		H
Action		Clearing procedure
Check if "0" data is included in the parameter set, machining program or other types of machining data, and then correct it if such data is present.		N
		Display
		H

013	MEMORY PARITY	(, ,)
Cause		Type of error
The contents of the memory within the NC system (operation instructions or data) have been destroyed.		E
		Stopped status
		H
Action		Clearing procedure
Please contact the nearest MAZAK service center.		M
		Display
		H

016	SYSTEM LOADING ERROR	(, ,)
Cause		Type of error
The system software stored on the floppy disk has been destroyed. Or a malfunction has occurred in the floppy disk unit.		G
		Stopped status
Action		Clearing procedure
The floppy disk or the disk unit (including the card) needs replacing. Please contact the nearest MAZAK service center.		M
		Display
		H

014	MEMORY GUARD	(, ,)
Cause		Type of error
A defect(s) is included in the system software or custom software.		E
		Stopped status
		H
Action		Clearing procedure
Please contact the nearest MAZAK service center.		M
		Display
		H

017	SUM CHECK (CRC) ERROR	(, ,)
Cause		Type of error
The contents of the system software and/or custom software have been destroyed.		E
		Stopped status
		H
Action		Clearing procedure
Turn power off and then back on. If this does not clear the error status, please contact the nearest MAZAK service center.		M
		Display
		H

018	BATTERY ALARM	(, ,)
Cause	The NC system battery provided to retain parameter, machining program and other types of data has reached the minimum permissible voltage level.	Type of error
		E
		Stopped status
		H
Action	It is required that the machining data is rechecked for possible damage when the battery is recharged or replaced. For the battery recharging or replacement procedure, please see the Maintenance Manual.	Clearing procedure
		M
		Display
		H

3-2 AXIS & SPINDLE DRIVE ERRORS

019 SPNDL CONTROL. (BREAKER TRIP) (, ,)	
Cause	Type of error
Electrical current exceeding the set value has occurred (Spindle converter circuits) ① Power transistor damage ② Motor overload ③ Wrong motor wiring ④ Motor coil layer short-circuit ⑤ Insufficient power capacity ⑥ Abnormal line voltage waveform ⑦ Abnormal line frequency ($\pm 3\%$) ⑧ Current detector circuit fault	D
	Stopped status
	H
Action	Clearing procedure
① Replace the power transistor ② Reduce the load ③ Correct the wiring ④ Replace the motor ⑤ Increase the power capacity ⑥ Increase the power capacity or use larger-sized cables ⑦ Improve the fluctuation state of the frequency ⑧ Replace the SF-CA card	M
	Display
	H

020 SPNDL (CONVERTER OVERCURRENT) (, ,)	
Cause	Type of error
Electrical current exceeding the set value has occurred (Spindle converter circuits) ① Power transistor damage ② Motor overload ③ Wrong motor wiring ④ Motor coil layer short-circuit ⑤ Insufficient power capacity ⑥ Abnormal line voltage waveform ⑦ Abnormal line frequency ($\pm 3\%$) ⑧ Current detector circuit fault	D
	Stopped status
	H
	Clearing procedure
① Replace the power transistor ② Reduce the load ③ Correct the wiring ④ Replace the motor ⑤ Increase the power capacity ⑥ Increase the power capacity or use larger-sized cables ⑦ Improve the fluctuation state of the frequency ⑧ Replace the SF-CA card	M
	Display
	H

021 INSUFFICIENT VOLTAGE (, ,)	
Cause	Type of error
The three-phase input supply voltage has decreased below 160V ($\pm 5V$).	F
	Stopped status
	H
	Clearing procedure
Check the input voltage, and then increase it to 200/220V ($+10\%$, -15%).	M
	Display
	H

022	MOMENTAR, POWER DOWN	(, ,)
Cause	The supply voltage has temporarily decreased below the minimum permissible level.	Type of error
		Stopped status
Action	Adjust the power supply.	Clearing procedure
		Display
		H

025	WATCH DOG	(, ,)
Cause	A malfunction(s) has occurred in the NC, the servo amplifier control card, the internal cables or the connectors.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

023	ILLEGAL MEMORY 1	(, ,)
Cause	A malfunction(s) has occurred in the control card of the servo amplifier, the internal cables or the connectors.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

026	ILLEGAL MEMORY 2	(, ,)
Cause	A malfunction(s) has occurred in the NC, the servo amplifier control card, the internal cables or the connectors.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

024	EXTERNAL CLOCK MALFUNCTION	(, ,)
Cause	A malfunction(s) has occurred in the NC, the servo amplifier control card, the internal cables or the connectors.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

027	MAGNETIC POSITION DETECT MALF	(, ,)
Cause	A malfunction(s) has occurred either in the detectors (or cables) fitted to the servo motor or in the servo amplifier. Or the machine parameter settings for the servo system include an error(s).	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

028	PRINT CIRCUIT BOARD MALF	(, ,)
Cause	A malfunction(s) has occurred in the control card of the servo amplifier.	Type of error
		F
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

031	DETECTING NO SIGNAL 3	(, ,)
Cause	A malfunction(s) has occurred either in the detectors (or cables) or the servo amplifier. Or the machine parameter settings for the servo system include an error(s).	Type of error
		C
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

029	DETECTING NO SIGNAL 1	(, ,)
Cause	A malfunction(s) has occurred either in the detectors (or cables) fitted to the servo motor or in the servo amplifier. Or the machine parameter settings for the servo system include an error(s).	Type of error
		C
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

032		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

030	DETECTING NO SIGNAL 2	(, ,)
Cause	A malfunction(s) has occurred either in the detectors (or cables) or the servo amplifier. Or the machine parameter settings for the servo system include an error(s).	Type of error
		C
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

033	DETECTING NO SIGNAL 5	(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

034	BATTERY MALFUNCTION	(, ,)
Cause		Type of error
The absolute-value detector circuit backup battery for the servo amplifier control card has run down.		E
		Stopped status
		H
Action		Clearing procedure
Please contact the nearest MAZAK service center.		M
		Display
		H

037	OVER AMPERE	(, ,)
Cause		Type of error
A ground short or an internal short has occurred to the motor power line. Or an overcurrent has flown through the servo amplifier circuit for more than a certain time.		C
		Stopped status
		H
Action		Clearing procedure
Locate and correct the shorted portion of the motor power line. If the alarm status still persists after that, please contact the nearest MAZAK service center.		M
		Display
		H

035	OVER REGENERATION	(, ,)
Cause		Type of error
Acceleration/deceleration has been repeated too many times during rapid feeding.		C
		Stopped status
		H
Action		Clearing procedure
Reduce either the frequency of rapid-feed acceleration/deceleration or the rapid feedrate.		N
		Display
		H

038	OVER VOLTAGE	(, ,)
Cause		Type of error
The input voltage to the servo amplifier or its internal voltage has become excessively large.		C
		Stopped status
		H
Action		Clearing procedure
Please contact the nearest MAZAK service center.		M
		Display
		H

036	OVER SPEED 1	(, ,)
Cause		Type of error
The maximum permissible speed of motor or detector rotation has been exceeded.		C
		Stopped status
		H
Action		Clearing procedure
Reduce the motor speed. If this does not correct the alarm status, then the detector/cable, the servo amplifier, or the control card is defective; please contact the nearest MAZAK service center.		N
		Display
		H

039	DATA PARITY	(, ,)
Cause		Type of error
A malfunction(s) has occurred in the NC, the servo amplifier control card, the internal cables or the connectors.		E
		Stopped status
		H
Action		Clearing procedure
Please contact the nearest MAZAK service center.		M
		Display
		H

040	ILLEGAL DATA	(, ,)
Cause	A malfunction(s) has occurred in the NC, the servo amplifier control card, the internal cables or the connectors.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

043	EMERGENCY STOP	(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

041	TRANSMISSION MALFUNCTION	(, ,)
Cause	A malfunction of data transmission between NC and servo system has occurred.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

044	EMERGENCY STOP	(, ,)
Cause	Trouble has occurred in the hardware.	Type of error
		E
		Stopped status
		H
Action	Turn power off and then back on. If this does not clear the alarm status, please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

042	PARAMETER ERROR	(, ,)
Cause	An error(s) is included in the machine parameter settings for the servo system.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		N
		Display
		H

045	EMERGENCY STOP	(, ,)
Cause	The emergency stop button on the operation panel has been pressed.	Type of error
		A
		Stopped status
		H
Action	Release the pressed state of the emergency stop button and reset the NC system to its initial state.	Clearing procedure
		M
		Display
		H

046	EMERGENCY STOP	(, ,)
Cause	An external emergency stop signal has been input.	Type of error
		G
		Stopped status
		H
Action	Check the robot or other external units.	Clearing procedure
		O
		Display
		H

049		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

047		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

050		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

048		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

051	FIN OVERHEAT	(, ,)
Cause	A servo amplifier coolingfin has overheated due to abnormal operation. (Output current is higher than the continuous operation rating.)	Type of error
		F
		Stopped status
		H
Action	Reduce the frequency of axis acceleration/deceleration.	Clearing procedure
		M
		Display
		H

052	MOTOR OVERHEAT	(, ,)
Cause	The motor has become overheated due to running of the motor at an output higher than the rating for the continuous operation.	Type of error
		F
		Stopped status
		H
Action	Reduce either the frequency of acceleration/deceleration or the cutting load.	Clearing procedure
		M
		Display
		H

055	SERVO LAG EXCESS	(, ,)
Cause	The difference of the actual machine position from that ordered by NC is excessively great, a machine collision has occurred, or trouble has occurred in the detector/cable.	Type of error
		E
		Stopped status
		H
Action	Release the machine from the collision. If this does not correct the alarm status, please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

053	OVERLOAD 1	(, ,)
Cause	The servo motor has been run at an output higher than the rating.	Type of error
		C
		Stopped status
		H
Action	Reduce either the frequency of acceleration/deceleration or the cutting load.	Clearing procedure
		N
		Display
		H

056	EMERGENCY STOP (EXTERNAL)	(, ,)
Cause	An emergency stop signal has been input from the NC system or the machine.	Type of error
		E
		Stopped status
		H
Action	Check the NC system or the machine, and locate and eliminate the cause of the emergency stop.	Clearing procedure
		M
		Display
		H

054	OVERLOAD 2	(, ,)
Cause	A machine collision has occurred.	Type of error
		C
		Stopped status
		H
Action	Remove the collision.	Clearing procedure
		N
		Display
		H

057	ANOTHER AXIS MALFUNCTION	(, ,)
Cause	A malfunction has occurred in the optionally added servo amplifier.	Type of error
		C
		Stopped status
		H
Action	Eliminate the cause of the servo amplifier malfunction.	Clearing procedure
		M
		Display
		H

058		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

061	OVER REGENERATION	(, ,)
Cause		Type of error
	Acceleration/deceleration has taken place too many times. (This can cause overheating of the regenerative resistor.)	C
		Stopped status
		H
Action		Clearing procedure
	Reduce the frequency of rapidfeed acceleration/deceleration or the rapid feedrate.	N
		Display
		N

059		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

062	OVERLOAD	(, ,)
Cause		Type of error
	The continuous rating of the motor has been exceeded. Or an excessive load has been applied to the motor because of hunting, machine collision or some other unusual status.	C
		Stopped status
		H
Action		Clearing procedure
	Reduce the motor load. If this does not reset the alarm status, contact the nearest MAZAK service center.	N
		Display
		H

060		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

063	PARAMETER ERROR	(, ,)
Cause		Type of error
	An error(s) is included in the machine parameter settings for the servo system.	E
		Stopped status
		H
Action		Clearing procedure
	Please contact the nearest MAZAK service center.	N
		Display
		N

064	OVERTRAVEL	(, ,)
Cause		Type of error
An axis has reached its stroke limit. (Automatic operation cannot be started in this state.)		E
		Stopped status
		H
Action		Clearing procedure
Move the axis in manual operation mode away from the stroke limit. If this has occurred with no axis at its stroke limit, check for a disconnection in the signal line, for a limit switch malfunction, etc.		O
		Display
		N

067	SPNDL.CONTL.(CPU)MALFUNCTION	(, ,)
Cause		Type of error
During division, a CPU error has occurred because of wrong parameter settings.		
		Stopped status
Action		Clearing procedure
Correct the parameter settings.		
		Display

065		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

068	SPNDL. (INVERTER OVERCURRENT)	(, ,)
Cause		Type of error
A current exceeding the required value has flown into the converter because of: (Same as for No. 20.)		D
		Stopped status
		H
Action		Clearing procedure
		M
		Display
		H

066	SPNDL. CONTRL. (PHASE LACK)	(, ,)
Cause		Type of error
One or more of the three phases of the AC power have opened, or fuse F1, F2 or F3 has blown.		D
		Stopped status
		H
Action		Clearing procedure
Check the three-phase power. For blown fuses, check the cause and then replace the fuses.		M
		Display
		H

069	SPNDL. CONTRL. OVERHEAT	(, ,)
Cause		Type of error
The main circuit elements have become overheated because of abnormal increases in ambient temperature, an overload or a cooling fan failure.		D
		Stopped status
		H
Action		Clearing procedure
Eliminate the cause(s).		M
		Display
		H

070	ABSOLUTE POSITION UNRELIABLE (, ,)	
Cause		Type of error
The absolute data has been lost because of a possible abnormal decrease in battery voltage.		C, E
		Stopped status
		Warning
Action		Clearing procedure
After checking the battery, carry out watchdog-type homing operation. Please contact the nearest MAZAK service center.		Watchdog-type homing operation
		Display
		N

071	LOCAL RAM MALFUNCTION (, ,)	
Cause		Type of error
A RAM (random access memory) malfunction has occurred.		E
		Stopped status
		H
Action		Clearing procedure
The MC111 or MC411 card must be replaced. Please contact the nearest MAZAK service center.		M
		Display
		H

072	2 PORT RAM MALFUNCTION (, ,)	
Cause		Type of error
A servo-control RAM (random access memory) malfunction has occurred.		E
		Stopped status
		H
Action		Clearing procedure
The MC111 or MC611 card must be replaced. Please contact the nearest MAZAK service center.		M
		Display
		H

073	ROM MALFUNCTION (CHECK SUM) (, ,)	
Cause		Type of error
A ROM (read only memory) malfunction has occurred.		E
		Stopped status
		H
Action		Clearing procedure
The MC411 card must be replaced. Please contact the nearest MAZAK service center.		M
		Display
		H

074	BUS ERROR (, ,)	
Cause		Type of error
Error has occurred during data transmission between servo-control unit and the amplifier.		E
		Stopped status
		H
Action		Clearing procedure
Turn power off and then back on. If this does not clear the error status, please contact the nearest MAZAK service center.		M
		Display
		H

075	ADDRESS ERROR	(, ,)
Cause		Type of error
Error has occurred during data transmission between the servo-control unit and the amplifier.		E
		Stopped status
		H
Action		Clearing procedure
Turn power off and then back on. If this does not clear the error status, please contact the nearest MAZAK service center.		M
		Display
		H

078	AMPLIFIER NOT EQUIPPED	(, ,)
Cause		Type of error
Amplifier power is not yet turned on. Or no signals are transferred yet.		E
		Stopped status
		H
Action		Clearing procedure
Check for an incorrectly connected cable, an incorrectly attached connector, an inadequate input supply voltage to the amplifier, an incorrect axis-number switch setting, etc.		M
		Display
		H

076	ILLEGAL INSTRUCTION	(, ,)
Cause		Type of error
Error has occurred during data transmission between the servo-control unit and the amplifier.		E
		Stopped status
		H
Action		Clearing procedure
Turn power off and then back on. If this does not clear the error status, please contact the nearest MAZAK service center.		M
		Display
		H

079	2 PORT MEMORY PARITY	(, ,)
Cause		Type of error
Servo-related data has been destroyed.		E
		Stopped status
		H
Action		Clearing procedure
Card replacement is required. Please contact the nearest MAZAK service center.		M
		Display
		H

077	ZERO DIVISION	(, ,)
Cause		Type of error
Error has occurred during data transmission between the servo-control unit and the amplifier.		E
		Stopped status
		H
Action		Clearing procedure
Turn power off and then back on. If this does not clear the error status, please contact the nearest MAZAK service center.		M
		Display
		H

080	ILLEGAL INPUT DIMENSION	(, ,)
Cause		Type of error
The units of input are out of the permissible setting range.		E
		Stopped status
		H
Action		Clearing procedure
Please contact the nearest MAZAK service center.		M
		Display
		H

081	ILLEGAL OUTPUT DIMENSION	(, ,)
Cause	An illegal value(s) is included in the parameter settings.	Type of error
		E
		Stopped status
		H
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		M
		Display
		H

084		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

082		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

085		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

083		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

086		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

087	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

090	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

088	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

091	ILLEGAL TIME CONST. (FEEDRATE)	(, ,)
Cause		Type of error
The necessary time constant is incorrect.		E
		Stopped status
		H
Action		Clearing procedure
Parameter reloading is required. Please contact the nearest MAZAK service center.		N
		Display
		H

089	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

092	ILLEGAL TIME CONST. (FEEDRATE)	(, ,)
Cause		Type of error
The necessary time constant is incorrect.		E
		Stopped status
		H
Action		Clearing procedure
Parameter reloading is required. Please contact the nearest MAZAK service center.		N
		Display
		H

093	ILLEGAL TIME CONSTANT	(, ,)
Cause	The necessary time constant is incorrect.	Type of error
		E
		Stopped status
		H
Action	Parameter reloading is required. Please contact the nearest MAZAK service center.	Clearing procedure
		N
		Display
		H

096		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

094	ILLEGAL TIME CONSTANT	(, ,)
Cause	The necessary time constant is incorrect.	Type of error
		E
		Stopped status
		H
Action	Parameter reloading is required. Please contact the nearest MAZAK service center.	Clearing procedure
		N
		Display
		H

097		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

095		(, ,)
Cause		Type of error
		E
		Stopped status
		H
Action		Clearing procedure
		N
		Display
		H

098		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

NOTE

Alarms 200-399 are PLC (programmable logic control) generated for a specific machine application and may vary from machine to machine. If the error description is insufficient to correct the problem, make note and contact your regional service center for assistance.

102	SOFT LIMIT -X	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the -X limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct program data so that the machine will move within the soft limits.		P
		Display
		N

100		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

103	SOFT LIMIT +Y	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the +Y limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct program data so that the machine will move within the soft limits.		P
		Display
		N

101	SOFT LIMIT +X	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the +X limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct program data so that the machine will move within the soft limits.		P
		Display
		N

104	SOFT LIMIT -Y	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the -Y limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct program data so that the machine will move within the soft limits.		P
		Display
		N

105	SOFT LIMIT +Z	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the +Z limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct the program and other data so that the machine will move within the soft limits.		P
		Display
		N

108	SOFT LIMIT -4th	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the -4th-axis limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct the program and other data so that the machine will move within the soft limits.		P
		Display
		N

106	SOFT LIMIT -Z	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the -Z limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct the program and other data so that the machine will move within the soft limits.		P
		Display
		N

109	SOFT LIMIT +5th	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the +5th-axis limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct the program and other data so that the machine will move within the soft limits.		P
		Display
		N

107	SOFT LIMIT +4th	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the +4th-axis limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct the program and other data so that the machine will move within the soft limits.		P
		Display
		N

110	SOFT LIMIT -5th	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the -5th-axis limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct the program and other data so that the machine will move within the soft limits.		P
		Display
		N

111	SOFT LIMIT +6th	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the +6th-axis limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct program data so that the machine will move within the soft limits.		P
		Display
		N

114	OVER TRAVEL -X	(, ,)
Cause		Type of error
The X-axis has reached its minus (-) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

112	SOFT LIMIT -6th	(, ,)
Cause		Type of error
During NC operation, linear axis movement is commanded beyond the -6th-axis limit regulated by parameter.		A
		Stopped status
		K
Action		Clearing procedure
Correct program data so that the machine will move within the soft limits.		P
		Display
		N

115	OVER TRAVEL +Y	(, ,)
Cause		Type of error
The Y-axis has reached its plus (+) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

113	OVER TRAVEL +X	(, ,)
Cause		Type of error
The X-axis has reached its plus (+) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

116	OVER TRAVEL -Y	(, ,)
Cause		Type of error
The Y-axis has reached its minus (-) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

117	OVER TRAVEL +Z	(, ,)
Cause		Type of error
The Z-axis has reached its plus (+) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

120	OVER TRAVEL -4th	(, ,)
Cause		Type of error
The fourth-axis has reached its minus (-) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

118	OVER TRAVEL -Z	(, ,)
Cause		Type of error
The Z-axis has reached its minus (-) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

121	OVER TRAVEL +5th	(, ,)
Cause		Type of error
The fifth-axis has reached its plus (+) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

119	OVER TRAVEL +4th	(, ,)
Cause		Type of error
The fourth-axis has reached its plus (+) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

122	OVER TRAVEL -5th	(, ,)
Cause		Type of error
The fifth-axis has reached its minus (-) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

123	OVER TRAVEL +6th	(, ,)
Cause		Type of error
The sixth-axis has reached its plus (+) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		P
		Display
		H

126	Z AXIS NOT COMPLETED	(, ,)
Cause		Type of error
During initial reference-point return following the power-on action, an axis has not passed through the Z phase of the corresponding detector.		E
		Stopped status
		H
Action		Clearing procedure
First actuate the handle for manual pulse feed to move the axis back in the opposite direction to the zero-point, and then carry out the zero-point returning operation once again.		O
		Display
		H

124	OVER TRAVEL -6th	(, ,)
Cause		Type of error
The sixth-axis has reached its minus (-) stroke limit.		A
		Stopped status
		K
Action		Clearing procedure
Move the axis away from the end in manual operation mode.		S
		Display
		H

127	ORIGIN RETURN DIR. ILLEGAL AXIS	(, ,)
Cause		Type of error
The axis-movement direction selected with the axis selector key is not correct for the reference-point return in manual operation mode.		A
		Stopped status
		K
Action		Clearing procedure
Set the correct direction using the axis selector keys (+, -).		P
		Display
		H

125	ILLEGAL AXIS EXISTS	(, ,)
Cause		Type of error
During reference-point return, the proximity-point detection limit switch has overrun the position in which the watchdog is mounted.		E
		Stopped status
		H
Action		Clearing procedure
Either extend the length of the proximity-point watchdog or reduce the reference - point returning speed. After that, carry out the zero-point returning operation once again.		O
		Display
		H

128	OUTSIDE INTERLOCK AXIS	(, ,)
Cause		Type of error
An axis is interlocked because the interlock function has become active (input signal has turned off).		A
		Stopped status
		K
Action		Clearing procedure
Clear the active state of the interlock function.		P
		Display
		H

129	INSIDE INTERLOCK AXIS	(, ,)
Cause		Type of error
The same direction in which the manual skip function has become effective is specified in the axis-movement command, or the servo-off function is active.		A
		Stopped status
		K
Action		Clearing procedure
Deactivate the servo-off function.		P
		Display
		H

132	EXTERNAL FEEDRATE ZERO	(, ,)
Cause		Type of error
An attempt has been made to execute dry-run in the automatic operation mode or in cutting feed mode, with the manual feedrate remaining set to 0 on the machine operation panel.		A
		Stopped status
		K
Action		Clearing procedure
Change the manual feedrate to a value greater than 0. If this alarm message is displayed when the manual feedrate is not 0, check the signal line for a short-circuit.		P
		Display
		N

130	NO OPERATE MODE	(, ,)
Cause		Type of error
This message is displayed in the event of incorrect mode selection or a mode selector switch malfunction.		A
		Stopped status
		K
Action		Clearing procedure
In the latter case, check the wiring of the mode selector switches.		P
		Display
		H

133	STOP SPINDLE	(, ,)
Cause		Type of error
Spindle rotation did not start when the spindle rotation start command was issued during automatic operation.		D
		Stopped status
		K
Action		Clearing procedure
The spindle amplifier and the encoder must be checked for normal operation. Please contact the nearest MAZAK service center.		N
		Display
		H

131	CUTTING FEED OVERRIDE ZERO	(, ,)
Cause		Type of error
The cutting-feed override value is set to 0 on the machine operation panel.		A
		Stopped status
		K
Action		Clearing procedure
Change the cutting-feed override value to one greater than 0. If this alarm message is displayed when the cutting-feed override value is not 0, check the signal line for a short-circuit.		P
		Display
		N

134	SPINDLE ROTATE NO. OVER	(, ,)
Cause		Type of error
The spindle-speed limit has been exceeded.		D
		Stopped status
		K
Action		Clearing procedure
Reduce the spindle speed. The spindle amplifier must be checked for normal operation. Please contact the nearest MAZAK service center.		N
		Display
		H

135	BLOCK START INTERLOCK	(, ,)
Cause		Type of error
The interlock signal to lock the start of the program block has been input.		B
		Stopped status
		K
Action		Clearing procedure
The sequence program needs checking for normal functioning. Please contact the nearest MAZAK service center.		N
		Display
		H

138		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

136	CUTTING BLOCK START INTERLOCK	(, ,)
Cause		Type of error
The interlock signal to lock the start of the cutting program block has been input.		B
		Stopped status
		K
Action		Clearing procedure
The sequence program needs checking for normal functioning. Please contact the nearest MAZAK service center.		N
		Display
		H

139		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

137	OVER DYNAMIC COMPENSATION	(, ,)
Cause		Type of error
Dynamic compensation amount exceeded 3 mm.		A
		Stopped status
		K
Action		Clearing procedure
Make sure that the workpiece coordinate zero point is centrally positioned in the workpiece, and set the difference between the center of the workpiece and the rotary center of the table to 3 mm or less.		P
		Display
		H

140		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

141		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

192	EXECUTION IMPOSSIBLE	(WNO.,UNO.,SNO.)
Cause		Type of error
	An internal error(s) has occurred during execution of the MMS unit.	E
		Stopped status
		L
Action		Clearing procedure
	After checking the entire data of the program being executed, tool data, tool file, parameters, etc., save the data using the CMT I/O and then contact the nearest MAZAK service center.	S
		Display
		N

190	ILLEGAL DRUM NO.	(WNO.,UNO.,SNO.)
Cause		Type of error
	The drum number settings on the POSITION or COMMAND display do not agree with the machine specifications or machine status.	B
		Stopped status
		L
Action		Clearing procedure
	Set the drum number appropriate to the machine status using the drum-number setting function of MDI-operation mode.	S
		Display
		N

193	NO TOOL IN MAGAZINE	(WNO.,UNO.,SNO.)
Cause		Type of error
	Tool data that corresponds to the pocket numbers being displayed in the "TNO." item of the POSITION or COMMAND display are unregistered.	B
		Stopped status
		L
Action		Clearing procedure
	Register the tool data.	S
		Display
		N

191	FILE SYSTEM I/O ERROR	(WNO.,UNO.,SNO.)
Cause		Type of error
	An internal error(s) has occurred during program data change by the function of VFC, MMS etc.	E
		Stopped status
		L
Action		Clearing procedure
	After checking the entire data of the program being executed, tool data, tool file, parameters, etc., save the data using the CMT I/O and then contact the nearest MAZAK service center.	S
		Display
		N

194	NO TOOL DATA IN PROGRAM	(WNO.,UNO.,SNO.)
Cause		Type of error
	An internal error(s) has occurred when circumferential speed or feedrate changing by VFC function was under way.	E
		Stopped status
		L
Action		Clearing procedure
	After checking the entire data of the program being executed, tool data, tool file, parameters, etc., save the data using the CMT I/O and then contact the nearest MAZAK service center.	S
		Display
		N

200	HYDRAULIC UNIT PRESSURE DOWN (, ,)		
Cause		Type of error	
Insufficient hydraulic system pressure.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the hydraulic unit, filter and pressure switch for proper operation. Check the hydraulic unit for proper oil level with the specified fluid.		N	
		Display	

203	SPINDLE OIL PRESSURE DOWN (, ,)		
Cause		Type of error	
Insufficient spindle lubrication pressure.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the spindle lube pump and pressure switch for proper operation. Check the resevoir for proper oil level with the specified fluid.		N	
		Display	

201	CHILLER MALFUNCTION (, ,)		
Cause		Type of error	
Hydraulic chiller unit fault.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the chiller unit fault status.		N	
		Display	

204	SPINDLE OIL INSUFFICIENT (, ,)		
Cause		Type of error	
Insufficient spindle lubrication oil level.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the fluid level and fill with the recommended oil. Check the oil level switch.		N	
		Display	

202	AIR PRESSURE DOWN (, ,)		
Cause		Type of error	
The incoming system air pressure has dropped or the air pressure switch has failed.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the incoming air supply and pressure switch.		N	
		Display	

205	SPINDLE OIL OVERFLOW (, ,)		
Cause		Type of error	
Spindle lubrication oil level too high.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the fluid level. Check the oil level switch.		N	
		Display	

206	SPINDLE LUB. CHILLER MALFUNC.	(, ,)
Cause	Spindle chiller unit malfunction.	Type of error
		F
		Stopped status
		K
Action	Check spindle lubricating fluid level and fill with the specified oil. Check the fault status indicators and contact the nearest Mazak service center for assistance.	Clearing procedure
		N
		Display

209	SLIDEWAY OIL CONSTANT	(, ,)
Cause	Way lubrication pressure is low or oil level is insufficient.	Type of error
		F
		Stopped status
		K
Action	Verify that the lubrication unit is filled with the approved oil. Check the lube pressure switch and replace if necessary. Check the lube tubing and fittings for leaks.	Clearing procedure
		N
		Display

207	SLIDEWAY OIL PRESSURE CONSTANT	(, ,)
Cause	Low oil level in the way lubrication unit.	Type of error
		F
		Stopped status
		K
Action	Verify that the lubrication unit is filled with the approved oil. Check the lube unit float (level) switch and replace if necessary.	Clearing procedure
		N
		Display

210	TAP COOLANT INSUFFICIENT	(, ,)
Cause		Type of error
		F
		Stopped status
		K
Action		Clearing procedure
		N
		Display

208	SLIDEWAY OIL INSUFFICIENT	(, ,)
Cause	Way lubrication pressure , flow rate or oil level is insufficient.	Type of error
		F
		Stopped status
		K
Action	Verify that the lubrication unit is filled with the approved oil. Check the lube pressure switch and replace if necessary. Check the lube tubing and fittings for leaks.	Clearing procedure
		N
		Display

211	SPINDLE DRIVER MALFUNCTION	(, ,)
Cause	Spindle controller fault.	Type of error
		D
		Stopped status
		K
Action	Check the spindle controller fault status indicators and contact the nearest Mazak service center for assistance.	Clearing procedure
		N
		Display

212	MAGAZINE DRIVER MALFUNCTION (, ,)
Cause	Type of error
Magazine controller or drive malfunction.	F
	Stopped status
	K
Action	Clearing procedure
Check the fault status indicators and contact the nearest Mazak service center for assistance.	N
	Display

215	(, ,)
Cause	Type of error
	Stopped status
Action	Clearing procedure
	Display

213	INDEX TABLE DRIVER MALFUNC. (, ,)
Cause	Type of error
Index table controller or drive malfunction.	C
	Stopped status
	K
Action	Clearing procedure
Check the fault status indicators and contact the nearest Mazak service center for assistance.	N
	Display

216	(, ,)
Cause	Type of error
	Stopped status
Action	Clearing procedure
	Display

214	ILLEGAL TOOL DESIGNATED (, ,)
Cause	Type of error
An invalid tool was specified.	B
	Stopped status
	K
Action	Clearing procedure
Check the tool data for accuracy.	S
	Display

217	THERMAL TRIP (, ,)
Cause	Type of error
A thermal overload has tripped in the machine electrical cabinet.	F
	Stopped status
	K
Action	Clearing procedure
Press the reset button on the thermal overload or replace the unit. If the problem persists, check for abnormal current draw by protected AC motor and take appropriate action.	N
	Display

218	CONVEYOR THERMAL TRIP	(, ,)
Cause		Type of error
The chip conveyor motor thermal overload has tripped in the machine electrical cabinet.		F
		Stopped status
		K
Action		Clearing procedure
Press the reset button on the thermal overload or replace the unit. If the problem persists, check for abnormal current draw by protected AC motor and take appropriate action.		N
		Display

221	MACHINE +24v MALFUNCTION	(, ,)
Cause		Type of error
+24v power supply fault.		F
		Stopped status
		K
Action		Clearing procedure
Check the+24v power supply and fuse in the machine electrical cabinet.		N
		Display

219	MAIN TRANSFORMER OVERHEAT	(, ,)
Cause		Type of error
The main power transformer temperature exceeds 120° C		F
		Stopped status
		K
Action		Clearing procedure
Allow the transformer to cool. Check for air flow obstruction around the transformer. If problem recurs, contact the nearest Mazak service center for assistance.		N
		Display

222	AFC OVERLOAD	(, ,)
Cause		Type of error
The spindle and Z axis load has not dropped within 5 seconds of applying the AFC function feed override.		C
		Stopped status
		K
Action		Clearing procedure
Reduce the load and repeat operation.		N
		Display

220		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

223	IMPOS. S. AUTO TOOL	(, ,)
Cause	(IN M. UNIT)	Type of error
		B
		Stopped status
		I
Action		Clearing procedure
		Q
		Display

224	UNSUITABLE TL FOR TL LGTH MSMT (, ,)		
Cause		Type of error	
Tool measurement was attempted with a touch sensor (Renishaw probe) or an invalid tool type (backboring, chamfering, face milling or special tools).		B	
		Stopped status	
		I	
Action		Clearing procedure	
Correct the tool measurement program or tool data for the correct tools.		Q	
		Display	

227	NOT OPERATED M CODE SIMULAT. (, ,)		
Cause		Type of error	
M code error.		B	
		Stopped status	
		I	
Action		Clearing procedure	
Correct the program.		Q	
		Display	

225	TOOL LIFE OVER (, ,)		
Cause		Type of error	
A tool was called for in the program that has exceeded its established tool life and no spare tool was specified.		B	
		Stopped status	
		J	
Action		Clearing procedure	
Replace the affected tool and/or correct tool data. Press the M.FAIL CLEAR key and restart operation by pressing CYCLE START.		N	
		Display	

228	ILLEGAL M CODE (, ,)		
Cause		Type of error	
An invalid M code was programmed.		B	
		Stopped status	
		I	
Action		Clearing procedure	
Correct the program.		Q	
		Display	

226	TOOL BREAKAGE (, ,)		
Cause		Type of error	
A broken tool was detected (M35 command) or a broken tool was mounted into the spindle.		B	
		Stopped status	
		J	
Action		Clearing procedure	
Check the tool condition, replace and correct tool data.		N	
		Display	

229	IMPOSSIBLE SCREEN CYCLE START (, ,)		
Cause		Type of error	
An attempt was made to start a MEMORY or TAPE operation from other than the POSITION, COMMAND, TRACE or MODAL INFO. displays.		B	
		Stopped status	
		I	
Action		Clearing procedure	
Go the the correct display and retry.		S	
		Display	

230	ILLEGAL MMS UNIT (, ,)
Cause	[MMS UNIT MALFUNCTION]
Mazak measuring system error.	Type of error
	F
	Stopped status
K	Clearing procedure
	N
	Display
Action	Check the MMS unit in the machine electrical panel or contact the nearest Mazak service center for assistance.

233	MACHINE DOOR INTERLOCK (, ,)
Cause	
A machine door was opened during automatic cycle.	Type of error
	F
	Stopped status
K	Clearing procedure
	N
	Display
Action	With the door interlock key at AUTO: close the door, press the <i>RESET</i> key and press CYCLE START. With the door interlock key at TEST: close the door, press the <i>M.FAIL CLEAR</i> key and press CYCLE START.

231	EXTERNAL CONTROLLER ALARM (, ,)
Cause	
The controller fault occurred for a vendor supplied option .	Type of error
	F
	Stopped status
K	Clearing procedure
	N
	Display
Action	Check the controller fault status indicators. Contact the component manufacturer or the nearest Mazak service center for assistance.

234	PALLET CHANGER DOOR INTERLOCK (, ,)
Cause	
A pallet changer door was opened during automatic cycle.	Type of error
	F
	Stopped status
K	Clearing procedure
	N
	Display
Action	With the door interlock key at AUTO: close the door, press the <i>RESET</i> key and press CYCLE START. With the door interlock key at TEST: close the door, press the <i>M.FAIL CLEAR</i> key and press CYCLE START.

232	MACHINE DOOR INTERLOCK (, ,)
Cause	
A machine door was opened during automatic cycle.	Type of error
	F
	Stopped status
K	Clearing procedure
	N
	Display
Action	With the door interlock key at AUTO: close the door, press the <i>RESET</i> key and press CYCLE START. With the door interlock key at TEST: close the door, press the <i>M.FAIL CLEAR</i> key and press CYCLE START.

