GFZ-62580EN B-62580EN

GE Fanuc CNC

Series 0-MD/0-GSD
Parameter Manual

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GE Fanuc Automation

Computer Numerical Control Products

Series 0-MD / 0-GSD

Parameter Manual

PREFACE

The models covered by this manual, and their abbreviations are:

Product name	Abbreviations	
FANUC Series 0–MD	0–MD	Series 0–D
FANUC Series 0–GSD	0–GSD	

The table below lists manuals related to the FANUC Series 0–D.
In the table, this manual is marked with an asterisk (*).

Table 1 Manuals related to the FANUC Series 0–D

Manuals name	Specification number	
FANUC Series 0–TD/MD/GCD/GSD CONNECTION MANUAL (HARDWARE)	B–62543EN	
FANUC Series 0–TD/MD/GCD/GSD CONNECTION MANUAL (FUNCTION)	B–62543EN–1	
FANUC Series 0–TD/GCD OPERATOR'S MANUAL	B–62544EN	
FANUC Series 0–MD/GSD OPERATOR'S MANUAL	B–62574EN	
FANUC Series 0–TD/MD/GCD/GSD MAINTENANCE MANUAL	B–62545EN	
FANUC Series 0–TD/GCD PARAMETER MANUAL	B–62550EN	
FANUC Series 0–MD/GSD PARAMETER MANUAL	B–62580EN	*

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NOTE

1 A bit parameter has two meanings, each described on the left and right of |. The meaning on the left applies when the bit is set to 0 and the meaning on the right applies when it is set to 1.

(Example)The current value is 0/1.

2 For details, refer to "Description of Parameters".

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(1) Setting parameters (1/1)

No.	Symbol	Description
0000	REVX, Y, 4	The mirror image of each axis is disabled/enabled.
0000	TVON	When a program is registered, a TV check is not executed/is executed.
0000	ISO	The code system used to output a program is EIA/ISO.
0000	INCH	The least input increment (input unit) of a program is one millimeter/one inch.
0000	I/O	Input/output unit on the reader/punch interface
0000	ABS	In the MDI mode, commands are specified with incremental values/absolute values.
0000	SEQ	Sequence numbers are not automatically inserted/are automatically inserted.
0000	PWE	Parameters cannot be written/can be written.

(2) Parameters related to the reader/punch interface (1/1)

No.	Symbol	Description
0002#0 0012#0	STP2 STP2	(I/O=0) The stop bit is 1/2. (I/O=1)
0002#2 0012#0	ASR33 ASR33	(I/O=0) FANUC PPR etc./20–mA current interface (I/O=1)
0002#3 0012#3	RSASCI RSASCI	(I/O=0) The input/output code is ISO or EIA/ASCII. (I/O=1)
0002#7 0012#7	NFED NFED	(I/O=0) Beforehand and afterwards, a feed character is output/is not output. (I/O=1)
0015#5	PRWD	The rewind signal is not output/is output to the portable tape reader.
0018#6	TVC	In the comment section of a program, a TV check is not executed/is executed.
0038#6, #7	✳✳✳, ✳✳✳	(I/O=0, 1) Setting the input/output unit
0070#7	ICR	If data is output in ISO code, the EOB code is LF, CR, or CR/LF.
0075#7	IONUL	If a null character is detected while EIA codes are read, an alarm does not occur/occurs.
0391#6	RS23BN	On the RS–232C interface, the DC code is used/is not used.
0396#0	NCKER	The ER (RS–232C) or TR (RS–422) signal is checked/is not checked.
0399#6	FEDNUL	A feed character in a significant information section is output as a space character/null character.
0552 0553	–––––– ––––––	(I/O=0) Baud rate (I/O=1)

(3) Parameters related to controlled axes and the increment system (1/1)

No.	Symbol	Description
0001#0	SCW	The least command increment (output unit) for a linear axis is one millimeter/inch.
0003#0 to #3	ZM∗	(X to 4) The direction of a reference position return and initial direction are positive/ negative.
0008#2 to #4 0280	ADW∗ – – – – –	(4) Axis name (4)
0011#2	ADLN	(4) Rotation axis/linear axis
0024#1	LII10	The input/output unit is IS–B/IS–A.
0049#4	S3JOG	The number of axes that can be simultaneously controlled in manual operation is one/ up to three.
0057#3	MIC	If a decimal point is omitted, the least input increment is not multiplied/is multiplied by ten.
0074#0 to #3	CRF∗	If a reference position return is not made and a movement command other than G28 is specified, an alarm does not occur/occurs.
0076#1	JZRN	The function for setting the reference position without dogs is disabled/enabled.
0391#0 to #5	JZRN∗	The function for setting the reference position without dogs is enabled/disabled.
0398#1	ROAX	The roll–over function is disabled/enabled.
0398#2	RODRC	The direction of rotation specified in ABS mode is determined so that the distance of rotation is minimized/determined according to the sign of the specified value.
0398#3	ROCNT	Relative coordinates which are not multiples of the travel distance per rotation are not rounded/are rounded.
0399#7	OUTZRN	If the remaining travel distance or active miscellaneous function is found at a manual return to the reference position, an alarm occurs/does not occur.
0269 to 0272	– – – – –	Number of a servo axis
0279	– – – – –	Attribute of the fourth axis

(4) Parameters related to coordinate systems (1/1)

No.	Symbol	Description
0010#7	APRS	At a manual reference position return, automatic coordinate system setting is not executed/is executed.
0024#6	CLCL	At a manual reference position return, the local coordinate system is not canceled/is canceled.
0028#5	EX10D	When an external workpiece coordinate system shift is executed, the offset value is the input value/ten–times the input value.
0708 to 0711 0815 to 0818	– – – – – – – – – – – –	(X to 4) Coordinates of the reference position for automatic coordinate system setting (X to 4)
0735 to 0738	– – – – – –	(X to 4) Distance from the first reference position to the second reference position
0751 to 0754	– – – – – –	Offset from the external workpiece reference point on each axis
0755 to 0758	– – – – – –	Offset from the first workpiece reference point on each axis (G54)
0759 to 0762	– – – – – –	Offset from the second workpiece reference point on each axis (G55)
0763 to 0766	– – – – – –	Offset from the third workpiece reference point on each axis (G56)
0767 to 0770	– – – – – –	Offset from the fourth workpiece reference point on each axis (G57)
0771 to 0774	– – – – – –	Offset from the fifth workpiece reference point on each axis (G58)
0775 to 0778	– – – – – –	Offset from the sixth workpiece reference point on each axis (G59)
0860	– – – – – –	Travel distance per revolution about the rotation axis

(5) Parameters related to the stroke limit (1/1)

No.	Symbol	Description
0008#6	OTZN	A Z–axis stored stroke check is executed/is not executed.
0015#4	LM2	The signal for switching the second stored stroke limit is disabled/enabled.
0057#5	HOT3	The hardware OT signals ✳+LX to ✳–LZ (X020, #0 to #5) are disabled/enabled.
0065#3	PSOT	Before a reference position return is made, the stored stroke limit is checked/is not checked.
0076#7	OTRF0M	An alarm occurs after the stroke limit is exceeded/before the stroke limit is exceeded.
0700 to 0703	– – – – – –	(X to 4) First stored stroke limit in the positive direction on each axis
0704 to 0707	– – – – – –	(X to 4) First stored stroke limit in the negative direction on each axis
0743 to 0746	– – – – – –	Second stored stroke limit in the positive direction on each axis
0747 to 0750	– – – – – –	Second stored stroke limit in the negative direction on each axis

(6) Parameters related to the feedrate (1/1)