235	MAGAZINE MANUAL INTERRUPT (, ,)
Cause	
	Type of error
	F
	Stopped status
K	Clearing procedure
	N
	Display
Action	

236	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

239	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

237	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

240	RESTART OPERATION UNFINISHED (, ,)	
Cause		Type of error
An attempt was made to start operation without completing the EIA restart operation.		A
		Stopped status
		K
Action		Clearing procedure
		N
		Display

238	ATC STOP (, ,)	
Cause		Type of error
The ATC STOP menu key way pressed.		A
		Stopped status
		K
Action		Clearing procedure
Turn the ATC STOP key off and press CYCLE START to resume automatic tool change.		S
		Display

241	SPINDLE OVERLOAD (, ,)	
Cause	(SPINDLE RPM MALF.)	Type of error
Spindle controller fault. The zero speed signal remained ON.		D
		Stopped status
		I
Action		Clearing procedure
Check the spindle controller fault status indicators and contact the nearest Mazak service center for assistance.		N
		Display

242	SPINDLE ORIENT TIME OVER	(, ,)
Cause	Spindle controller fault. The orient check signal did not come ON 10 seconds after the spindle orient command.	Type of error
Action		D
		Stopped status
Check the spindle controller fault status indicators and contact the nearest Mazak service center for assistance.	I	Clearing procedure
	Q	
	Display	

245		(, ,)
Cause		Type of error
Action		Stopped status
		Clearing procedure
	I	Display
	Q	
	Display	

243	SPINDLE ORIENT CANCEL OVER	(, ,)
Cause	Spindle controller fault. The orient command signal remained ON 1 second after the Off orient command.	Type of error
Action		D
		Stopped status
Check the spindle controller fault status indicators and contact the nearest Mazak service center for assistance.	I	Clearing procedure
	Q	
	Display	

246		(, ,)
Cause		Type of error
Action		Stopped status
		Clearing procedure
	I	Display
	Q	
	Display	

244	SPINDLE ORI. ZERO SIGNAL OFF	(, ,)
Cause	Spindle controller fault. The spindle zero speed check is OFF while the orient check signal is ON.	Type of error
Action		D
		Stopped status
Check the spindle controller fault status indicators and contact the nearest Mazak service center for assistance.	I	Clearing procedure
	Q	
	Display	

247		(, ,)
Cause		Type of error
Action		Stopped status
		Clearing procedure
	I	Display
	Q	
	Display	

248	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

251	TOOL LENGTH RETRACT SENSOR MAL. (, ,)	
Cause		Type of error
A tool length measurement stand retract command was given but no confirmation was received.		F
		Stopped status
		I
Action		Clearing procedure
Check the tool measurement stand for proper operation and the confirmation proximity switch.		N
		Display

249	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

252	DECELERATION SENSOR MALF. (, ,)	
Cause		Type of error
During tool length measurement, the SKIP signal was generated without the DECELERATION signal first.		F
		Stopped status
		K
Action		Clearing procedure
Check the tool measurement stand for proper operation and the confirmation proximity switches.		N
		Display

250	TOOL LENGTH EXTEND SENSOR MAL. (, ,)	
Cause		Type of error
A tool length measurement stand extend command was given but no confirmation was received.		F
		Stopped status
		I
Action		Clearing procedure
Check the tool measurement stand for proper operation and the confirmation proximity switch.		N
		Display

253	SKIP SENSOR MALF. (, ,)	
Cause		Type of error
During tool length measurement, the DECELERATION signal was generated although the SKIP signal was not.		F
		Stopped status
		K
Action		Clearing procedure
Check the tool measurement stand for proper operation and the confirmation proximity switches.		N
		Display

254	SPINDLE DETECTOR SENSOR MALF. (, ,)	
Cause		Type of error
A tool was detected in the spindle although the CRT display indicates no active tool.		D
		Stopped status
		I
Action		Clearing procedure
Manually remove the tool from the spindle or use to tool no. set procedure to correct the CRT display. Check the spindle tool detector sensor for proper adjustment. Replace if necessary.		N
		Display

257	TOOL UN-CLAMP SENSOR MALF. (, ,)	
Cause		Type of error
Tool unclamp confirmation was not received within 5 seconds after the unclamp command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the tool unclamp proximity switch for proper adjustment. Replace if necessary.		N
		Display

255	MGZN TOOL DETECTOR SENSOR MALF. (, ,)	
Cause		Type of error
An attempt was made to place a tool in the magazine at a location where a tool already exists.		F
		Stopped status
		K
Action		Clearing procedure
Move the tool to a different magazine pocket and/or update tool data. Check the magazine tool detector sensor for proper adjustment. Replace if necessary.		N
		Display

258	ATC COVER SENSOR (OPEN) MALF. (, ,)	
Cause		Type of error
ATC cover open confirmation was not received within 5 seconds after the cover open command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the ATC cover open proximity switch for proper adjustment. Replace if necessary.		N
		Display

256	TOOL CLAMP SENSOR MALFUNCTION (, ,)	
Cause		Type of error
Tool clamp confirmation was not received within 5 seconds after the clamp command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the tool clamp proximity switch for proper adjustment. Replace if necessary.		N
		Display

259	ATC COVER SENSOR (CLOSE) MALF. (, ,)	
Cause		Type of error
ATC cover closed confirmation was not received within 5 seconds after the cover close command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the ATC cover open proximity switch for proper adjustment. Replace if necessary.		N
		Display

260	ATC ARM EXTEND SENSOR MALF. (, ,)	
Cause		Type of error
ATC arm extend confirmation was not received within 5 seconds after the extend command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the proximity switch for proper adjustment. Replace if necessary.		N
		Display

263	GEAR SENSOR (MIDDLE SPEED) MALF. (, ,)	
Cause		Type of error
Middle speed gear confirmation was not received within 5 seconds after the gear shift command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the middle speed proximity switch for proper adjustment. Replace if necessary.		N
		Display

261	ATC ARM RETRACT SENSOR MALF. (, ,)	
Cause		Type of error
ATC arm retract confirmation was not received within 5 seconds after the retract command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the proximity switch for proper adjustment. Replace if necessary.		N
		Display

264	GEAR SENSOR (LOW SPEED) MALF. (, ,)	
Cause		Type of error
Low speed gear confirmation was not received within 5 seconds after the gear shift command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the low speed proximity switch for proper adjustment. Replace if necessary.		N
		Display

262	GEAR SENSOR (HIGH SPEED) MALF. (, ,)	
Cause		Type of error
High speed gear confirmation was not received within 5 seconds after the gear shift command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the high speed proximity switch for proper adjustment. Replace if necessary.		N
		Display

265	NEUTRAL SENSOR MALFUNCTION (, ,)	
Cause		Type of error
Neutral speed confirmation was not received within 5 seconds after the gear shift command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the neutral position proximity switch for proper adjustment. Replace if necessary.		N
		Display

266	PALLET CLAMP SENSOR MALF. (, ,)		
Cause		Type of error	
Pallet clamp confirmation was not received within 5 seconds after the clamp command was given.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the pallet clamp proximity switch for proper adjustment. Replace if necessary.		N	
		Display	

269	MAGAZINE STOP PIN MALF. (, ,)		
Cause		Type of error	
Magazine stop pin confirmation was not received within 5 minutes after the magazine rotate command was given.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the magazine stop pin proximity switch for proper adjustment. Replace if necessary.		N	
		Display	

267	PALLET UN-CLAMP SENSOR MALF. (, ,)		
Cause		Type of error	
Pallet unclamp confirmation was not received within 5 seconds after the unclamp command was given.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the pallet unclamp proximity switch for proper adjustment. Replace if necessary.		N	
		Display	

270	X AXIS ORGIN RETURN UNFINISHED (, ,)		
Cause		Type of error	
An attempt was made to do a tool change, tool length measurement, pallet change, etc, without first completing the zero point return procedure.			
		Stopped status	
		K	
Action		Clearing procedure	
Perform the zero point return procedure.		N	
		Display	

268	MAGAZINE INPOSI. SENSOR MALF. (, ,)		
Cause		Type of error	
Magazine in position confirmation was not received within 5 minutes after the magazine rotate command was given.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the magazine in position proximity switch for proper adjustment. Replace if necessary. Check the magazine assembly for proper positioning.		N	
		Display	

271	Y AXIS ORGIN RETURN UNFINISHED (, ,)		
Cause		Type of error	
An attempt was made to do a tool change, tool length measurement, pallet change, etc, without first completing the zero point return procedure.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Perform the zero point return procedure.		N	
		Display	

272		Z AXIS ORGIN RETURN UNFINISHED (, ,)	
Cause		Type of error	
An attempt was made to do a tool change, tool length measurement, pallet change, etc, without first completing the zero point return procedure.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Perform the zero point return procedure.		N	
		Display	

275		SPINDLE IMPOS. (SPECIAL TOOL) (, ,)	
Cause		Type of error	
A spindle rotation command was given with a touch sensor (Renishaw probe), chip removal tool or other special tool in the spindle.		A	
		Stopped status	
		K	
Action		Clearing procedure	
Remove the tool or put the correct tool in the spindle.		N	
		Display	

273		4 AXIS ORGIN RETURN UNFINISHED (, ,)	
Cause		Type of error	
An attempt was made to do a tool change, tool length measurement, pallet change, etc, without first completing the zero point return procedure.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Perform the zero point return procedure.		N	
		Display	

276		SPINDLE IMPOS. (NOT FIT ATC ARM) (, ,)	
Cause		Type of error	
		F	
		Stopped status	
		K	
Action		Clearing procedure	
		N	
		Display	

274		SPINDLE IMPOS. (NOT TOOL CLAMP) (, ,)	
Cause		Type of error	
A spindle rotation command was given without tool clamp confirmation.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Check the tool clamp proximity switch for proper adjustment. Replace if necessary. Verify that the manual tool unclamp switch is in the tool clamp position.		N	
		Display	

277		GEAR SHIFT IMPOS. (NO TOOL CLAMP) (, ,)	
Cause		Type of error	
A gear shift command was given without tool clamp confirmation.			
		Stopped status	
Action		Clearing procedure	
Check the tool clamp proximity switch for proper adjustment. Replace if necessary. Verify that the manual tool unclamp switch is in the tool clamp position.			
		Display	

278	GEAR SHIFT IMPOS. (SPECIAL TOOL) (, ,)	
Cause		Type of error
A gear shift command was given with a touch sensor (Renishaw probe), chip removal tool or other special tool in the spindle.		F
		Stopped status
		K
Action		Clearing procedure
Remove the tool or put the correct tool in the spindle.		N
		Display

281	SPDL ORIENT IMP. (SPECIAL TOOL) (, ,)	
Cause		Type of error
The spindle orient command was given with a touch sensor (Renishaw probe), chip removal tool or other special tool in the spindle.		A
		Stopped status
		K
Action		Clearing procedure
Remove the tool or put the correct tool in the spindle.		N
		Display

279	GEAR SHIFT IMPOS. (NOT FIT ATC ARM) (, ,)	
Cause		Type of error
		F
		Stopped status
		K
Action		Clearing procedure
		N
		Display

282	ORIENT IMP. (NOT FIT ATC) (, ,)	
Cause		Type of error
		F
		Stopped status
		K
Action		Clearing procedure
		N
		Display

280	SPDL ORIENT IMP. (NOT TOOL CLAMP) (, ,)	
Cause		Type of error
The spindle orient command was given without tool clamp confirmation.		F
		Stopped status
		K
Action		Clearing procedure
Check the tool clamp proximity switch for proper adjustment. Replace if necessary. Verify that the manual tool unclamp switch is in the tool clamp position.		N
		Display

283	UNCLAMP IMP. (NOT STOP SPINDLE) (, ,)	
Cause		Type of error
The tool unclamp key switch was turned ON while the spindle was turning or in jog mode.		F
		Stopped status
		K
Action		Clearing procedure
Stop all spindle operations.		N
		Display

284	UNCLAMP IMP. (SPNDL ORI. UNFI.) (, ,)		
Cause		Type of error	
The tool unclamp key switch was turned ON before the spindle orient was completed.		A	
		Stopped status	
		K	
Action		Clearing procedure	
Complete the spindle orient and retry.		N	
		Display	

287	AUTO MODE IMP. (MGZN MANUAL) (, ,)		
Cause		Type of error	
An attempt was made to change to the auto mode while the magazine manual switch was ON.		A	
		Stopped status	
		K	
Action		Clearing procedure	
Turn the magazine manual switch OFF.		N	
		Display	

285	UNCLAMP IMP. (NOT MANUAL MODE) (, ,)		
Cause		Type of error	
The tool unclamp key switch was turned ON although the machine was not in manual mode.		A	
		Stopped status	
		K	
Action		Clearing procedure	
Place the machine in manual mode and retry.		N	
		Display	

288	TOOL LOAD IMP. (TOOL IN ARM) (, ,)		
Cause		Type of error	
A tool load command was made although the current spindle tool does not equal 0. A tool unload command was made although a tool was detected in the magazine.		A	
		Stopped status	
		K	
Action		Clearing procedure	
Correct the spindle tool data and retry.		N	
		Display	

286	AUTO MODE IMP. (TOOL UNCLAMP) (, ,)		
Cause		Type of error	
An attempt was made to change to the auto mode while the tool unclamp key switch was ON.		A	
		Stopped status	
		K	
Action		Clearing procedure	
Turn the tool unclamp key switch OFF.		N	
		Display	

289	TOOL LOAD IMP. (NOT FIT ARM. SFT) (, ,)		
Cause		Type of error	
		A	
		Stopped status	
		K	
Action		Clearing procedure	
		N	
		Display	

290	TOOL LOAD IMP. (NOT FIT MGZN) (, ,)		
Cause		Type of error	
An attempt was made to load a tool although the magazine in position signal in not ON.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Wait until the magazine is in position. Check the magazine in position proximity switch for proper adjustment. Replace if necessary. Check the magazine assembly for proper positioning.		N	
		Display	

293	UNLOAD IMP. (TOOL IN MAGAZINE) (, ,)		
Cause		Type of error	
An attempt was made to unload a tool although the magazine in position signal in not ON.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Wait until the magazine is in position. Check the magazine in position proximity switch for proper adjustment. Replace if necessary. Check the magazine assembly for proper positioning.		N	
		Display	

291	UNLOAD IMP. (TOOL IN MAGAZINE) (, ,)		
Cause		Type of error	
An attempt was made to unload a tool in the magazine at a location where a tool already exists.		F	
		Stopped status	
		K	
Action		Clearing procedure	
Move the tool to a different magazine pocket and/or update tool data. Check the magazine tool detector sensor for proper adjustment. Replace if necessary.		N	
		Display	

294	TOOL SELECT IMP. (TNO.EXCS.ZERO) (, ,)		
Cause		Type of error	
		F	
		Stopped status	
		K	
Action		Clearing procedure	
		N	
		Display	

292	UNLOAD IMP. (NOT FIT ARM. SHIFT) (, ,)		
Cause		Type of error	
		F	
		Stopped status	
		K	
Action		Clearing procedure	
		N	
		Display	

295	TOOL SELECT MISS OPERATION (, ,)		
Cause		Type of error	
		A	
		Stopped status	
		K	
Action		Clearing procedure	
		N	
		Display	

296	MAGAZINE EXTEND ALARM	(, ,)
Cause		Type of error
Magazine extended confirmation was not received within 5 seconds after the extend command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the magazine extended proximity switch for proper adjustment. Replace if necessary.		N
		Display

299		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

297	MAGAZINE RETRACT ALARM	(, ,)
Cause		Type of error
Magazine retracted confirmation was not received within 5 seconds after the retract command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the magazine retracted proximity switch for proper adjustment. Replace if necessary.		N
		Display

300	TOOL SELECT MISS OPERATION 1	(, ,)
Cause		Type of error
A wrong tool was selected.		A
		Stopped status
		K
Action		Clearing procedure
Check tool data for accuracy.		N
		Display

298	MAGAZINE NOT ZERO RETURN	(, ,)
Cause		Type of error
		F
		Stopped status
		K
Action		Clearing procedure
		N
		Display

301	TOOL SELECT MISS OPERATION 2	(, ,)
Cause		Type of error
The magazine was not fully retracted (home position).		A
		Stopped status
		K
Action		Clearing procedure
Manually jog the magazine to home position. Check the magazine home position proximity switch and replace if necessary.		N
		Display

302	MAGAZINE EXTEND ALARM	(, ,)
Cause		Type of error
Magazine extended confirmation was not received within 5 seconds after the extend command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the magazine extended proximity switch for proper adjustment. Replace if necessary.		N
		Display

305	TOOL HOLDER DOWN SENSOR MALF. (, ,)	
Cause		Type of error
Tool holder down confirmation was not received within 5 seconds after the command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the tool holder down proximity switch for proper adjustment. Replace if necessary.		N
		Display

303	MAGAZINE RETRACT ALARM	(, ,)
Cause		Type of error
Magazine retracted confirmation was not received within 5 seconds after the retract command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the magazine retracted proximity switch for proper adjustment. Replace if necessary.		N
		Display

306	NC TABLE UNCLAMP SENSOR MALF. (, ,)	
Cause		Type of error
NC rotary table unclamp confirmation was not received within 5 seconds after the unclamp command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the NC table unclamp proximity switch for proper adjustment. Replace if necessary.		N
		Display

304	MAGAZINE NOT ZERO RETURN	(, ,)
Cause		Type of error
		F
		Stopped status
		K
Action		Clearing procedure
		N
		Display

307	5 AXIS UNCLAMP SENSOR MALF. (, ,)	
Cause		Type of error
5 th axis unclamp confirmation was not received within 5 seconds after the unclamp command was given.		F
		Stopped status
		K
Action		Clearing procedure
Check the 5 th axis unclamp proximity switch for proper adjustment. Replace if necessary.		N
		Display

308	5 AXIS ORIGIN RETURN UNFINISHED (, ,)	
Cause		Type of error
An attempt was made to do a tool change, tool length measurement, pallet change, etc., without first completing the zero point return procedure.		F
		Stopped status
		K
Action		Clearing procedure
Perform the zero point return procedure.		N
		Display

311	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

309	MMS SKIP SIGNAL MALF. (, ,)	
Cause		Type of error
The SKIP signal was received while an axis was moving in rapid traverse.		F
		Stopped status
		H
Action		Clearing procedure
Check the touch sensor (Renishaw probe) for looseness or damage. If the problem repeats, check the MMS unit in the machine electrical panel.		N
		Display

312	CAN'T ATC (M. LOCK OR Z. NG.) (, ,)	
Cause		Type of error
An ATC command was given while the MACHINE LOCK or Z AXIS CANCEL menu was active.		F
		Stopped status
		K
Action		Clearing procedure
Turn off the MACHINE LOCK or Z AXIS CANCEL menu and press CYCLE START to continue.		N
		Display

310	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

313	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

314		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

317	CAN'T PLUS MOTION	(, ,)
Cause		Type of error
	After first turning machine power ON, an attempt was made to move an axis in the plus direction before moving in the minus direction. (During the zero return procedure)	A
		Stopped status
		I
Action		Clearing procedure
	Move the axis a short distance minus before attempting a plus direction move.	N
		Display

315		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

318	SET UP SWITCH WAS SELECTED	(, ,)
Cause		Type of error
	An attempt was made to run the machine in automatic with the Set Up selector switch ON.	F
		Stopped status
		K
Action		Clearing procedure
	Turn OFF the Set Up switch located on the front operation panel and retry.	N
		Display

316	DOOR INTERLOCK (SINGLE BLOCK)	(, ,)
Cause		Type of error
	A machine door was opened while in the TEST mode of automatic operation. The machine will continue to run single block.	F
		Stopped status
		J
Action		Clearing procedure
	Close the machine door or run in single block.	N
		Display

319	PALLET-HYD. PRESSUR TOO LOW	(, ,)
Cause		Type of error
		F
		Stopped status
		K
Action		Clearing procedure
		N
		Display

320	PALLET #1 SELECT SENSOR MALF. (, ,)	
Cause		Type of error
		F
		Stopped status
Action		K
		Clearing procedure
		N
		Display

323	PALLET DOOR CLOSE SENSOR MALF. (, ,)	
Cause		Type of error
		F
		Stopped status
Action		K
		Clearing procedure
		N
		Display

321	PALLET #2 SELECT SENSOR MALF. (, ,)	
Cause		Type of error
		F
		Stopped status
Action		K
		Clearing procedure
		N
		Display

324	PALLET LOAD SENSOR MALF. (, ,)	
Cause		Type of error
		F
		Stopped status
Action		K
		Clearing procedure
		N
		Display

322	PALLET DOOR OPEN SENSOR MALF. (, ,)	
Cause		Type of error
		F
		Stopped status
Action		K
		Clearing procedure
		N
		Display

325	PALLET UNLOAD SENSOR MALF. (, ,)	
Cause		Type of error
		F
		Stopped status
Action		K
		Clearing procedure
		N
		Display

326	PALLET LOAD DEC. SENSOR MALF. (, ,)	
Cause		Type of error
		F
		Stopped status
Action		K
		Clearing procedure
		N
		Display

	(, ,)	
Cause		Type of error
		Stopped status
Action		
		Clearing procedure
		N
		Display

327	PALLET UNLOAD DEC. SENSOR MALF. (, ,)	
Cause		Type of error
		F
		Stopped status
Action		K
		Clearing procedure
		N
		Display

	(, ,)	
Cause		Type of error
		Stopped status
Action		
		Clearing procedure
		N
		Display

	(, ,)	
Cause		Type of error
		Stopped status
Action		
		Clearing procedure
		N
		Display

	(, ,)	
Cause		Type of error
		Stopped status
Action		
		Clearing procedure
		N
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

349	Z AXIS AIR BLOW LS MALF.	(, ,)
Cause		Type of error
		F
		Stopped status
		K
Action		Clearing procedure
		N
		Display

350	DOOR INTERLOCK (ATC) (, ,)	
Cause		Type of error
A machine door was opened during automatic tool change operation.		F
		Stopped status
		K
Action		Clearing procedure
Close the door, press the RESET key and press CYCLE START.		N
		Display

353	MAGAZINE RETRACT MISSOPERATION (, ,)	
Cause	[MAGAZINE WILL NOT INSERT]	Type of error
A magazine retract command was made with the machine units out of position.		A
		Stopped status
		K
Action		Clearing procedure
Properly position the machine units: 1) Make sure the tool is clamped 2) Move the X & Y axes to #2 home 3) Move Z axis to #1 or #2 home		N
		Display

351	RESTART (CYCLE START PB.) (, ,)	
Cause	[REOPEN (CYCLE START)]	Type of error
An attempt to start ATC with a machine door open. (Door interlock)		A
		Stopped status
		K
Action		Clearing procedure
Restart operation using the CYCLE START pushbutton after closing the machine door and clearing alarms 232 & 350.		N
		Display

354	ATC COVER CLOSE MISSOPERATION (, ,)	
Cause	[ATC COVER WILL NOT OPEN]	Type of error
An attempt was made to close the ATC cover while the magazine was not fully retracted.		A
		Stopped status
		K
Action		Clearing procedure
Check the magazine assembly and the retracted proximity switch for proper adjustment. Replace if necessary.		N
		Display

352	MAGAZINE EXTEND MISSOPERATION (, ,)	
Cause	[MAGAZINE WILL NOT EJECT]	Type of error
A magazine extend command was made with the machine units out of position.		A
		Stopped status
		K
Action		Clearing procedure
Properly position the machine units: 1) Close the ATC cover 2) Move the X & Y axes to #2 home 3) Move Z axis to #1 home when the magazine has a tool. (Tool load) Move Z axis to #2 home when the magazine does not have a tool. (Unload)		N
		Display

355	MAGAZINE ROTATION MISSOPERATION (, ,)	
Cause	[MAGAZINE WILL NOT TURN]	Type of error
A magazine rotation command was made with the machine units out of position.		A
		Stopped status
		K
Action		Clearing procedure
Properly position the machine units: 1) Fully retract the magazine OR 2) The Z axis is positioned at #1 home and the active spindle tool is "0"		N
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

(, ,)		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

3-4 DISPLAY OPERATION ERRORS

400		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

403	PROGRAM TOO LARGE	(, ,)
Cause		Type of error
	The limit of 250 lines per program has been exceeded.	A
		Stopped status
		L
Action		Clearing procedure
	Recreate the program so that it consists of 250 lines or less.	S
		Display
		N

401	ILLEGAL FORMAT	(, ,)
Cause		Type of error
	The format of the input data is not an available one. (Example) Negative data has been input to an item that rejects negative data input.	A
		Stopped status
		L
Action		Clearing procedure
	Press the clear key and then input correct data.	S
		Display
		N

404	MEMORY CAPACITY EXCEED	(, ,)
Cause		Type of error
	① Additional creation of a machining program is no longer possible since the memory has already been filled up to its machining-program data storage capacity	A
	② Additional preparation of process control data is no longer possible since 100 sets of such data have already been stored.	
	③ Additional preparation of program layout data is no longer possible since 1000 sets of such data have already been stored.	Stopped status
		L
Action		Clearing procedure
	Make an available storage area by either erasing an unnecessary machining program from the memory or saving a machining program onto an external storage, and then create a new machining program.	S
		Display
		N

402	ILLEGAL NUMBER INPUT	(, ,)
Cause		Type of error
	① The work number of a display inhibiting program was specified.	A
	② The numeric value that has been input is out of the allowable range.	
		Stopped status
		L
Action		Clearing procedure
	① The operation concerned cannot be performed for the program of display inhibition (Program management function).	S
	② Press the clear key and then input correct data.	Display
		N

405		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

408	PROGRAM ERROR	(, ,)
Cause		Type of error
	The memory contents in the machining-program data storage area have been destroyed.	A
		Stopped status
		L
Action		Clearing procedure
	Delete the corresponding program.	S
		Display
		N

406	MEMORY PROTECT	(, ,)
Cause		Type of error
	① Inhibiting operation (editing, erasing, renumber and entry of names) has been performed for the edit-inhibiting program.	A
	② PROGRAM LOCK/ENABLE switch on the operation panel is set to the LOCK position.	Stopped status
		L
Action		Clearing procedure
	① The operation concerned cannot be performed for the edit-inhibiting program (Program management function).	S
	② Set the PROGRAM LOCK/ENABLE switch to the ENABLE position.	Display
		N

409	ILLEGAL INSERTION	(, ,)
Cause		Type of error
	Program data insertion is not possible.	A
		Stopped status
		L
Action		Clearing procedure
	It is not possible to insert data before the common program unit.	S
		Display
		N

407	DESIGNATED DATA NOT FOUND	(, ,)
Cause		Type of error
	The number or character string that has been designated does not exist in the program.	A
		Stopped status
		L
Action		Clearing procedure
	Designate an existent number or character string.	S
		Display
		N

410	ILLEGAL DELETION	(, ,)
Cause		Type of error
	Program deletion is not possible.	A
		Stopped status
		L
Action		Clearing procedure
	It is not possible to delete the common unit.	S
		Display
		N

411	STOP POWER IN PROGRAM EDITING (, ,)		
Cause		Type of error	
A portion of the program may have been destroyed because power has been turned off during program editing.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Check the corresponding program for incorrect data, and correct the program data if an error(s) exists in it.		S	
		Display	
		N	

414	AUTO CALCULATION IMPOSSIBLE (, ,)		
Cause		Type of error	
Automatic calculation of circumferential speed and feedrate is not possible.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Check and correct the tool sequence data or machining unit of the program.		S	
		Display	
		N	

412	WPC NESTING OVER (, ,)		
Cause		Type of error	
The number of repeats of subprogram nesting has exceeded nine times.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Correct the program so that the total number of repeats of subprogram nesting becomes nine or less.		S	
		Display	
		N	

415	(, ,)		
Cause		Type of error	
		Stopped status	
Action		Clearing procedure	
		Display	

413	PROGRAM OVER (, ,)		
Cause		Type of error	
The program registration has exceeded its maximum value available (up to 32 or 256 programs, depending on the type of model).		A	
		Stopped status	
		L	
Action		Clearing procedure	
Delete an unnecessary program(s) from the memory, or save all the necessary programs onto an external storage and then delete an unnecessary program.		S	
		Display	
		N	

416	AUTO PROCESS DIA EXCEED (, ,)		
Cause		Type of error	
Tools cannot be automatically developed because of errors of the machining-unit data.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Check and correct the machining-unit data.		S	
		Display	
		N	

417		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

420	DESIGNATION OVERLAP	(, ,)
Cause		Type of error
	An attempt has been made to input the same data as that which has already been registered. ① Pocket number in the TOOL LAYOUT display. ② Machining-program number (changed) ③ Machining priority number	A
		Stopped status
		L
Action		Clearing procedure
	Check and correct the data settings.	S
		Display
		N

418		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

421		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

419	AUTO TAP PROCESS IMPOSSIBLE	(, ,)
Cause		Type of error
	The pitch or other data cannot be automatically set because of incorrectness of the tap nominal diameter in the tapping-unit data.	A
		Stopped status
		L
Action		Clearing procedure
	Check and correct the tapping-unit data and tapping-tool sequence data of the program.	S
		Display
		N

422	MEMORY PROTECT (I/O BUSY)	(, ,)
Cause		Type of error
	An attempt has been made to edit or input the machining program, tool data, etc. during I/O operation.	A
		Stopped status
		L
Action		Clearing procedure
	Wait until the I/O operation is completed, and then repeat the editing or input operation from the beginning.	S
		Display
		N

423	EXCEEDED MAX NUMBER OF TOOLS (, ,)		
Cause		Type of error	
During tool layout, the number of tools used in the designated program has exceeded the maximum available number per drum.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Check and correct the corresponding machining program so that the maximum number of tools available for the drum is not exceeded.		S	
		Display	
		N	

426	PROGRAM DATA MISSING (, ,)		
Cause		Type of error	
The tool sequence data cannot be automatically developed because of partial lack of the machining-unit data.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Fill up all the machining-unit data items with data.		S	
		Display	
		N	

424	ALL POCKET NO.S NOT ASSIGNED (, ,)		
Cause		Type of error	
It is not possible to finish the tool layout operation because the pocket number has not yet been assigned to all the required tools.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Assign the pocket number(s) and then finish the tool layout operation.		S	
		Display	
		N	

427	MEMORY PROTECT (AUTO MODE) (, ,)		
Cause		Type of error	
An attempt has been made to input a tool tip current-position counter value in the automatic operation mode.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Change the mode over to the manual mode, and then input a tool tip current-position counter value.		S	
		Display	
		N	

425	DATA MISSING (, ,)		
Cause		Type of error	
Processing is not possible because of insufficient data. ① Saving or loading was attempted without necessary data (such as work numbers, etc.) on the DATA IN OUT (CMT) display. ② The data input for restart operation is insufficient.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Input all necessary data.		S	
		Display	
		N	

428	MEMORY PROTECT (AUTO OPERAT.) (, ,)		
Cause		Type of error	
An attempt has been made to input unallowable data on a display (such as the TOOL DATA display) during automatic operation.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Input allowable data only after placing the NC equipment in its reset state or after changing the current mode over to another mode.		S	
		Display	
		N	

429	MEASURING NOT ALLOWED	(, ,)
Cause		Type of error
<p>The following conditions were not satisfied:</p> <p>Coordinate measurement</p> <p>① Automatic operation must not be in progress.</p> <p>② The spindle must have a tool mounted on it.</p> <p>③ The tool data of the tool mounted on the spindle must have already been input.</p> <p>Tool-length measurement</p> <p>① Automatic operation must not be in progress.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Set the specified conditions and then make the measurement.</p>	S	
	Display	
	N	

430	ILLEGAL TOOL DESIGNATED	(, ,)
Cause		Type of error
	Stopped status	
Action		Clearing procedure
	Display	

431	ILLEGAL PALLET NO.	(, ,)
Cause		Type of error
<p>A nonexistent pallet number has been designated.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Designate a correct pallet number.</p>	S	
	Display	
	N	

432	ILLEGAL TOOL NO.	(, ,)
Cause		Type of error
<p>A nonexistent tool number has been designated.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Designate a correct tool number.</p>	S	
	Display	
	N	

433	SAME PROGRAM EXISTS	(, ,)
Cause		Type of error
<p>The number of the machining program that has been designated for program reading from an external unit already exists within the NC memory.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Check the number of the machining program.</p>	S	
	Display	
	N	

434	NO ASSIGNED TOOL IN TOOL FILE (, ,)		
Cause		Type of error	
The tools that have been designated on the machining program (face-mills, end-mills, chamfering cutters, and ball end-mills) include a tool(s) that is not yet registered in the TOOL FILE display.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Register the corresponding tools in the TOOL FILE display.		S	
		Display	
		N	

437	NO NOM.-DIA DATA IN PROGRAM (, ,)		
Cause		Type of error	
It has been found during tool layout that there is a tool without a nominal diameter in the designated program.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Check if nominal diameters have been assigned to all tools registered in the designated program.		S	
		Display	
		N	

435	PROGRAM CHECK NOT ALLOWED (, ,)		
Cause		Type of error	
		Stopped status	
Action		Clearing procedure	
		Display	

438	NOT FOUND END UNIT (, ,)		
Cause		Type of error	
The end unit is not included in the machining program.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Create the end unit at the end of the program.		S	
		Display	
		N	

436	DESIGN. T-NO. NOT MEASURABLE (, ,)		
Cause		Type of error	
An unregistered tool number has been designated in the automatic tool-length measurement mode.		A	
		Stopped status	
		L	
Action		Clearing procedure	
Designate a tool number registered in the TOOL DATA display.		S	
		Display	
		N	

439	MAZATROL PROGRAM DESIGNATED (, ,)			
Cause		Type of error		
<ul style="list-style-type: none"> ① The machining program that has been designated for the tape punching machine is a MAZATROL program. ② A MAZATROL program has been designated for copying purposes during EIA/ISO program editing. 		A		
			Stopped status	
			L	
Action		Clearing procedure		
No MAZATROL programs can be designated for tape punching machine or during EIA/ISO program editing.		S		
		Display		
		N		

440	EIA/ISO PROGRAM DESIGNATED	(, ,)
Cause		Type of error
<p>① The machining program that has been designated on the TOOL LAYOUT or PROCESS WORK display is an EIA/ISO program.</p> <p>② An EIA/ISO program has been designated for copying purposes during MAZATROL program editing.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>No EIA/ISO programs can be designated during MAZATROL program editing on the TOOL LAYOUT or PROCESS WORK display.</p>	S	
	Display	
	N	

443	HELP IS AVLBL FOR PRCS UNIT ONLY	(, ,)
Cause		Type of error
<p>The help (DETAILED INFORM.) display can be called only for machining units.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Move the cursor to a machining-unit data item, and then call the DETAILED INFORM. display.</p>	S	
	Display	
	N	

441	ILLEGAL DRUM NO.	(, ,)
Cause		Type of error
<p>A nonexistent drum number has been designated.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Designate a correct drum number.</p>	S	
	Display	
	N	

444		(, ,)
Cause		Type of error
	Stopped status	
Action		Clearing procedure
	Display	

442	DATA RENEWAL NOT ALLOWED	(, ,)
Cause		Type of error
<p>No updates can be made to the machining program.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>This message may also be displayed when the NC equipment is busy processing data. Press the clear key and then carry out the operation.</p>	S	
	Display	
	N	

445		(, ,)
Cause		Type of error
	Stopped status	
Action		Clearing procedure
	Display	

446	RESTART TIMES OVER	(, ,)
Cause		Type of error
The block to be searched for at the time of restart of the EIA/ISO program does exist, but the designated number of times of reappearance of the block is too large.		A
		Stopped status
		L
Action		Clearing procedure
Check the number of reappearances of the block.		S
		Display
		N

449	RESTART SEARCH FINISHED	(, ,)
Cause		Type of error
An attempt has been made to carry out another search operation when EIA/ISO restart searching had already been finished.		A
		Stopped status
		L
Action		Clearing procedure
Press the reset key and then carry out the restart operation once again.		S
		Display
		N

447	PROGRAM ERROR	(, ,)
Cause		Type of error
A program error(s) has occurred during EIA/ISO restart search.		A
		Stopped status
		L
Action		Clearing procedure
The program being searched for includes an error(s). Perform a tool-path check upon the program contents.		S
		Display
		N

450		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

448	RESTART SEARCH UNFINISHED	(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

451	DRUM CHANGE UNIT MISSING	(, ,)
Cause		Type of error
The drum change unit is not included in the machining program that is to be run on a machine provided with a drum changer (option).		A
		Stopped status
		L
Action		Clearing procedure
Check the contents of the machining program, and then set the drum change unit in it.		S
		Display
		N

452	NO SHAPE DATA IN THE UNIT	(, ,)
Cause	No shape data exists in the program unit that has been designated in an attempt to make a copy of shape data.	Type of error
		A
		Stopped status
		L
Action	Check the contents of the program unit to be made a copy of shape.	Clearing procedure
		S
		Display
		N

455	SAME PROGRAM APPOINT	(, ,)
Cause	The machining program currently being edited has been appointed for the particular program copying operation.	Type of error
		A
		Stopped status
		L
Action	Copying within the same program is not possible. Check the designated program number.	Clearing procedure
		S
		Display
		N

453	SELECTED SHAPE INADEQUATE	(, ,)
Cause	An attempt has been made to copy shape data whose type is not available for the particular program unit.	Type of error
		A
		Stopped status
		L
Action	It is not possible to copy shape data of the pallet-changing unit, index unit, or other units that do not have a shape sequence.	Clearing procedure
		S
		Display
		N

456	NO TOOL IN SPINDLE	(, ,)
Cause	The spindle does not currently have a tool mounted on it.	Type of error
		A
		Stopped status
		L
Action	After mounting a tool on the spindle, carry out the particular operation once again.	Clearing procedure
		S
		Display
		N

454	CURSOR POSITION INADEQUATE	(, ,)
Cause	Processing not permissible for the current cursor position has been attempted. (Example) An attempt has been made to carry out a shape copying operation with the cursor on the tool sequence line.	Type of error
		A
		Stopped status
		L
Action		Clearing procedure
		S
		Display
		N

457	NOT FOUND ADDRESS OF DATA	(, ,)
Cause	During execution of manual program unit, data setting has been attempted without addressing.	Type of error
		A
		Stopped status
		L
Action	During execution of the manual program, designate an address before a setting data.	Clearing procedure
		S
		Display
		N

3-5 DATA I/O ERRORS

500	(, ,)
Cause	Type of error
	Stopped status
Action	Clearing procedure
	Display

503	LOAD IMPOSSIBLE (TOO MANY) (WNO., ,)
Cause	Type of error
An attempt has been made to load more machining programs than the maximum number of programs that can be registered within the NC system.	A
	Stopped status
	L
Action	Clearing procedure
Delete unnecessary programs, or save the programs onto an external storage and then delete them. After that, load the particular program.	S
	Display
	N

501	ILLEGAL FORMAT (, ,)
Cause	Type of error
A cassette tape or floppy disk that contains data other than M2 or M32 data has been set.	A
	Stopped status
	L
Action	Clearing procedure
Set the cassette tape or floppy disk that contains M2 or M32 data.	S
	Display
	N

504	LOAD IMPOSSIBLE (AUTO OPE.) (, ,)
Cause	Type of error
An attempt has been made during automatic operation to load data other than machining programs.	A
	Stopped status
	L
Action	Clearing procedure
Load the data only after completion of automatic operation.	S
	Display
	N

502	LOAD IMPOSSIBLE (SIZE OVER) (WNO., ,)
Cause	Type of error
The contents of the cassette tape or floppy disk are not correct. (Loading of a MAZATROL program of more than 250 lines of data has been attempted.)	A
	Stopped status
	L
Action	Clearing procedure
Either use another cassette tape (or floppy disk) or save the program data. After that, carry out a load operation once again.	S
	Display
	N

505	LOAD IMPOSSIBLE (MISMATCH) (, ,)
Cause	Type of error
Loading has been attempted although the data within the cassette tape or floppy disk does not match to the NC system. (Mismatching in data size, drum conditions, etc)	A
	Stopped status
	L
Action	Clearing procedure
Check if the data saved on the cassette tape or floppy disk is the data to be used for the machine currently in operation.	S
	Display
	N

506	SAME PROGRAM APPOINT	(WNO, ,)
Cause		Type of error
An attempt has been made to load the machining program that has the same work number as that of a machining program registered within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Check for overlapping work numbers.		S
		Display
		N

509	MEMORY PROTECT	(, ,)
Cause		Type of error
Loading has been attempted when the PROGRAM LOCK/ENABLE switch setting was LOCK.		A
		Stopped status
		L
Action		Clearing procedure
Set the switch to ENABLE, and then carry out the loading operation.		S
		Display
		N

507	NO DESIGNATED PROGRAM	(WNO., ,)
Cause		Type of error
The machining program whose saving onto CMT has been attempted does not exist in the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Check if the machining program with the specified work number exists in the NC system.		S
		Display
		N

510	CONTENTS ARE NOT COINCIDENT	(WNO., ,)
Cause		Type of error
Comparison between the cassette tape or floppy disk contents and the NC memory contents has shown disparities in data size, type of file information, etc.		A
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> ① Locate those disparities on the PROGRAM FILE display and correct them, and then make the comparison once again. ② If the disparities exist in data other than machining program data, check if the data is for the machine being used. 		S
		Display
		N

508	MEMORY CAPACITY EXCEEDED	(WNO., ,)
Cause		Type of error
An attempt has been made to load more machining programs than the maximum number of programs that can be registered within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Delete unnecessary programs, or save the programs onto an external storage and then delete them. After that, load the particular program.		S
		Display
		N

511	DATA ARE NOT COINCIDENT (WNO.,UNO.,SNO.)	
Cause		Type of error
<p>Comparison between the cassette tape or floppy disk contents and the NC data settings has shown several disparities. Note) For EIA/ISO programs, the number displayed in the UNO. position is a line number, which corresponds to the number displayed at the lower right corner of the WK. PROGRAM display.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>① After correcting the disparities within the machining program, make the comparison once again. ② If the disparities exist in data other than machining program data, locate those disparities on each display. Note) This alarm message may be displayed if data is saved prior to automatic operation and then subjected to comparison with that after automatic operation. This is because execution of automatic operation may cause automatic data overriding.</p>	S	
	Display	
	N	

512	DESIGNATED FILE NOT FOUND (WNO., ,)	
Cause		Type of error
<p>The machining program or another data that has been designated for the LOAD or COMPARE operation does not exist within the cassette tape or floppy disk.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Carry out a DIRECTORY operation to check what type of data is stored on the cassette tape or floppy disk.</p>	S	
	Display	
	N	

513	PROG. SOFTWARE NOT COINCIDENT (, ,)	
Cause		Type of error
<p>An attempt has been made to load a machining program different in structure from the programs within the NC memory.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Check if the contents of the cassette tape or floppy disk are for M32 or M2.</p>	S	
	Display	
	N	

514	DESIGNATED DATA NOT COINCIDENT (, ,)	
Cause		Type of error
<p>An attempt has been made to load data (other than machining program data) that differs in structure from the NC memory data.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Check if the contents of the cassette tape or floppy disk are for M32 or for the machine being used.</p>	S	
	Display	
	N	

515	CMT MIS-CONNECTED	(, ,)
Cause		Type of error
<p>This message implies incorrect cable connection between CMT (cassette magnetic tape unit) or microdisk unit and the NC system, or implies a power-off status or an incorrect baud-rate setting. In the case of microdisk unit, this message also implies incorrect setting of a floppy disk.</p>	G	
	Stopped status	
	L	
Action		Clearing procedure
<p>① Check for correct cable connections. ② Check if power is turned on. ③ Check for correct baud-rate setting. (Parameter for the NC system: G1) ④ For microdisk unit, check if the floppy disk is correctly set.</p>	S	
	Display	
	N	