No.	Symbol	Description
0001#6	RDRN	For the rapid traverse command, a dry run is disabled/enabled.
0008#5	ROVE	The rapid traverse override signal ROV2 (G117, #7) is enabled/disabled.
0010#0	ISOT	When a reference position is not established, manual rapid traverse is disabled/enabled.
0011#3	ADNW	Feedrate specification A/B
0015#3	SKPF	With G31, a dry run, override, or automatic acceleration/deceleration is disabled/enabled.
0049#6	NPRV	When a position coder is not used, the command of feed per rotation is disabled/enabled.
0049#7	FML10	The unit of parameters in which the rapid traverse rate and cutting feedrate are specified is not multiplied/is multiplied by ten.
0393#1	COVOUT	The function for changing the speed of outer arc machining is disable/enabled.
0393#5	STOV0	If the cutting feedrate override is 0% in rapid traverse, a stop does not occur/occurs.
0397#2	OVR255	The signal of feedrate override in 1% steps is disable/enabled.
0518 to 0521	––––––	(X to 4) Rapid traverse feedrate for each axis
0527	––––––	Maximum cutting feedrate
0530	––––––	(X to 4) FL speed in exponential acceleration/deceleration of cutting feed
0533	––––––	(X to 4) F0 speed of rapid traverse override
0534	––––––	(X to 4) FL speed at a reference position return
0548	––––––	FL speed in exponential acceleration/deceleration of manual feed
0549	––––––	Cutting feedrate in the automatic mode at power–on
0559 to 0562	––––––	Jog rapid traverse rate for each axis
0565, 0566	––––––	Jog feedrate when the rotary switch is set to position 10
0567	––––––	Maximum cutting feedrate with feedrate specification B
0568	––––––	F0 speed of rapid traverse override on an additional axis with feedrate specification B
0569	––––––	FL speed at a reference position return on an additional axis with feedrate specification B
0605 to 0608	––––––	FL speed of exponential acceleration/deceleration for manual feed on each axis
0684	––––––	Feedrate with which the error detect function assumes that deceleration is completed

(7) Parameters related to acceleration/deceleration control (1/1)

No.	Symbol	Description
0020#5	NCIPS	A position check is executed/is not executed.
0045#4	CCINP	The in–position width for cutting feed is specified with the same parameters as those used for rapid traverse (No. 0500 to 0503)/with different parameters (No. 0609 to 0612).
0048#4	SMZCT	Rapid traverse block overlap is disabled/enabled.
0076#0	ERDT	The error detect function is disable/enabled.
0379	– – – – – –	Feedrate ratio at which the next block is started for block overlap
0399#2	RPDFF	Feed forward control is applied only to cutting feed/applied to both cutting feed and rapid traverse.
0399#4	CINPS	For feed–type–based in–position check (CCINP: bit 4 of parameter 0045), the in–position width for cutting feed is specified using parameters other than those for rapid traverse, only when the next block also specifies cutting feed/regardless of the type of feed specified in the next block.
0522 to 0525	– – – – – –	(X to 4) Time constant of linear acceleration/deceleration in rapid traverse on each axis
0529	– – – – – –	Time constant of exponential acceleration/deceleration in cutting feed or manual feed
0601 to 0604	– – – – – –	(X to 4) Time constant of exponential acceleration/deceleration in manual feed on each axis
0635	– – – – – –	Time constant of linear acceleration/deceleration after interpolation in cutting feed
0651 to 0654	– – – – – –	(X to 4) Time constant of exponential acceleration/deceleration in cutting feed on a PMC axis

(8) Parameters related to servo motors (1/1)

No.	Symbol	Description
0004 to 0007 0570 to 0573	GRD∗ – – – – – –	(X to 4) Capacity of the reference counter of each axis (X to 4)
0004 to 0007	DMR∗	(X to 4) Detection multiplication of each axis (DMR)
0010#2	OFFVY	If VRDY is set to 1 before PRDY is set to 1, an alarm occurs/does not occur.
0021#0 to #3	APC∗	(X to 4) For each axis, an absolute–position detector is not used/is used.
0021#6	NOFLUP	At power–on before the reference position is established by the absolute–position detector, a follow–up is executed/is not executed.
0022#0 to #3	ABS∗	(X to 4) The reference position has not yet been established/has already been established by the absolute–position detector.
0035#7	ACMR	(X to 4) An optional CMR is not used/is used.
0037#0 to #5	SPTP∗	(X to 4) As a position detector, a separate pulse coder is not used/is used.
0037#7	PLC01	(X to 8) A high–resolution pulse coder is not used/is used.
0076#4	ADBLS	Cutting feed and rapid traverse separate backlash is disabled/enabled.
0390#0 to #5	NREQ∗	If an absolute pulse coder is used for each axis and the zero point is not established before power–on, an alarm requesting a return to the reference position does not occur/occurs.
0399#5	FUNO	If a servo alarm is detected by the CNC, a follow–up is executed/is not executed.
0100 to 0103	– – – – – –	(X to 4) Command multiplication of each axis (CMR)
0265	– – – – – –	Time interval for leveling the current value display on the servo adjustment screen
0452 to 0455 0739 to 0742	– – – – – – – – – – – –	(X to 4 3RD WORD) Count at the zero point of the APC (X to 4 LOWER 2 WORD)
0500 to 0503	– – – – – –	(X to 4) Effective area on each axis
0504, 0507	– – – – – –	(X to 4) Limit on position error for each axis during traveling
0508 to 0511	– – – – – –	(X to 4) Grid shift amount for each axis
0512 to 0515	– – – – – –	(X to 4) Loop gain of position control for each axis
0517	– – – – – –	(X to 4) Loop gain of position control common to all axes
0535 to 0538	– – – – – –	(X to 4) Backlash compensation for each axis
0593 to 0596	– – – – – –	(X to 4) Limit on position error for each axis during a stop
0609 to 0612	– – – – – –	(X to 4th) In–position width for cutting feed for each axis

(9) Parameters related to DI/DO (1/1)

No.	Symbol	Description
0001#2	DCS	The START key on the MDI panel is connected through the machine/is not connected through the machine.
0001#5	DECI	(X to 4) At a reference position return, deceleration occurs when the deceleration signal is set to 0/1.
0003#4	OVRI	(X to 4) Acceleration occurs when the override signal or rapid traverse override signal is set to 0/1.
0008#7	EILK	Interlock occurs on all axes or Z–axis only/on an individual axis.
0009#0 to #3	TFIN	(X to 4) Time period in which the signal (FIN, bit 3 of G120) indicating that the miscellaneous function, spindle–speed function, or tool function has been completed is accepted
0009#4 to #7	TMF	(X to 4) Period up to the time when the signal indicating that the code of the miscellaneous function, spindle–speed function, or tool function is read is sent
0012#1	ZILK	Interlock occurs on all axes/Z–axis only.
0015#2	RIKL	The high–speed interlock signal *RILK (X008, #5) is disabled/enabled.
0019#1	C4NG	The signal to ignore the fourth axis 4NG (X004, #7) is disabled/enabled.
0020#4	BCD3	For the B code, six digits/three digits are output.
0045#2	RWDOUT	The rewind signal RWD (F164, #6) is output only when the tape reader is rewinding/is output while a program in memory is rewound.
0045#7	HSIF	For processing the M, S, T, and B codes, the standard interface is used/the high–speed interface is used.
0049#0	DILK	The signal for separate interlock in the direction of each axis is disabled/enabled.
0049#1	RDIK	The high–speed interlock signal is always enabled/is disabled when the signal for separate interlock in the direction of each axis is set to 1.
0070#4	DSTBGE	When output is started in background editing, the signal for starting manual data input DST (F150, #5) is not output/is output.
0252	– – – – – –	Extension time for the reset signal

(10) Parameters related to the CRT/MDI, display, and editing (1/2)