517	PROG.OPERATION NOT ALLOWED (WNO., ,)
Cause	Type of error
<p>① An attempt has been made to save a display inhibiting program. (Program management function) ② An attempt has been made to save the program being edited (or the program being loaded using another I/O unit).</p>	A
	Stopped status
	L
Action	Clearing procedure
<p>① Check if the specified work number is for the program of display inhibition. ② Carry out a saving operation only after completion of the program editing operation (or the program loading operation using another I/O unit).</p>	S
	Display
	N

516	SYSTEM ERROR	(, ,)
Cause		Type of error
<p>An error has occurred within the NC system.</p>	E	
	Stopped status	
	L	
Action		Clearing procedure
<p>Please contact the nearest MAZAK service center. (At this time, also please notify them of what kind of operating procedure you had carried out before the alarm message appeared and what values were displayed in parentheses.)</p>	S	
	Display	
	N	

518	DATA OPERATION NOT ALLOWED	(, ,)
Cause		Type of error
<p>① An attempt has been made during automatic operation to load data other than machining program data. ② An attempt has been made to save the data being loaded using another I/O unit. ③ An attempt has been made to load the data being saved using another I/O unit.</p>	A	
	Stopped status	
	L	
Action	Clearing procedure	
<p>Wait until automatic operation has been completed (or until the loading or saving operation using another I/O unit has been completed).</p>	S	
	Display	
	N	

519	DATA SIZE OVER (WNO.,Note.,)	
Cause		Type of error
<p>The EIA/ISO machining program includes a block that consists of more than 256 characters. (EOB or EOR does not appear within 256 characters.)</p> <p>Note) The number displayed next to the work number is a line number, which corresponds to the number displayed in the lower right section of the WK. PROGRAM display.</p>	A	Stopped status
	L	
		Clearing procedure
Action		Clearing procedure
<p>Correct the EIA/ISO machining program. (Insert EOB within 256 characters.)</p>	S	Stopped status
	Display	L
		Clearing procedure
	N	

520	MEMORY CAPACITY EXCEEDED (WNO., ,)	
Cause		Type of error
<p>The tape end has been reached before saving onto the cassette tape or floppy disk was completed.</p>	G	Stopped status
	L	
		Clearing procedure
Action		Clearing procedure
<p>Divide the data into two segments, and resave the particular data segment onto the cassette tape or floppy disk.</p>	S	Stopped status
	Display	L
		Clearing procedure
	N	

521	CMT MIS-EQUIPPED (, ,)	
Cause		Type of error
<p>The cassette tape unit is not loaded.</p>	A	Stopped status
	L	
		Clearing procedure
Action		Clearing procedure
<p>Load a cassette tape correctly into the tape unit.</p>	S	Stopped status
	Display	L
		Clearing procedure
	N	

522	NO OPERABLE DATA IN CMT (, ,)	
Cause		Type of error
<p>An M2-use cassette tape or floppy disk was used, but it contained no machining programs. (Only machining programs can be loaded from cassette tape or floppy disk for M2.)</p>	A	Stopped status
	L	
		Clearing procedure
Action		Clearing procedure
<p>No machining programs are registered within the M2-use cassette tape or floppy disk. Check this state on MAZATROL M2.</p>	S	Stopped status
	Display	L
		Clearing procedure
	N	

523	CMT I/O ERROR (, ,)	
Cause		Type of error
<p>A hardware error has occurred in the CMT or microdisk unit.</p>	G	Stopped status
	L	
		Clearing procedure
Action		Clearing procedure
<p>Check the CMT or microdisk unit baudrate setting (RS-232C setting parameter), and replace the cassette tape or floppy disk.</p>	S	Stopped status
	Display	L
		Clearing procedure
	N	

524	CMT WRITE PROTECT	(, ,)
Cause		Type of error
Data saving onto a write-protected cassette tape or floppy disk has been attempted.		A
		Stopped status
		L
Action		Clearing procedure
The cassette tape or floppy disk is protected against data writing. Release the write-protected state. (For cassette tape, fill in the hole on the tape surface with tape.)		S
		Display
		N

526	CMT MALFUNCTION	(, ,)
Cause		Type of error
Data cannot be read because of the presence of check sum errors, for example, within the cassette tape or floppy disk contents.		G
		Stopped status
		L
Action		Clearing procedure
Reread the data only after setting a new cassette tape or floppy disk or after saving the corresponding data.		S
		Display
		N

525	STOP POWER IN CMT ACTION	(, ,)
Cause		Type of error
Power has been turned off during operation of the CMT or microdisk unit.		A
		Stopped status
		L
Action		Clearing procedure
Check the machining program being transferred. If an abnormality is found, repeat the desired operation. If this alarm state has occurred during loading of a machining program, erase the loaded portion of the program and then execute the loading again.		S
		Display
		N

527		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

528	NO EIA/ISO OPTION	(, ,)
Cause		Type of error
An attempt has been made to load an EIA/ISO program although the EIA/ISO option is not provided.		A
		Stopped status
		L
Action		Clearing procedure
Provide the NC equipment with an EIA/ISO option. (Only with this option, can EIA/ISO programs be processed.)		S
		Display
		N

529		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

532	LOAD IMPOSSIBLE (SIZE OVER)	(, ,)
Cause		Type of error
	The contents of the paper tape or floppy disk are not correct.	A
		Stopped status
		L
Action		Clearing procedure
	Use an appropriate type of paper tape or floppy disk. Or punch the data once again.	S
		Display
		N

530	NO TAPE READER PUNCHER OPTION	(, ,)
Cause		Type of error
	An attempt has been made to carry out a tape I/O operation although the tape reader/puncher option is not provided.	A
		Stopped status
		L
Action		Clearing procedure
	Provide the NC system with a tape reader/puncher option. (Only with this option, can tape I/O operations be carried out.)	S
		Display
		N

533	LOAD IMPOSSIBLE (TOO MANY)	(WNO., ,)
Cause		Type of error
	An attempt has been made to load more machining programs than the maximum number of programs that can be registered within the NC system.	A
		Stopped status
		L
Action		Clearing procedure
	Delete unnecessary programs, or save the programs onto an external storage and then delete them. After that, load the particular program.	S
		Display
		N

531	ILLEGAL FORMAT	(, ,)
Cause		Type of error
	Paper tape with a format unavailable on M32 was used.	A
		Stopped status
		L
Action		Clearing procedure
	Punch the paper tape into a format available on M32.	S
		Display
		N

534	LOAD IMPOSSIBLE (AUTO OPE.)	(, ,)
Cause		Type of error
	An attempt has been made during automatic operation to load data other than machining programs.	A
		Stopped status
		L
Action		Clearing procedure
	Load such data only after completion of automatic operation.	S
		Display
		N

535 STOP POWER IN TAPE READ PUNCH (, ,)		
Cause		Type of error
Power has been turned off during operation of the tape reader/puncher or microdisk unit.		A
		Stopped status
		L
Action		Clearing procedure
If power has been turned off during loading, check the machining program loaded. If an error(s) is found, delete the loaded data and then reload the program. If power has been turned off during punching, repunch the tape.		S
		Display
		N

538 MEMORY CAPACITY EXCEEDED (WNO., ,)		
Cause		Type of error
An attempt has been made to load more machining programs than the maximum number of programs that can be registered within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Delete unnecessary programs, or save the programs onto an external storage and then delete them. After that, load the particular program.		S
		Display
		N

536 SAME PROGRAM APPOINT (WNO, ,)		
Cause		Type of error
An attempt has been made to load the machining program that has the same work number as that of a machining program registered within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Check for an overlapping work number.		S
		Display
		N

539 MEMORY PROTECT (, ,)		
Cause		Type of error
Loading has been attempted when the PROGRAM LOCK/ENABLE switch setting was LOCK.		A
		Stopped status
		L
Action		Clearing procedure
Set the switch to ENABLE, and then carry out the loading operation.		S
		Display
		N

537 NO DESIGNATED PROGRAM (WNO., ,)		
Cause		Type of error
The machining program whose punching or saving onto paper tape or CMT has been attempted does not exist in the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Check if the machining program with the specified work number exists in the NC system.		S
		Display
		N

540	CONTENTS ARE NOT COINCIDENT (WNO., ,)	
Cause		Type of error
Comparison between the cassette tape or floppy disk contents and the NC memory contents has shown disparities in data size, type of file information, etc. This alarm state occurs if a COMPARE operation is carried out after punching a machining program that does not have end M codes (M02, M30, M99) or a machining program that contains data preceded by these end M codes.		A
		Stopped status
		L
Action		Clearing procedure
After specifying the end M codes, correct the machining program so that the codes cannot be followed by data. If the end M codes are to be followed by data, specify end M code nullification under parameter G50.		S
		Display
		N

541	DATA ARE NOT COINCIDENT (WNO.,Note.,)	
Cause		Type of error
Comparison between the cassette tape or floppy disk contents and the NC memory has shown several disparities. Note) The number displayed next to the work number is a line number, which corresponds to the number displayed at the lower right corner of the WK. PROGRAM display.		A
		Stopped status
		L
Action		Clearing procedure
After correcting the disparities within the machining program, make the comparison once again.		S
		Display
		N

542	NO DESIGNATED PROGRAM (WNO., ,)	
Cause		Type of error
The machining program or data that has been designated for the LOAD or COMPARE operation does not exist within the cassette tape or floppy disk.		A
		Stopped status
		L
Action		Clearing procedure
Carry out an ALL LOAD operation to check the contents of the machining program stored on the cassette tape or floppy disk.		S
		Display
		N

543	DESIGNATED DATA IS NOT RIGHT (, ,)	
Cause		Type of error
The designated search data is not correct (when EOB has been set in the search data). Or REWIND has been designated although the rewind option is not provided.		A
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> ① Check if the search data is correct. ② Check if the rewind parameters (G39, G48) are correct. Note, however, that REWIND is possible only for a tape reader provided with a rewind option.		S
		Display
		N

544	TAPE READER MIS-CONNECTED (, ,)	
Cause		Type of error
This message implies incorrect cable connection between tape reader or microdisk unit and the NC system or implies a power-off state. In the case of microdisk unit, this message also implies incorrect setting of a floppy disk.		G
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> ① Check for correct cable connections. ② Check if power is turned on. ③ In the case of microdisk unit, check if the floppy disk is correctly set. 		S
		Display
		N

545	TAPE PUNCHER MIS-CONNECTED (, ,)	
Cause	This message implies incorrect cable connection between tape puncher or microdisk unit and the NC system or implies a power-off state. In the case of microdisk unit, this message also implies incorrect setting of a floppy disk.	Type of error
		G
		Stopped status
		L
Action	<ul style="list-style-type: none"> ① Check for correct cable connections. ② Check if power is turned on. ③ In the case of microdisk unit, check if the floppy disk is correctly set. 	Clearing procedure
		S
		Display
		N

546	SYSTEM ERROR (, ,)	
Cause	An error has occurred within the system.	Type of error
		E
		Stopped status
		L
Action	Please contact the nearest MAZAK service center. (At this time, also please notify them of what kind of operating procedure you had carried out before the alarm message appeared and what values were displayed in parentheses.)	Clearing procedure
		S
		Display
		N

547	PROG.OPERATION NOT ALLOWED (WNO., ,)	
Cause	<ul style="list-style-type: none"> ① An attempt has been made to save a display inhibiting program. (Program management function) ② An attempt has been made to save the program being edited (or the program being loaded using another I/O unit). 	Type of error
		A
		Stopped status
		L
Action	<ul style="list-style-type: none"> ① Check if the specified work number is for the program of display inhibition. ② Carry out a saving operation only after completion of the program editing operation (or the program loading operation using another I/O unit). 	Clearing procedure
		S
		Display
		N

548	NO EIA/ISO OPTION (, ,)	
Cause	An attempt has been made to load an EIA/ISO program although the EIA/ISO option is not provided.	Type of error
		A
		Stopped status
		L
Action	Provide the NC system with an EIA/ISO option. (Only with this option, can EIA/ISO programs be processed.)	Clearing procedure
		S
		Display
		N

549	DATA SIZE OVER (WNO.,Note.,)	
Cause		Type of error
<p>The machining program includes a block that consists of more than 256 characters. (EOB or EOR does not appear within 256 characters.)</p> <p>Note The number displayed next to the work number is a line number, which corresponds to the number displayed in the lower right section of the WK. PROGRAM display.</p>		A
		Stopped status
		L
Action		Clearing procedure
<p>Correct the machining program. (Insert EOB within 256 characters.)</p>		S
		Display
		N

550	NOT FOUND WNO. ON PAPER TAPE (, ,)	
Cause		Type of error
<p>Loading or comparing is not possible since no O numbers (work numbers) are stored on the paper tape or floppy disk.</p>		A
		Stopped status
		L
Action		Clearing procedure
<p>Call the TAPE I/O display and designate a work number(s).</p>		S
		Display
		N

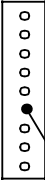
551	SET THE NEW PAPER TAPE (, ,)	
Cause		Type of error
<ul style="list-style-type: none"> - The tape reader/puncher is not correctly loaded with paper tape. - Differences in baud-rate or other parameter settings for RS-232C exist between the tape reader/puncher (or microdisk unit) and the NC system. 		A
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> ① Check if the tape reader/puncher is correctly loaded with paper tape. ② Check for differences in RS-232C parameter settings between the I/O unit and the NC system. (Parameters for the NC system: G19 G54) 		S
		Display
		N

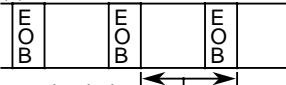
552	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

553	TAPE READER ERROR (, ,)	
Cause		Type of error
<p>A hardware error has occurred in the tape reader or the microdisk unit.</p>		G
		Stopped status
		L
Action		Clearing procedure
<p>Before operating the tape reader or microdisk unit, check that no differences in RS-232C parameter settings exist between the tape reader or microdisk unit and the NC system and replace the paper tape or floppy disk.</p>		S
		Display
		N

554	TAPE PUNCHER ERROR	(, ,)
Cause	A hardware error has occurred in the tape puncher or the microdisk unit.	Type of error
		G
		Stopped status
		L
Action	Before operating the tape puncher or microdisk unit, check that no differences in RS-232C parameter settings exist between the tape puncher or microdisk unit and the NC system and replace the paper tape or floppy disk.	Clearing procedure
		S
		Display
		N

555	MAZATROL PROGRAM DESIGNATED	(, ,)
Cause	An attempt has been made to punch a MAZATROL program onto paper tape.	Type of error
		A
		Stopped status
		L
Action	Designate an EIA/ISO program. (Only EIA/ISO programs can be punched on paper tape.)	Clearing procedure
		S
		Display
		N

556	PARITY H ERROR	(, ,)
Cause	 <p>The contents of the paper tape or floppy disk cannot be read since they include a parity-H error(s). (The number of holes on tape must always be even for ISO; it must be odd for EIA).</p>	Type of error
		A
		Stopped status
		L
Action	Reading must be carried out only after replacing the paper tape or floppy disk or after repunching the program.	Clearing procedure
		S
		Display
		N

557	PARITY V ERROR	(, ,)
Cause	 <p>The contents of the paper tape or floppy disk cannot be read since they include a parity-V error(s).</p> <p>The number of sprocket holes in this area must be even.</p>	Type of error
		A
		Stopped status
		L
Action	Reading is made possible by invalidating the parity-V check parameter setting (G43 , bit 1).	Clearing procedure
		S
		Display
		N

558	PROGRAM END NOT FOUND	(, ,)
Cause	A machining program in which EOR precedes the end M code (M02, M30 or M99) or the next O number (work number) was loaded. The end-of-program condition can be changed by varying the settings of the parameters (G47/G50).	Type of error
		A
		Stopped status
		L
Action	Since the machining program has already been loaded, the WK. PROGRAM display must be called and then one of the above three end M codes must be inserted in the program.	Clearing procedure
		S
		Display
		N

559	DESIGNATED DATA NOT FOUND	(, ,)
Cause		Type of error
The designated data was not found on the paper tape or floppy disk.		A
		Stopped status
		L
Action		Clearing procedure
Select another set of data or make a search once again from the beginning of the paper tape or floppy disk.		S
		Display
		N

562	NO DESIGNATED PROGRAM	(WNO. , ,)
Cause		Type of error
The machining program corresponding to the specified work number does not exist within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Check if the machining program with the specified work number exists within the NC system.		S
		Display
		N

560	NO PRINTER OPTION	(, ,)
Cause		Type of error
Printer operation was attempted although the printer option is not provided.		A
		Stopped status
		L
Action		Clearing procedure
Provide the NC system with a printer option. (Only with this option, can printer operation be carried out.)		S
		Display
		N

563	PRINTER I/O ERROR	(, ,)
Cause		Type of error
<ul style="list-style-type: none"> - A hardware error has occurred on the printer. - The baud-rate or other RS-232C parameter settings differ between the printer and the NC system. 		G
		Stopped status
		L
Action		Clearing procedure
Check for differences in the above settings between the printer and NC system. (Parameters for the NC system: G10 G18)		S
		Display
		N

561	SET THE NEW PAPER	(, ,)
Cause		Type of error
Output onto the printer was attempted when it was not loaded with paper or when it was not in a READY status.		
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> ① Load the printer with paper. ② Set the printer ready for operation. 		S
		Display
		N

564		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

565	PRINTER MIS-CONNECTED	(, ,)
Cause	This message implies incorrect cable connection between the printer and NC system or implies a power-off status.	Type of error
		G
		Stopped status
		L
Action	<ul style="list-style-type: none"> ① Check if the printer cables are correctly connected. ② Check if printer power is turned on. 	Clearing procedure
		S
		Display
		N

568	DESIGNATED DATA IS NOT RIGHT	(WNO., ,)
Cause	The G11 and G12 parameter settings (number of paper feed lines, and number of lines per page) are not correct.	Type of error
		A
		Stopped status
		L
Action	Set the parameters correctly.	Clearing procedure
		S
		Display
		N

566	SYSTEM ERROR	(, ,)
Cause	An error(s) has occurred within the system.	Type of error
		E
		Stopped status
		L
Action	Please contact your YAMAZAKI MAZAK products service station. (At this time, also please notify them of what kind of operating procedure you had carried out before the alarm message appeared and what values were displayed in parentheses.)	Clearing procedure
		S
		Display
		N

569	DATA SIZE OVER	(WNO.,Note.,)
Cause	The EIA/ISO machining program includes a block that consists of more than 256 characters. (EOB or EOR does not appear within 256 characters.) Note) The number displayed next to the work number is a line number, which corresponds to the number displayed in the lower right section of the WK. PROGRAM display.	Type of error
		A
		Stopped status
		L
Action	Correct the EIA/ISO machining program. (Insert EOB within 256 characters.)	Clearing procedure
		S
		Display
		N

567	PROG.OPERATION NOT ALLOWED	(WNO., ,)
Cause	An attempt has been made to output onto the printer the program being edited (or the program being loaded using another I/O unit).	Type of error
		A
		Stopped status
		L
Action	Carry out a printout operation only after completion of the program editing operation (or the program loading operation using another I/O unit).	Clearing procedure
		S
		Display
		N

570	NO DNC OPTION	(, ,)
Cause		Type of error
DNC operation was attempted although DNC option is not provided.		A
		Stopped status
		L
Action		Clearing procedure
Provide the NC system with a DNC option. (Only with this option, can DNC operation be carried out.)		S
		Display
		N

573	LOAD IMPOSSIBLE (TOO MANY)	(WNO., ,)
Cause		Type of error
An attempt has been made to load more machining programs than the maximum number of programs that can be registered within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Delete unnecessary programs, or save the programs onto an external storage and then delete them. After that, load the particular program.		S
		Display
		N

571	ILLEGAL FORMAT	(, ,)
Cause		Type of error
Data other than M32 or M2 use data has been transmitted from the host system, (The format of the transmitted data is not correct.)		A
		Stopped status
		L
Action		Clearing procedure
Check if the transmitted data from the host system is M32 or M2 use data.		S
		Display
		N

574	LOAD IMPOSSIBLE (AUTO OPE.)	(, ,)
Cause		Type of error
An attempt has been made during automatic operation to load data other than machining program data.		A
		Stopped status
		L
Action		Clearing procedure
Load such data only after completion of automatic operation.		S
		Display
		N

572	LOAD IMPOSSIBLE (SIZE OVER)	(WNO., ,)
Cause		Type of error
The contents of the transmitted machining program from the host system are not correct. (More than 250 lines of MAZATROL program data has been transmitted.)		A
		Stopped status
		L
Action		Clearing procedure
Check the size of the program which has been transmitted from the host system.		S
		Display
		N

575	LOAD IMPOSSIBLE (MISMATCH)	(, ,)
Cause		Type of error
Loading has been attempted when the transmitted data from the host system does not match to the data or other parameter settings within the NC system. (Mismatching in data size, drum conditions, etc)		A
		Stopped status
		L
Action		Clearing procedure
Check if the data that has been transmitted from the host system is that which is to be used for the machine being used.		S
		Display
		N

576	SAME PROGRAM APPOINT	(WNO., ,)
Cause		Type of error
An attempt has been made to load the machining program that has the same work number as that of a machining program registered within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Check for an overlapping work number. This alarm message also implies that the parameter (G98, bit 2) is set for the priority of the old program over a new one. If the parameter is set to 0, the old data will automatically be deleted in such a case as mentioned above and the new program data can be loaded with the specified work number.		S
		Display
		N

577	NO DESIGNATED PROGRAM	(WNO., ,)
Cause		Type of error
<ul style="list-style-type: none"> - The machining program whose transmission from the NC system to the host system has been attempted does not exist within the NC system. - The machining program that has been designated using a control command (work number search or program deletion) does not exist within the NC system. 		A
		Stopped status
		L
Action		Clearing procedure
Check if the machining program with the specified work number exists in the NC system.		S
		Display
		N

578	MEMORY CAPACITY EXCEED	(WNO., ,)
Cause		Type of error
An attempt has been made to load more machining programs than the maximum number of programs that can be registered within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
Delete unnecessary programs, or save the programs onto an external storage and then delete them. After that, load the particular program.		S
		Display
		N

579	MEMORY PROTECT	(, ,)
Cause		Type of error
Loading has been attempted when the PROGRAM LOCK/ENABLE switch setting was LOCK.		A
		Stopped status
		L
Action		Clearing procedure
Set the switch to ENABLE, and then carry out the loading operation. This alarm message also implies that the setting of the parameter (G98, bit 3) is OFF (0). Change this parameter setting to ON (1). Data loading will then become possible.		S
		Display
		N

580		(, ,)
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

581	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

582	DSGNTD FILE NOT TRANSFERED (, ,)	
Cause		Type of error
A file different from the one that has been requested from NC system to the host system was transferred from the latter.		A
		Stopped status
		L
Action		Clearing procedure
Check the details of the file that has been transferred from the host system.		S
		Display
		N

583	PROG. SOFTWARE NOT COINCIDENT (, ,)	
Cause		Type of error
An attempt has been made to load a machining program that is different in structure from those stored within the NC system.		A
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> - Check if the program that has been transferred from the host system is for use with M32 or M2. - Check if the contents of the file transfer message (header block) are correct. 		S
		Display
		N

584	RECEIVED DATA NOT COINCIDENT (, ,)	
Cause		Type of error
<ul style="list-style-type: none"> - An attempt has been made to load data other than machining program data and also different in structure from the data stored within the NC system. - The contents of the header block or data block in the file transfer message (including machining programs) are not correct. 		A
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> - Check if the data that has been transferred from the host system is for use with M32 or for use with the machining being operated. - Check the contents of the header block (version number, etc.) or data block (sequence number, etc.) in the file transfer message. 		S
		Display
		N

585	CABLE MIS-CONNECTED (, ,)	
Cause		Type of error
<p>This message implies incorrect cable connection between the host system and the NC system or implies a power-off status.</p>		G
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> - Check if the DNC cables are correctly connected. - Check if the host system is turned on and ready for data transmission/reception. <p>There may be cases that although a DNC option is provided, DNC itself is not to be used for the time being and thus the DNC cables are not yet connected. If this is the case, then set the appropriate parameter (G98, bit 1) to OFF (0). This will clear the alarm display.</p>		S
		Display
		N

586	SYSTEM ERROR	(, ,)
Cause	An error has occurred within the system.	Type of error
		E
		Stopped status
		L
Action	Please contact the nearest MAZAK service center. (At this time, also please notify them of what kind of operating procedure you had carried out before the alarm message appeared and what values were displayed in parentheses.)	Clearing procedure
		S
		Display
		N

587	PROG.OPERATION NOT ALLOWED (WNO., ,)
Cause	Type of error
① An attempt has been made to transmit a display inhibiting program to the host system. (Program management function) ② An attempt has been made to transmit to the host system the program being edited (or the program being loaded using another I/O unit).	A
	Stopped status
	L
Action	Clearing procedure
① Check if the specified work number is for the program of display inhibition. ② Carry out the transfer operation only after completion of the program editing (or program loading using another I/O unit).	S
	Display
	N

588	DATA OPERATION NOT ALLOWED	(, ,)
Cause	- An attempt has been made during automatic operation to load data other than machining program data. - An attempt has been made to transmit to the host system the data being loaded using another I/O unit. - An attempt has been made to load the data being saved using another I/O unit.	Type of error
		A
		Stopped status
		L
Action	Wait until automatic operation has been completed (or until the loading or saving operation using another I/O unit has been completed).	Clearing procedure
		S
		Display
		N

589	DATA SIZE OVER	(WNO.,Note.,)
Cause	Type of error	
The EIA/ISO machining program includes a block that consists of more than 256 characters. (EOB or EOR is not present within 256 characters.) Note) The number displayed next to the work number is a line number, which corresponds to the number displayed in the lower right section of the WK. PROGRAM display.	A	
	Stopped status	
	L	
Action	Clearing procedure	
Correct the machining program. (Insert EOB within 256 characters.)	S	
	Display	
	N	

590	DNC COMMAND IMPOSSIBLE (, ,)	
Cause		Type of error
<p>The particular status of the NC system disables execution of the control command that has been requested from the host system.</p> <ul style="list-style-type: none"> - A request for work number search has been made during automatic operation. - During automatic operation, a request for deleting the machining program being used for the automatic operation has been made. 		A
		Stopped status
		L
Action		Clearing procedure
<p>Wait until the NC system becomes ready for processing or until the automatic operation is completed, and then make the request once again.</p>		S
		Display
		N

592	RECEIVED ILLEGAL COMMAND (, ,)	
Cause		Type of error
<ul style="list-style-type: none"> - The control command or file transfer command that has been requested from the host system is a nonexistent command. - The machine number that has been designated for the loading of data other than machining program data does not agree with any of the machine numbers within the NC system. 		A
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> - Check the details of the command message that has been sent from the host system. - Check if the machine number is the same as that registered within the NC system (parameter G106). 		S
		Display
		N

591	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

593	DNC I/O ERROR (, ,)	
Cause		Type of error
<ul style="list-style-type: none"> - During use of DNC, processing has been aborted by line noise or other hardware factors. - RS-232C communication parameter settings (such as those of the baud-rate, etc.) between the host system and NC system differ. - Timer, number-of-retries or other settings are not correct. 		G
		Stopped status
		L
Action		Clearing procedure
<ul style="list-style-type: none"> - Make line checks and hardware checks of the host and NC systems. - Match the RS-232C communication parameter settings between the host system and NC system. - Set the timer, number-of-retries, or other settings to those of the host system. (Parameters for the NC system: (G55 to G108)) 		S
		Display
		N

594	SEND-RECEIVE ERROR	(, ,)
Cause		Type of error
<ul style="list-style-type: none"> - The preset number of retries has been exceeded during transmission/reception of command messages. - RS-232C communication parameter settings (such as those of the baud-rate, etc.) between the host system and NC system differ. - Timer, number-of-retries or other settings are not correct. 	G	
	Stopped status	
	L	
Action		Clearing procedure
<ul style="list-style-type: none"> - Make line checks and message checks of the host systems. - Match the RS-232C communication parameter settings between the host system and NC system. - Set the timer, number-of-retries or other settings to those of the host system. (Parameters for the NC system: G55 to G108) 	S	
	Display	
	N	

595	FILE TRANSFER ERROR	(, ,)
Cause		Type of error
<ul style="list-style-type: none"> - The preset number of retries has been exceeded during transmission/reception of the messages. - RS-232C communication parameter settings (such as those of the baud-rate, etc.) between the host system and NC system differ. - Timer, number-of-retries or other settings are not correct. 	G	
	Stopped status	
	L	
Action		Clearing procedure
<ul style="list-style-type: none"> - Make line checks and message checks of the host systems. - Match the RS-232C communication parameter settings between the host system and NC system. - Set the timer, number-of-retries or other settings to those of the host system. (Parameters for the NC system: G55 to G108) 	S	
	Display	
	N	

596	DNC MALFUNCTION	(, ,)
Cause		Type of error
<p>An irretrievable hardware error has occurred during reception of the first message (ENQ) from the host system.</p>	G	
	Stopped status	
	L	
Action		Clearing procedure
<p>After making hardware checks of the NC and host systems and line checks, turn the NC system power back on and then restart the receiving operation.</p>	S	
	Display	
	N	

597	STOP POWER IN DNC ACTION	(, ,)
Cause		Type of error
<p>Power has been turned off during DNC operation.</p>	A	
	Stopped status	
	L	
Action		Clearing procedure
<p>Check for errors in the machining program being used, and if errors are found, carry out the DNC operation once again. Note, however, that if the machining program is being loaded, then loading must be carried out once again after erasing the loaded contents of the program.</p>	S	
	Display	
	N	

598	NO EIA/ISO OPTION (, ,)	
Cause	An attempt has been made to transfer EIA/ISO program although the NC system is not provided with an EIA/ISO option.	Type of error
		A
		Stopped status
		L
Action	Without an EIA/ISO option, EIA/ISO program processing is not possible.	Clearing procedure
		S
		Display
		N

599	NO APPOINT DATA (, ,)	
Cause	<p>The host system has issued a request for transmission/reception of data not existing within the NC system.</p> <ul style="list-style-type: none"> - A drum-tool data transfer request has been issued to the NC system though it is not provided with a drum. - A request for transfer of a larger volume of data than the control data stored within the NC system has been made. 	Type of error
		A
		Stopped status
		L
Action	Check the contents of the command messages that have been sent from the host system.	Clearing procedure
		S
		Display
		N

Notes:

3-6 AUTO CYCLE MODE PROGRAMMING ERRORS

600	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

601	SYSTEM ERROR	(, ,)
Cause		Type of error
A processing error has occurred within the NC system.		E
		Stopped status
		I (L)
Action		Clearing procedure
Using CMT I/O, save the program data, tool data, tool file data, parameters, etc. that are currently being used. After that, please contact the nearest MAZAK service center.		O (S)
		Display
		H (N)

602	PROG. DATA NOT ALLOWED	(, ,)
Cause		Type of error
An attempt has been made to start the program being transferred.		B
		Stopped status
		I (L)
Action		Clearing procedure
After the transfer operation is completed, start the program.		O (S)
		Display
		H (N)

603	NO DESIGNATED PROGRAM	(WNO.,UNO.,SNO.)
Cause		Type of error
The program having the work number that has been set in the subprogram unit does not exist within the memory. No work number has been set in the subprogram unit. The work number that has been designated as the restart position does not exist within the memory.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining programs to see if the designated program exists.		O (S)
		Display
		H (N)

604	NO PITCH IN MULTI WORKPIECES	(WNO.,UNO.,SNO.)
Cause		Type of error
Pitch X is not yet set in spite of the fact that multi-piece machining in the direction of the X-axis is to take place. Pitch Y is not yet set in spite of the fact that multi-piece machining in the direction of the Y-axis is to take place.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program and then set an appropriate multi-piece machining pitch in the common unit,		O (S)
		Display
		H (N)

605	NO TOOL DATA IN PROGRAM (WNO.,UNO.,SNO.)	
Cause		Type of error
The point-, line- or face-machining unit does not contain any tool sequences.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program to see if there are units that do not contain necessary tool sequences.		O (S)
		Display
		H (N)

608	MISSING INPUT DATA (LINE) (WNO.,UNO.,SNO.)	
Cause		Type of error
A line-machining unit lacks data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program, and set data if a line-machining unit lacks data.		O (S)
		Display
		H (N)

606	NO FIGURE IN PROGRAM (WNO.,UNO.,SNO.)	
Cause		Type of error
The point-, line- or face-machining unit does not have any figure data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program to see if there are units that do not contain necessary figure data.		O (S)
		Display
		H (N)

609	MISSING INPUT DATA (FACE) (WNO.,UNO.,SNO.)	
Cause		Type of error
A face-machining unit lacks data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program, and set data if a face-machining unit lacks data.		O (S)
		Display
		H (N)

607	MISSING INPUT DATA (POINT) (WNO.,UNO.,SNO.)	
Cause		Type of error
A point-machining unit lacks data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program, and set data if a point-machining unit lacks data.		O (S)
		Display
		H (N)

610	MISSING TOOL DATA FOR POINT (WNO.,UNO.,SNO.)	
Cause		Type of error
A point-machining tool sequence lacks data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program, and set data if a point-machining tool sequence lacks data.		O (S)
		Display
		H (N)

611	MISSING TOOL DATA FOR LINE (WNO.,UNO.,SNO.)	
Cause		Type of error
A line-machining tool sequence lacks data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program, and set data if a line-machining tool sequence lacks data.		O (S)
		Display
		H (N)

612	MISSING TOOL DATA FOR FACE (WNO.,UNO.,SNO.)	
Cause		Type of error
A face-machining tool sequence lacks data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program, and set data if a face-machining tool sequence lacks data.		O (S)
		Display
		H (N)

613	WPC UNIT INCOMPLETE (WNO.,UNO.,SNO.)	
Cause		Type of error
The WPC unit lacks data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program, and set data if the WPC unit lacks data.		O (S)
		Display
		H (N)

614	WPC NESTING OVER (WNO.,UNO.,SNO.)	
Cause		Type of error
The maximum permissible number of repeats of MAZATROL program nesting has been exceeded nine.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review and correct the particular machining program so that the total number of repeats of nesting does not excess nine.		O (S)
		Display
		H (N)

615	OFS UNIT INCOMPLETE (WNO.,UNO.,SNO.)	
Cause		Type of error
The offset unit lacks data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the particular machining program, and set data if the offset unit lacks data.		O (S)
		Display
		H (N)

616	DATA ERROR IN M CODE UNIT (WNO.,UNO.,SNO.)	
Cause	The M code unit contains no data.	Type of error
		B
		Stopped status
		I (L)
Action	Review the particular machining program, and input data to the M code unit.	Clearing procedure
		O (S)
		Display
		H (N)

619	LINE/FACE CUTTING PAR. ERROR (WNO.,UNO.,SNO.)	
Cause	The line- or face-machining parameter settings are out of their permissible ranges.	Type of error
		B
		Stopped status
		I (L)
Action	The parameter E13 is set to "0"; change it to a value other than "0".	Clearing procedure
		O (S)
		Display
		H (N)

617	EXECUTION IMPOSSIBLE (WNO.,UNO.,SNO.)	
Cause	The data processing operation cannot be performed because of contradiction in data. This condition occurs if an attempt is made to start automatic operation when the specified work number is an unregistered number.	Type of error
		B
		Stopped status
		I (L)
Action	Search out the contradictory data making reference to WNO., UNO., SNO. (which are displayed together with the alarm message), and then correct the data.	Clearing procedure
		O (S)
		Display
		H (N)

620	CUTTING SPEED ZERO (WNO.,UNO.,SNO.)	
Cause	Of tool sequence data (except for chip removal), the circumferential speed is unset or set to "0".	Type of error
		B
		Stopped status
		I (L)
Action	Review the machining program and set the desired circumferential speed.	Clearing procedure
		O (S)
		Display
		H (N)

618	POINT CUTTING PARAMETER ERROR (WNO.,UNO.,SNO.)	
Cause	The point-machining parameter setting(s) is out of its permissible range.	Type of error
		B
		Stopped status
		I (L)
Action		Clearing procedure
		O (S)
		Display
		H (N)

621	FEEDRATE ZERO (WNO.,UNO.,SNO.)	
Cause	Of tool sequence data (except for chip removal), the feedrate is unset or set to "0".	Type of error
		B
		Stopped status
		I (L)
Action	Review the machining program and set the desired feedrate.	Clearing procedure
		O (S)
		Display
		H (N)

622	DESIGNATED UNIT NOT FOUND	(, ,)
Cause		Type of error
The unit that has been designated as the restart position is not present in the program with the specified work number.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and designate the correct unit number.		O (S)
		Display
		H (N)

625	EXCEED ENDMILL DIAMETER	(WNO.,UNO.,SNO.)
Cause		Type of error
The value of "(groove width) – (finish allowance R) × 2" of the endmill groove unit is larger than the "tool diameter" value of the rough-machining tool. The "groove width" value of the endmill groove unit is smaller than the "tool diameter" value of the finishing tool.		B
		Stopped status
		I (L)
Action		Clearing procedure
		O (S)
		Display
		H (N)

623	DESIGNATED SNO. NOT FOUND	(, ,)
Cause		Type of error
The tool sequence that has been designated as the restart position is not present in the unit of the specified work number; two or more lines of tool sequence data are present in the line-machining chamfering unit.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and designate the correct tool sequence number.		O (S)
		Display
		H (N)

626	NO TOOL IN MAGAZINE	(WNO.,UNO.,SNO.)
Cause		Type of error
The tool(s) specified in the program is not registered in the tool data of the drum which is to be used. The drum number setting either on the COMMAND display or in the drum changing unit is not correct.		B
		Stopped status
		I (L)
Action		Clearing procedure
Carry out a tool layout operation and register the necessary tool(s) on the TOOL DATA display. Change the drum number setting on the COMMAND display or in the drum changing unit to the correct value.		O (S)
		Display
		H (N)

624	RESTART IMPOSSIBLE	(, ,)
Cause		Type of error
The unit that has been designated as the restart position is the end unit. The designated number of times of reappearance (L) is too large and the corresponding restart position is not present. The restart data is incomplete.		B
		Stopped status
		I (L)
Action		Clearing procedure
		O (S)
		Display
		H (N)

627	TOOL DATA INPUT PROCESS ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
The data of the tool length or tool diameter is not yet input on the TOOL DATA display.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the tool data and input the tool length or tool diameter.		O (S)
		Display
		H (N)

629	TOOL FILE INPUT PROCESS ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
The tool file lacks of data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the data on the TOOL FILE display and fill in any empty items with data.		O (S)
		Display
		H (N)

628	NO ASSIGNED TOOL IN TOOL FILE (WNO.,UNO.,SNO.)	
Cause		Type of error
The tool specified in the program is not registered on the TOOL FILE display.		B
		Stopped status
		I (L)
Action		Clearing procedure
Register the tool data that is to be used in the program into the tool file.		O (S)
		Display
		H (N)

630	Z DEPTH OF CUT TOO LARGE (WNO.,UNO.,SNO.)	
Cause		Type of error
Of the line- or face-machining tool sequence data, the value of the Z depth of cut is in excess of its maximum allowable limit specified on the TOOL FILE display.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and correct the value of the Z depth of cut.		O (S)
		Display
		H (N)

631	STOCK REMOVAL R TOO LARGE (WNO.,UNO.,SNO.)	
Cause		Type of error
The value of "(removal allowance R) – (finish allowance R)" in the line-machining unit is larger than the value of the tool diameter of the rough-cutting tool. The value of removal allowance R in the line-machining unit is larger than the value of the tool diameter of the finishing tool.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and correct the values of removal allowance R and finishing allowance R in the line-machining unit.		O (S)
		Display
		H (N)

632	RADIAL DEPTH OF CUT ZERO (WNO.,UNO.,SNO.)	
Cause		Type of error
Of line- or face-machining tool sequence data, the radial depth of cut is set to a value smaller than zero.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set the radial depth of cut to the correct value.		O (S)
		Display
		H (N)

633	Z DEPTH OF CUT ZERO (WNO.,UNO.,SNO.)	
Cause		Type of error
Of line- or face-machining tool sequence data, the Z depth of cut is set to a value smaller than zero.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set the Z depth of cut to the correct value.		O (S)
		Display
		H (N)