No.	Symbol	Description
0001#1	PROD	In the relative coordinate display, tool length compensation is included/is not included.
0001#4	IOF	An offset value is input from the MID panel in the ABS mode/INC mode.
0002#1 7002#1	PPD PPDS	Coordinate system setting does not cause relative coordinates to be pre–set/causes relative coordinates to be pre–set.
0010#1	EBCL	When a program in memory is displayed, the EOB code is displayed as ;/∗.
0011#7	MCINP	By MINP (G120, #0), a program is not registered/is registered in memory.
0015#0	CBLNK	The cursor blinks/does not blink.
0015#6	REP	If a program registered from the reader/punch interface has the same number as another program registered in memory, an alarm occurs/the program is replaced.
0018#5	PROAD	In the absolute coordinate display, tool length compensation is included/is not included.
0018#7	EDITB	With the standard keyboard, editing A is executed/editing B is executed.
0019#6	NEOP	M02, M30, or M99 terminates program registration/does not terminate program registration.
0019#7	DBCD	On the diagnostic screen, the data of a timer counter is displayed in binary/decimal.
0023#0 to #6	∗∗∗∗	Setting of the language to be used on the display
0028#0	PRCPOS	On the program check screen, relative coordinates are displayed/absolute coordinates are displayed.
0028#2	DACTF	The actual speed is not displayed/is displayed.
0035#0 to #3	NDSP∗	The current position on each axis is displayed/is not displayed.
0040#0	NAMPR	On the program directory screen, program names are not displayed/are displayed.
0040#4	SORT	On the program directory screen, programs are arranged in the order in which they are registered/in the ascending order of program numbers.
0045#0	RDL	Under I/O unit external control, reading depends on the REP bit (bit 6 of parameter 0015)/a program is registered after all programs are deleted.
0045#1	RAL	Reading on the reader/punch interface causes all programs to be registered/only the first program to be registered.
0048#7	SFFDSP	The soft–key display and control depend on the configuration of additional functions/are executed regardless of additional functions.
0050#1	NOFMK	When a sequence number is searched for, the format is checked/is not checked.
0056#0	NOCND	When the length of part program storage is 120 or 320 m, or if the background editing function is provided, memory is automatically compressed/is not automatically compressed.
0060#0	DADRDP	On the diagnostic screen, addresses are not displayed/are displayed.
0060#2	LDDSPG	Dynamic ladder display is not executed/is executed.

(10) Parameters related to the CRT/MDI, display, and editing (2/2)

No.	Symbol	Description
0060#5	OPMNDP	Operating monitor display is invalid/valid.
0060#6	EXTSP	The function to search for or display a protected program is disabled/enabled.
0063#0	MTDSPI	Machine coordinates are not displayed according to the input system/are displayed according to the input system.
0063#1	PRSTIN	Automatic coordinate system setting in the inch input mode is specified in parameter 0708 and subsequent parameters/in parameter 0815 and subsequent parameters.
0064#0	SETREL	Pre–setting relative coordinates causes clearing to zero/optional values to be used.
0064#1	ALLPRE	For pre–setting relative coordinates, the standard specification is selected/axes are selected by numeric keys.
0064#5	NPA	If an alarm occurs or an operator message is input, the alarm or message screen is displayed instead/is not displayed.
0076#2	IOP	Input or output of an NC program can be stopped by an NC reset/only by pressing the [STOP] soft key.
0077#6	HLKEY	The MDI keys are not processed in the high–speed mode/are processed in the high–speed mode.
0078#0	NOINOW	The amount of tool compensation can be input with the MDI keys/cannot be input with the MDI keys.
0078#2	NOINMV	A macro variable can be input with the MDI keys/cannot be input with the MDI keys.
0078#3	NOINWZ	An offset from the workpiece reference point can be input with the MDI keys/cannot be input with the MDI keys.
0389#0	SRVSET	The servo setting screen is displayed/is not displayed.
0393#2	WKNMDI	If the automatic operation is started or halted, an offset from the workpiece reference point can be input with the MDI keys/cannot be input with the MDI keys.
0393#7	DGNWEB	If PWE is set to 0, a PMC parameter cannot be input/can be input.
0395#1	TLSCUR	On the offset screen, the cursor position is not retained/is retained.
0397#7	SERNAI	The contents of alarm 409 are not displayed/are displayed.
0398#0	WKINC	With the MDI keys, an offset from the workpiece reference point is input in the ABS mode/INC mode.
0337 to 0346	– – – – – –	Character codes of the title
0351 to 0355	– – – – – –	Character codes of the NC name
0550	– – – – – –	Increment used when the sequence number is automatically inserted
0797	– – – – – –	Encryption
0798	– – – – – –	Key