634	FINISH DEPTH OF CUT ZERO (WNO.,UNO.,SNO.)	
Cause		Type of error
The finish allowance value in the line- or face-machining unit is set to zero in spite of the fact that a finishing tool is registered.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set data in the finish allowance data item.		O (S)
		Display
		H (N)

635	TOOL DIAMETER ZERO (WNO.,UNO.,SNO.)	
Cause		Type of error
Of tool data, the tool diameter setting is zero.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the data on the TOOL DATA display and set data in the tool diameter item.		O (S)
		Display
		H (N)

636	STOCK REMOVAL Z TOO SMALL (WNO.,UNO.,SNO.)	
Cause		Type of error
In the line- or face-machining unit, removal allowance Z is smaller than finish allowance Z.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the line- or face-machining unit and increase removal allowance Z to a value greater than that of finish allowance Z.		O (S)
		Display
		H (N)

638	R DEPTH OF CUT TOO LARGE (WNO.,UNO.,SNO.)	
Cause		Type of error
Of the face-machining tool sequence data, the setting of the radial depth of cut is smaller than the tool diameter setting on the TOOL DATA display.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and increase the radial depth of cut to a value greater than the tool diameter setting in the tool data.		O (S)
		Display
		H (N)

637	STOCK REMOVAL R TOO SMALL (WNO.,UNO.,SNO.)	
Cause		Type of error
In the line- or face-machining unit, removal allowance R is smaller than finish allowance R.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the line- or face-machining unit and increase the value of removal allowance R to a value greater than that of finish allowance R.		O (S)
		Display
		H (N)

639	DESIGNATED PALLET NOT FOUND (WNO.,UNO.,SNO.)	
Cause		Type of error
The pallet number that has been set in the pallet changing unit is larger than the maximum allowable number of pallets set in the parameter L46 .		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set an allowable pallet number.		O (S)
		Display
		H (N)

640	ILLEGAL ANGLE OF INDEX ORDERED (WNO.,UNO.,SNO.)	
Cause		Type of error
The data set in the angle item of the indexing unit cannot be divided by the parameter L37 setting (minimum allowable angle of index).		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set an allowable angle of index.		O (S)
		Display
		H (N)

642	ILLEGAL NEXT PALLET NO. INPUT (WNO.,UNO.,SNO.)	
Cause		Type of error
A pallet number has been duplicated.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program for accurate pallet numbers.		O (S)
		Display
		H (N)

641	MISSING INPUT DATA (WNO.,UNO.,SNO.)	
Cause		Type of error
The pallet changing unit or the indexing unit lacks unit data. Initial point Z is not set in the common unit. The drum number is not set in the drum changing unit.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set all necessary values in the unit.		O (S)
		Display
		H (N)

643	DATA ERROR IN MAN. PROG. UNIT (WNO.,UNO.,SNO.)	
Cause		Type of error
The manual program mode unit contains a sequence that has no data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program, and fill in any incomplete sequence with data or erase such sequences.		O (S)
		Display
		H (N)

644	NOT FOUND NOMINAL DIA	(WNO.,UNO.,SNO.)
Cause		Type of error
The nominal diameter item of the tool sequence data is not complete. The nominal diameter item of the MMS unit or the manual program mode unit (when a tool is set) is not complete.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program, and set data in the nominal diameter item of the MMS unit or the manual program mode unit (when a tool is set) or erase the corresponding portion.		O (S)
		Display
		H (N)

647	NOT FOUND END UNIT	(WNO.,UNO.,SNO.)
Cause		Type of error
The end unit is not present in the program.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set the end unit at the end of the program.		O (S)
		Display
		H (N)

645	PRIORITY NO. OVERLAP	(WNO.,UNO.,SNO.)
Cause		Type of error
The same priority number is assigned to different tools.		B
		Stopped status
		I (L)
Action		Clearing procedure
The same priority number must not be assigned to different tools within one process, Change the priority number.		O (S)
		Display
		H (N)

648	OFFSET DATA FOR MULTI TOO MANY	(WNO.,UNO.,SNO.)
Cause		Type of error
More than 10 sets of offset data have been input for multi-piece machining.		B
		Stopped status
		I (L)
Action		Clearing procedure
The machining program is in an abnormal state. If the program is already saved onto CMT, microdisk or other media, erase the program and then reload it. If the program is not saved, make corrections with the editing function and fully scan for more data errors.		O (S)
		Display
		H (N)

646	PRIORITY NO. IS ILLEGAL	(WNO.,UNO.,SNO.)
Cause		Type of error
The priority numbering order within a unit is not correct.		B
		Stopped status
		I (L)
Action		Clearing procedure
The machining order within one unit has been reversed by the incorrect priority numbering. Change the priority numbers.		O (S)
		Display
		H (N)

649	MMS SEQUENCE INCOMPLETE (WNO.,UNO.,SNO.)	
Cause		Type of error
The MMS sequence data is incomplete.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program, and input data to the MMS sequence to make it complete.		O (S)
		Display
		H (N)

651	PARAMETER ERROR (GYN) (WNO.,UNO.,SNO.)	
Cause		Type of error
An attempt has been made to execute the point-, line- or face- machining MAZATROL program when the setting of parameter L28 was "5" or more.		B
		Stopped status
		I (L)
Action		Clearing procedure
Change the setting of parameter L28 to a value between 0 and 4.		O (S)
		Display
		H (N)

650	CHAMFERING IMPOSSIBLE (WNO.,UNO.,SNO.)	
Cause		Type of error
Cutting is impossible because the chamfering cutter is likely to come into contact with the wall or bottom of the workpiece during chamfering. The data of the specified chamfering cutter on the TOOL DATA or TOOL FILE display is not appropriate.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program or the tool file, and correct inappropriate data.		O (S)
		Display
		H (N)

652	GEAR SHIFT DATA ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
The tool sequence data contains an unavailable gear-shift M code(s).		B
		Stopped status
		I (L)
Action		Clearing procedure
Change the corresponding code(s) to an available one(s). 2-gear $\begin{cases} \text{H} : \text{M39} \\ \text{L} : \text{M38} \end{cases}$ 4-gear $\begin{cases} \text{H} : \text{M39} \\ \text{MH} : \text{M38} \\ \text{ML} : \text{M37} \\ \text{L} : \text{M36} \end{cases}$		O (S)
		Display
		H (N)

653		ILLEGAL TOOL DESIGNATED (WNO.,UNO.,SNO.)	
Cause	Tools that cannot be used have been designated.	Type of error	B
		Stopped status	I (L)
Action	Review the machining program and designate tools that are usable.	Clearing procedure	O (S)
		Display	H (N)

654		TOOL DATA ERROR (WNO.,UNO.,SNO.)	
Cause	The tool length and tool diameter settings on the TOOL DATA display are negative.	Type of error	B
		Stopped status	I (L)
Action	Set positive tool length and tool diameter values.	Clearing procedure	O (S)
		Display	H (N)

655		PROGRAM DATA IS DESTROYED (WNO.,UNO.,SNO.)	
Cause	The program is already destroyed.	Type of error	B
		Stopped status	I (L)
Action	Erase a part of the program and then re-create the destroyed part; or erase the entire program and then carry out a loading operation using the CMT I/O or other functions once again.	Clearing procedure	O (S)
		Display	H (N)

656		NOT FOUND MMS SEQUENCE DATA (WNO.,UNO.,SNO.)	
Cause	The MMS units include one that has no sequence data.	Type of error	B
		Stopped status	I (L)
Action	Create one or more lines of sequence data in the corresponding MMS unit, or erase the unit.	Clearing procedure	O (S)
		Display	H (N)

657	ILLEGAL NUMBER INPUT (WNO.,UNO.,SNO.)
Cause	Type of error
The program contains incorrect data.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the machining program and make data corrections.	O (S)
	Display
	H (N)

658	INITIAL Z < MATERIAL DEPTH (WNO.,UNO.,SNO.)
Cause	Type of error
The setting of the material height in the 3-D machining unit is greater than that of initial point Z in the common unit.	B
	Stopped status
	I (L)
Action	Clearing procedure
Change the program to give a material height value smaller than the initial point Z value.	O (S)
	Display
	H (N)

659	NO ADMIT. TOOL PATH (I/O BUSY) (WNO., ,)
Cause	Type of error
The tool path check cannot be performed since I/O operation (loading) is in progress.	A
	Stopped status
	L
Action	Clearing procedure
Make the tool path check after the I/O operation has been completed.	S
	Display
	N

660	NO ADMIT. APPOINT AXIS MOVE (, ,)
Cause	Type of error
The Y-axis or Z-axis of the index position has been appointed using the indexing unit when the parameter L41 is set to "2".	B
	Stopped status
	I (L)
Action	Clearing procedure
Using the data cancellation key, erase the Y-axis or Z-axis data of the index position.	O (S)
	Display
	H (N)

661	ILLEGAL M CODE (WNO.,UNO.,SNO.)
Cause	Type of error
M195 (tool breakage detection start command code) has been set for the M code unit or for the manual program mode sequence.	
	Stopped status
Action	Clearing procedure
M195 cannot be executed on MAZATROL programs. Delete that command code from in program.	
	Display

664	3-D UNIT NOT FOUND IN THE PRG. (WNO.,UNO.,SNO.)
Cause	(M-32A ONLY) Type of error
A 3-D machining unit has been set in the program in spite of the fact that 3-D machining option is not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Erase the 3-D machining unit from the machining program.	O (S)
	Display
	Red (Blue)

662	(, ,)
Cause	Type of error
	Stopped status
Action	Clearing procedure
	Display

665	ILLEGAL DATA IN 3-D UNIT (WNO.,UNO.,SNO.)
Cause	(M-32A ONLY) Type of error
The 3-D machining unit lacks of unit data.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the machining program and set necessary data in the 3-D machining unit.	O (S)
	Display
	Red (Blue)

663	(, ,)
Cause	Type of error
	Stopped status
Action	Clearing procedure
	Display

666	PLN DATA NOT FOUND IN THE PRG. (WNO.,UNO.,SNO.)	
Cause	(M-32A ONLY)	Type of error
The 3-D machining unit lacks of plane definition data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set plane definition data in the 3-D machining unit.		O (S)
		Display
		Red (Blue)

668	ILLEGAL PLN DATA IN THE PRG. (WNO.,UNO.,SNO.)	
Cause	(M-32A ONLY)	Type of error
The plane definition data in the 3-D machining unit is not complete.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set data in the plane definition data item.		O (S)
		Display
		Red (Blue)

667	NOT FOUND CHECK SURFACE DATA (WNO.,UNO.,SNO.)	
Cause	(M-32A ONLY)	Type of error
The 3-D machining unit lacks of check surface data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set check surface data in the 3-D machining unit.		O (S)
		Display
		Red (Blue)

669	ILLEGAL TOLERANCE DATA INPUT (WNO.,UNO.,SNO.)	
Cause	(M-32A ONLY)	Type of error
The value of the tolerance parameter that has been designated in the tool sequence is "0".		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the parameters E67 through E75 , and set a value other than "0" in the parameter whose setting is "0".		O (S)
		Display
		Red (Blue)

670	ILLEGAL SEQUENCE DATA IN PRG. (WNO.,UNO.,SNO.)	
Cause	(M-32A ONLY)	Type of error
The tool sequence in the 3-D machining unit lacks of data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and input data to the tool sequence.		O (S)
		Display
		Red (Blue)

671	ILLEGAL MOVE SURFACE DATA (WNO.,UNO.,SNO.)	
Cause	(M-32A ONLY)	Type of error
The coordinate conversion data in the 3-D machining unit is not complete.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and make the coordinate conversion data complete.		O (S)
		Display
		Red (Blue)

672	ILLEGAL AREA DATA INPUT (WNO.,UNO.,SNO.)	
Cause	(M-32A ONLY)	Type of error
In the check surface data of the 3-D machining unit, the setting of the maximum value is smaller than that of the minimum value.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the check surface data, and make corrections so that the setting of the maximum value is equal to or greater than that of the minimum value for each axis.		O (S)
		Display
		Red (Blue)

673	FL NUMBER OVER (3-D UNIT) (WNO.,UNO.,SNO.)	
Cause	(M-32A ONLY)	Type of error
In the ruled-surface unit, the number of FLs is in excess of 20, or in the line- or face-machining unit, the number of defined figures is in excess of 2.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and correct the shape data.		O (S)
		Display
		Red (Blue)

674	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

675	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

677	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

676	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

678	NO INTERSECTION	(WNO.,UNO.,SNO.)
Cause		Type of error
	In the line- or face-machining unit, the coordinates of the intersection point of figures cannot be obtained because of shortage of, or contradiction, in the free-shape data.	B
		Stopped status
		I (L)
Action		Clearing procedure
		O (S)
		Display
		Red (Blue)

679 SMOOTHING FIGURE IMPOSSIBLE (WNO.,UNO.,SNO.)	
Cause	Type of error
The figures cannot be connected smoothly at corner R because of contradiction in the data of corner R or in the data of the figures in front and rear of corner R.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the machining program and check the value of corner R of the free shapes.	O (S)
	Display
	H (N)

681 UNDEFINED CORNER AT SPT/FPT (WNO.,UNO.,SNO.)	
Cause	Type of error
Corner rounding or corner chamfering has been set at the starting or ending point of a figure when defining figures in the central linear machining, right-hand linear machining, left-hand linear machining, right-hand chamfering or left-hand chamfering units.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the machining program and correct it so that the corner rounding or corner chamfering is not set at the starting or ending point.	O (S)
	Display
	H (N)

680 HOLE NUMBER OVER (>500) (WNO.,UNO.,SNO.)	
Cause	Type of error
The point-machining units include one(s) that has more than 500 holes defined in it.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the point-machining units, and make corrections so that the total number of hole settings in one point-machining unit is not greater than 500.	O (S)
	Display
	H (N)

682 REPEAT FIGURE INAPPROPRIATE (WNO.,UNO.,SNO.)	
Cause	Type of error
Contradiction presides in the figure rotation or figure shift data that has been set during defining free figures in the line- or face-machining unit.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review and correct the corresponding shape data.	O (S)
	Display
	H (N)

683	UNDEFINED CORNER (WNO.,UNO.,SNO.)
Cause	Type of error
The value of designated corner rounding or corner chamfering is not appropriate.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the corresponding shape data and set the correct corner rounding or corner chamfering value.	O (S)
	Display
	H (N)

684	POINT CUTTING PATTERN ERROR (WNO.,UNO.,SNO.)
Cause	Type of error
The point-machining shape definition data is not appropriate.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review and correct the corresponding shape data.	O (S)
	Display
	H (N)

685	SQUARE CAN NOT BE DEFINED (WNO.,UNO.,SNO.)
Cause	Type of error
When the shape pattern is "square", the input data cannot be used to make shape definitions.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review and correct the corresponding shape data.	O (S)
	Display
	H (N)

686	NO STARTING POINT (WNO.,UNO.,SNO.)
Cause	Type of error
During input of free-shape data (open-figure data) to the line-machining unit, "?" has been set as the definition of the starting point.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the machining program and set the coordinates of the starting point of the free shape.	O (S)
	Display
	H (N)

687	NO FINAL POINT (WNO.,UNO.,SNO.)
Cause	Type of error
During input of free-shape data (open-figure data) to the line-machining unit, "?" has been set as the definition of the starting point.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the machining program and set the coordinates of the ending point of the free shape.	O (S)
	Display
	H (N)

688	INSUFFICIENT INPUT DATA (WNO.,UNO.,SNO.)	
Cause		Type of error
The coordinates of the intersection point cannot be calculated since the free-shape input data in the line- or face-machining unit is incomplete.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the corresponding shape data and set data that is wanting.		O (S)
		Display
		H (N)

691	MOUNT (VALLEY) SHAPE ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
The second figures (inside figures) are not yet defined in the endmilling-relief, pocket milling-relief or pocket milling-hollow unit.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program, and define the second shape in the endmilling-mountain, pocket milling-mountain or pocket milling-valley unit.		O (S)
		Display
		H (N)

689	INPUT DATA EXCEEDED (WNO.,UNO.,SNO.)	
Cause		Type of error
The line- or face-machining unit contains too much free-shape input data, and there is contradiction between overlapping data.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the corresponding shape data and erase either one of the overlapping data sets.		O (S)
		Display
		H (N)

692	POINT NUMBER EXCEEDED (>200) (WNO.,UNO.,SNO.)	
Cause		Type of error
The number of points which are necessary to define the shapes designated in the line- or face-machining unit exceeds 200.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program, and reduce the number of shapes within one line- or face-machining unit.		O (S)
		Display
		H (N)

690	ILLEGAL RADIUS (WNO.,UNO.,SNO.)	
Cause		Type of error
Contradiction exists in the free-shape data that have been set to define arc in the line- or face-machining units.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the corresponding shape data and set correct data.		O (S)
		Display
		H (N)

693	NUMBER OF SHAPE TOO MANY (WNO.,UNO.,SNO.)	
Cause		Type of error
Among the line- or face-machining units is one(s) that contains more shapes than allowable within one unit.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the corresponding shape data and check the number of shapes.		O (S)
		Display
		H (N)

694	FIXED FIGURE DESIGNATED ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
Fixed shapes are included in the shape data (open figures) of the central linear machining, right-hand linear machining, left-hand linear machining, right-hand chamfering, left-hand chamfering or endmilling-groove units.		B
		Stopped status
		I (L)
Action		Clearing procedure
Change the fixed shapes to free ones.		O (S)
		Display
		H (N)

695	POINT INSIDE CIRCLE (WNO.,UNO.,SNO.)	
Cause		Type of error
It is not possible to draw a straight line tangential to point P1 since it is inside the arc.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and check the free-shaped data.		O (S)
		Display
		H (N)

696	ILLEGAL (P) (WNO.,UNO.,SNO.)	
Cause		Type of error
"Left" or "right" is set in P, though "up" or "down" should have been set.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and check the value of P.		O (S)
		Display
		H (N)

697	DATUM (P) NECESSARY (WNO.,UNO.,SNO.)	
Cause		Type of error
P is not yet input in spite of the fact that there are more than one point of intersection with the arc.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the machining program and set P.		O (S)
		Display
		H (N)

698	TWO POINT OVERLAPPED (WNO.,UNO.,SNO.)	
Cause	The coordinate values of the start point and end point are the same.	Type of error
		B
		Stopped status
		I (L)
Action	For the pattern of straight line, the data of X/Y are set to exactly the same end point coordinate values as X/Y present on the preceding line of the program; delete these data.	Clearing procedure
		O (S)
		Display
		H (N)

699	PARALLEL LINES (WNO.,UNO.,SNO.)	
Cause	The two straight lines are parallel to each other, and thus the coordinates of their intersection point cannot be obtained.	Type of error
		B
		Stopped status
		I (L)
Action	Review the corresponding shape data and set correct data.	Clearing procedure
		O (S)
		Display
		H (N)

700	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

701	DEFINED SHAPE TOO SMALL (WNO.,UNO.,SNO.)	
Cause		Type of error
The shape compensation clearance with respect to the shape of the endmilling-top is too large; or the tool diameter with respect to the size of the line-inside machining is too large.		B
		Stopped status
		K
Action		Clearing procedure
Change the shape compensation clearance (parameter E13) to an appropriate value: or use a tool of smaller diameter.		O
		Display
		N

702	FIGURE DEFINITION ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
The radius of the arc does not agree with the distance from the center.		B
		Stopped status
		K
Action		Clearing procedure
Such contradiction usually results from arithmetic errors. Change the radial depth of cut by some micro, or use a tool of smaller diameter.		O
		Display
		N

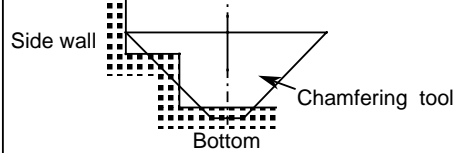
703	PROCESS DEFINITION ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
The machining conditions are incorrect (for example, the radial depth of cut is zero).		B
		Stopped status
		K
Action		Clearing procedure
Change the machining conditions to correct ones.		O
		Display
		N

704	TOOL TRESPASSING IMPOSSIBLE (WNO.,UNO.,SNO.)	
Cause		Type of error
In area machining, the tool diameter with respect to the figure is too large.		B
		Stopped status
		K
Action		Clearing procedure
Replace the tool with one that has a smaller diameter; or select the M2 mode endmilling-mountain machining pattern with setting bit 7 of parameter E91 if this error occurs in the outside machining endmilling-mountain.		O
		Display
		N

705	APPROACH POINT ERROR (WNO.,UNO.,SNO.)
Cause	
The approach point cannot be obtained.	Type of error
	B
	Stopped status
Action	K
	Clearing procedure
	O
Reduce the tool diameter, the approach amount (E1, E2) and/or the overlap amount (E21).	Display
	N

706	ILLEGAL FIGURE DATA (WNO.,UNO.,SNO.)
Cause	
The shape has been separated into three segments or more as a result of offsetting.	Type of error
	B
	Stopped status
Action	K
	Clearing procedure
	O
Change the machining pattern (from inversed type to fixed type, for example); or divide the machining shape in advance so that it will not be separated by offsetting.	Display
	N

707	INTERVENTION CHAMF. CUTTER (WNO.,UNO.,SNO.)
Cause	
The chamfering tool interferes with the side wall or bottom.	Type of error
	B
	Stopped status
Action	K
	Clearing procedure
	O
Use a tool which does not interfere with the side wall or bottom.	Display
	N



708	DATA AREA OVER FLOW (WNO.,UNO.,SNO.)
Cause	
In the EIA program, the total number of characters within one block is in excess of 248.	Type of error
	B
	Stopped status
Action	L
	Clearing procedure
	S
Divide blocks so that one block contains 248 characters or less.	Display
	N

748	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

751	CURVED DEFINITION ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
A curved surface that cannot be machined has been defined.		B
		Stopped status
		K
Action		Clearing procedure
No corrective actions can be taken against this error; define a curved surface that can be machined.		O
		Display
		Blue

749	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

752	DESIGNATED AREA DATA IMPOSS. (WNO.,UNO.,SNO.)	
Cause		Type of error
The check surface values are incorrect. ① For rough-machining 1 or 2: Check surface Z min. \geq material height ② For finishing: Check surface Z min. $>$ initial Z ③ Check surface X min. $>$ X max., or Y min. $>$ Y max., or Z min. $>$ Z max.		**
		Stopped status
		K
Action		Clearing procedure
Set the check surface values as follows: ① For rough-machining 1 or 2: Check surface Z min. $<$ material height ② For finishing: Check surface Z min. \geq initial Z ③ Check surface X min. \leq X max., and Y min. \leq Y max., and Z min. \leq Z max.		O
		Display
		Blue

750	CURVED DEFINITION ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
A curved surface that cannot be machined has been defined.		B
		Stopped status
		K
Action		Clearing procedure
No corrective actions can be taken against this error; define a curved surface that can be machined.		O
		Display
		Blue

** : eia-gen (3D) B

753	SMALL TOOL	(WNO.,UNO.,SNO.)
Cause		Type of error
In rough-machining 2, the tool diameter is extremely small in comparison with the dimensions of the defined 3-D figure.		**
		Stopped status
		K
Action		Clearing procedure
Use tools whose diameters are no less than 1/100 of the distance between the maximum and minimum dimensions of the 3-D figure.		O
		Display
		Blue

756	Z DIRECTION PITCH SMALL	(WNO.,UNO.,SNO.)
Cause		Type of error
In rough-machining 2, the pitch in the Z direction is extremely small in comparison with the dimensions of the defined 3-D figure.		B
		Stopped status
		K
Action		Clearing procedure
Set the Z-direction pitch to a value no less than 1/250 of (material height – height of the Z bottom of the 3-D figure).		O
		Display
		Blue

754	LARGE TOOL	(WNO.,UNO.,SNO.)
Cause		Type of error
Tool interference has occurred.		B
		Stopped status
		K
Action		Clearing procedure
Note) Currently, this error message does not actually appear since an automatic tool-interference checking function is not provided. Here, this message is covered just to allow for future possible system expansion.		O
		Display
		Blue

757	CURVED DEFINITION LARGE	(WNO.,UNO.,SNO.)
Cause		Type of error
<ul style="list-style-type: none"> ① For rough-machining 2 with designation of work size, the dimensions of the defined figure are larger than those of the workpiece. ② For rough-machining 2, a material height smaller than “(height of the Z bottom of the 3-D figure) + (height of a machining area outside the figure)” [parameters E84, E89] has been set irrespective of designating the offset amount or the work size. 		B
		Stopped status
		K
Action		Clearing procedure
<ul style="list-style-type: none"> ① Under YMW specifications, the alarm does not occur. ② Change the E84 and E89 parameter settings so that: for the offset amount designation, “(height of the bottom of the 3-D figure) + E84 < material height”, and; for the work size designation, “(height of the bottom of the 3-D figure) + E89 < material height”. 		O
		Display
		Blue

755	R DIRECTION PITCH SMALL	(WNO.,UNO.,SNO.)
Cause		Type of error
In rough-machining 2, the pitch in the radial direction is extremely small in comparison with the dimensions of the defined 3-D figure.		B
		Stopped status
		K
Action		Clearing procedure
Set the radial-direction pitch to a value no less than 1/200 of the distance between the maximum and minimum dimensions of the 3-D figure.		O
		Display
		Blue

** : eia-gen (3D) B

758	INITIAL POINT SET ERROR (WNO.,UNO.,SNO.)	
Cause		Type of error
In rough-machining 1 or 2, initial Z ≤ material height.		B
		Stopped status
		K
Action		Clearing procedure
Change settings to give initial Z > material height. Note) This error does not occur if the setting check has already been made using the Op-gen function.		O
		Display
		Blue

779	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

759	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

780	APPROACH PASS INTERVENTION (WNO.,UNO.,SNO.)	
Cause		Type of error
The programmed approach path or retraction path interferes with the stock material (programmed shape plus removal allowance).		B
		Stopped status
		L
Action		Clearing procedure
Reduce the approach amount/overlap amount or use a tool of smaller diameter; or set the approach point in a different position.		O
		Display
		Blue

778	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

Notes:

3-7 TOOL PATH MODE PROGRAMMING ERRORS

800	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

803	DIMENSION DETECTING ERROR (WNO.,NNO.,BNO.)	
Cause		Type of error
	A distance of axis movement that cannot be divided by the preset command unit has been assigned.	B
		Stopped status
		I (L)
Action		Clearing procedure
	Review the program.	O (S)
		Display
		H (N)

801	SIMULTANEOUS AXIS OVER (WNO.,NNO.,BNO.)	
Cause		Type of error
	The number of axis addresses which have been assigned in one block is in excess of the specifications.	B
		Stopped status
		I (L)
Action		Clearing procedure
	Check the specifications and then divide the block into two parts.	O (S)
		Display
		H (N)

804	PARITY H ERROR (WNO.,NNO.,BNO.)	
Cause		Type of error
	On paper tape, the number of holes per character is even for EIA code or odd for ISO code.	B
		Stopped status
		I (L)
Action		Clearing procedure
	Check the paper tape and the tape reader.	O (S)
		Display
		H (N)

802	ILLEGAL AXIS NAME (WNO.,NNO.,BNO.)	
Cause		Type of error
	The axis names assigned in the program are not identified in the system parameters.	B
		Stopped status
		I (L)
Action		Clearing procedure
	Correct the axis names in the program (eg: X, Y, Z etc.).	O (S)
		Display
		H (N)

805	PARITY V ERROR (WNO.,NNO.,BNO.)	
Cause		Type of error
	On paper tape, the number of holes per block is odd.	B
		Stopped status
		I (L)
Action		Clearing procedure
	Make even the hole quantity per block on the paper tape; or turn off the user parameter G23 used for parity-V selection.	O (S)
		Display
		H (N)

806	ILLEGAL ADDRESS (WNO.,NNO.,BNO.)
Cause	Type of error
An address that is not covered in the specifications has been used.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check and correct the corresponding address in the program, and also check the specifications.	O (S)
	Display
	H (N)

809	ILLEGAL NUMBER INPUT (WNO.,NNO.,BNO.)
Cause	Type of error
The assigned data for the address is out of the allowable setting range.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the program.	O (S)
	Display
	H (N)

807	ILLEGAL FORMAT (WNO.,NNO.,BNO.)
Cause	Type of error
The format in which the data has been designated in the program is incorrect.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the program.	O (S)
	Display
	H (N)

810	PROGRAM END NOT FOUND (WNO.,NNO.,BNO.)
Cause	Type of error
"EOR" has been detected during tape or memory operation.	B
	Stopped status
	I (L)
Action	Clearing procedure
For the main program, set M02 or M30 at the end of the program. For subprograms, set M99 at the end of the program.	O (S)
	Display
	H (N)

808	MIS-SET G CODE (WNO.,NNO.,BNO.)
Cause	Type of error
A G code that is not covered in the specifications has been designated.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check and correct the corresponding G code address in the program.	O (S)
	Display
	H (N)

811	ILLEGAL O, N NUMBER (WNO.,NNO.,BNO.)
Cause	Type of error
Zeroes have been designated as program or sequence numbers.	B
	Stopped status
	I (L)
Action	Clearing procedure
Delete zero from N (sequence) or O (program) numbers of the program; or change O-No. (program numbers) to between 1 and 99999999, N-No. (sequence numbers) to 1 99999.	O (S)
	Display
	H (N)

812	ERROR IN THE BUFFER BLOCK (WNO.,NNO.,BNO.)	
Cause		Type of error
An error has been found to exist in the pre-read block during execution of tool-diameter compensation.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program.		O (S)
		Display
		H (N)

814	INTERPOLATION IS OVERFLOW (WNO.,NNO.,BNO.)	
Cause		Type of error
The designated distance of movement is too large (in excess of 231).		B
		Stopped status
		I (L)
Action		Clearing procedure
Reduce the axis-address setting range.		O (S)
		Display
		H (N)

813	NOT FOUND INCH/METRIC OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
The inch/metric selection command has been issued using the G code although a G-code inch/metric selection function is not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications.		O (S)
		Display
		H (N)

815	NOT FOUND G60 OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
Program command G60 has been designated although a uni-directional positioning function is not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the software specifications and change the program command G60 to G00.		O (S)
		Display
		H (N)

816	FEEDRATE ZERO (WNO.,NNO.,BNO.)	
Cause		Type of error
The feedrate command has not been input.		B
		Stopped status
		I (L)
Action		Clearing procedure
Specify feedrate F for the movement command. (Since modal move command G01 is automatically set at power-on, axis movement in the modal mode is started by input of a move command, even if G01 is not designated in the program).		O (S)
		Display
		H (N)

817	DIFFERENT CENTER TOO LARGE (WNO.,NNO.,BNO.)	
Cause		Type of error
The relationship between the starting and ending points of the arc and the center of the arc is not appropriate.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the values of the starting/ending points and the address values of center of the arc in the program, and check the address values for the correct direction (minus or plus).		O (S)
		Display
		H (N)

820	NOT FOUND G02.1, G03.1 OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
The spiral interpolation command (G02.1 or G03.1) has been issued although such an interpolation function is not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Delete the G02.1 or G03.1 command.		O (S)
		Display
		H (N)

818	MISSING CENTER (NO DATA) (WNO.,NNO.,BNO.)	
Cause		Type of error
For arc interpolation by R designation, the coordinates of the center of the arc cannot be calculated.		B
		Stopped status
		I (L)
Action		Clearing procedure
Correct the value of each address in the program.		O (S)
		Display
		H (N)

821	NOT FOUND G60 OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
The virtual-axis command (G07) has been issued although there are not virtual-axis specifications.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications, and then change the G07 command.		O (S)
		Display
		H (N)

819	NOT FOUND HERICAL OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
The helical interpolation command has been issued although such an interpolation function is not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Correct the specifications, and if such an interpolation function is not available, correct the data of the block in which the arc interpolation command has been issued with designation of three axes.		O (S)
		Display
		H (N)

822	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

823	G17 G19 COMMAND IN M98 (WNO.,NNO.,BNO.)	
Cause		Type of error
A plane selection command (G17, G18 or G19) has been issued during figure rotation.		B
		Stopped status
		I (L)
Action		Clearing procedure
Delete the plane selection command (G17, G18 or G19) from the figure rotation subprogram.		O (S)
		Display
		H (N)

825	G17 G19 COMMAND IN G38 G42 (WNO.,NNO.,BNO.)	
Cause		Type of error
A plane selection command (G17, G18 or G19) has been specified during tool diameter compensation (G41 or G42)		B
		Stopped status
		I (L)
Action		Clearing procedure
Specify the plane selection command after the tool diameter compensation command has been canceled by G40.		O (S)
		Display
		H (N)

824	G17 G19 COMMAND IN G68 (WNO.,NNO.,BNO.)	
Cause		Type of error
A plane selection command (G17, G18 or G19) has been specified in the coordinates rotation command (G68).		B
		Stopped status
		I (L)
Action		Clearing procedure
IF G68 has been issued, execute the coordinates rotation cancel command (G69) before specifying the plane selection command (G17, G18 or G19).		O (S)
		Display
		H (N)

826	NOT FOUND G95 OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
The synchronous feed command (G95) has been specified although such feed specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
After checking the specifications, change the synchronous feed command (G95) to the feed-in-minutes command (G94). Also change the F command value.		O (S)
		Display
		H (N)

827	F0 COMMAND IN G02, G03 (WNO.,NNO.,BNO.)	
Cause		Type of error
The F 1-digit rapid-feed command (F0) has been specified during arc interpolation (G02 or G03).		B
		Stopped status
		I (L)
Action		Clearing procedure
Since rapid feed cannot be ordered for arc interpolation, specify an F 1-digit command other than F0. Specify G0 or G1 if the type of interpolation is not arc interpolation.		O (S)
		Display
		H (N)

828	NOT FOUND AUTO CORNEROVERRIDE (WNO.,NNO.,BNO.)	
Cause		Type of error
The automatic corner override command (G62) has been specified although such an override function is not available.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications, and delete the G62 command from the program.		O (S)
		Display
		H (N)

830	NOT FOUND G96 OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
The constant circumferential speed command (G96) has been specified although such specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications and change the constant circumferential speed command (G96) to the speed command (rpm).		O (S)
		Display
		H (N)

829	ILLEGAL 2-ND MISCELLAN, CODE (WNO.,NNO.,BNO.)	
Cause		Type of error
The secondary auxiliary function address that has been specified in the program is different from the corresponding address that has been parametrized.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check and the correct secondary auxiliary function address that has been specified in the program.		O (S)
		Display
		H (N)

831	NOT FOUND G45, 46,47,48 OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
A tool-position compensation command (G45 to G48) has been specified although such specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications.		O (S)
		Display
		H (N)

832	G45 G49 COMMAND IN M98 (WNO.,NNO.,BNO.)
Cause	Type of error
Tool-position compensation has been specified during figure rotation or coordinates rotation.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the program.	O (S)
	Display
	H (N)

834	NOT FOUND G40, G41, G42 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
A tool-diameter compensation command (G41 or G42) has been specified although such specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

833	1/4, 3/4 CIRCLES IN G45 G48 (WNO.,NNO.,BNO.)
Cause	Type of error
An arc command that is not available for tool-position compensation has been specified.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the program.	O (S)
	Display
	H (N)

835	G41, G42, FORMAT ERROR (WNO.,NNO.,BNO.)
Cause	Type of error
A compensation command (G40, G41, G42) has been specified during the arc mode (G02 or G03 command).	B
	Stopped status
	I (L)
Action	Clearing procedure
Set either the linear command (G01) or the rapid-feed command (G00) into the compensation command block or the cancellation block. (That is, set the modal status to linear interpolation).	O (S)
	Display
	H (N)

836	NO INTERSECTION (WNO.,NNO.,BNO.)
Cause	Type of error
In tool-diameter compensation (G41 or G42), the coordinates of the intersection point existing when a block was skipped in processing of interference blocks cannot be calculated.	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the program.	O (S)
	Display
	H (N)

837	TOOL OFFSET INTERFERENCE ERROR (WNO.,NNO.,BNO.)	
Cause		Type of error
An interference error has occurred during execution of tool-diameter compensation (G41 or G42).		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program.		O (S)
		Display
		H (N)

838	NOT FOUND 3-D OFFSET OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
The three-dimensional compensation command has been designated although such compensation specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications.		O (S)
		Display
		H (N)

839	ILLEGAL OFFSET NO. (WNO.,NNO.,BNO.)	
Cause		Type of error
A compensation command (G41, G42 or G43) has been designated without a compensation number (D○○); or the compensation number is larger than the maximum number of sets of compensation numbers available in the specifications.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the maximum available number of sets of compensation numbers, and designate a compensation number smaller than that.		O (S)
		Display
		H (N)

840	NOT FOUND CANNED CYCLE OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
A fixed-cycle G code has been designated although fixed-cycle specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications and correct the program.		O (S)
		Display
		H (N)

841	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

842	SUB PROGRAM NESTING OVER (WNO.,NNO.,BNO.)	
Cause		Type of error
The total number of sequential calls of subprogram has exceeded eight.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the number of subprogram calls, and correct the program so that the number of calls does not exceed eight.		O (S)
		Display
		H (N)

844	NOT FOUND PROGRAM NUMBER (WNO.,NNO.,BNO.)	
Cause		Type of error
An attempt was made to call a subprogram which was not yet registered.		B
		Stopped status
		I (L)
Action		Clearing procedure
Register the subprogram.		O (S)
		Display
		H (N)

843	DESIGNATED SNO. NOT FOUND (WNO.,NNO.,BNO.)	
Cause		Type of error
The sequence number for subprogram call, for return from a subprogram or for the GOTO designation is not yet set.		B
		Stopped status
		I (L)
Action		Clearing procedure
Set the sequence number in the appropriate block.		O (S)
		Display
		H (N)

845	ILLEGAL VARIABLE COMMAND (WNO.,NNO.,BNO.)	
Cause		Type of error
A variables number has been designated although variables number (#○○) specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications.		O (S)
		Display
		H (N)

846	DESIGNATED NUMBER NOT FOUND (WNO.,NNO.,BNO.)
Cause	Type of error
The designated variables number is larger than the maximum variables number permitted by the specifications.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications and the variables numbers in the program.	O (S)
	Display
	H (N)

849	FIGURE ROTATE NESTING OVER (WNO.,NNO.,BNO.)
Cause	Type of error
One figure rotation command has been designated during execution of another such command.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the program.	O (S)
	Display
	H (N)

847	NO "=" CODE IN PROGRAM (WNO.,NNO.,BNO.)
Cause	Type of error
"=" was not designated in the definition of a variable.	B
	Stopped status
	I (L)
Action	Clearing procedure
Set "=" in the variables definition.	O (S)
	Display
	H (N)

850	G68 AND M98 COMMANDS (WNO.,NNO.,BNO.)
Cause	Type of error
A figure rotation command and a coordinates rotation command are designated at the same time.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the program.	O (S)
	Display
	H (N)

848	NOT FOUND G98 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
A figure rotation command has been designated although figure rotation specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

851	NOT FOUND G68 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The coordinates rotation command (G68) has been designated although coordinates rotation specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

852	NOT FOUND USERMACRO OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
Macro specifications have been designated although such specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications.		O (S)
		Display
		H (N)

853	NOT FOUND EXTERNAL MACRO OPT. (WNO.,NNO.,BNO.)	
Cause		Type of error
A user macro interruption command has been designated although such interruption specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications.		O (S)
		Display
		H (N)

854	USERMACRO MIS-OPERATION (WNO.,NNO.,BNO.)	
Cause		Type of error
An NC statement and a macro statement are present in one block.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program and give the NC statement and the macro statement in separate blocks.		O (S)
		Display
		H (N)

855	USERMACRO NESTING OVER (WNO.,NNO.,BNO.)	
Cause		Type of error
The maximum permissible degree of multiplicity of user macro calls has been exceeded.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program and correct it so that the number of user macro calls does not exceed the maximum number of calls permitted by the specifications.		O (S)
		Display
		H (N)

856	USERMACRO ARGUMENT OVER (WNO.,NNO.,BNO.)	
Cause		Type of error
The number of sets of user macro call arguments of type II is too large.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program.		O (S)
		Display
		H (N)

857	USERMACRO G67 MIS-OPERATION (WNO.,NNO.,BNO.)	
Cause		Type of error
Command G67 has been designated when G66 command modal state was not yet set.		B
		Stopped status
		I (L)
Action		Clearing procedure
The G67 command is the call cancellation command; after reviewing the program, designate firstly the G66 command and then the G67 command.		O (S)
		Display
		H (N)

859	NUMBER OF PARENTHESIS MISMATCH (WNO.,NNO.,BNO.)	
Cause		Type of error
The total number of “[” and “]” within one block differ.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program, and correct it so that the total number of “[” and of “]” become the same.		O (S)
		Display
		H (N)

858	USERMACRO “[” NESTING OVER (WNO.,NNO.,BNO.)	
Cause		Type of error
The total number of “[” and “]” within one block has become more than five.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program, and correct it so that the total number of “[” and “]” within one block does not exceed five.		O (S)
		Display
		H (N)

860	CALCULATE IMPOSSIBLE (WNO.,NNO.,BNO.)	
Cause		Type of error
The operation expression is not correct.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program and correct the operation expression.		O (S)
		Display
		H (N)

861	DIVISION ZERO ERROR (WNO.,NNO.,BNO.)	
Cause		Type of error
The denominator in the division expression is zero.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program and correct it so that the denominator in the division expression does not become zero.		O (S)
		Display
		H (N)

879	NOT FOUND G10 OPTION (WNO.,NNO.,BNO.)		
Cause	Program data input has been designated although such input specifications are not provided.	Type of error	
		B	
		Stopped status	
		I (L)	
Action	Check the specifications.	Clearing procedure	
		O (S)	
		Display	
		H (N)	

882			(, ,)
Cause		Type of error	
		Stopped status	
Action		Clearing procedure	
		Display	

880	NOT ZERO RETURNED AXIS EXIST (WNO.,NNO.,BNO.)		
Cause	A move command other than that for reference-point return has been designated for the axis that was not returned to its reference point.	Type of error	
		B	
		Stopped status	
		I (L)	
Action	Manually return the axis to its reference point.	Clearing procedure	
		O (S)	
		Display	
		H (N)	

883			(, ,)
Cause		Type of error	
		Stopped status	
Action		Clearing procedure	
		Display	

881	NOT FOUND G30 OPTION (WNO.,NNO.,BNO.)		
Cause	Second, third or fourth reference-point return has been designated although such reference-point returning specifications are not provided.	Type of error	
		B	
		Stopped status	
		I (L)	
Action	Check the specifications.	Clearing procedure	
		O (S)	
		Display	
		H (N)	

884	REFERENCE POINT RETURN CHECK (WNO.,NNO.,BNO.)		
Cause	An axis had not returned to the zero-point when the zero-point check command (G27) was executed.	Type of error	
		B	
		Stopped status	
		I (L)	
Action	Review the program.	Clearing procedure	
		O (S)	
		Display	
		H (N)	

885	NOT FOUND G22 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The before-movement stroke check function (G22) has been designated although such function specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

888	FILE I/O ERROR (WNO.,NNO.,BNO.)
Cause	Type of error
The machining program file cannot be read.	E
	Stopped status
	I
Action	Clearing procedure
Please contact the nearest MAZAK service center.	O
	Display
	H (N)

886	BEYOND THE AREA OF G22 (WNO.,NNO.,BNO.)
Cause	Type of error
This alarm message is displayed before execution of a movement block to indicate that the ending point of the axis movement designated in the block is likely to enter the forbidden area which has been designated using the before-movement stroke check function (G22).	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the axis-address coordinate values in the program.	O (S)
	Display
	H (N)

889	NOT FOUND G37 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The automatic tool-length measurement command (G37) has been designated although such measurement specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

887	TAKE I/O ERROR (WNO.,NNO.,BNO.)
Cause	Type of error
An error has occurred in the tape reader; or a macro printing error has occurred in the printer.	B
	Stopped status
	I
Action	Clearing procedure
Check the parameters for incorrect settings.	O
	Display
	H (N)

890	NOT FOUND G31 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The skip command (G31) has been designated although skip specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

891	NOT FOUND G31.1 G31.3 OPTION (WNO.,NNO.,BNO.)	
Cause	A multi-step skip command (G31.1, G31.2 or G31.3) has been designated although such skip specifications are not provided.	Type of error
		B
		Stopped status
		I (L)
Action	Check the specifications.	Clearing procedure
		O (S)
		Display
		H (N)

894	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

892	AUTO PROGRAMING FAIL (WNO.,NNO.,BNO.)	
Cause	An error occurred with the auto program software during operation.	Type of error
		E
		Stopped status
		I
Action	Please contact the nearest MAZAK service center.	Clearing procedure
		O
		Display
		H (N)

895	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

893	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

896	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

897	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

898	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

899	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

879	NOT FOUND G10 OPTION (WNO.,NNO.,BNO.)		
Cause	Program data input has been designated although such input specifications are not provided.	Type of error	
		B	
		Stopped status	
		I (L)	
Action	Check the specifications.	Clearing procedure	
		O (S)	
		Display	
		H (N)	

882			(, ,)
Cause		Type of error	
		Stopped status	
Action		Clearing procedure	
		Display	

880	NOT ZERO RETURNED AXIS EXIST (WNO.,NNO.,BNO.)		
Cause	A move command other than that for reference-point return has been designated for the axis that was not returned to its reference point.	Type of error	
		B	
		Stopped status	
		I (L)	
Action	Manually return the axis to its reference point.	Clearing procedure	
		O (S)	
		Display	
		H (N)	

883			(, ,)
Cause		Type of error	
		Stopped status	
Action		Clearing procedure	
		Display	

881	NOT FOUND G30 OPTION (WNO.,NNO.,BNO.)		
Cause	Second, third or fourth reference-point return has been designated although such reference-point returning specifications are not provided.	Type of error	
		B	
		Stopped status	
		I (L)	
Action	Check the specifications.	Clearing procedure	
		O (S)	
		Display	
		H (N)	

884	REFERENCE POINT RETURN CHECK (WNO.,NNO.,BNO.)		
Cause	An axis had not returned to the zero-point when the zero-point check command (G27) was executed.	Type of error	
		B	
		Stopped status	
		I (L)	
Action	Review the program.	Clearing procedure	
		O (S)	
		Display	
		H (N)	

885	NOT FOUND G22 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The before-movement stroke check function (G22) has been designated although such function specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

888	FILE I/O ERROR (WNO.,NNO.,BNO.)
Cause	Type of error
The machining program file cannot be read.	E
	Stopped status
	I
Action	Clearing procedure
Please contact the nearest MAZAK service center.	O
	Display
	H (N)

886	BEYOND THE AREA OF G22 (WNO.,NNO.,BNO.)
Cause	Type of error
This alarm message is displayed before execution of a movement block to indicate that the ending point of the axis movement designated in the block is likely to enter the forbidden area which has been designated using the before-movement stroke check function (G22).	B
	Stopped status
	I (L)
Action	Clearing procedure
Review the axis-address coordinate values in the program.	O (S)
	Display
	H (N)

889	NOT FOUND G37 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The automatic tool-length measurement command (G37) has been designated although such measurement specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

887	TAKE I/O ERROR (WNO.,NNO.,BNO.)
Cause	Type of error
An error has occurred in the tape reader; or a macro printing error has occurred in the printer.	B
	Stopped status
	I
Action	Clearing procedure
Check the parameters for incorrect settings.	O
	Display
	H (N)

890	NOT FOUND G31 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The skip command (G31) has been designated although skip specifications are not provided.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

891	NOT FOUND G31.1 G31.3 OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
A multi-step skip command (G31.1, G31.2 or G31.3) has been designated although such skip specifications are not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check the specifications.		O (S)
		Display
		H (N)

894	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

892	AUTO PROGRAMING FAIL (WNO.,NNO.,BNO.)	
Cause		Type of error
An error occurred with the auto program software during operation.		E
		Stopped status
		I
Action		Clearing procedure
Please contact the nearest MAZAK service center.		O
		Display
		H (N)

895	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

893	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

896	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

897	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

898	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

899	(, ,)	
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

900	(, ,)
Cause	Type of error
	Stopped status
Action	Clearing procedure
	Display

903	ILLEGAL G10 L NUMBER (WNO.,NNO.,BNO.)
Cause	Type of error
An unallowable L number has been designated during input of G10 program command.	B
	Stopped status
	I (L)
Action	Clearing procedure
Correct the L number in the program.	O (S)
	Display
	H (N)

901	DIRECTIVE FIXED CYCLE IN CORR. (WNO.,NNO.,BNO.)
Cause	Type of error
The fixed-cycle command has been set in the program during the tool-diameter compensation (G40 or G42) modal status.	B
	Stopped status
	I (L)
Action	Clearing procedure
Set the tool-diameter compensation cancellation command (G40) before the fixed-cycle command.	O (S)
	Display
	H (N)

904	ILLEGAL G10 CORRECTION NO. (WNO.,NNO.,BNO.)
Cause	Type of error
Compensation numbers other than the number of sets permitted by the specifications have been designated during input of G10.	B
	Stopped status
	I (L)
Action	Clearing procedure
After checking the number of compensation sets permitted by the specifications, change the setting of address P to a value smaller than the permissible number of sets.	O (S)
	Display
	H (N)

902	NOT FOUND G10 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The G10 command has been designated although this command is not available with the system.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

905	NOT FOUND G11 OPTION (WNO.,NNO.,BNO.)
Cause	Type of error
The G11 command has been designated although this command is not available with the system.	B
	Stopped status
	I (L)
Action	Clearing procedure
Check the specifications.	O (S)
	Display
	H (N)

906	NO S DIRECTIVE IN FIXED CYCLE (WNO.,NNO.,BNO.)	
Cause		Type of error
The spindle speed for the fixed cycle has not yet been set in the program.		B
		Stopped status
		I (L)
Action		Clearing procedure
Program the spindle speed command in the block which precedes the block with the fixed cycle command.		O (S)
		Display
		H (N)

907	DIFFERENT SPINDLE TYPE (WNO.,NNO.,BNO.)	
Cause		Type of error
An attempt has been made to machine the workpiece using the synchronous tapping method in spite of the spindle controller being an SE type.		B
		Stopped status
		I (L)
Action		Clearing procedure
Use the appropriate tapping method for the particular type of the spindle controller.		O (S)
		Display
		H (N)

908	NOT PITCH FIXED CYCLE (WNO.,NNO.,BNO.)	
Cause		Type of error
The pitch or the number of threads has not been designated for the tapping cycle (G74 or G84) of the drilling fixed cycles.		B
		Stopped status
		I (L)
Action		Clearing procedure
Designate the pitch using address F or E.		O (S)
		Display
		H (N)

909	ILLEGAL PITCH FIXED CYCLE (WNO.,NNO.,BNO.)	
Cause		Type of error
The pitch or the number of threads designated for the tapping cycle (G74 or G84) of the drilling fixed cycles is wrong.		B
		Stopped status
		K
Action		Clearing procedure
Check and correct the pitch or the number of threads.		S
		Display
		N

910		
Cause		Type of error
		Stopped status
Action		Clearing procedure
		Display

911	NOT FOUND CORNER R/C OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
Corner chamfering/corner rounding has been designated although such specifications are not provided.		B
		Stopped status
		K
Action		Clearing procedure
Check the specifications and delete corner R or corner C from the program.		S
		Display
		N

912	NO DIRECTIVE FOR NEXT MOVE R/C (WNO.,NNO.,BNO.)	
Cause		Type of error
The block after the corner rounding or corner chamfering command does not include a move command.		B
		Stopped status
		K
Action		Clearing procedure
Place a G01 command in the corresponding block.		S
		Display
		N

914	INSUFF. NEXT MOVE DISTANCE R/C (WNO.,NNO.,BNO.)	
Cause		Type of error
The movement distance designated in the next block is shorter than the length of the corner rounding or corner chamfering.		B
		Stopped status
		K
Action		Clearing procedure
Reduce the length of the corner R/C to a value smaller than the moving distance of the next block.		S
		Display
		N

913	INSUFFICIENT MOVE DISTANCE R/C (WNO.,NNO.,BNO.)	
Cause		Type of error
The length of the corner rounding or corner chamfering that has been designated in the corner R/C command is larger than the distance of movement.		B
		Stopped status
		K
Action		Clearing procedure
Reduce the length of the corner R/C to a value smaller than the distance of movement.		S
		Display
		N

915	NO STRAIGHT ANGLE GEOMETRIC (WNO.,NNO.,BNO.)	
Cause		Type of error
In the geometrics command, the difference in angle between the two straight lines which intersect with each other is less than 1 degree.		B
		Stopped status
		K
Action		Clearing procedure
Increase the angle difference in the geometrics command.		O
		Display
		N

916	NEXT INCREASE DIREC. GEOMETRIC (WNO.,NNO.,BNO.)	
Cause		Type of error
The second block of the geometrics command is an incremental command and must always consists of absolute data.		B
		Stopped status
		K
Action		Clearing procedure
Program the second block in units of absolute coordinates.		O
		Display
		N

918	INSUFFICIENT ADDRESS GEOMETRIC (WNO.,NNO.,BNO.)	
Cause		Type of error
In address designation of the geometrics command, the angle in the first block, ending point coordinates and angle in the second block are incorrectly given.		B
		Stopped status
		I (L)
Action		Clearing procedure
Check and reprogram the corresponding data.		O (S)
		Display
		H (N)

917	NO NEXT STRAIGHT LINE GEOMETRIC (WNO.,NNO.,BNO.)	
Cause		Type of error
The second block of the geometrics command is not given the linear command (G1).		B
		Stopped status
		K
Action		Clearing procedure
Correct the program so that the linear command (G1) and the feedrate command (F) are given to the second block.		O
		Display
		N

919	G17 G19 IN GEOMETRIC (WNO.,NNO.,BNO.)	
Cause		Type of error
A plane selection command (G17, G18 or G19) was given in the geometrics command block.		B
		Stopped status
		I (L)
Action		Clearing procedure
Program the plane selection command (G17, G18 or G19) in the block that precedes the geometrics command block.		O (S)
		Display
		H (N)

920	G27, M COMMANDS SAME BLOCK (WNO.,NNO.,BNO.)	
Cause		Type of error
An M independent command (M0, M1, M2 or M30) has been programmed in the same block as the G27 command.		B
		Stopped status
		I (L)
Action		Clearing procedure
Correct the program so that the G27 command and the M independent command are contained in separate blocks.		O (S)
		Display
		H (N)

921	G29, M COMMANDS SAME BLOCK (WNO.,NNO.,BNO.)	
Cause		Type of error
An M independent command (M0, M1, M2 or M30) and the G29 command (start-position return) have been programmed in the same block.		B
		Stopped status
		I (L)
Action		Clearing procedure
Correct the program so that the G29 command and the M independent command are contained in separate blocks.		O (S)
		Display
		H (N)

922	SKIP SPEED ZERO (WNO.,NNO.,BNO.)	
Cause		Type of error
The feedrate F has been programmed in the G31 (skip) command block.		B
		Stopped status
		I (L)
Action		Clearing procedure
Program the skip feedrate F into the G31 program block.		O (S)
		Display
		H (N)

923	MISS DIRECTIVE G37 AXIS (WNO.,NNO.,BNO.)	
Cause		Type of error
No axis settings are included in the automatic tool-length measurement block; or more than one axis setting have been made.		B
		Stopped status
		I (L)
Action		Clearing procedure
Designate only one axis.		O (S)
		Display
		H (N)

924	G37, M COMMANDS SAME BLOCK (WNO.,NNO.,BNO.)	
Cause		Type of error
The H code is in the same block as the automatic tool-length measurement command.		B
		Stopped status
		I (L)
Action		Clearing procedure
Set the H code into a block preceding the automatic tool-length measurement block.		O (S)
		Display
		H (N)

925	NO DIRECTIVE H BEFORE G37 (WNO.,NNO.,BNO.)	
Cause		Type of error
The H code is not yet set for automatic tool-length measurement.		B
		Stopped status
		I (L)
Action		Clearing procedure
Set an H code into a block preceding the automatic tool-length measurement block.		O (S)
		Display
		H (N)

940	NO INVERSE TIME OPTION (WNO.,NNO.,BNO.)	
Cause		Type of error
Inverse time feed program was attempted although inverse time feed option is not provided.		B
		Stopped status
		I (L)
Action		Clearing procedure
Inverse time feed program cannot be executed because inverse time feed option is not provided.		O (S)
		Display
		H (N)

926	G37 ILLEGAL SIGNAL (WNO.,NNO.,BNO.)	
Cause		Type of error
The signal of measuring-position arrival has been turned on before the tool reaches the area designated through either a D code or the parameter for deceleration area "d"; or the signal has not been turned on at all.		B
		Stopped status
		I
Action		Clearing procedure
Check the program and parameters.		O
		Display
		H

941	G93 MODE (WNO.,NNO.,BNO.)	
Cause		Type of error
G code of inhibition during G93 mode has been designated.		B
		Stopped status
		I (L)
Action		Clearing procedure
Review the program and delete G code of inhibition.		O (S)
		Display
		H (N)

927	SKIP COMMAND IN CORRECTING DIA (WNO.,NNO.,BNO.)	
Cause		Type of error
The skip command (G31) was given during cutter-diameter compensation (G41 or G42).		B
		Stopped status
		I (L)
Action		Clearing procedure
Correct the program so that the skip command is executed only after the cutter-diameter compensation cancellation command (G40) has been executed.		O (S)
		Display
		H (N)

979	MACRO USER ALARM (, ,)	
Cause		Type of error
#3000=n (alarm message) in the user macroprogram was executed. (n ≥ 21)		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

980	MACRO USER ALARM 1	(, ,)
Cause		Type of error
#3000=1 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

983	MACRO USER ALARM 4	(, ,)
Cause		Type of error
#3000=4 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

981	MACRO USER ALARM 2	(, ,)
Cause		Type of error
#3000=2 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

984	MACRO USER ALARM 5	(, ,)
Cause		Type of error
#3000=5 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

982	MACRO USER ALARM 3	(, ,)
Cause		Type of error
#3000=3 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

985	MACRO USER ALARM 6	(, ,)
Cause		Type of error
#3000=6 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

986	MACRO USER ALARM 7	(, ,)
Cause		Type of error
#3000=7 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

989	MACRO USER ALARM 10	(, ,)
Cause		Type of error
#3000=10 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

987	MACRO USER ALARM 8	(, ,)
Cause		Type of error
#3000=8 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

990	MACRO MEASUREMENT ALARM 1	(, ,)	
Cause		Type of error	
<ul style="list-style-type: none"> ⓐ During execution of the MMS unit, the touch sensor has not come into contact with the workpiece (the skip signal has not turned on) when the maximum feed distance available at the skipping speed is exceeded. ⓑ #3000=11 (alarm message) in the user macroprogram was executed. 		B	
			Stopped status
			I (L)
Action		Clearing procedure	
<ul style="list-style-type: none"> ⓐ Check the workpiece and the machining program. ⓑ Refer to the relevant user macroprogram instruction manual to check the alarm. 		O (S)	
			Display
			H (N)

988	MACRO USER ALARM 9	(, ,)
Cause		Type of error
#3000=9 (alarm message) in the user macroprogram was executed.		B
		Stopped status
		I (L)
Action		Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.		O (S)
		Display
		H (N)

991	MACRO MEASUREMENT ALARM 2 (, ,)
Cause	Type of error
<ul style="list-style-type: none"> ① During execution of the MMS unit, the touch sensor came into contact with the workpiece (the skip signal turned on) when another feeding than that at the skipping speed was taking place. ② #3000=12 (alarm message) in the user macroprogram was executed. 	B
	Stopped status
	I (L)
Action	Clearing procedure
<ul style="list-style-type: none"> ① Check the workpiece and the machining program. Also check the touch sensor for proper mounting on the spindle. ② Refer to the relevant user macroprogram instruction manual to check the alarm. 	O (S)
	Display
	H (N)

992	MACRO MEASUREMENT ALARM 3 (, ,)
Cause	Type of error
<ul style="list-style-type: none"> ① Correct signals were not output because of trouble with the touch sensors, receivers or other such MMS unit components. ② #3000=13 (alarm message) in the user macroprogram was executed. 	B
	Stopped status
	I (L)
Action	Clearing procedure
<ul style="list-style-type: none"> ① Contact a service station. ② Refer to the relevant user macroprogram instruction manual to check the alarm. 	O (S)
	Display
	H (N)

993	MACRO MEASUREMENT ALARM 4 (, ,)
Cause	Type of error
#3000=14 (alarm message) in the user macroprogram was executed.	B
	Stopped status
	I (L)
Action	Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.	O (S)
	Display
	H (N)

994	MACRO MEASUREMENT ALARM 5 (, ,)
Cause	Type of error
#3000=15 (alarm message) in the user macroprogram was executed.	B
	Stopped status
	I (L)
Action	Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.	O (S)
	Display
	H (N)

995	MACRO MEASUREMENT ALARM 6 (, ,)
Cause	Type of error
#3000=16 (alarm message) in the user macroprogram was executed.	B
	Stopped status
	I (L)
Action	Clearing procedure
Refer to the relevant user macroprogram instruction manual to check the alarm.	O (S)
	Display
	H (N)

996	MACRO MEASUREMENT ALARM 7 (, ,)	
Cause	#3000=17 (alarm message) in the user macroprogram was executed.	Type of error
		B
		Stopped status
		I (L)
Action	Refer to the relevant user macroprogram instruction manual to check the alarm.	Clearing procedure
		O (S)
		Display
		H (N)

999	MACRO MEASUREMENT ALARM 10 (, ,)	
Cause	#3000=20 (alarm message) in the user macroprogram was executed.	Type of error
		B
		Stopped status
		I (L)
Action	Refer to the relevant user macroprogram instruction manual to check the alarm.	Clearing procedure
		O (S)
		Display
		H (N)

997	MACRO MEASUREMENT ALARM 8 (, ,)	
Cause	#3000=18 (alarm message) in the user macroprogram was executed.	Type of error
		B
		Stopped status
		I (L)
Action	Refer to the relevant user macroprogram instruction manual to check the alarm.	Clearing procedure
		O (S)
		Display
		H (N)

998	MACRO MEASUREMENT ALARM 9 (, ,)	
Cause	#3000=19 (alarm message) in the user macroprogram was executed.	Type of error
		B
		Stopped status
		I (L)
Action	Refer to the relevant user macroprogram instruction manual to check the alarm.	Clearing procedure
		O (S)
		Display
		H (N)

Notes:

Using the NC Parameter Lists	4.
Mazatrol M-32 Parameter Lists	
Cutting Conditions	5-1
User Parameter (Point Cutting: D1 ~ D108)	5-2
User Parameter (Line/Face Cutting: E1 ~ E108)	5-3
User Parameter No. 1 (F1 ~ F108)	5-4
User Parameter No. 2 (Tape, I/O: G1 ~ G108)	5-5
User Parameter No. 3 & 4 (H1 ~ H108, I1 ~ I108)	5-6
Machine Constant Parameters	5-7

Notes:

4. USING THE NC PARAMETER LISTS

4-1 DESCRIPTION OF THE NC PARAMETER LISTS

A *parameter* is data required for setting machine and NC equipment operation modes. Parameters are preset at the factory. Some parameters can be changed by the user to adjust for changes in machine condition or when adding optional equipment. If incorrect parameter values are set, the machine and NC may not function properly. Make sure you have a thorough understanding of a parameter function before making any changes.

Parameter data falls into the following three types:

CUTTING CONDITION PARAMETERS (See section 5-1)

Cutting condition parameters are the constants that are used to automatically set the cutting conditions (circumferential speed and feed rate) during program creation.

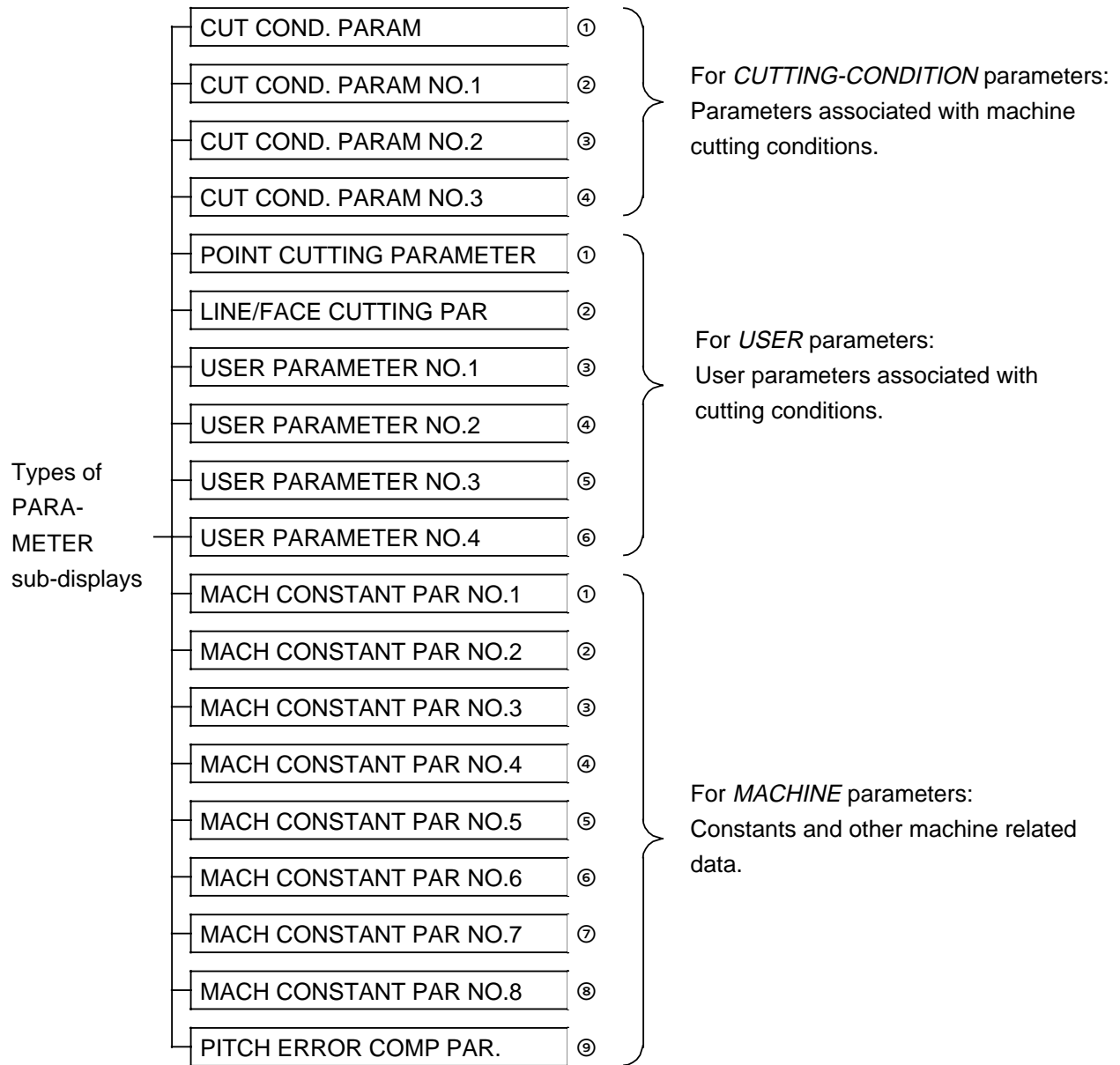
USER PARAMETERS (See sections 5-2 - 5-6)

The data needed for point-, line-, and face-machining data, constants related to data input/output etc. are registered.

MACHINE CONSTANT PARAMETERS (See section 5-7)

Constants related to the servo motors and spindle motors, machine status data etc. are registered.

The parameter display is used to see the contents of parameters or to change parameters. User parameters and cutting condition parameters can be set on this display.



4-2 DISPLAYING PARAMETER DATA

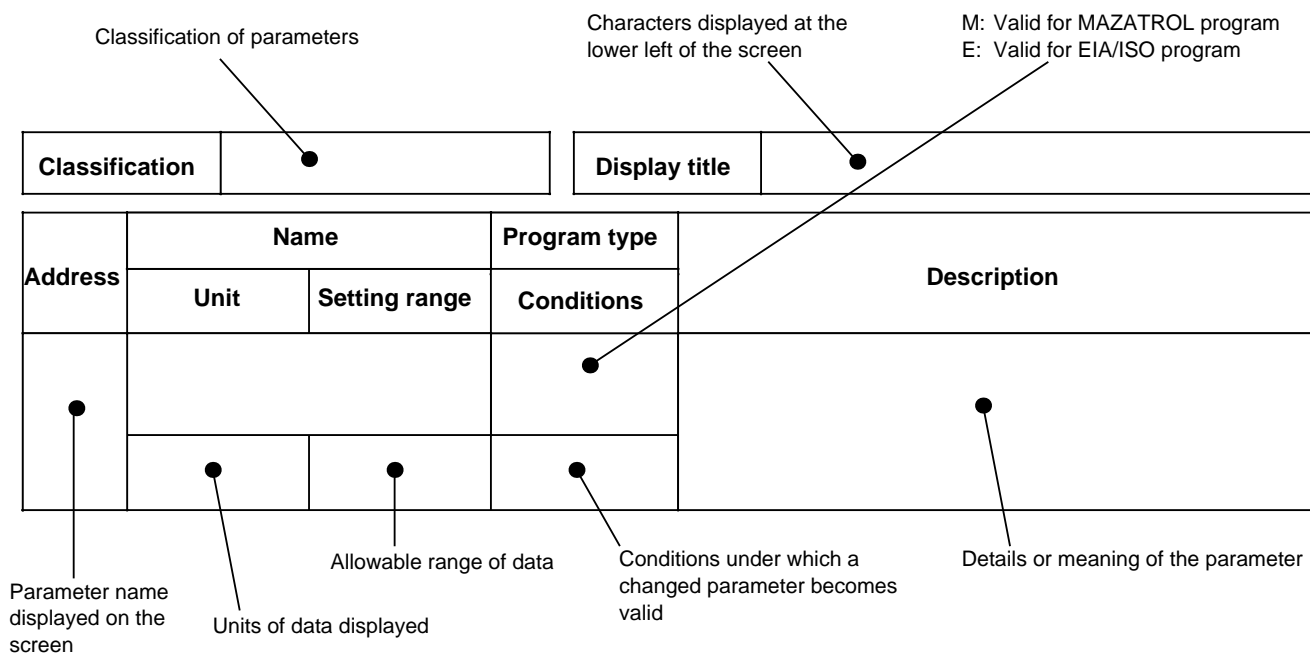
- 1) When the PARAMETER display has been changed from another display, the CUT COND. PARAM subdisplay is indicated with the following menu:

CUTTING COND	USER	MACHINE					PREVIOUS PAGE	NEXT PAGE
-----------------	------	---------	--	--	--	--	------------------	--------------

- a) Each time the *NEXT PAGE* menu key is pressed, subdisplays for cutting-conditions/parameters will change over in order of ① → ② → ③ → ④ → ① → ②
- b) Each time the *PREVIOUS PAGE* menu key is pressed, subdisplays for cutting-conditions/parameters will change over in order of ① → ④ → ③ → ② → ① → ④
- 2) When the *USER* menu key is pressed, the POINT CUTTING PARAMETER subdisplay will be indicated.
- a) Each time the *NEXT PAGE* menu key is pressed, subdisplays for user parameters will change over in order of ① → ② → ③ → → ⑥ → ① → ②
- b) Each time the *PREVIOUS PAGE* menu key is pressed, subdisplays for user parameters will change over in order of ① → ⑥ → ⑤ → → ② → ① → ⑥
- 3) When the *MACHINE* menu key is pressed, the MACH CONSTANT PAR NO. 1 subdisplay will be indicated.
- a) Each time the *NEXT PAGE* menu key is pressed, subdisplays for machine parameters will change over in order of ① → ② → ③ → → ⑨ → ① → ②
- b) Each time the *PREVIOUS PAGE* menu key is pressed, subdisplays for machine parameters will change over in order of ① → ⑨ → ⑧ → → ② → ① → ⑨
- 4) When the *CUTTING COND* menu key is pressed on each PARAMETER subdisplay, the CUT COND. PARAM subdisplay will be indicated.

4-3 NC PARAMETER LIST STRUCTURE

The parameter tables are written in the following format:



Precautions:

- 1) The type and setting value for required parameters may vary according to machine types, optional equipment and software version.
Values are set for specific machines and NC equipment and must not be used for other machines.
- 2) The factory set parameters are recorded at machine run-off and stored inside the electrical control. This paper must not be lost.
- 3) If parameter setting values are changed, make note of the values before and after the change.
- 4) If machines are not operated for a long time, battery backup may be lost resulting in the loss of data (battery alarm indicated). In this case, confirm parameter setting values by referring to the parameter record paper. If a machine is operated without re-entering parameter data, programming and operation errors will result.

When the PARAMETER display is selected, the CUT COND. PARAM display will appear as shown below. This data is used to set the cutting conditions according to specific materials that are specified in the common unit on the WK PROGRAM display.

MATERIAL	STANDARD		DRILL	REAMER	TAP	BOR BAR	MILLCUT
MAT.-1 →→		C-SP (%)	255	255	255	255	255
MAT.-2 →→		FR (%)					
MAT.-3 →→		C-SP (%)					
MAT.-4 →→	②	FR (%)			③		
MAT.-5 →→		C-SP (%)					
MAT.-6 →→		FR (%)					
MAT.-7 →→		C-SP (%)					
MAT.-8 →→		FR (%)					

①

*** CUT COND. PARAM ***

()

CUTTING COND.	USER	MACHINE					PREVIOUS PAGE	NEXT PAGE
---------------	------	---------	--	--	--	--	---------------	-----------

Note: Values shown above denote the maximum value of each type of data.

Description of display data

No.	Data name	Unit	Description																																																
①	MATERIAL	_	This data corresponds to OTHERS No.1 through 8, which are to be set for MAT of the common unit.																																																
②	STANDARD	_	Select one of CST IRN, DUC-CI, CBN STL, ALY STL, STAINLS, ALMINUM and CPR-ALY that best matches the material of the work to be machined.																																																
③	DRILL REAMER TAP BOR BAR (BACK BORING) MILL CUT (FACE MILL, ENDMILL)	%	<p>Set the rate (%) of the cutting conditions most appropriate for the special material to the cutting conditions which are automatically set for the selected material code.</p> <p>Example:</p> <table border="1"> <tr> <td>MATERIAL</td> <td>STANDARD</td> <td></td> <td>DRILL</td> </tr> <tr> <td>MAT.-1</td> <td>CBN STL</td> <td>C-SP (%)</td> <td>120</td> </tr> <tr> <td></td> <td></td> <td>FR (%)</td> <td>80</td> </tr> </table> <p>When setting is done as shown above, the program will automatically set the cutting conditions as follows:</p> <table border="1"> <tr> <td>UNO</td> <td>MAT</td> <td>~</td> <td></td> </tr> <tr> <td>0</td> <td>CBN STL</td> <td>~</td> <td></td> </tr> <tr> <td>SNO</td> <td>TOOL</td> <td>~</td> <td>C-SP FR</td> </tr> <tr> <td>1</td> <td>DRILL</td> <td>~</td> <td>20 0.2</td> </tr> <tr> <td></td> <td></td> <td></td> <td>↓ ↓</td> </tr> <tr> <td>UNO</td> <td>MAT</td> <td>~</td> <td></td> </tr> <tr> <td>0</td> <td>MAT.-1</td> <td>~</td> <td>(20 × $\frac{120}{100}$) (0.2 × $\frac{80}{100}$)</td> </tr> <tr> <td>SNO</td> <td>TOOL</td> <td>~</td> <td>C-SP FR</td> </tr> <tr> <td>1</td> <td>DRILL</td> <td>~</td> <td>24 0.16</td> </tr> </table> <p>Note: If cutting condition calculation is performed irrespectively of the material of the work, then this data will become invalid for software reasons.</p>	MATERIAL	STANDARD		DRILL	MAT.-1	CBN STL	C-SP (%)	120			FR (%)	80	UNO	MAT	~		0	CBN STL	~		SNO	TOOL	~	C-SP FR	1	DRILL	~	20 0.2				↓ ↓	UNO	MAT	~		0	MAT.-1	~	(20 × $\frac{120}{100}$) (0.2 × $\frac{80}{100}$)	SNO	TOOL	~	C-SP FR	1	DRILL	~	24 0.16
MATERIAL	STANDARD		DRILL																																																
MAT.-1	CBN STL	C-SP (%)	120																																																
		FR (%)	80																																																
UNO	MAT	~																																																	
0	CBN STL	~																																																	
SNO	TOOL	~	C-SP FR																																																
1	DRILL	~	20 0.2																																																
			↓ ↓																																																
UNO	MAT	~																																																	
0	MAT.-1	~	(20 × $\frac{120}{100}$) (0.2 × $\frac{80}{100}$)																																																
SNO	TOOL	~	C-SP FR																																																
1	DRILL	~	24 0.16																																																

Notes:

5. MAZATROL M-32B PARAMETER LISTS

5-1 CUTTING CONDITIONS

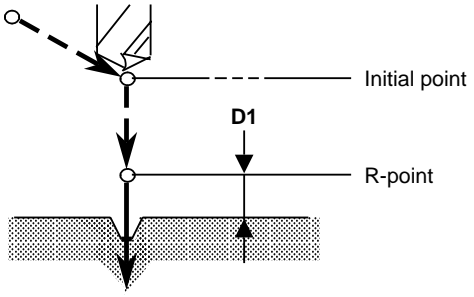
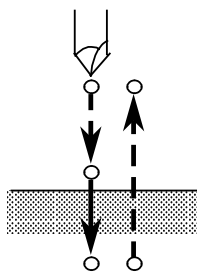
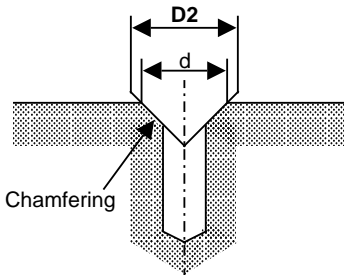
Classification	Cutting conditions		Display title	CUT COND. PARAM NO. 1
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
A1	-		M	Arithmetic constant used to automatically set the cutting conditions (circumferential speed and feed rate) for MAZATROL program. Note: Details of these parameters are not released to the public.
A108	-	-	Immediate	

Classification	Cutting conditions		Display title	CUT COND. PARAM NO. 2
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
B1	-		M	Arithmetic constant used to automatically set the cutting conditions (circumferential speed and feed rate) for MAZATROL program. Note: Details of these parameters are not released to the public.
B108	-	-	Immediate	

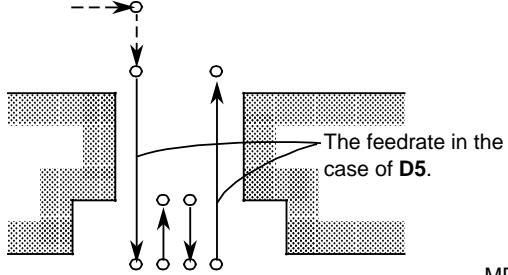
Classification	Cutting conditions		Display title	CUT COND. PARAM NO. 3
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
C1	-		M	Arithmetic constant used to automatically set the cutting conditions (circumferential speed and feed rate) for MAZATROL program. Note: Details of these parameters are not released to the public.
C52	-	-	Immediate	
C53	-		M	Arithmetic constant used to automatically set thrust (THR.) and horsepower (HP) on the TOOL DATA display. Note: Details of these parameters are not released to the public.
C108	-	-	Immediate	

Notes:

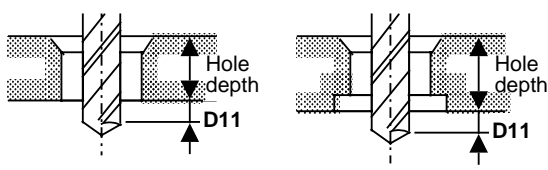
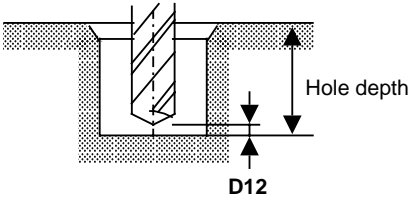
5-2 USER PARAMETER (Point Cutting)