(11) Parameters related to programming (1/1)

No.	Symbol	Description
0010#4	PRG9	Editing of subprograms from O9000 to O9999 is not inhibited/is inhibited.
0011#6	G01	The mode selected at power–on is G00/G01.
0015#7	CPRD	If a decimal point is omitted, the selected unit is the least input increment/mm, inch, deg, and sec.
0016#3	NPRD	Decimal point input or display is used/is not used.
0019#5	M02NR	After M02 is executed, a return to the beginning of the program is made/is not made.
0028#4	EXTS	External program number search is invalid/valid.
0030#7	G91	The mode selected at power–on is G90/G91.
0045#6	CLER	Pressing the RESET key, setting the external reset signal or an emergency stop sets the system in the reset state/clear state.
0065#7	M3B	A single block can contain only one M code/up to three M codes.
0389#2	PRG8	Editing of programs from O8000 to 8999 is not inhibited/is inhibited.
0391#7	NOCLR	In the clear state, a specific G code is cleared/is not cleared.
0393#3	M3PQNG	An M code specified with three digits is valid/invalid.
0393#6	RADCHK	When circular interpolation is specified, the difference between the radius values at the start point and end point is not checked/is checked.
0394#6	WKZRST	In workpiece coordinate system setting, an NC reset does not cause a return to G54/causes a return to G54.
0394#7	CAKEY	On the parameter, diagnostic, or offset screen, pressing the CAN key does not erase a single character/erases a single character.
0396#7	EORRE	If EOR is read without the program end command, an alarm occurs/a reset occurs.
0111, 0112	– – – – – –	M code which is not buffered
0212	– – – – – –	Plane selected at power–on
0876	– – – – – –	Limit of arc radius error

(12) Parameters related to pitch error compensation (1/1)

No.	Symbol	Description
0011#0, #1	PML∗	(X to 4) Magnification of pitch error compensation
0712 to 0715	– – – – – –	(X to 4) Interval of pitch error compensation for each axis
1000 to 6000	– – – – – –	Reference position of pitch error compensation for each axis
1001 to 6128	– – – – – –	Pitch error compensation for each axis

(13) Parameters related to spindle control (1/2)

No.	Symbol	Description
0003#5	GST	By SOR (G120, #5), spindle orientation is executed/a gear–change is executed.
0012#6	G84S	If the G74 or G84 cycle is specified, the gear is changed at a point specified through S analog output gear–change method A or B/at a point specified in parameters 0540 and 0556.
0013#5	ORCW	In spindle orientation, S analog output is positive/negative.
0013#6, #7	TCW, CWM	Sign output in S analog output
0014#0	SCTA	The spindle speed arrival signal is checked conditionally/always.
0020#7	SFOUT	SF (F150, #2) is output when a gear–change is made/even if a gear–change is not made.
0024#2	SCTO	The spindle speed arrival signal SAR (G120, #4) is not checked/is checked.
0028#6, #7	PSG✳	Gear ratio between the spindle and position coder
0035#6	LGCM	The gear–change speed is the maximum speed of each gear (method A)/is determined by parameters 0585 and 0586 (method B).
0062#3	SPMRPM	Parameters of spindle speed control are specified in units of 1 RPM/10 RPM.
0071#0	ISRLPC	When the serial interface spindle is used, the position coder signal is fetched from the optical fiber cable/connector M27.
0071#4	SRL2SP	The number of serial interface spindles connected is one/two.
0071#7	FSRSP	The serial interface spindle is not used/is used.
0080#2	MORCM✳	For the first spindle motor, the spindle orientation function with the stop position set externally is not used/is used.
0108	– – – – – –	Spindle speed in stable spindle rotation
0108	– – – – – –	Spindle motor speed at a gear–change
0110	– – – – – –	Delay timer if the spindle speed arrival signal SAR (G120, #4) is checked
0539 0541 0555	– – – – – – – – – – – – – – – – – –	[Neutral gear] Maximum spindle speed [Low gear] [High gear]
0540 to 0543	– – – – – –	Spindle speed when the voltage for specifying the spindle speed of each gear is 10 V
0540 0556	– – – – – – – – – – – –	[Neutral gear] Minimum spindle speed in a tapping cycle [High gear]
0542	– – – – – –	Upper limit of the value output to the spindle motor
0543	– – – – – –	Lower limit of the value output to the spindle motor
0577	– – – – – –	Spindle speed offset compensation
0585, 0586	– – – – – –	Gear–change point in S analog switching method B
0957 to 0959	– – – – – –	Limit of position error during spindle rotation at the maximum spindle speed