Classification		USER		Display title	POINT CUTTING PARAMETER												
Address	Name		Program type	Description													
	Unit	Setting range	Conditions														
D1	Height of the second R-point of the drill		M	<p>Height of the next R-point of the drill after pilot-drilling with a spot-machining tool or a drill.</p>  <p>Initial point</p> <p>R-point</p> <p>Note: Valid only when bit 6 of D91 is 1.</p> <p>MPL001</p>													
	0.1 mm 0.01 inch	0 999	Immediate														
D2	Nominal diameter of spot-machining tool		M	<p>The nominal diameter of a spot-machining tool that is automatically set during automatic tool development.</p> <p>Example:</p> <table border="1"> <tr> <td>SNO</td> <td>TOOL</td> <td>NOM-φ</td> <td>NO.</td> <td>HOLE-φ</td> <td>HOLE-DEP</td> </tr> <tr> <td>1</td> <td>CTR-DR</td> <td>20.</td> <td></td> <td>10</td> <td>◆</td> </tr> </table> <p style="text-align: center;">D2</p>		SNO	TOOL	NOM-φ	NO.	HOLE-φ	HOLE-DEP	1	CTR-DR	20.		10	◆
	SNO	TOOL	NOM-φ			NO.	HOLE-φ	HOLE-DEP									
1	CTR-DR	20.		10	◆												
1 mm 0.1 inch	0 99	Immediate															
D3	Spot-machining hole bottom dwell element		M	<p>Z-axis feed dwell time at the hole bottom in a spot-machining cycle. Set this time in spindle revolutions.</p>  <p>When the spot-machining tool reaches the hole bottom, the Z-axis will first stop moving until the spindle makes D3 revolutions, and then return to the original position at the rapid feedrate.</p> <p>(Stops at hole bottom.)</p> <p>MPL002</p>													
	1 revolution	0 9	Immediate														
D4	Maximum allowable spot-chamfering hole diameter element		M	<p>Element used to set the maximum spot-chamfering hole diameter (d) during automatic tool development.</p>  <p>Spot-chamfering occurs if $d \leq D2 - D4$. If $d > D2 - D4$, the chamfering cutter is developed automatically.</p> <p>Chamfering</p> <p>MPL003</p>													
	0.1 mm 0.01 inch	0 99	Immediate														

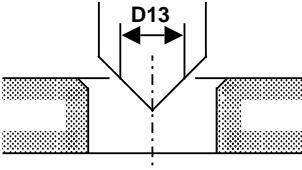
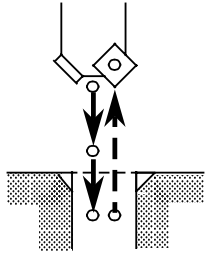
Classification	USER	Display title	POINT CUTTING PARAMETER
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Address	Name		Program type	Description										
	Unit	Setting range	Conditions											
D5	Prehole through speed during inversed spot-facing		M	<p>The feedrate of a tool as it is being passed through the prehole during an inversed spot-facing cycle.</p> <p>Note: 0.5 mm/rev if this parameter setting is 0.</p> 										
	100 mm/min 10 inch/min	0 99	Immediate											
D6	Drill-machining cycle setting element		M	<p>Element used to automatically set drill-machining cycles during automatic tool development.</p> <table border="1"> <thead> <tr> <th>Machining cycle</th> <th>Conditions</th> </tr> </thead> <tbody> <tr> <td>Drilling cycle</td> <td>$\frac{\text{Hole depth}}{\text{Hole diameter}} \leq D6$</td> </tr> <tr> <td>High-speed deep-hole drilling cycle</td> <td>$D6 < \frac{\text{Hole depth}}{\text{hole diameter}} \leq D7$</td> </tr> <tr> <td>Deep-hole drilling cycle</td> <td>$D7 < \frac{\text{Hole depth}}{\text{hole diameter}}$</td> </tr> </tbody> </table>	Machining cycle	Conditions	Drilling cycle	$\frac{\text{Hole depth}}{\text{Hole diameter}} \leq D6$	High-speed deep-hole drilling cycle	$D6 < \frac{\text{Hole depth}}{\text{hole diameter}} \leq D7$	Deep-hole drilling cycle	$D7 < \frac{\text{Hole depth}}{\text{hole diameter}}$		
	Machining cycle	Conditions												
Drilling cycle	$\frac{\text{Hole depth}}{\text{Hole diameter}} \leq D6$													
High-speed deep-hole drilling cycle	$D6 < \frac{\text{Hole depth}}{\text{hole diameter}} \leq D7$													
Deep-hole drilling cycle	$D7 < \frac{\text{Hole depth}}{\text{hole diameter}}$													
-	0 9	Immediate												
D7	Drill-machining cycle setting element		M	<table border="1"> <thead> <tr> <th>Number of drills developed</th> <th>Conditions</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Bore diameter $\leq D8$</td> </tr> <tr> <td>2</td> <td>$D8 < \text{Bore diameter} \leq D9$</td> </tr> <tr> <td>3</td> <td>$D9 < \text{Bore diameter} \leq D10$</td> </tr> <tr> <td>Alarm</td> <td>$D10 < \text{Bore diameter}$</td> </tr> </tbody> </table>	Number of drills developed	Conditions	1	Bore diameter $\leq D8$	2	$D8 < \text{Bore diameter} \leq D9$	3	$D9 < \text{Bore diameter} \leq D10$	Alarm	$D10 < \text{Bore diameter}$
	Number of drills developed	Conditions												
1	Bore diameter $\leq D8$													
2	$D8 < \text{Bore diameter} \leq D9$													
3	$D9 < \text{Bore diameter} \leq D10$													
Alarm	$D10 < \text{Bore diameter}$													
-	0 9	Immediate												
D8	Maximum diameter of holes machinable on one drill		M	<p>Element used to automatically set the number of drills which are automatically developed according to the bore diameter of the drill unit.</p>										
	1 mm 0.1 inch	0 99	Immediate											
D9	Maximum diameter of holes machinable on two drills		M	<table border="1"> <thead> <tr> <th>Number of drills developed</th> <th>Conditions</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Bore diameter $\leq D8$</td> </tr> <tr> <td>2</td> <td>$D8 < \text{Bore diameter} \leq D9$</td> </tr> <tr> <td>3</td> <td>$D9 < \text{Bore diameter} \leq D10$</td> </tr> <tr> <td>Alarm</td> <td>$D10 < \text{Bore diameter}$</td> </tr> </tbody> </table>	Number of drills developed	Conditions	1	Bore diameter $\leq D8$	2	$D8 < \text{Bore diameter} \leq D9$	3	$D9 < \text{Bore diameter} \leq D10$	Alarm	$D10 < \text{Bore diameter}$
	Number of drills developed	Conditions												
1	Bore diameter $\leq D8$													
2	$D8 < \text{Bore diameter} \leq D9$													
3	$D9 < \text{Bore diameter} \leq D10$													
Alarm	$D10 < \text{Bore diameter}$													
1 mm 0.1 inch	0 99	Immediate												
D10	Maximum diameter of holes machinable on three drills		M	<table border="1"> <thead> <tr> <th>Number of drills developed</th> <th>Conditions</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Bore diameter $\leq D8$</td> </tr> <tr> <td>2</td> <td>$D8 < \text{Bore diameter} \leq D9$</td> </tr> <tr> <td>3</td> <td>$D9 < \text{Bore diameter} \leq D10$</td> </tr> <tr> <td>Alarm</td> <td>$D10 < \text{Bore diameter}$</td> </tr> </tbody> </table>	Number of drills developed	Conditions	1	Bore diameter $\leq D8$	2	$D8 < \text{Bore diameter} \leq D9$	3	$D9 < \text{Bore diameter} \leq D10$	Alarm	$D10 < \text{Bore diameter}$
	Number of drills developed	Conditions												
1	Bore diameter $\leq D8$													
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3	$D9 < \text{Bore diameter} \leq D10$													
Alarm	$D10 < \text{Bore diameter}$													
1 mm 0.1 inch	0 99	Immediate												

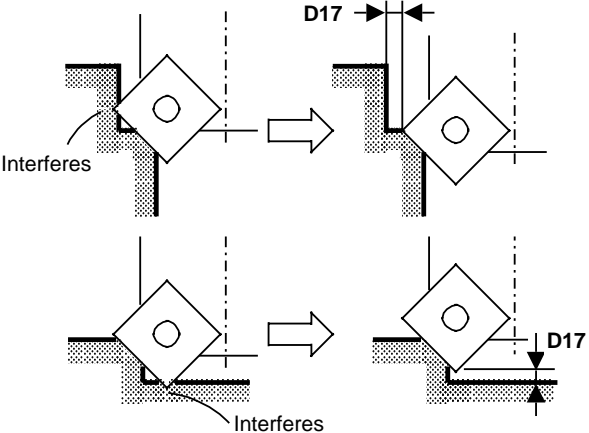
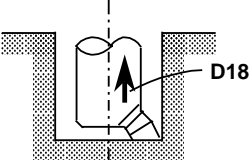
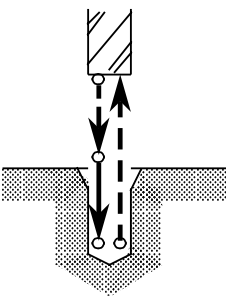
Classification	USER	Display title	POINT CUTTING PARAMETER
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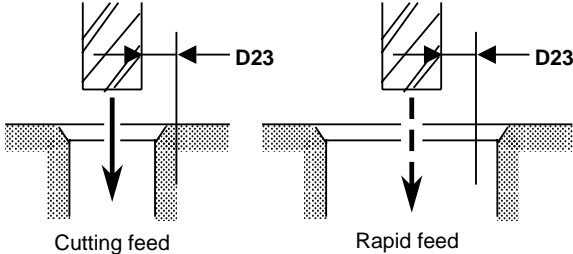
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D11	Through-hole/tap-prehole machining overshoot		M	<p>Element used to automatically set the hole-drilling, endmilling, and boring depths during automatic tool development of inversed spot-facing, tapping, back-boring, through-hole drilling, through-hole counter-boring, and spot-faced tapping units.</p>  <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ HOLE-DEP 1 DRILL 10. 10. (21.) (Hole depth + D11)</p> <p>Note: See also parameter D30 for tapping units.</p> <p style="text-align: right;">MPL005</p>
	0.1 mm 0.01 inch	0 99	Immediate	
D12	Stop-hole machining hole-bottom clearance		M	<p>Element used to automatically set the hole-drilling depth during automatic tool development of stop-hole counter-boring and stop-hole boring units.</p>  <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ HOLE-DEP 1 DRILL 10. 10. (19.) (Hole depth - tool tip compensation - D12)</p> <p style="text-align: right;">MPL006</p>
	0.1 mm 0.01 inch	0 99	Immediate	

Classification	USER	Display title	POINT CUTTING PARAMETER
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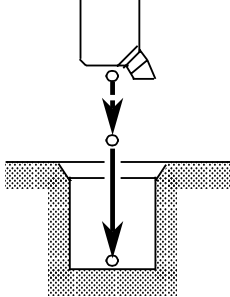
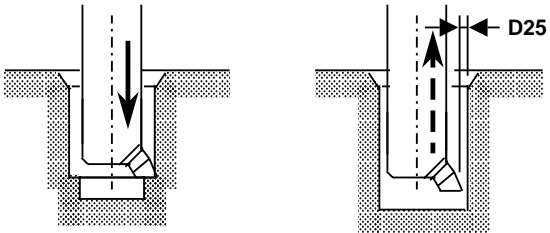
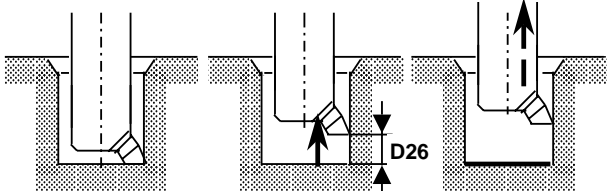
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D13	Spot-machining hole diameter (fixed value)		M	<p>Hole diameter is automatically set during automatic tool development when spot-chamfering is not to be performed.</p>  <p>Example: SNO TOOL NOM-φ NO. HOLE-φ HOLE-DEP 1 CTR-DR 20. 10. ◆ D13 →</p> <p style="text-align: right;">MPL007</p>
	1 mm 0.1 inch	0 99	Immediate	
D14	Depth-of-cut setting element for drilling (ALMINUM)		M	<p>Element used to automatically set the depth-of-cut per drilling operation during automatic tool development.</p> <p>Hole-φ × D14 : (when the material of the stock work is aluminum)</p>
	0.1	0 10	Immediate	
D15	Depth-of-cut setting element for drilling (except ALMINUM)		M	<p>Hole-φ × D15 : (when the material of the stock work is other than aluminum)</p>
	0.1	0 10	Immediate	
D16	Hole-bottom dwell setting element for chamfering cutter		M	<p>Z-axis feed dwell time at the hole bottom in a chamfering cutter machining cycle. Set this time in spindle revolutions.</p>  <p>When the chamfering cutter reaches the hole bottom, the Z-axis will first stop moving until the spindle makes D16 revolutions, and then return to the original position at the rapid feedrate.</p> <p>Note: This parameter is invalid for chamfering with true-circle processing.</p> <p>(Stops at hole bottom.)</p> <p style="text-align: right;">MPL008</p>
	1 revolution	0 9	Immediate	

Classification	USER	Display title	POINT CUTTING PARAMETER
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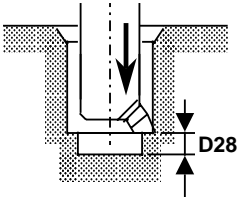
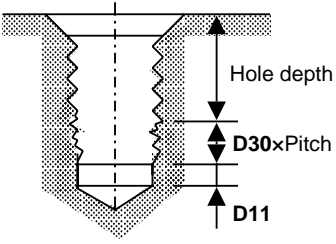
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D17	Interference clearance of chamfering cutter		M	<p>The clearance to ensure that the tool will not contact the workpiece wall or with the hole bottom during a chamfering cycle.</p>  <p style="text-align: right;">MPL009</p>
	0.1 mm 0.01 inch	0 99	Immediate	
D18	Return feedrate for reaming or boring (cycle 3)		M	<p>The feedrate at which the tool is returned from the hole bottom during reaming or boring.</p>  <p style="text-align: right;">MPL010</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. Valid only when the setting for the depth of cut by the reamer (tool sequence) is G01. 2. Valid only when the setting for prehole diameter of the boring tool (tool sequence) is CYCLE 3. 3. If this parameter is 0, the tool is returned at the same feedrate as that of cutting.
	100 mm/min 10 inch/min	0 9	Immediate	
D19	Hole-bottom dwell setting element for endmilling		M	<p>Z-axis feed dwell time at the hole bottom in an endmilling cycle. Set this time in spindle revolutions.</p>  <p>(Stops at hole bottom.)</p> <p>When the endmilling tool reaches the hole bottom, the Z-axis will stop moving until the spindle makes D19 revolutions, and then return to the original position at the rapid feedrate.</p> <p>Note: This parameter is invalid for true-circle processing.</p> <p style="text-align: right;">MPL011</p>
	1 revolution	0 9	Immediate	

Classification		USER		Display title	POINT CUTTING PARAMETER																		
Address	Name		Program type	Description																			
	Unit	Setting range	Conditions																				
D20	Radial depth-of-cut setting element for endmilling		M	Element used to automatically set the radial depth-of-cut per endmilling operation. Depth-of-cut = nominal diameter × D20 Depth-of-cut is automatically set according to the value of this parameter when nominal diameter of the endmilling tool is input. Example: SNO TOOL NOM-φ NO. HOLE-φ HOLE-DEP PRE-DIA PRE-DEP RGH DEPTH 1 E-MILL 20 40. 10. 30. ◆ 0. (12.) (NOM-φ × D20)																			
	1%	0 100	Immediate																				
D21	Reference bottom-finishing allowance for endmilling		M	The reference value for calculation of a bottom-finishing allowance which corresponds to the roughness of the endmilling (tool sequence). The finishing allowance in the case of roughness level 4 becomes the value of this parameter, and the values for all other roughness levels are set using the expressions listed in the table below. <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Roughness</th> <th>Bottom-finishing allowance</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0.0</td> </tr> <tr> <td>3</td> <td></td> </tr> <tr> <td>4</td> <td>D21</td> </tr> <tr> <td>5</td> <td>D21 × 0.7</td> </tr> <tr> <td>6</td> <td>D21 × 0.7 × 0.7</td> </tr> <tr> <td>7</td> <td>D21 × 0.7 × 0.7 × 0.7</td> </tr> <tr> <td>8</td> <td>D21 × 0.7 × 0.7 × 0.7 × 0.7</td> </tr> <tr> <td>9</td> <td>D21 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7</td> </tr> </tbody> </table>		Roughness	Bottom-finishing allowance	0	0.0	3		4	D21	5	D21 × 0.7	6	D21 × 0.7 × 0.7	7	D21 × 0.7 × 0.7 × 0.7	8	D21 × 0.7 × 0.7 × 0.7 × 0.7	9	D21 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7
	Roughness	Bottom-finishing allowance																					
0	0.0																						
3																							
4	D21																						
5	D21 × 0.7																						
6	D21 × 0.7 × 0.7																						
7	D21 × 0.7 × 0.7 × 0.7																						
8	D21 × 0.7 × 0.7 × 0.7 × 0.7																						
9	D21 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7																						
0.1 mm 0.01 inch	0 99	Immediate																					
D22	Tapping-cycle dwell time		M	Dwell time at the hole bottom or at the R-point. This value is valid when 1 is set for bit 0, 1 or 2 of parameter D91. Note: This parameter is valid only when the setting for roughness of tapping (tool sequence) is FIX.																			
	0.01 sec.	0 99	Immediate																				
D23	Prehole clearance for endmilling		M	The excess amount of prehole diameter over nominal diameter that is used to specify whether the Z-axis is to be moved at a rapid feedrate or at a cutting feedrate during true-circle processing with the endmill. <div style="text-align: center; margin-top: 10px;">  <p>The diagram illustrates two scenarios for prehole clearance D23. On the left, 'Cutting feed' shows an endmill with a diameter D23 moving through a hole. On the right, 'Rapid feed' shows the endmill with a diameter D23 moving through a hole. The clearance D23 is the distance from the end of the endmill to the start of the hole.</p> </div>																			
	0.1 mm 0.01 inch	0 99	Immediate																				

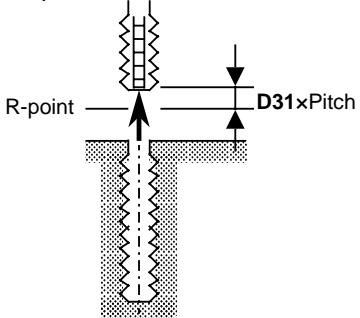
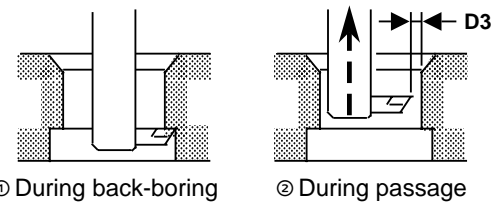
MPL012

Classification		USER		Display title	POINT CUTTING PARAMETER
Address	Name		Program type	Description	
	Unit	Setting range	Conditions		
D24	Hole-bottom dwell setting element for boring		M	<p>Z-axis feed dwell time at the hole bottom in a boring cycle. Set this time in spindle revolutions.</p>  <p>(Stops at hole bottom)</p> <p>When the boring bar reaches the hole bottom, the Z-axis will first stop moving until the spindle makes D24 revolutions, and then the spindle orientation will be performed.</p> <p>Note: This parameter is invalid if the roughness of the boring (tool sequence) is 0.</p> <p style="text-align: right;">MPL013</p>	
	1 revolution	0 9	Immediate		
D25	Boring-bar tip relief		M	<p>The amount of relief provided for the tip of a boring bar to be kept clear of the hole wall after spindle orientation.</p>  <p>During boring During returning</p> <p>Notes: 1. Valid only when the setting for the prehole diameter of the boring (tool sequence) is CYCLE 1. 2. For the relief direction of the tool tip, see the description of bit 3 and bit 4 of I14.</p> <p style="text-align: right;">MPL014</p>	
	0.1 mm 0.01 inch	0 99	Immediate		
D26	Boring or back-boring hole-bottom return feed distance		M	<p>The distance a boring or back-boring tool is returned at the programmed feedrate after the tool has reached the hole bottom.</p>  <p>① Has reached the hole bottom. ② Returned at the same feedrate. ③ Returned at a rapid feedrate.</p> <p>Note: Not valid if the setting for the roughness of the boring (tool sequence) is 1.</p> <p style="text-align: right;">MPL015</p>	
	0.1 mm 0.01 inch	0 99	Immediate		

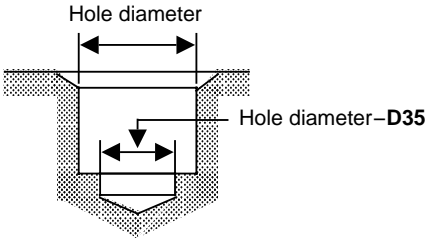
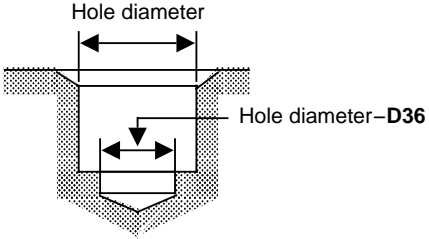
Classification	USER	Display title	POINT CUTTING PARAMETER
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Address	Name		Program type	Description												
	Unit	Setting range	Conditions													
D27				Invalid												
D28	Bottom-finishing amount of boring		M	<p>The distance the boring bar is fed in at 70% of the original feedrate to finish the hole bottom.</p>  <p>The feedrate is reduced to 70% of the original value before the hole bottom is reached. Note: Not valid if the setting for the roughness of the boring (tool sequence) is 1. MPL016</p>												
	0.1 mm 0.01 inch	0 99	Immediate													
D29	Chip removal time		M	<p>The time required for a chip removal tool to complete a chip removal operation after the tool has been positioned at the hole bottom.</p>												
	1 sec.	0 99	Immediate													
D30	Number of incomplete threads in tapping cycle		M	<p>Element used to automatically set the hole-drilling depths during automatic tool development for tapping unit.</p>  <p>Example:</p> <table border="1"> <thead> <tr> <th>SNO</th> <th>TOOL</th> <th>NOM-φ</th> <th>NO.</th> <th>HOLE-φ</th> <th>HOLE-DEP</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DRILL</td> <td>10.</td> <td>10.</td> <td>10.</td> <td>19.</td> </tr> </tbody> </table> <p>{Hole depth + D11 + (D30 × pitch) } MPL017</p>	SNO	TOOL	NOM-φ	NO.	HOLE-φ	HOLE-DEP	1	DRILL	10.	10.	10.	19.
	SNO	TOOL	NOM-φ		NO.	HOLE-φ	HOLE-DEP									
1	DRILL	10.	10.	10.	19.											
1 thread	0 9	Immediate														

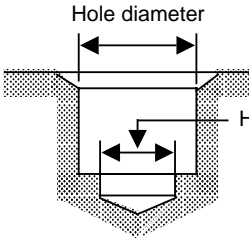
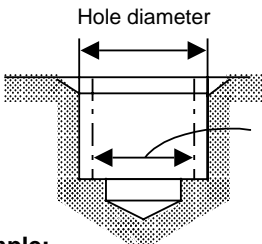
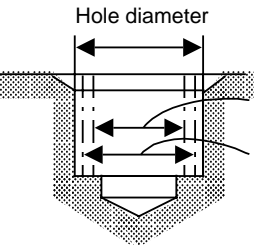
Classification	USER	Display title	POINT CUTTING PARAMETER
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D31	Tapper elongation amount of tap		M	<p>Excess amount of tool return due to elongation of the tapper during a tapping a cycle. Set this value in spindle revolutions.</p>  <p style="text-align: right;">MPL018</p>
	1 revolution	0 9	Immediate	
D32	Number of spindle revolutions until spindle CCW rotation begins in tapping cycle		M	<p>The number of rotations in the tapping cycle that the spindle continues to rotate clockwise during the time from output of a spindle CCW rotation command to the start of spindle CCW rotation.</p>
	1 revolution	0 99	Immediate	
D33	Back-boring tool tip relief		M	<p>The amount of relief provided for a back-boring tool tip to be kept clear of the prehole walls as it is being passed through the prehole in the oriented state of the spindle.</p>  <p>ⓐ During back-boring ⓑ During passage</p> <p>Note: For the relief direction of the tool tip, see the description of bit 3 and bit 4 of I14.</p> <p style="text-align: right;">MPL019</p>
	0.1 mm 0.01 inch	0 99	Immediate	
D34				Invalid

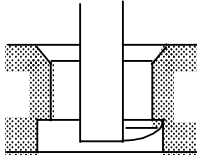
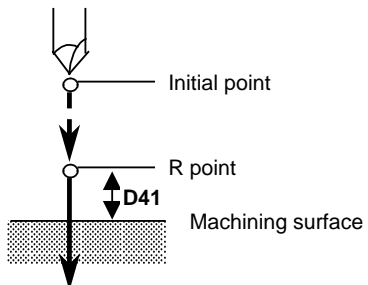
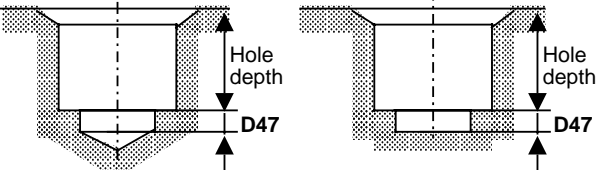
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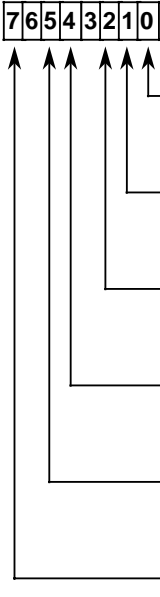
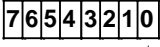
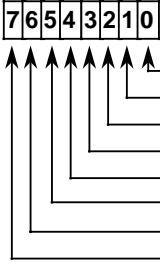
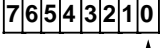
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D35	Prehole-drilling diameter setting element for reamer drilling		M	<p>Element used to automatically set the prehole-drilling diameter during automatic tool development of the reamer unit. (When the pre-machining process is drilling).</p>  <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 DRILL 10. \rightarrow (10.) (Hole diameter - D35)</p> <p style="text-align: right;">MPL020</p>
	0.01 mm 0.001 inch	0 999	Immediate	
D36	Prehole-drilling diameter setting element for reamer boring		M	<p>Element used to automatically set the prehole-drilling diameter during automatic tool development of the reamer unit. (When the pre-machining process is boring).</p>  <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 DRILL 10. \rightarrow (10.) (Hole diameter - D36)</p> <p style="text-align: right;">MPL020</p>
	0.01 mm 0.001 inch	0 999	Immediate	

Classification	USER	Display title	POINT CUTTING PARAMETER
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D37	Prehole-drilling diameter setting element for reamer endmilling		M	<p>Element used to automatically set the prehole-drilling diameter during automatic tool development of the reamer unit. (When the pre-machining process is endmilling).</p>  <p>MPL020</p> <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 DRILL 10. (10.) (Hole diameter - D37)</p>
	0.01 mm 0.001 inch	0 999	Immediate	
D38	Reamer-prehole diameter setting element for boring or endmilling		M	<p>(1) In automatic tool development of the reamer unit, if the pre-machining process is boring:</p>  <p>MPL021</p> <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 BOR BAR 10. (10.) (Hole diameter - D38)</p>
	0.01 mm 0.001 inch	0 999	Immediate	
D39	Reamer-prehole diameter setting element for endmilling		M	<p>(2) In automatic tool development of the reamer unit, if the pre-machining process is endmilling:</p>  <p>MPL022</p> <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 E-MILL 15. (20.) ← (Hole diameter - D39) 2 E-MILL 10. (21.) ← (Hole diameter - D38)</p>
	0.01 mm 0.001 inch	0 999	Immediate	

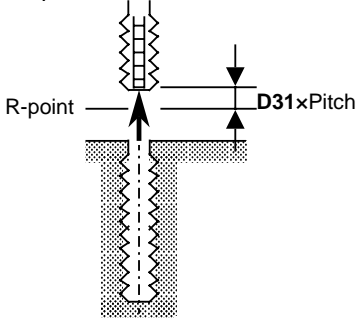
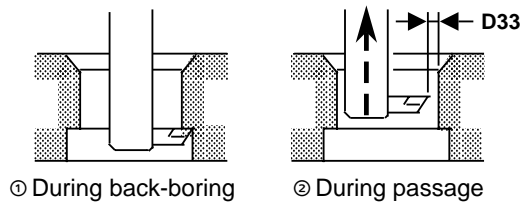
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Address	Name		Program type	Description												
	Unit	Setting range	Conditions													
D40	Spot-faced hole bottom dwell element for inversed spot-facing		M	<p>Z-axis feed dwell time at the spot-faced hole bottom in an inversed spot facing cycle. Set this time in spindle revolutions.</p>  <p>When the inversed spot-facing tool reaches the hole bottom, first the Z-axis will stop moving until the spindle makes D40 revolutions, and then the rotational direction of the spindle will reverse.</p> <p>(Feeding stops at hole bottom.)</p> <p style="text-align: right;">MPL023</p>												
	1 revolution	0 9	Immediate													
D41	R-point height during point-machining		M	<p>R-point height of each tool in the point-machining unit.</p> <p>Example:</p>  <p>Notes:</p> <ol style="list-style-type: none"> For the inversed spot-facing unit or the back-boring unit, this parameter can also be used for setting the clearance amount at the hole bottom. For the drilling unit, see D1 also. <p style="text-align: right;">MPL024</p>												
	1 mm 0.1 inch	0 99	Immediate													
D42				Invalid												
D46																
D47	Reamer-prehole machining overshoot		M	<p>Element used to automatically set the hole depth of drilling, endmilling and boring during automatic tool development of the reamer unit.</p>  <p>For drilling For endmilling or boring</p> <p style="text-align: right;">MPL025</p> <p>Example:</p> <table border="1"> <thead> <tr> <th>SNO</th> <th>TOOL</th> <th>NOM-φ</th> <th>NO.</th> <th>HOLE-φ</th> <th>HOLE-DEP</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DRILL</td> <td>10.</td> <td></td> <td>10.</td> <td>21.</td> </tr> </tbody> </table> <p>(Hole depth + D47)</p>	SNO	TOOL	NOM-φ	NO.	HOLE-φ	HOLE-DEP	1	DRILL	10.		10.	21.
	SNO	TOOL	NOM-φ		NO.	HOLE-φ	HOLE-DEP									
1	DRILL	10.		10.	21.											
0.01 mm 0.001 inch	0 999	Immediate														

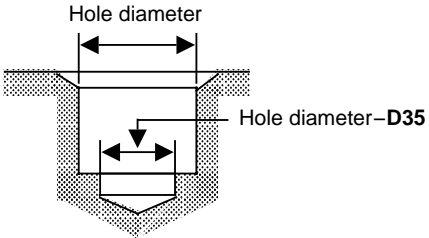
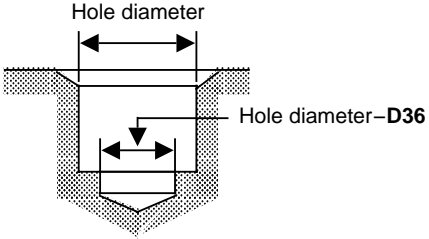
Classification		USER		Display title	POINT CUTTING PARAMETER
Address	Name		Program type	Description	
	Unit	Setting range	Conditions		
D48				Invalid	
D90					
D91	-		M	 <p>(1: Execution, 0: No execution)</p> <ul style="list-style-type: none"> 7 — M04 is output after the tool has dwelled at the hole bottom during a tapping cycle. 6 — The tool dwells after M04 has been output at the hole bottom during a tapping cycle. 5 — The tool dwells after it has been returned to the R-point during a tapping cycle. 4 — The finishing tool path is shortened during a true-circle processing cycle (endmilling). 3 — The tool path is shortened during a true-circle processing cycle (chamfering). 2 — The R-point height of the drill is set as D1. 	
	Bit	Binary eight digits	Immediate		
D92	-		M	 <p>(1: Execution, 0: No execution)</p> <ul style="list-style-type: none"> 7 — During a true-circle processing (endmilling) cycle, E17 is used for axial feed. 	
	Bit	Binary	Immediate		
D93	-		M	<p>Unidirectional positioning for point-machining</p>  <p>(1: Execution, 0: No execution)</p> <ul style="list-style-type: none"> 7 — CTR-DR (Spot-machining tool) 6 — DRILL (Drill) 5 — REAM (Reamer) 4 — TAP (Tap) 3 — BK FACE (Inversed spot-facing tool) 2 — BOR BAR (Boring tool) 1 — B-B BAR (Back-boring tool) 0 — CHF-M (Chamfering cutter) 	
	Bit	Binary eight digits	Immediate		
D94	-		M	<p>Unidirectional positioning for point-machining</p>  <p>(1: Execution, 0: No execution)</p> <ul style="list-style-type: none"> 7 — E-MILL (Endmilling tool) 	
	Bit	Binary eight digits	Immediate		
D95				Invalid	
D108					

Notes:

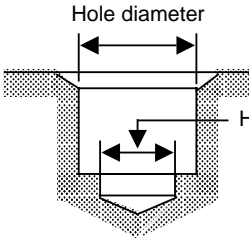
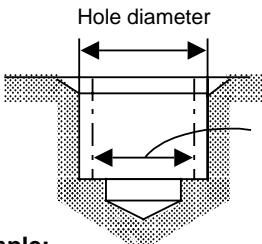
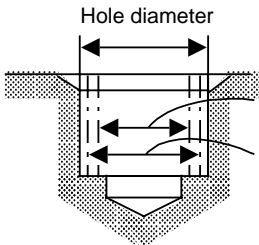
Classification	USER	Display title	POINT CUTTING PARAMETER
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D31	Tapper elongation amount of tap		M	<p>Excess amount of tool return due to elongation of the tapper during a tapping a cycle. Set this value in spindle revolutions.</p>  <p style="text-align: right;">MPL018</p>
	1 revolution	0 9	Immediate	
D32	Number of spindle revolutions until spindle CCW rotation begins in tapping cycle		M	<p>The number of rotations in the tapping cycle that the spindle continues to rotate clockwise during the time from output of a spindle CCW rotation command to the start of spindle CCW rotation.</p>
	1 revolution	0 99	Immediate	
D33	Back-boring tool tip relief		M	<p>The amount of relief provided for a back-boring tool tip to be kept clear of the prehole walls as it is being passed through the prehole in the oriented state of the spindle.</p>  <p>① During back-boring ② During passage</p> <p>Note: For the relief direction of the tool tip, see the description of bit 3 and bit 4 of I14.</p> <p style="text-align: right;">MPL019</p>
	0.1 mm 0.01 inch	0 99	Immediate	
D34				Invalid

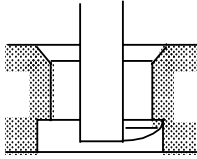
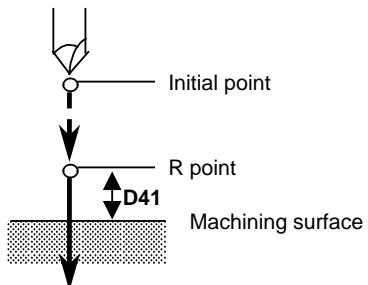
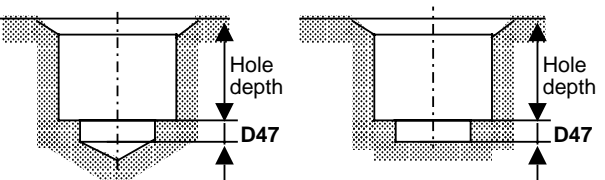
Classification	USER	Display title	POINT CUTTING PARAMETER
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D35	Prehole-drilling diameter setting element for reamer drilling		M	<p>Element used to automatically set the prehole-drilling diameter during automatic tool development of the reamer unit. (When the pre-machining process is drilling).</p>  <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 DRILL 10. \rightarrow (10.) (Hole diameter - D35)</p> <p style="text-align: right;">MPL020</p>
	0.01 mm 0.001 inch	0 999	Immediate	
D36	Prehole-drilling diameter setting element for reamer boring		M	<p>Element used to automatically set the prehole-drilling diameter during automatic tool development of the reamer unit. (When the pre-machining process is boring).</p>  <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 DRILL 10. \rightarrow (10.) (Hole diameter - D36)</p> <p style="text-align: right;">MPL020</p>
	0.01 mm 0.001 inch	0 999	Immediate	

Classification	USER	Display title	POINT CUTTING PARAMETER
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
D37	Prehole-drilling diameter setting element for reamer endmilling		M	<p>Element used to automatically set the prehole-drilling diameter during automatic tool development of the reamer unit. (When the pre-machining process is endmilling).</p>  <p style="text-align: right;">MPL020</p> <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 DRILL 10. (10.) (Hole diameter - D37)</p>
	0.01 mm 0.001 inch	0 999	Immediate	
D38	Reamer-prehole diameter setting element for boring or endmilling		M	<p>(1) In automatic tool development of the reamer unit, if the pre-machining process is boring:</p>  <p style="text-align: right;">MPL021</p> <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 BOR BAR 10. (10.) (Hole diameter - D38)</p>
	0.01 mm 0.001 inch	0 999	Immediate	
D39	Reamer-prehole diameter setting element for endmilling		M	<p>(2) In automatic tool development of the reamer unit, if the pre-machining process is endmilling:</p>  <p style="text-align: right;">MPL022</p> <p>Example: SNO TOOL NOM-ϕ NO. HOLE-ϕ 1 E-MILL 15. (20.) ← (Hole diameter - D39) 2 E-MILL 10. (21.) ← (Hole diameter - D38)</p>
	0.01 mm 0.001 inch	0 999	Immediate	

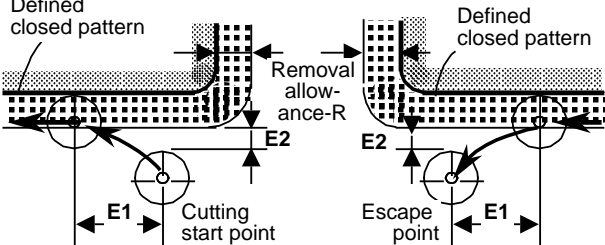
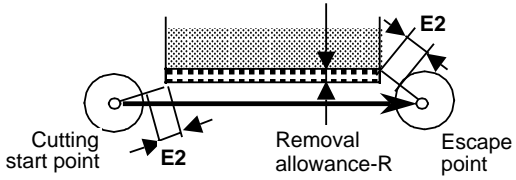
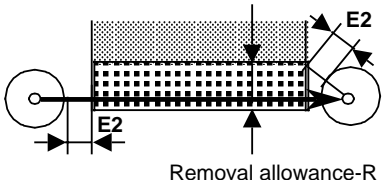
Classification	USER	Display title	POINT CUTTING PARAMETER
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Address	Name		Program type	Description												
	Unit	Setting range	Conditions													
D40	Spot-faced hole bottom dwell element for inversed spot-facing		M	<p>Z-axis feed dwell time at the spot-faced hole bottom in an inversed spot facing cycle. Set this time in spindle revolutions.</p>  <p>When the inversed spot-facing tool reaches the hole bottom, first the Z-axis will stop moving until the spindle makes D40 revolutions, and then the rotational direction of the spindle will reverse.</p> <p>(Feeding stops at hole bottom.)</p> <p style="text-align: right;">MPL023</p>												
	1 revolution	0 9	Immediate													
D41	R-point height during point-machining		M	<p>R-point height of each tool in the point-machining unit.</p> <p>Example:</p>  <p>Notes:</p> <ol style="list-style-type: none"> For the inversed spot-facing unit or the back-boring unit, this parameter can also be used for setting the clearance amount at the hole bottom. For the drilling unit, see D1 also. <p style="text-align: right;">MPL024</p>												
	1 mm 0.1 inch	0 99	Immediate													
D42				Invalid												
D46																
D47	Reamer-prehole machining overshoot		M	<p>Element used to automatically set the hole depth of drilling, endmilling and boring during automatic tool development of the reamer unit.</p>  <p>For drilling For endmilling or boring</p> <p style="text-align: right;">MPL025</p> <p>Example:</p> <table border="1"> <thead> <tr> <th>SNO</th> <th>TOOL</th> <th>NOM-φ</th> <th>NO.</th> <th>HOLE-φ</th> <th>HOLE-DEP</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DRILL</td> <td>10.</td> <td></td> <td>10.</td> <td>21.</td> </tr> </tbody> </table> <p>(Hole depth + D47)</p>	SNO	TOOL	NOM-φ	NO.	HOLE-φ	HOLE-DEP	1	DRILL	10.		10.	21.
	SNO	TOOL	NOM-φ		NO.	HOLE-φ	HOLE-DEP									
1	DRILL	10.		10.	21.											
0.01 mm 0.001 inch	0 999	Immediate														