(13) Parameters related to spindle control (2/2)

No.	Symbol	Description
7516	–––––	Data for adjusting the gain under sub–spindle control by the S command specified with four or five digits
7539	–––––	Sub–spindle speed offset compensation

(14) Parameters related to tool compensation (1/1)

No.	Symbol	Description
0001#3	RS43	When a reset occurs, the vector of tool length compensation is cleared/is not cleared.
0003#6	TSLT	Tool length compensation is executed on the Z–axis (type A)/an axis vertical to the specified plane (type B).
0016#2	SUPM	In cutter compensation C, start–up and cancellation are executed through the method of type A/B.
0019#3	TLCD	Tool length compensation A or B/C
0030#2	OFCDH	Tool compensation memory C is disable/enabled.
0036#5	TLCDOK	In tool length compensation of type C, offset of two or more axes is disabled/enabled.
0036#6	OFRD	Tool length compensation and cutter compensation are specified with the H code./Tool length compensation and cutter compensation C are specified with the H code and D code, respectively.
0062#2	G40V	Operation by a single command (G40, G41, or G42)
0557	–––––	Maximum travel distance that can be ignored on the outside of a corner in cutter compensation C

(15) Parameters related to canned cycles (1/1)

No.	Symbol	Description
0002#4, #5	PMXY1, 2	Axis and direction on and in which the tool is retracted in canned cycle G76 or G87
0011#4	MCF	When positioning of G81 terminates, the signal to specify an external operation function is not output/is output.
0012#4	FXCS	In canned cycle G74 or G84, reverse and forward spindle rotations are executed after M05 is output/even if M05 is not output.
0012#5	FXCO	In canned cycle G76 or G87, an oriented spindle stop is executed after M05 is output/even if M05 is not output.
0057#6	FXY	The drilling axis in a canned cycle is always the Z–axis/is a programmed axis.
0403	–––––	Clearance/cutting start point in a peck tapping cycle
0531	–––––	Clearance in canned cycle G73 (high–speed peck drilling cycle)
0532	–––––	Cutting start point in canned cycle G83 (peck drilling cycle)

(16) Parameters related to rigid tapping (1/2)

No.	Symbol	Description
0019#4	SRGTP	The rigid tapping selection signal (RGTAP) is G123, #1/G135, #0.
0035#5	RGCTO	When the tool is retracted in rigid tapping, the time constant of acceleration/deceleration on the spindle and tapping axis is the same parameter as that for starting cutting/is a different parameter from that for starting cutting.
0037#6	VALT	In rigid tapping, the variable time constant switching function is not used/is used.
0040#2	RGTPE	In rigid tapping, the rigid mode is canceled after the rigid DI signal is turned off/even before the rigid DI signal is turned off.
0063#3	VSLPC	An optional gear ratio between the spindle and position coder is not used/is used.
0063#4	RGDOV	When the tool is retracted, an override is disabled/enabled.
0065#5	TAPDRN	During tapping, a dry run is enabled/disabled.
0076#3	G84RGD	G84 and G74 are not handled as G codes for rigid tapping/are handled as G codes for rigid tapping.
0077#1	CT3G	Three–stage time constant switching is disabled/enabled.
0388#0	PCTPH	A peck tapping cycle is handled as a high–speed peck tapping cycle.
0388#2	RGMFH	A feed hold and single–block operation are enabled/disabled.
0388#3	RGORT	When rigid tapping is started, a spindle reference position return is not made/is made.
0388#5	SIG	At a gear–change, the SIND signal is disabled/enabled.
0388#6	CHKERC	During spindle rotation, the position error is checked according to the maximum spindle speed/specified spindle speed.
0254	––––––	Type of acceleration/deceleration for the spindle and tapping axis
0255	––––––	Spindle backlash amount in rigid tapping
0256	––––––	M code for specifying the rigid tapping mode
0258	––––––	Override value when the tool is retracted in rigid tapping
0378	––––––	Override for rigid tapping return
0400 to 0402	––––––	Time constant of acceleration/deceleration on the spindle and tapping axis when the tool is retracted
0613	––––––	Time constant of acceleration/deceleration on the spindle and tapping axis
0614	––––––	FL speed of exponential acceleration/deceleration on the spindle and tapping axis
0615	––––––	Loop gain of position control on the spindle and tapping axis
0616	––––––	(Low gear) Multiplier of loop gain on the spindle
0624	––––––	(Neutral gear)
0625	––––––	(High gear)
0617	––––––	Allowable maximum spindle speed in rigid tapping
0618	––––––	Effective area on the tapping axis in rigid tapping

(16) Parameters related to rigid tapping (2/2)

No.	Symbol	Description
0619	– – – – – –	Effective area on the spindle in rigid tapping
0620	– – – – – –	Limit of position error on the tapping axis during traveling
0621	– – – – – –	Limit of position error on the spindle during traveling
0622	– – – – – –	Limit of position error on the tapping axis under a stop
0623	– – – – – –	Limit of position error on the spindle under a stop
0626	– – – – – –	Feedrate for defining the reference lead in rigid tapping
0627	– – – – – –	Position error on the spindle in rigid tapping
0628	– – – – – –	Spindle pulse distribution in rigid tapping
0663 to 0665	– – – – – –	Number of teeth on the spindle when an optional gear ratio is selected
0666 to 0668	– – – – – –	Number of teeth on the position coder when an optional gear ratio is selected
0669 to 0671	– – – – – –	Loop gain of position control
0692 0693	– – – – – – – – – – – –	(Low gear) Time constant of acceleration/deceleration on the spindle and tapping axis (Neutral gear)
0694 0695	– – – – – – – – – – – –	(Low gear) Maximum spindle speed in rigid tapping (Neutral gear)
0696	– – – – – –	Instantaneous difference between errors on the spindle and tapping axis
0697	– – – – – –	Maximum difference between errors on the spindle and tapping axis
0799	– – – – – –	Integrated spindle pulse distribution in rigid tapping
0960	– – – – – –	Amount of return α for rigid tapping return

(17) Parameters related to unidirectional positioning (1/1)

No.	Symbol	Description
0029#0 to #3	G60✶	In unidirectional positioning (G60) for each axis, the direction of approach is positive/negative.
0204 to 0207	– – – – – –	Distance of approach in unidirectional positioning for each axis

(18) Parameters related to control in the normal direction (1/1)

No.	Symbol	Description
0683	– – – – – –	Rotation speed around a controlled axis in the normal direction
0832	– – – – – –	Limit up to which an inserted rotation around a controlled axis in the normal direction can be ignored
0833	– – – – – –	Limit on travel distance that can be executed with the angle in the normal direction of the previous block

(19) Parameters related to custom macro (1/1)

No.	Symbol	Description
0011#5	SBKM	By a macro statement, a single–block stop is not made/is made.
0040#