Classification		USER		Display title	POINT CUTTING PARAMETER
Address	Name		Program type	Description	
	Unit	Setting range	Conditions		
D48				Invalid	
D90					
D91	-		M	<p>(1: Execution, 0: No execution)</p> <ul style="list-style-type: none"> M04 is output after the tool has dwelled at the hole bottom during a tapping cycle. The tool dwells after M04 has been output at the hole bottom during a tapping cycle. The tool dwells after it has been returned to the R-point during a tapping cycle. The finishing tool path is shortened during a true-circle processing cycle (endmilling). The tool path is shortened during a true-circle processing cycle (chamfering). The R-point height of the drill is set as D1. 	
	Bit	Binary eight digits	Immediate		
D92	-		M	<p>(1: Execution, 0: No execution)</p> <ul style="list-style-type: none"> During a true-circle processing (endmilling) cycle, E17 is used for axial feed. 	
	Bit	Binary	Immediate		
D93	-		M	<p>Unidirectional positioning for point-machining</p> <p>(1: Execution, 0: No execution)</p> <ul style="list-style-type: none"> CTR-DR (Spot-machining tool) DRILL (Drill) REAM (Reamer) TAP (Tap) BK FACE (Inversed spot-facing tool) BOR BAR (Boring tool) B-B BAR (Back-boring tool) CHF-M (Chamfering cutter) 	
	Bit	Binary eight digits	Immediate		
D94	-		M	<p>Unidirectional positioning for point-machining</p> <p>(1: Execution, 0: No execution)</p> <ul style="list-style-type: none"> E-MILL (Endmilling tool) 	
	Bit	Binary eight digits	Immediate		
D95				Invalid	
D108					

Notes:

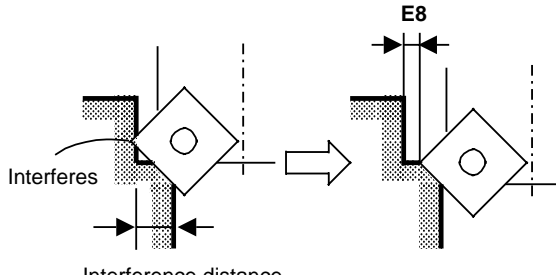
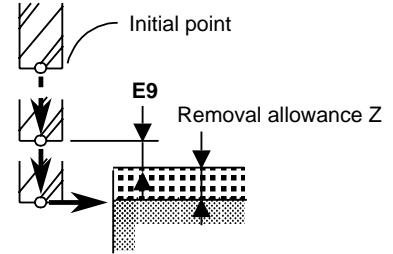
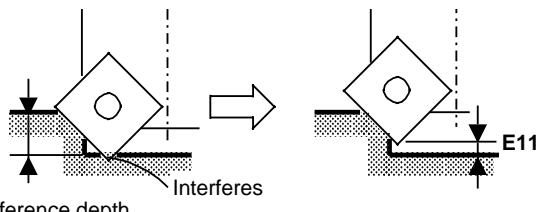
5-3 USER PARAMETER (Line/Face)

Classification		USER		Display title	LINE/FACE CUTTING PAR
Address	Name		Program type	Description	
	Unit	Setting range	Conditions		
E1	Closed-pattern cutting start point and escape point setting element		M	<p>Element used to set cutting start point and escape point for closed-pattern line- or face-machining.</p> <p>Example:</p>  <p>[Applicable units] - LINE OUT, LINE IN, CHMF OUT and CHMF IN - Wall finishing of STEP, POCKET, PCKT MT and PCKT VLY</p> <p style="text-align: right;">MPL026</p>	
	0.1 mm 0.01 inch	0 999	Immediate		
E2	Cutting start point and escape point setting element		M	<p>Element used to set the cutting start point and escape point for line- or face-machining.</p> <p>Example:</p> <p>Tool diameter/2 ≥ Removal allowance-R</p>  <p>Tool diameter/2 < Removal allowance-R</p>  <p>[Applicable units] - All line-machining units - Face-machining units other than FACE MIL, TOP EMIL, and SLOT</p> <p>Notes: 1. See the diagram of parameter E1 also. 2. Positioning of E2 at the escape point can be selected using E95, but only for line-machining units.</p> <p style="text-align: right;">MPL027</p>	
	0.1 mm 0.01 inch	0 999	Immediate		
E3				Invalid	

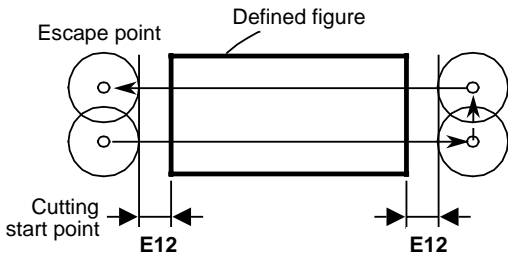
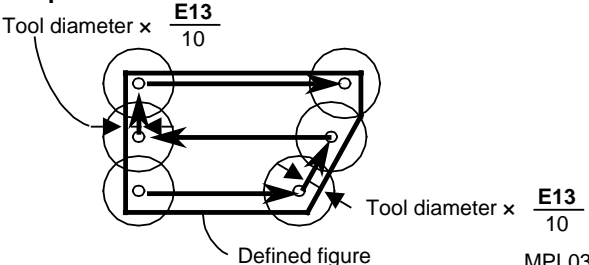
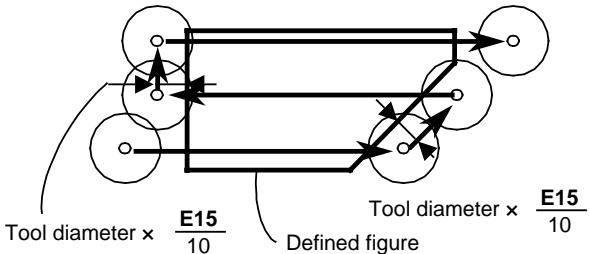
Classification	USER	Display title	LINE/FACE CUTTING PAR
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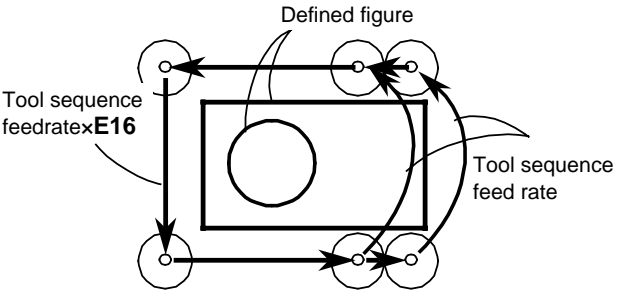
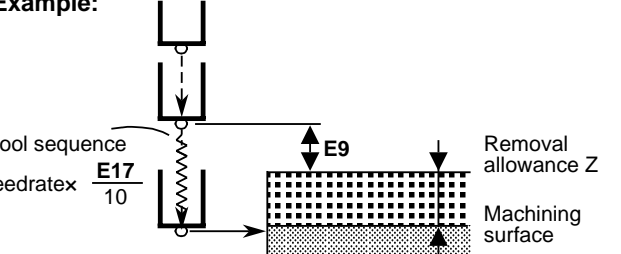
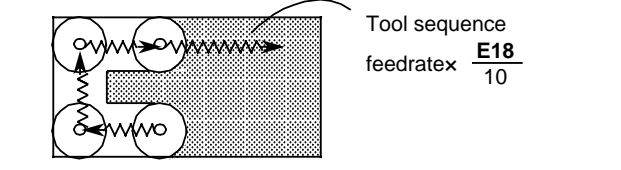
Address	Name		Program type	Description																		
	Unit	Setting range	Conditions																			
E4	Reference allowance of finish in radial direction		M	<p>The reference value of each finish allowance R which is automatically set when the roughness levels of the line- or face-machining units have been set. The finish allowance R in the case of roughness level 4 becomes the value of this parameter, and the values for all other roughness levels are calculated using the expressions listed in the table below.</p> <table border="1"> <thead> <tr> <th>Roughness</th> <th>Finish allowance R</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0.0</td> </tr> <tr> <td>3</td> <td>0.0</td> </tr> <tr> <td>4</td> <td>E4</td> </tr> <tr> <td>5</td> <td>E4 × 0.7</td> </tr> <tr> <td>6</td> <td>E4 × 0.7 × 0.7</td> </tr> <tr> <td>7</td> <td>E4 × 0.7 × 0.7 × 0.7</td> </tr> <tr> <td>8</td> <td>E4 × 0.7 × 0.7 × 0.7 × 0.7</td> </tr> <tr> <td>9</td> <td>E4 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7</td> </tr> </tbody> </table>	Roughness	Finish allowance R	0	0.0	3	0.0	4	E4	5	E4 × 0.7	6	E4 × 0.7 × 0.7	7	E4 × 0.7 × 0.7 × 0.7	8	E4 × 0.7 × 0.7 × 0.7 × 0.7	9	E4 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7
	Roughness	Finish allowance R																				
0	0.0																					
3	0.0																					
4	E4																					
5	E4 × 0.7																					
6	E4 × 0.7 × 0.7																					
7	E4 × 0.7 × 0.7 × 0.7																					
8	E4 × 0.7 × 0.7 × 0.7 × 0.7																					
9	E4 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7																					
0.1 mm 0.01 inch	0 999	Immediate																				
E5				Invalid																		
E6	Reference allowance of finish in axial direction		M	<p>The reference value of each finish allowance Z which is automatically set when the roughness levels of the line- or face-machining units have been set. The finish allowance Z in the case of roughness level 4 becomes the value of this parameter, and the values for all other roughness levels are calculated using the expressions listed in the table below.</p> <table border="1"> <thead> <tr> <th>Roughness</th> <th>Finish allowance Z</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0.0</td> </tr> <tr> <td>3</td> <td>0.0</td> </tr> <tr> <td>4</td> <td>E6</td> </tr> <tr> <td>5</td> <td>E6 × 0.7</td> </tr> <tr> <td>6</td> <td>E6 × 0.7 × 0.7</td> </tr> <tr> <td>7</td> <td>E6 × 0.7 × 0.7 × 0.7</td> </tr> <tr> <td>8</td> <td>E6 × 0.7 × 0.7 × 0.7 × 0.7</td> </tr> <tr> <td>9</td> <td>E6 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7</td> </tr> </tbody> </table>	Roughness	Finish allowance Z	0	0.0	3	0.0	4	E6	5	E6 × 0.7	6	E6 × 0.7 × 0.7	7	E6 × 0.7 × 0.7 × 0.7	8	E6 × 0.7 × 0.7 × 0.7 × 0.7	9	E6 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7
	Roughness	Finish allowance Z																				
0	0.0																					
3	0.0																					
4	E6																					
5	E6 × 0.7																					
6	E6 × 0.7 × 0.7																					
7	E6 × 0.7 × 0.7 × 0.7																					
8	E6 × 0.7 × 0.7 × 0.7 × 0.7																					
9	E6 × 0.7 × 0.7 × 0.7 × 0.7 × 0.7																					
0.1 mm 0.01 inch	0 999	Immediate																				
E7				Invalid																		

Classification	USER	Display title	LINE/FACE CUTTING PAR
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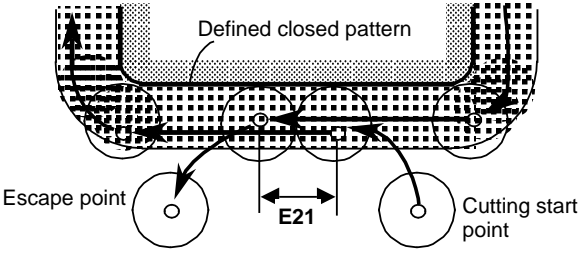
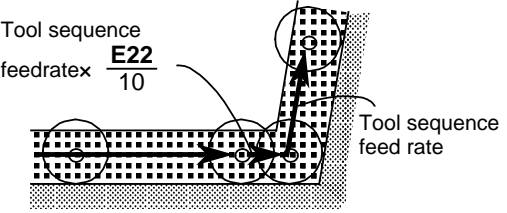
Address	Name		Program type	Description																				
	Unit	Setting range	Conditions																					
E8	Radial interference clearance of chamfering cutter		M	<p>The amount of clearance that ensures no interference of the chamfering cutter with the hole walls during face-machining.</p> 																				
	0.1 mm 0.01 inch	0 999	Immediate		MPL028																			
E9	Allowance of axial-cutting start position		M	<p>Element used to set the position in which the cutting feed in axial direction is to be started after the line- or face-machining tool has been moved from the initial point toward the work at a rapid feedrate.</p> <p>Example:</p> 																				
	0.1 mm 0.01 inch	0 999	Immediate		MPL029																			
E10	Depth-of-cut-R automatic setting element (Face milling, Endmilling-top, Endmilling-relief)		M	<p>Element used to automatically set the radial depth-of-cut of the tool sequence in FACE MIL, TOP EMIL or STEP unit.</p> $\text{Radial depth-of-cut} = \frac{\text{Nominal diameter} \times \text{E10}}{10}$ <p>Example:</p> <table border="1"> <thead> <tr> <th>SNO</th> <th>TOOL</th> <th>NOM-φ</th> <th>NO.</th> <th>APRCH-X</th> <th>APRCH-Y</th> <th>TYPE</th> <th>ZFD</th> <th>DEP-Z</th> <th>WID-R</th> </tr> </thead> <tbody> <tr> <td>R1</td> <td>E-MILL</td> <td>100A</td> <td>?</td> <td>?</td> <td>XBI</td> <td>◆</td> <td>1.</td> <td>70.</td> <td></td> </tr> </tbody> </table> <p style="text-align: center;"> $\frac{\text{Nominal diameter} \times \text{E10}}{10}$ </p>	SNO	TOOL	NOM-φ	NO.	APRCH-X	APRCH-Y	TYPE	ZFD	DEP-Z	WID-R	R1	E-MILL	100A	?	?	XBI	◆	1.	70.	
	SNO	TOOL	NOM-φ		NO.	APRCH-X	APRCH-Y	TYPE	ZFD	DEP-Z	WID-R													
R1	E-MILL	100A	?	?	XBI	◆	1.	70.																
10%	0 9	Immediate																						
E11	Axial interference clearance of chamfering cutter		M	<p>The amount of clearance that ensures no interference of the chamfering cutter with the hole bottom during chamfering.</p> 																				
	0.1 mm 0.01 inch	5 40	Immediate		MPL030																			

Classification	USER	Display title	LINE/FACE CUTTING PAR
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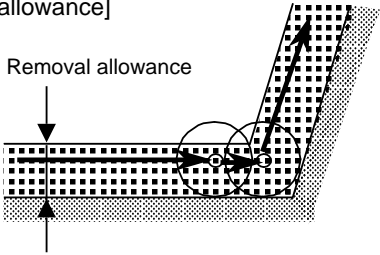
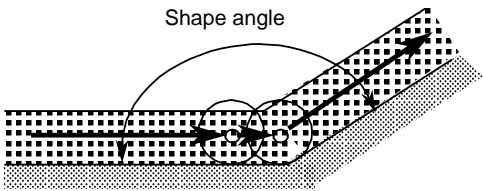
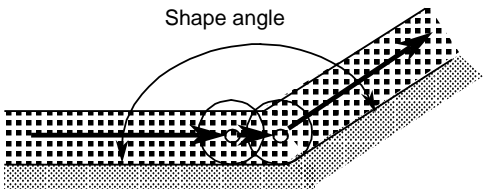
Address	Name		Program type	Description																				
	Unit	Setting range	Conditions																					
E12	Radial interference clearance of face milling unit		M	<p>The amount of clearance that ensures no contact between the tool and the figure during face milling. Example:</p>  <p style="text-align: right;">MPL031</p>																				
	0.1 mm 0.01 inch	0 999	Immediate																					
E13	Tool path setting element for endmilling-top unit		M	<p>Element used to set the tool path internal to the figure for endmilling-top unit. Example:</p>  <p style="text-align: right;">MPL032</p>																				
	10%	1 9	Immediate																					
E14	Depth-of-cut-R automatic setting element (Pocket milling, Pocket milling-relief, Pocket milling-hollow)		M	<p>Element used to automatically set the radial depth-of-cut of the tool sequence in POCKET, PCKT MT or PCKT VLY unit.</p> <p style="text-align: center;">Radial depth-of-cut= $\frac{\text{Nominal diameter} \times \text{E14}}{10}$</p> <p>Example:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SNO</th> <th>TOOL</th> <th>NOM-φ</th> <th>NO.</th> <th>APRCH-X</th> <th>APRCH-Y</th> <th>TYPE</th> <th>ZFD</th> <th>DEP-Z</th> <th>WID-R</th> </tr> </thead> <tbody> <tr> <td>R1</td> <td>E-MILL</td> <td>20A</td> <td></td> <td>?</td> <td>?</td> <td>CW</td> <td>G01</td> <td>10.</td> <td>12.</td> </tr> </tbody> </table> <p style="text-align: center;">Nominal diameter x E14 10</p>	SNO	TOOL	NOM-φ	NO.	APRCH-X	APRCH-Y	TYPE	ZFD	DEP-Z	WID-R	R1	E-MILL	20A		?	?	CW	G01	10.	12.
	SNO	TOOL	NOM-φ		NO.	APRCH-X	APRCH-Y	TYPE	ZFD	DEP-Z	WID-R													
R1	E-MILL	20A		?	?	CW	G01	10.	12.															
10%	0 9	Immediate																						
E15	Tool path setting element for face milling-top unit (reciprocating short)		M	<p>Element used to set the tool path external to the defined figure for reciprocating-short machining with face milling unit. Example:</p>  <p style="text-align: right;">MPL033</p>																				
	10%	1 9	Immediate																					

Classification		USER		Display title	LINE/FACE CUTTING PAR
Address	Name		Program type	Description	
	Unit	Setting range	Conditions		
E16	Peripheral-cutting feedrate override for endmilling-relief unit		M	Override value of the idle-cutting feedrate at which tool of endmilling-relief unit is to be moved around the outer form of the work. Note: Valid only when bit 0 of E91 is 1 and bit 7 is 0. Example:	
	-	1 20	Immediate		
E17	Axial-cutting feedrate override		M	Override value of the feedrate at which the tool of a line- or face-machining unit (excluding face milling unit) is to be moved to the machining surface in an axial direction. Notes: 1. Valid only when ZFD of tool sequence is G01. 2. Feed overriding is invalid when this parameter is 0. Example:	
	10%	0 9	Immediate		
E18	Override in case of the overall width cutting for pocket-machining		M	Override value of feedrate when the pocket-machining radial depth-of-cut becomes equal to the tool diameter.	
	10%	0 9	Immediate	 Note: Overriding for overall width cutting is not valid when this parameter is 0. [Applicable units] Rough-machining of POCKET, PCKT MT, PCKT VLY and STEP	

Classification	USER	Display title	LINE/FACE CUTTING PAR
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
E19 E20				Invalid
E21	Wall-cutting overlap in closed figure		M	<p>The amount of overlap of the wall-cutting start and end areas in closed-pattern line- or face-machining.</p> <p>Example:</p>  <p>Escape point</p> <p>Defined closed pattern</p> <p>Cutting start point</p> <p>E21</p> <p>[Applicable units] - LINE OUT, LINE IN, CHMF OUT and CHMF IN - Wall finishing of STEP, POCKET, PCKT MT, PCKT VLY and SLOT</p> <p style="text-align: right;">MPL037</p>
	0.1 mm 0.01 inch	0 999	Immediate	
E22	Override value of automatic corner overriding		M	<p>Override value of automatic corner overriding in line- or face-machining</p> <p>Example:</p>  <p>Tool sequence feedrate x $\frac{E22}{10}$</p> <p>Tool sequence feed rate</p> <p>Note: Automatic corner overriding is invalid when this parameter is 0. [Applicable units] LINE RGT, LINE LFT, LINE OUT, LINE IN, STEP, POCKET, PCKT MT and PCKT VLY</p> <p style="text-align: right;">MPL038</p>
	1%	0 99	Immediate	

Classification	USER	Display title	LINE/FACE CUTTING PAR
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Address	Name		Program type	Description						
	Unit	Setting range	Conditions							
E23	Effective removal allowance (upper limit) of automatic corner overriding		M	<p>The range of removal allowances (upper and lower limits). The automatic corner overriding becomes valid when the following line- or face-machining conditions are met:</p> $\text{Tool diameter} \times \frac{\text{E24}}{100} \leq \text{Removal allowance} \leq \text{Tool diameter} \times \frac{\text{E23}}{100}$ <p>[Removal allowance]</p>  <p style="text-align: right;">MPL039</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Machining</th> <th>Removal allowance</th> </tr> </thead> <tbody> <tr> <td>Line-roughmachining</td> <td>(Radial removal allowance) - (Radial finish allowance)</td> </tr> <tr> <td>Face-roughmachining</td> <td>(Radial depth-of-cut)</td> </tr> </tbody> </table>	Machining	Removal allowance	Line-roughmachining	(Radial removal allowance) - (Radial finish allowance)	Face-roughmachining	(Radial depth-of-cut)
	Machining	Removal allowance								
Line-roughmachining	(Radial removal allowance) - (Radial finish allowance)									
Face-roughmachining	(Radial depth-of-cut)									
1%	1 99	Immediate								
E24	Effective removal allowance (lower limit) of automatic corner overriding		M	<p>The shape angle range (upper limit). The automatic corner overriding becomes valid when the following line- or face-machining conditions are met:</p> $\text{Shape angle} \leq \text{E25}$  <p style="text-align: right;">MPL040</p>						
	1°	1 179	Immediate							
E25	Effective angle (upper limit) of automatic corner overriding		M	<p>The shape angle range (upper limit). The automatic corner overriding becomes valid when the following line- or face-machining conditions are met:</p> $\text{Shape angle} \leq \text{E25}$  <p style="text-align: right;">MPL040</p>						
1°	1 179	Immediate								
E26				Invalid						
E54										

NOTE: PARAMETERS E55 THRU E90 APPLY TO M-32A CONTROLS ONLY.

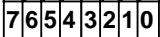
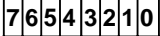
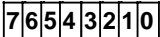
Classification	USER	Display title	LINE/FACE CUTTING PAR
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
E91	Tool-path pattern selection for endmilling-relief unit		M	<div style="display: flex; align-items: center;"> <div style="border: 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> <ul style="list-style-type: none"> ↑ [0: Machining from inside to outside ↑ [1: Machining from outside to inside ↑ [0: Cutting direction inverted ↑ [1: Cutting direction fixed ↑ 1: Rapid feed up to the intended surface + E9 ↑ [0: Tool path based on inside shape ↑ [1: Tool path based on outside shape <p>Notes:</p> <ol style="list-style-type: none"> If bit 0 = 0, tool path based on inside shape is selected automatically, irrespective of value of bit 7. If bit 0 = 1 and bit 7 = 0, fixed direction of cutting is selected automatically, irrespective of value of bit 1. Bit 4 becomes valid only for two or more rounds of cutting. <p style="text-align: right;">MPL055</p>
	Bit	Binary eight digits	Immediate	
E92	Tool-path pattern selection for pocket milling unit		M	<div style="display: flex; align-items: center;"> <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> <ul style="list-style-type: none"> ↑ [0: Machining from inside to outside ↑ [1: Machining from outside to inside ↑ 1: Rapid feed up to the intended surface + E9
	Bit	Binary eight digits	Immediate	
E93	Tool-path pattern selection for pocket milling-relief unit		M	<div style="display: flex; align-items: center;"> <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> <ul style="list-style-type: none"> ↑ [0: Machining from inside to outside ↑ [1: Machining from outside to inside ↑ [0: Cutting direction inverted ↑ [1: Cutting direction fixed ↑ 1: Rapid feed up to the intended surface + E9
	Bit	Binary eight digits	Immediate	
E94	Tool-path pattern selection for pocket milling-hollow unit		M	<div style="display: flex; align-items: center;"> <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> <ul style="list-style-type: none"> ↑ [0: Machining from inside to outside ↑ [1: Machining from outside to inside ↑ [0: Cutting direction inverted ↑ [1: Cutting direction fixed ↑ 1: Rapid feed up to the intended surface + E9
	Bit	Binary eight digits	Immediate	

Classification	USER	Display title	LINE/FACE CUTTING PAR
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Address	Name		Program type	Description								
	Unit	Setting range	Conditions									
E95	Tool-path pattern selection for line-machining unit		M	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <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></tr> </table> </div> <div> <p>For the 2nd and subsequent rounds of cutting: 0: Not via the approach point 1: Via the approach point</p> <p>For the 2nd and subsequent rounds of cutting: 0: Escape to the Z-axis initial point 1: No escape toward the Z-axis</p> <p>1: Rapid feed up to the intended surface + E9</p> <p>1: Escape to a position where the workpiece and the tool do not interfere</p> <p>- Bit 2</p> <p>- Bit 3</p> <p>- Bit 5</p> </div> </div> <p style="text-align: right;">MPL056</p> <p>Note: Bit 3 is valid only for inside/outside linear machining unit.</p>	7	6	5	4	3	2	1	0
7	6	5	4	3	2	1	0					
	Bit	Binary eight digits	Immediate									

Classification	USER	Display title	LINE/FACE CUTTING PAR
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
E96	Tool-path pattern selection for endmilling-groove unit		M	 <p>For the 2nd and subsequent rounds of cutting: 0: Not via the approach point 1: Via the approach point 1: Rapid feed up to the intended surface + E9</p>
	Bit	Binary eight digits	Immediate	
E97	Tool-path pattern selection for endmilling-top unit		M	 <p>1: Rapid feed up to the intended surface + E9</p>
	Bit	Binary eight digits	Immediate	
E98	Cutting method selection for endmilling-relief, pocket milling-hollow unit		M	 <p>1: The 1st cutting amount exceed the command value at endmilling-relief or pocket hollow-machining.</p>
	Bit	Binary eight digits	Immediate	
E99				Invalid
E108				

5-4 USER PARAMETER No. 1

Classification		USER		Display title	USER PARAMETER NO. 1
Address	Name		Program type	Description	
	Unit	Setting range	Conditions		
F1				Invalid	
F10					
F11	Vector constant for 3-D tool-diameter compensation			<p>Coordinates of program (x_0, y_0, z_0)</p> <p>Note: $F11 = \sqrt{I^2 + J^2 + K^2}$ if this parameter is 0. MPL057</p>	
	0.001 mm 0.0001 inch (0.001°)	0 99999999	Next block		
F12	Return amount of pecking in drill high-speed deep-hole cycle or in G73		M · E	<p>Pecking</p> <p>MPL058</p>	
	0.001 mm 0.0001 inch	0 99999999	Next block		
F13	Allowance amount of rapid-feed stop in deep-hole drilling cycle or in G83		M · E	<p>MPL059</p>	
	0.001 mm 0.0001 inch	0 99999999	Next block		
F14				Invalid	
F18					

Classification	USER	Display title	USER PARAMETER NO. 1
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
F19	Maximum permissible difference in arc radius		M · E	<p>Maximum radius difference that causes spiral interpolation to be performed when the arc-drawing start point and end point radius that have been specified in the arc command do not agree.</p> <p>$R \leq F19$: Spiral interpolation $R > F19$: Alarm</p> <p>MPL060</p>
	0.001 mm 0.0001 inch (0.001°)	0 9999	Next block	
F20	Fixed value of scaling factor		E	<p>That fixed value of the scaling factor which becomes valid in the case that no value is set (using the address P) in the same block as that of G51.</p> <p>Scaling factor = $\frac{b}{a}$</p> <p>MPL061</p>
	1/1000000	0 99999999	Next command	
F21	Maximum inside-corner angle available with automatic corner override (G62)		E	<p>The automatic corner override using the G62 code becomes valid when the following condition of the pattern angle is met: Pattern angle \leq F21</p> <p>Overriding occurs here.</p> <p>MPL062</p>
	1°	0 179	Next command	

Classification		USER		Display title		USER PARAMETER NO. 1	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
F22	Deceleration area of automatic corner overriding (G62)		E		<p>The area in which automatic corner overriding using the G62 code occurs.</p> <p style="text-align: right;">MPL063</p>		
	0.001 mm 0.0001 inch (0.001°)	0 99999999	Next command				
F23					Invalid		
F26							
F27	Fixed value		-				
	-	1	-				
F28	Fixed value		-				
	-	1	-				
F29	Override value of automatic corner overriding (G62)		E		<p>The override value of automatic corner overriding using the G62 code.</p> <p>Note: The automatic corner overriding is invalid when this parameter is 0.</p> <p style="text-align: right;">MPL064</p>		
	1%	0 100	Next command				
F30	Fixed value		-				
	-	88	-				
F31	Fixed value		-				
	-	85	-				
F32	Fixed value		-				
	-	65	-				

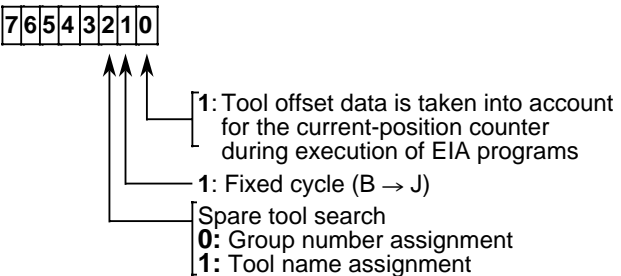
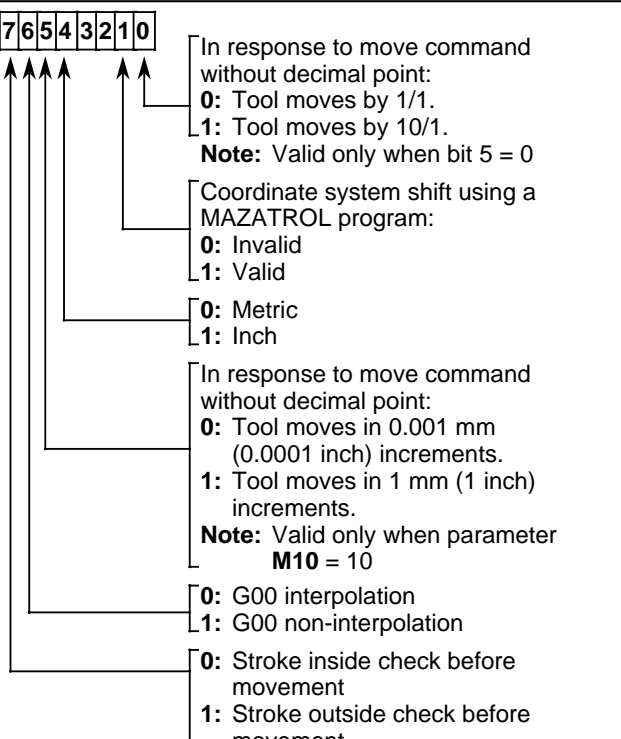
Classification		USER		Display title		USER PARAMETER NO. 1	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
F33	Fixed value		-				
	-	89	-				
F34	Fixed value		-				
	-	86	-				
F35	Fixed value		-				
	-	66	-				
F36	Fixed value		-				
	-	90	-				
F37	Fixed value		-				
	-	87	-				
F38	Fixed value		-				
	-	67	-				
F39	Fixed value		-				
	-	1	-				
F40			-		Invalid		
			-				
F41	Fixed value		-				
	-	1	-				
F42	Deceleration area r		E		Distance (r) between the starting point of movement at measuring speed and the measuring point. This data is used when argument R is omitted in G37 command format. G37 Z_R _r D_F _r ; (G37)		
	0.001 mm 0.0001 inch	0 99999999	After stop of movement				

Classification		USER		Display title		USER PARAMETER NO. 1	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
F43	Measurement area d		E		Range (d) where the tool should stop is commanded. This data is used when argument D is omitted in G37 command format. G37 Z_R_ D _d F_; (G37)		
	0.001 mm 0.0001 inch	0 99999999	After stop of movement				
F44	Measuring speed f		E		Measuring speed (f) This data is used when argument F is omitted in G37 command format. G37 Z_R_ D_ F _f ; Standard setting 1 60000 mm/min 1 2362 inch/min (G37)		
	1 mm/min 1 inch/min	0 120000	After stop of movement				
F45					Invalid		
F66							
F67	Tool-life integration display during EIA/ISO program execution		M · E		This parameter is used to specify whether or not the TOOL DATA display is to be used for integration of tool operation time existing during EIA/ISO program execution. 0: Only the TOOL LIFE INDEX display is used for integration 1: Both the TOOL LIFE INDEX display and the TOOL DATA display are used for integration.		
	–	0, 1	Immediate				
F68	Fixed value		–				
	–	0	–				
F69	EIA/ISO program restart method		E		This parameter is used to select the method of specifying the EIA/ISO program restarting position. Two methods are available: 0: The whole program, including the subprograms, is subjected to this processing. Set the sequence number, block number and number of times of repetition as counted from the beginning part of the main program. 1: The subprogram including the desired restart position can be specified. After setting the work number of the corresponding program, set the sequence number, block number, and number of times of repetition as counted from the beginning part.		
	–	0, 1	Immediate				

Classification	USER	Display title	USER PARAMETER NO. 1
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
F70				Invalid
F71	Machining order control		M	<p>Tool priority and multiple-machining priority selection</p> <p>0: Identical-tool priority function is executed first.</p> <p>1: Multiple-machining function is executed first.</p> <p>Example: Multiple-machining of two workpieces using a spot drill.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>F71=0</p> </div> <div style="text-align: center;"> <p>F71=1</p> </div> </div>
	—	0 255	Immediate	MPL065
F72				Invalid
F73	M code execution time for time study		M · E	The tool-path check time study time that is accumulated each time an M code is output.
	0.01 sec.	0 10000	Immediate	
F74	S code execution time for time study		M · E	The tool-path check time study time that is accumulated each time an S code is output.
	0.01 sec.	0 10000	Immediate	
F75	T code execution time for time study		M · E	The tool-path check time study time that is accumulated each time a T code is output.
	0.01 sec.	0 10000	Immediate	
F76	B code execution time for time study		M · E	The tool-path check time study time that is accumulated each time a B code is output.
	0.01 sec.	0 10000	Immediate	
F77				Invalid
F81				

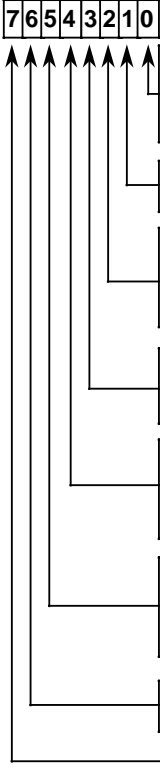
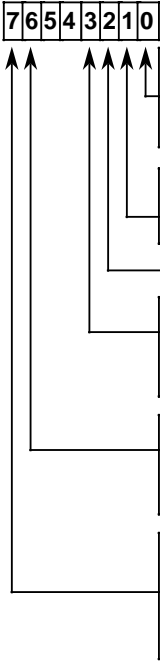
Classification	USER	Display title	USER PARAMETER NO. 1
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
F82	Total erasing of programs		M · E	0: Erasing of programs other than protected ones 1: Total erasing of programs (Format) If you want to protect programs with 8000 number mark and 9000 number mark by program management function (parameter H91), set 0 . (Standard setting) (Program management function)
	-	0 1	Immediate	
F83				Invalid
F84	Tool tip position display during EIA program execution		E	 <p> 7 6 5 4 3 2 1 0 [1: Tool offset data is taken into account for the current-position counter during execution of EIA programs 1: Fixed cycle (B → J) Spare tool search 0: Group number assignment 1: Tool name assignment </p>
	Bit	Binary eight digits	Immediate	
F85				Invalid
F90				
F91	-		M · E	 <p> 7 6 5 4 3 2 1 0 [In response to move command without decimal point: 0: Tool moves by 1/1. 1: Tool moves by 10/1. Note: Valid only when bit 5 = 0 [Coordinate system shift using a MAZATROL program: 0: Invalid 1: Valid 0: Metric 1: Inch [In response to move command without decimal point: 0: Tool moves in 0.001 mm (0.0001 inch) increments. 1: Tool moves in 1 mm (1 inch) increments. Note: Valid only when parameter M10 = 10 0: G00 interpolation 1: G00 non-interpolation 0: Stroke inside check before movement 1: Stroke outside check before movement </p>
	Bit	Binary eight digits	At power-on	

Classification	USER	Display title	USER PARAMETER NO. 1
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
F92		-	M · E	
	Bit	Binary eight digits	At power-on	
F93		-	M · E	
	Bit	Binary eight digits	At power-on	

Classification	USER	Display title	USER PARAMETER NO. 1
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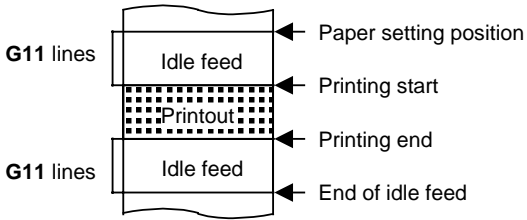
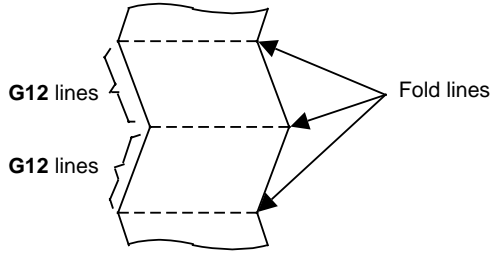
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
F94		-	M · E	 <p> Movement to hole-drilling position in fixed-cycle mode 0: Depends on modal state (G00 or G01) 1: Fixed at rapid feedrate (G00) 0: External deceleration signal valid 1: External deceleration signal invalid Tool length offsetting during G28/G30 execution 0: Offsetting is canceled 1: Offsetting is performed Modal at power-on or at reset 0: G01 (Linear interpolation) 1: G00 (Positioning) Tool command method using T codes 0: Assignment of group number on TOOL LIFE INDEX display 1: Pocket number assignment Spare-tool selection method for EIA/ISO program 0: Natural order of pocket number 1: Order of least tool operation time first 0: Incomplete synchronous tapping cycle 1: Complete synchronous tapping cycle Fixed value [1] </p>
	Bit	Binary eight digits	At power-on	
F95		-	M · E	 <p> Interrupt function using user macro instruction 0: Invalid 1: Valid Handling of interrupt macroprogram 0: Handled equally to interrupt call 1: Handled equally to subprogram call Fixed value [0] G00 (positioning) command feedrate for dry run 0: Rapid feedrate 1: Feedrate for dry run Manual-pulse interrupt amount cancellation with reset key 0: Invalid 1: Valid With reset key 0: Coordinate system corresponding to G54 1: Coordinate system that had been used until resetting was done </p>
	Bit	Binary eight digits	At power-on	
F96				Invalid
F108				

Notes:

5-5 USER PARAMETER No. 2

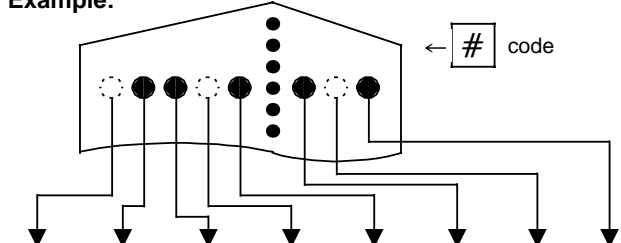
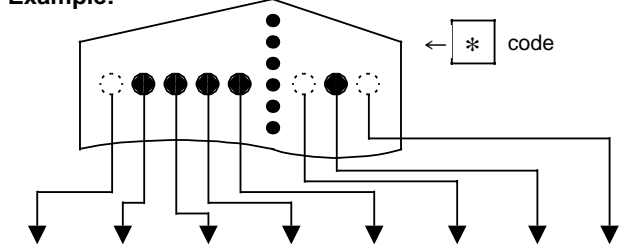
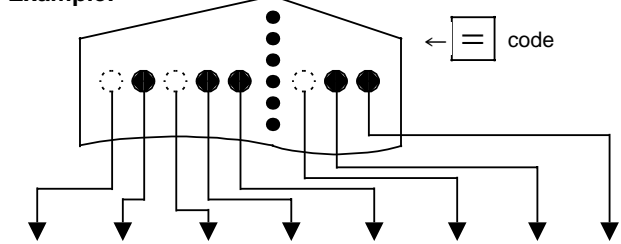
Classification		USER		Display title	USER PARAMETER NO. 2																		
Address	Name		Program type	Description																			
	Unit	Setting range	Conditions																				
G1	CMT baud rate		M · E	CMT baud rate (Parameter for RS-232C interface initialization) <table border="1"> <thead> <tr> <th>Setting</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr><td>0</td><td>19200</td></tr> <tr><td>1</td><td>9600</td></tr> <tr><td>2</td><td>4800</td></tr> <tr><td>3</td><td>2400</td></tr> <tr><td>4</td><td>1200</td></tr> <tr><td>5</td><td>600</td></tr> <tr><td>6</td><td>300</td></tr> <tr><td>7</td><td>110</td></tr> </tbody> </table>		Setting	Baud rate	0	19200	1	9600	2	4800	3	2400	4	1200	5	600	6	300	7	110
	Setting	Baud rate																					
0	19200																						
1	9600																						
2	4800																						
3	2400																						
4	1200																						
5	600																						
6	300																						
7	110																						
-	0 7	At I/O startup																					
G2				Invalid																			
G8																							
G9	-		M · E	<table border="1"> <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> </tr> </table> <p>Forced loading of tool data (Common to CMT and DNC)</p> <p>0: When loading conditions are not in agreement, forced loading is not performed. 1: When loading conditions are not in agreement, forced loading is performed.</p> <p>Superscription of program data (Common to CMT and PTP)</p> <p>0: When receiving a program of the same work number, an alarm shall be given. 1: When receiving a program of the same work number, the superscription shall be made.</p> <p>(I/O superscription)</p>		7	6	5	4	3	2	1	0										
	7	6	5			4	3	2	1	0													
Bit	Binary eight digits	At I/O startup																					
G10	Printer baud rate		M · E	Printer baud rate (Parameter for RS-232C interface initialization) <table border="1"> <thead> <tr> <th>Setting</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr><td>0</td><td>19200</td></tr> <tr><td>1</td><td>9600</td></tr> <tr><td>2</td><td>4800</td></tr> <tr><td>3</td><td>2400</td></tr> <tr><td>4</td><td>1200</td></tr> <tr><td>5</td><td>600</td></tr> <tr><td>6</td><td>300</td></tr> <tr><td>7</td><td>110</td></tr> </tbody> </table>		Setting	Baud rate	0	19200	1	9600	2	4800	3	2400	4	1200	5	600	6	300	7	110
	Setting	Baud rate																					
0	19200																						
1	9600																						
2	4800																						
3	2400																						
4	1200																						
5	600																						
6	300																						
7	110																						
-	0 7	At I/O startup																					

Classification	USER	Display title	USER PARAMETER NO. 2
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Address	Name		Program type	Description																
	Unit	Setting range	Conditions																	
G11	Number of printer paper feed lines		M · E	<p>The number of lines through which printer paper is to be fed at the start and end of printing.</p>  <p style="text-align: right;">MPL066</p>																
	1 line	0 255	At I/O startup																	
G12	Total number of lines per page of printer paper		M · E	<p>The maximum total number of lines per page that can be printed out on printer paper. This parameter becomes valid when printing a program with a length of more than one page.</p>  <p style="text-align: right;">MPL067</p>																
	1 line	0 255	At I/O startup																	
G13				Invalid																
G18																				
G19	Baud rate for paper tape reader/puncher		E	<p>Baud rate for paper tape reader/puncher (Parameter for RS-232C interface initialization)</p> <table border="1"> <thead> <tr> <th>Setting</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr><td>1</td><td>9600</td></tr> <tr><td>2</td><td>4800</td></tr> <tr><td>3</td><td>2400</td></tr> <tr><td>4</td><td>1200</td></tr> <tr><td>5</td><td>600</td></tr> <tr><td>6</td><td>300</td></tr> <tr><td>7</td><td>110</td></tr> </tbody> </table>	Setting	Baud rate	1	9600	2	4800	3	2400	4	1200	5	600	6	300	7	110
	Setting	Baud rate																		
1	9600																			
2	4800																			
3	2400																			
4	1200																			
5	600																			
6	300																			
7	110																			
-	0 7	At I/O startup																		

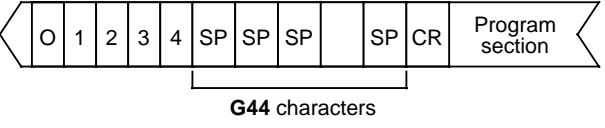
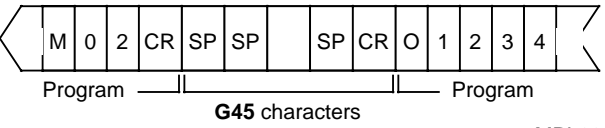
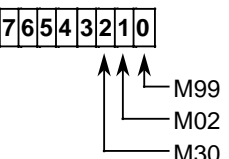
Classification		USER		Display title		USER PARAMETER NO. 2											
Address	Name		Program type		Description												
	Unit	Setting range	Conditions														
G20	Number of stop bits for paper tape reader/puncher		E		Number of stop bits for paper tape reader/puncher (Parameter for RS-232C interface initialization) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Setting</th> <th>No. of stop bits</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>1.5</td> </tr> <tr> <td>3</td> <td>2</td> </tr> </tbody> </table>			Setting	No. of stop bits	1	1	2	1.5	3	2		
	Setting	No. of stop bits															
1	1																
2	1.5																
3	2																
–	1	3	At I/O startup														
G21	Type of parity for paper tape reader/puncher		E		Type of parity for paper tape reader/puncher (Parameter for RS-232C interface initialization) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Setting</th> <th>Type of parity</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Even</td> </tr> <tr> <td>1</td> <td>Odd</td> </tr> </tbody> </table> <p>Note: This parameter is valid only when G22 is 1.</p>			Setting	Type of parity	0	Even	1	Odd				
	Setting	Type of parity															
0	Even																
1	Odd																
–	0	1	At I/O startup														
G22	Parity check for paper tape reader/puncher		E		Parity check of paper tape reader/puncher (Parameter for RS-232C interface initialization) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Setting</th> <th>Parity check</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Invalid</td> </tr> <tr> <td>1</td> <td>Valid</td> </tr> </tbody> </table> <p>Note: If this parameter is set to 1 (valid), then select whether even or odd parity is to be set using the G21 parameter.</p>			Setting	Parity check	0	Invalid	1	Valid				
	Setting	Parity check															
0	Invalid																
1	Valid																
–	0	1	At I/O startup														
G23	Number of data bits for paper tape reader/puncher		E		Number of data bits for paper tape reader/puncher (Parameter for RS-232C interface initialization) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Setting</th> <th>No. of data bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>5</td> </tr> <tr> <td>1</td> <td>6</td> </tr> <tr> <td>2</td> <td>7</td> </tr> <tr> <td>3</td> <td>8</td> </tr> </tbody> </table>			Setting	No. of data bits	0	5	1	6	2	7	3	8
	Setting	No. of data bits															
0	5																
1	6																
2	7																
3	8																
–	0	3	At I/O startup														
G24	Fixed value		–														
	–	1	–														
G25	Fixed value		–														
	–	0	–														
G26	Fixed value		–														
	–	0	–														
G27	Output of CR during ISO code punching		E		This parameter is used to specify whether or not CR is to be placed in front of LF (separation of blocks) during ISO code punching. 0: No placement of CR 1: Placement of CR												
	–	0	1	At I/O startup													

Classification		USER		Display title		USER PARAMETER NO. 2																																
Address	Name		Program type		Description																																	
	Unit	Setting range	Conditions																																			
G28	Fixed value		-																																			
	-	0	-																																			
G29	Paper tape reader/puncher Handshaking method		E		This parameter is used to select the method of handshaking to control the state of data transfer between the NC system and tape reader/puncher.																																	
	-	1 3	At I/O startup		<table border="1"> <thead> <tr> <th>Setting</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Complies with device connection RTS/CTS.</td> </tr> <tr> <td>2</td> <td>No control</td> </tr> <tr> <td>3</td> <td>Complies with control code DC1 through DC4.</td> </tr> </tbody> </table>	Setting	Description	1	Complies with device connection RTS/CTS.	2	No control	3	Complies with control code DC1 through DC4.																									
Setting	Description																																					
1	Complies with device connection RTS/CTS.																																					
2	No control																																					
3	Complies with control code DC1 through DC4.																																					
G30	Paper tape reader/puncher DC code parity		E		This parameter is used to specify whether or not a parity bit is to be assigned to the DC code to be output.																																	
	-	0, 1	At I/O startup		<table border="1"> <thead> <tr> <th>Setting</th> <th>Parity</th> <th colspan="8">DC3 code</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>No assignment</td> <td></td><td></td><td></td><td></td><td>●</td><td></td><td>○</td><td></td><td>●</td><td>○</td> </tr> <tr> <td>1</td> <td>Assignment</td> <td>●</td><td></td><td></td><td></td><td>●</td><td></td><td>○</td><td></td><td>●</td><td>○</td> </tr> </tbody> </table> <p>Note: This parameter is valid only when G29 is 3.</p>	Setting	Parity	DC3 code								0	No assignment					●		○		●	○	1	Assignment	●				●		○		●
Setting	Parity	DC3 code																																				
0	No assignment					●		○		●	○																											
1	Assignment	●				●		○		●	○																											
G31	"["code for paper tape reader/puncher for EIA		E		This parameter is used to set a hole-punching pattern for the character code "[" onto a paper tape reader/puncher using EIA. Set an eight-digit binary number in decimal form. Example:																																	
	-	0 255	At I/O startup		<p>$(0 \times 2^7) + (1 \times 2^6) + (0 \times 2^5) + (0 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) + (0 \times 2^1) + (0 \times 2^0)$ = 76 Set value</p> <p>MPL068</p>																																	
G32	"]"code for paper tape reader/puncher for EIA		E		This parameter is used to set a hole-punching pattern for the character code "]" onto a paper tape reader/puncher using EIA. Set an eight-digit binary number in decimal form. Example:																																	
	-	0 255	At I/O startup		<p>$(0 \times 2^7) + (0 \times 2^6) + (0 \times 2^5) + (0 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) + (0 \times 2^1) + (1 \times 2^0)$ = 13 Set value</p> <p>MPL069</p>																																	

Classification		USER		Display title		USER PARAMETER NO. 2	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
G33	“#”code for paper tape reader/puncher for EIA		E		<p>This parameter is used to set a hole-punching pattern for the character code “#” onto a paper tape reader/puncher using EIA. Set an eight-digit binary number in decimal form. Example:</p>  <p>$(0 \times 2^7) + (1 \times 2^6) + (1 \times 2^5) + (0 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) + (0 \times 2^1) + (1 \times 2^0)$ $= 109$</p> <p>Set value MPL070</p>		
	-	0 255	At I/O startup				
G34	“*”code for paper tape reader/puncher for EIA		E		<p>This parameter is used to set a hole-punching pattern for the character code “*” onto a paper tape reader/puncher using EIA. Set an eight-digit binary number in decimal form. Example:</p>  <p>$(0 \times 2^7) + (1 \times 2^6) + (1 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$ $= 122$</p> <p>Set value MPL071</p>		
	-	0 255	At I/O startup				
G35	“=”code for paper tape reader/puncher for EIA		E		<p>This parameter is used to set a hole-punching pattern for the character code “=” onto a paper tape reader/puncher using EIA. Set an eight-digit binary number in decimal form. Example:</p>  <p>$(0 \times 2^7) + (1 \times 2^6) + (0 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (1 \times 2^0)$ $= 91$</p> <p>Set value MPL072</p>		
	-	0 255	At I/O startup				

Classification		USER		Display title		USER PARAMETER NO. 2	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
G36	“:”code for paper tape reader/puncher for EIA		E		<p>This parameter is used to set a hole-punching pattern for the character code “:” onto a paper tape reader/puncher using EIA. Set an eight-digit binary number in decimal form. Example:</p> <p>$(0 \times 2^7) + (1 \times 2^6) + (0 \times 2^5) + (0 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$ $= 70$ Set value</p> <p>MPL073</p>		
	-	0 255	At I/O startup				
G37	“(”code for paper tape reader/puncher for EIA		E		<p>This parameter is used to set a hole-punching pattern for the character code “(” onto a paper tape reader/puncher using EIA. Set an eight-digit binary number in decimal form. Example:</p> <p>$(0 \times 2^7) + (0 \times 2^6) + (0 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$ $= 26$ Set value</p> <p>MPL074</p>		
	-	0 255	At I/O startup				
G38	“)”code for paper tape reader/puncher for EIA		E		<p>This parameter is used to set a hole-punching pattern for the character code “)” onto a paper tape reader/puncher using EIA. Set an eight-digit binary number in decimal form. Example:</p> <p>$(0 \times 2^7) + (1 \times 2^6) + (0 \times 2^5) + (0 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$ $= 74$ Set value</p> <p>MPL075</p>		
	-	0 255	At I/O startup				

Classification		USER		Display title		USER PARAMETER NO. 2																			
Address	Name		Program type	Description																					
	Unit	Setting range	Conditions																						
G39	Rewind code for paper tape reader		E	<p>The paper-tape rewind command code that is output onto a tape reader. This code is output either when M30 is executed in tape run mode or when a paper-tape load or compare operation is performed with parameter G48 set to 1. Set an eight-digit binary number in decimal form.</p> <p>Example:</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <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>Bit</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>●</td><td>●</td><td>●</td><td>●</td><td>○</td><td>Code</td></tr> </table> <p>$(0 \times 2^7) + (0 \times 2^6) + (0 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0) = 30$</p> <p>Set value _____ MPL076</p>				7	6	5	4	3	2	1	0	Bit	○	○	○	●	●	●	●	○	Code
	7	6	5					4	3	2	1	0	Bit												
○	○	○	●	●	●	●	○	Code																	
-	0 255	At I/O startup																							
G40	Feed section DC code output for paper tape puncher		E	<p>Select whether or not DC2 and DC4 codes are to be output to the feed sections which will be generated at the beginning and end of paper tape punching.</p> <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Setting</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Neither DC2 nor DC4 is output.</td> </tr> <tr> <td>1</td> <td>Only DC2 is not output.</td> </tr> <tr> <td>2</td> <td>Only DC4 is not output.</td> </tr> <tr> <td>3</td> <td>Both DC2 and DC4 are output.</td> </tr> </tbody> </table> <p>Note: This parameter is valid only when G29 is 2. _____ MPL077</p>				Setting	Description	0	Neither DC2 nor DC4 is output.	1	Only DC2 is not output.	2	Only DC4 is not output.	3	Both DC2 and DC4 are output.								
	Setting	Description																							
0	Neither DC2 nor DC4 is output.																								
1	Only DC2 is not output.																								
2	Only DC4 is not output.																								
3	Both DC2 and DC4 are output.																								
-	0 3	At I/O startup																							
G41	Number of characters in feed section for paper tape puncher		E	<p>The number of characters in NULL (feed) that are to be punched at the beginning and end of paper tape.</p> <p>Tape setting position _____ End of punching _____ MPL078</p>																					
	1 character	0 65535	At I/O startup																						
G42	Paper tape reader/puncher reply waiting time		E	<p>The waiting time for replies from the paper tape reader or puncher during paper tape reading or punching. An alarm occurs if this time elapses following the final reply.</p>																					
	0.1 sec.	0 65535	At I/O startup																						
G43	Paper tape puncher EIA/ISO output selection and parity-V check		E	<table border="1" style="display: inline-table; margin-right: 20px;"> <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></tr> </table> <p>↑ ↑ 0: Paper tape punching in ISO code ↑ ↑ 1: Paper tape punching in EIA code</p> <p>↑ 0: No parity-V check during paper tape reading ↑ 1: Parity-V check during paper tape reading</p>				7	6	5	4	3	2	1	0										
	7	6	5					4	3	2	1	0													
Bit	Binary eight digits	At I/O startup																							

Classification		USER		Display title		USER PARAMETER NO. 2	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
G44	Number of characters in the space between O-number and program for paper tape puncher		E		<p>The total number of space-characters that are punched out between O-number and program section.</p> 		
	1 character	0 65535	At I/O startup				
G45	Number of characters in the space between programs for paper tape puncher		E		<p>The total number of space-characters that are punched out between programs when more than one program are punched onto paper tape.</p> 		
	1 character	0 65535	At I/O startup				
G46	Program-name tape input/output		M · E		<p>Select whether program name tape input/output is to be made valid or invalid during paper tape reading/punching.</p> <p>0: Program name tape input/output is made invalid. 1: Program name tape input/output is made valid.</p>		
	–	0, 1	At I/O startup				
G47	Program end code for paper tape reader O (or:) code		E		<p>This parameter is used to specify whether or not character code O (or:) is to be set as the program end code when paper tape containing more than one program is read.</p> <p>0: Code O (or:) is not set as the program end code. 1: Code O (or:) is set as the program end code.</p>		
	–	0, 1	At I/O startup				
G48	Presence/absence of paper tape reader rewind function		E		<p>The parameter that is used to specify whether or not the paper tape reader has a rewind function. If 1 is set (rewind function present), then the code of parameter G39 will be output onto the reader at the completion of a paper tape load or compare operation.</p> <p>0: Rewind function absent 1: Rewind function present</p>		
	–	0, 1	At I/O startup				
G49	All-loading enable or disable of M2 all punched tape		E		<p>The parameter used to select whether all-loading of the paper tape onto which the M2 program has been all-punched is to be enabled or to be disabled.</p> <p>0: All-loading disabled 1: All-loading enabled</p>		
	–	0, 1	At I/O start				
G50	Program end code (M) for paper tape reader		E		<p>The parameter that is used to specify whether or not M02, M30 and M99 are to be set as the program end codes for paper tape reading.</p> <p>(0: Set as program end, 1: Not set as program end)</p> 		
	Bit	Binary eight digits	At I/O start				

Classification	USER	Display title	USER PARAMETER NO. 2
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Address	Name		Program type	Description																		
	Unit	Setting range	Conditions																			
G51	Program end code of MAZATROL program DC control function		M	For paper tape reader/puncher, set a character string output to the program end of MAZATROL program by hexadecimal of ASCII code. For example, when a character string of END is output to the program end: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>G51</td> <td>G52</td> <td>G53</td> </tr> <tr> <td>Character string</td> <td>E</td> <td>N</td> <td>D</td> </tr> <tr> <td>Set value</td> <td>45</td> <td>4E</td> <td>44</td> </tr> </table> (MAZATROL program DC control)		G51	G52	G53	Character string	E	N	D	Set value	45	4E	44						
	G51	G52	G53																			
Character string	E	N	D																			
Set value	45	4E	44																			
G53	ASCII	Hexadecimal number	At I/O startup																			
G54				Invalid																		
G55	Baud rate for DNC		M · E	Baud rate for DNC. (Parameter for RS-232C interface initialization) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Setting</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr><td>0</td><td>19200</td></tr> <tr><td>1</td><td>9600</td></tr> <tr><td>2</td><td>4800</td></tr> <tr><td>3</td><td>2400</td></tr> <tr><td>4</td><td>1200</td></tr> <tr><td>5</td><td>600</td></tr> <tr><td>6</td><td>300</td></tr> <tr><td>7</td><td>110</td></tr> </tbody> </table>	Setting	Baud rate	0	19200	1	9600	2	4800	3	2400	4	1200	5	600	6	300	7	110
Setting	Baud rate																					
0	19200																					
1	9600																					
2	4800																					
3	2400																					
4	1200																					
5	600																					
6	300																					
7	110																					
	–	0 7	At I/O startup																			
G56	Number of stop bits in DNC		M · E	Number of stop bits in DNC. (Parameter for RS-232C interface initialization) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Setting</th> <th>No. of stop bits</th> </tr> </thead> <tbody> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>1.5</td></tr> <tr><td>3</td><td>2</td></tr> </tbody> </table>	Setting	No. of stop bits	1	1	2	1.5	3	2										
Setting	No. of stop bits																					
1	1																					
2	1.5																					
3	2																					
	–	1 3	At I/O startup																			
G57	Type of parity for DNC		E	Type of parity for DNC. (Parameter for RS-232C interface initialization) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Setting</th> <th>Type of parity</th> </tr> </thead> <tbody> <tr><td>0</td><td>Even</td></tr> <tr><td>1</td><td>Odd</td></tr> </tbody> </table> Note: This parameter is valid only when G58 is 1.	Setting	Type of parity	0	Even	1	Odd												
Setting	Type of parity																					
0	Even																					
1	Odd																					
	–	0, 1	At I/O startup																			

Classification	USER	Display title	USER PARAMETER NO. 2
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Address	Name		Program type	Description										
	Unit	Setting range	Conditions											
G58	Parity check of DNC		M · E	Parity check of DNC. (Parameter for RS-232C interface initialization) <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Setting</th> <th>Parity check</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Invalid</td> </tr> <tr> <td>1</td> <td>Valid</td> </tr> </tbody> </table> Note: If this parameter is set to 1 (valid), then select even or odd parity using the G57 parameter.	Setting	Parity check	0	Invalid	1	Valid				
	Setting	Parity check												
0	Invalid													
1	Valid													
–	0, 1	At I/O startup												
G59	Number of data bits in DNC		M · E	Number of data bits in DNC. (Parameter for RS-232C interface initialization) <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Setting</th> <th>No. of data bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>5</td> </tr> <tr> <td>1</td> <td>6</td> </tr> <tr> <td>2</td> <td>7</td> </tr> <tr> <td>3</td> <td>8</td> </tr> </tbody> </table>	Setting	No. of data bits	0	5	1	6	2	7	3	8
	Setting	No. of data bits												
0	5													
1	6													
2	7													
3	8													
–	0 3	At I/O startup												
G60				Invalid										
G90														
G91	Number of NC transmission retries during DNC file transfer		M · E	This parameter is used to set the number of times that the * code or TEXT is to be repeatedly transmitted to a host system in case that the @ code is not sent from the host system within the waiting time which has been set using the G99 parameter. <p style="margin-left: 20px;"> --HOST -- NC -- </p> <p style="margin-left: 20px;"> * @ TEXT @ EOT </p> <p style="margin-left: 20px;">Retransmitted if @ is not received.</p>										
	Once	0 255	At I/O startup											

MPL081

Classification	USER	Display title	USER PARAMETER NO. 2
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
G92	Number of NC reception retries during DNC file transfer		M · E	<p>This parameter is used to set the number of times that the @ code is to be repeatedly transmitted to a host system in the case that the EOT code or TEXT from the host system is not received within the waiting time which has been set using the G100 parameter.</p> <p>Initialized if EOT or TEXT is not received.</p> <p>An alarm occurs if the transmission operation is repeated up to the number of times set with this parameter. MPL082</p>
	Once	0 255	At I/O startup	
G93	Number of NC transmission/reception retries during DNC command message transfer		M · E	<p>This parameter is used to set the number of times that transmission/reception of command messages is to be repeated in the case that it is not correctly performed. This parameter has almost the same meaning as that of parameters G91 and G92, except that command messages are interchanged in the case of G93 and files are interchanged in the case of G91 and G92.</p>
	Once	0 255	At I/O startup	
G94				Invalid
G97				
G98	-		M · E	<p>7 6 5 4 3 2 1 0 (1: Valid, 0: Invalid)</p> <p>After program reception, a search is made for the work number of that program.</p> <p>Details of an alarm occurring in DNC are displayed.</p> <p>Loading of programs having the same work number as that of the registered program in NC becomes impossible.</p> <p>The function of the PROGRAM LOCK/ENABLE switch is released.</p> <p>All programs having work numbers smaller than No. 9000 are erased at the start of program reception.</p>
	Bit	Binary eight digits	At I/O startup	

Classification	USER	Display title	USER PARAMETER NO. 2
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
G99	@ waiting time during DNC transmission		M · E	<p>The NC waiting time from transmission of * or TEXT to reception of @ from the host system.</p> <pre> sequenceDiagram participant Host as --HOST-- participant Nc as --NC-- Host->>Nc: * Host->>Nc: TEXT Host->>Nc: @ Nc->>Host: @ Note over Host,Nc: G99 </pre> <p>Note: See the description of parameter G91. MPL083</p>
	0.1 sec.	0 255	At I/O startup	
G100	* TEXT waiting time during DNC transmission		M · E	<p>The NC waiting time from transmission of @ or reception of EOT to reception of * or TEXT from the host system.</p> <pre> sequenceDiagram participant Host as --HOST-- participant Nc as --NC-- Host->>Nc: @ Host->>Nc: TEXT Host->>Nc: EOT Host->>Nc: * Nc->>Host: * Nc->>Host: TEXT Note over Host,Nc: G100 </pre> <p>Note: See the description of parameter G92. MPL084</p>
	0.1 sec.	0 255	At I/O startup	
G101	EOT waiting time during DNC transmission		M · E	<p>The NC waiting time from transmission of @ to reception of EOT from the host system.</p> <pre> sequenceDiagram participant Host as --HOST-- participant Nc as --NC-- Host->>Nc: @ Host->>Nc: TEXT Host->>Nc: EOT Nc->>Host: EOT Note over Host,Nc: G101 </pre> <p>Note: See the description of parameter G92. MPL085</p>
	0.1 sec.	0 255	At I/O startup	

Classification	USER	Display title	USER PARAMETER NO. 2
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
G102	NC stop time after reception of !		M · E	<p>The NC stop time from reception of ! from the host system to transmission of *.</p> <p>MPL086</p> <p>Code * is transmitted to the host system if the time that has been set with G102 elapses following reception of !.</p>
	0.1 sec.	1 255	At I/O startup	
G103	NC reset time after digital-out		M · E	<p>The time from the moment the NC receives the digital-out command to the moment the NC internally resets this command.</p>
	0.1 sec.	0 255	At I/O startup	
G104	NC stop time from reception		M · E	<p>For NC transmission The NC stop time from reception of @ from the host system to transmission of EOT or TEXT.</p> <p>For NC reception The NC stop time from reception of * or TEXT from the host system to transmission of @.</p> <p>MPL087</p>
	0.01 sec.	0 255	At I/O startup	
G105	DNC command reply message waiting time		M · E	<p>The NC waiting time from transmission of command message EOT to reception of command reply message * from the host system.</p> <p>MPL088</p>
	0.1 sec.	1 255	At I/O startup	

Classification	USER	Display title	USER PARAMETER NO. 2
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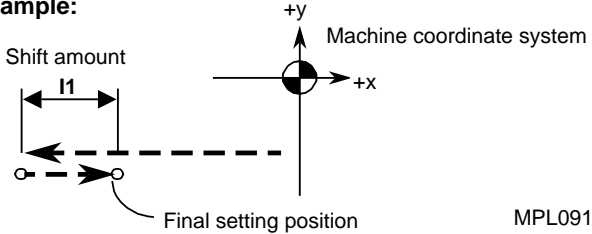
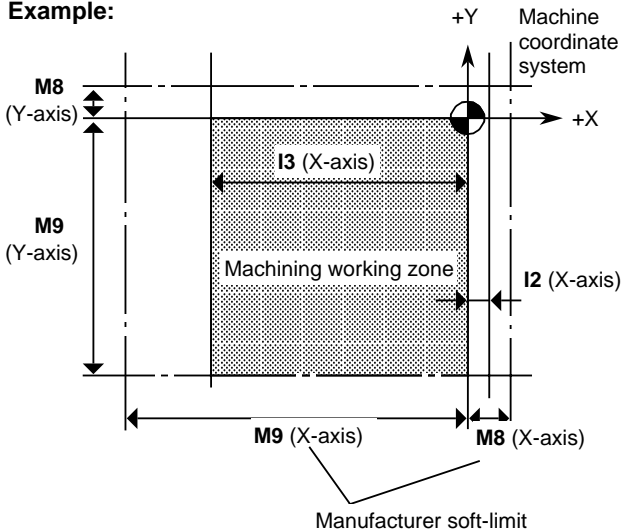
Address	Name		Program type	Description
	Unit	Setting range	Conditions	
G106	DNC machine number		M · E	The numbers to be assigned to various machines in order to manage on the host system the tool data, parameters etc. that are specific to the machines being used.
	—	0 255	At I/O startup	
G107	NC transmission stop time of DNC (From reception to transmission)		M · E	<p>The NC stop time from reception of EOT from the host system to transmission of * of the next message.</p> <p>The diagram shows two vertical dashed lines representing the start and end of the stop time. The first line is labeled 'EOT' and the second is labeled '*'. A double-headed arrow between these lines is labeled 'G107'. The sequence of events is: HOST sends *, NC receives @, NC sends TEXT, NC receives @, NC sends EOT, NC receives *, NC sends @.</p>
	0.01 sec.	0 255	At I/O startup	
G108	NC transmission stop time of DNC (From transmission to transmission)		M · E	<p>The NC stop time from transmission of EOT to the host system to transmission of * of the next message.</p> <p>The diagram shows two vertical dashed lines representing the start and end of the stop time. The first line is labeled 'EOT' and the second is labeled '*'. A double-headed arrow between these lines is labeled 'G108'. The sequence of events is: NC sends @, NC receives *, NC sends TEXT, NC receives @, NC sends EOT, NC receives *, NC sends @.</p>
	0.01 sec.	0 255	At I/O startup	

MPL089

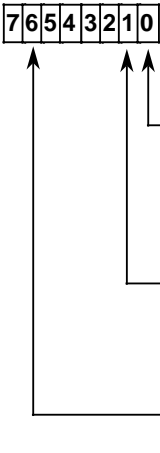
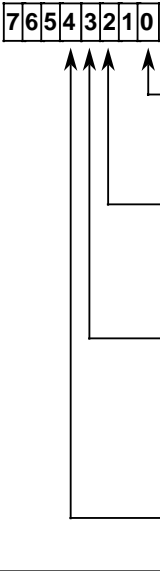
MPL090

5-6 USER PARAMETER No. 3 & 4

Classification		USER		Display title		USER PARAMETER NO. 3									
Address	Name		Program type		Description										
	Unit	Setting range	Conditions												
H1					Invalid										
H90															
H91	Program management function		M · E		<table border="1" style="display: inline-table; vertical-align: middle;"> <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> </tr> </table> Program management function Edit inhibition (9000 number mark) Display inhibition (9000 number mark) Edit inhibition (8000 number mark and 9000 number mark) Display inhibition (8000 number mark and 9000 number mark) (Program management function)			7	6	5	4	3	2	1	0
	7	6	5	4				3	2	1	0				
	Bit	Binary eight digits	At I/O startup												
H92					Invalid										
H108															

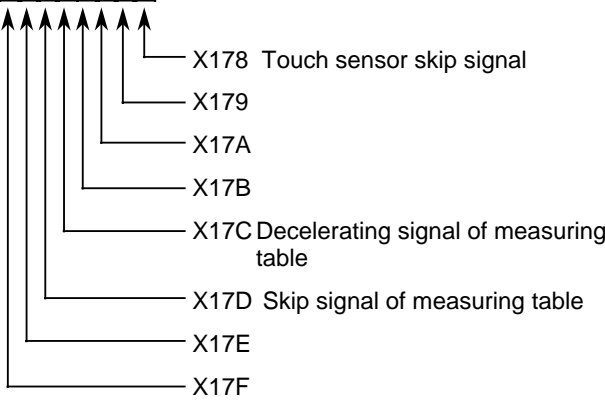
Classification		USER		Display title		USER PARAMETER NO. 4	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
I1	Shift amount of unidirectional positioning (G60)		M · E		<p>The amount and direction of shift from the final setting position during unidirectional positioning of the point-machining or during execution of G60.</p> <p>I1 < 0 : Positioning in minus direction I1 > 0 : Positioning in plus direction</p> <p>Example:</p>  <p style="text-align: right;">MPL091</p>		
	0.001 mm 0.0001 inch (0.001°)	0 ±99999999	After stop of movement				
I2	Upper (plus direction) user soft-limit		M · E		<p>The parameter used to define the machine working zone in order to prevent machine interference with the work or jigs. Set the coordinate values of the machine coordinate system.</p> <p>Example:</p>  <p style="text-align: right;">MPL092</p>		
	0.001 mm 0.0001 inch (0.001°)	0 ±99999999	After stop of movement				
I3	Lower (minus direction) user soft-limit		M · E		<p>If the machine is likely to overstep its working zone, an alarm will occur and the machine will stop.</p> <p>Notes:</p> <ol style="list-style-type: none"> These parameters are valid only when bit 2 of I14 is 0. These parameters are invalid if I2 = I3. <p style="text-align: right;">MPL092</p>		
	0.001 mm 0.0001 inch (0.001°)	0 ±99999999	After stop of movement				
I4					Invalid		
I10							

Classification	USER	Display title	USER PARAMETER NO. 4
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
I11	Rotary center of a workpiece		E	Set the rotary center of a workpiece at a table angle of 0° for each axis in the machine coordinate system. (Valid only in manual operation) (Dynamic compensation)
	0.001 mm 0.0001 inch	0 ±99999999	After stop of movement	
I12				Invalid
I13	-		M · E	 <p>[Upon execution G28 (reference-point return): 0: Memory-type zero-point return 1: Watchdog-type zero-point return</p> <p>[Upon manual zero-point return operation: 0: Memory-type zero-point return (At power-on, however, watchdog-type zero-point return) 1: Watchdog-type zero-point return</p> <p>[Removal of control axes 0: No (Not removed) 1: Yes (Removed)</p>
	Bit	Binary eight digits	After stop of movement	
I14	-		M · E	 <p>[Mirror image with respect to the machine zero-point 0: Invalid 1: Valid</p> <p>[User software limits (I2, I3) 0: Valid 1: Invalid</p> <p>[Tool-tip relief after spindle orientation during execution of G75, G76, G86 or point-machining (boring or back-boring) 0: Required 1: Not Required</p> <p>[Direction of the relief mentioned above 0: Plus 1: Minus</p>
	Bit	Binary eight digits	After stop of movement	
I15 I16				Invalid

Notes:

5-7 MACHINE CONSTANT PARAMETERS

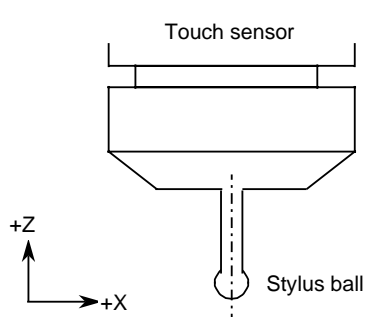
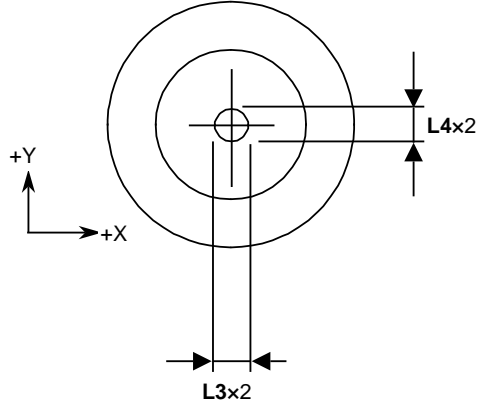
Classification		MACHINE		Display title		MACH CONSTANT PAR NO. 2	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
K72	G37 skip condition		E		<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">7</div> <div 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> <p style="margin-left: 100px;">(1: Valid 0: Invalid)</p>  <p style="margin-left: 100px;">Standard setting: Fixed value 00100000</p>		
	Bit	Binary eight digits	After stop of movement		(G37)		

Classification	MACHINE	Display title	MACH CONSTANT PAR NO. 3
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
L1	Stylus eccentricity of touch sensor (X-component)		M	<p>The eccentricity of the stylus of the touch sensor with respect to the center of the spindle.</p>
	0.0001 mm 0.00001 inch	0 ±99999999	At power-on	
L2	Stylus eccentricity of touch sensor (Y-component)		M	<p>Note: These data are automatically set when calibration measurement is performed on the MMS unit.</p>
	0.0001 mm 0.00001 inch	0 ±99999999	At power-on	

MPL093

Classification	MACHINE	Display title	MACH CONSTANT PAR NO. 3
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
L3	Radius of stylus ball of touch sensor (X-component)		M	<p>The true radius value of the stylus ball of the touch sensor.</p> 
	0.0001 mm 0.00001 inch	0 ±99999999	At power-on	
L4	Radius of stylus ball of touch sensor (Y-component)		M	 <p>Note: These data are automatically set when calibration measurement is performed on the MMS unit.</p> <p>MPL094</p>
	0.0001 mm 0.00001 inch	0 ±99999999	At power-on	

Classification	MACHINE	Display title	MACH CONSTANT PAR NO. 3
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Address	Name		Program type	Description
	Unit	Setting range	Conditions	
L5	Z-axis stroke for tip position memory (TEACH function)		M · E	<p>The distance from the spindle endface to the table surface (or the reference block on the pallet) existing when the Z-axis is in the machine zero-point position.</p> <p>The diagram illustrates two machine configurations. On the left, a V-type machine shows a spindle above a table. A vertical double-headed arrow labeled 'L5' indicates the distance from the spindle endface to the table surface. On the right, an H-type machine shows a spindle above a pallet with a reference block. A vertical double-headed arrow labeled 'L5' indicates the distance from the spindle endface to the reference block. The machine zero point is marked with a circle and a horizontal line.</p> <p style="text-align: right;">MPL095</p>
	0.0001 mm 0.00001 inch	0 ±99999999	Immediate	
L6	Tool-breakage judgment distance for TBR		M	<p>The minimum tool displacement by which the tool is judged to be a broken one as a result of execution of the tool breakage detection function.</p> <p>If (registered tool length data) – (tool length data that has been measured during the detecting operation) ≥ L6, then the tool is judged broken.</p>
	0.0001 mm 0.00001 inch	0 ±99999999	Immediate	
L7	Tool-breakage restoration mode for TBR		M	<p>The parameter for selecting the type of restoration to be performed after tool breakage has been detected as a result of execution of the tool breakage detection function.</p> <ol style="list-style-type: none"> 1: Single-block stop. 2: Machining restarts from the next process. 3: Single-block stop occurs in a state where machining can be restarted from the next process.
	–	1 3	Immediate	
L8	Skipping stroke limit for MMS		M	<p>The maximum skipping movement distance for the measurement with the MMS unit.</p> <p>An alarm message will appear if the touch sensor has not come into contact with the workpiece within this distance.</p>
	0.0001 mm 0.00001 inch	0 ±99999999	Immediate	

Classification		MACHINE		Display title		MACH CONSTANT PAR NO. 3	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
L51	Tool command system by MDI		M		Tool command system in MDI operation (Tool on the spindle and next time tool) 0: Command of pocket number 1: Command of group number (MDI tool command)		
	–	0, 1	Immediate				
L57	Rewriting of tool data during automatic operation		E		Data of tools other than a tool on the spindle shall be capable of rewriting during automatic operation with an EIA/ISO program. 0: Invalid 1: Valid (Rewriting of tool data)		
	–	0, 1	Immediate				

Classification		USER		Display title		MACH CONSTANT PAR NO. 8	
Address	Name		Program type		Description		
	Unit	Setting range	Conditions				
S5	Rotational center of the table		M · E		Set for each axis the position of the rotational center of the table in the machine coordinate system. Also, set those positions for each machine. (Dynamic compensation)		
	0.001 mm 0.0001 inch	0 ±99999999	At power on				

Notes: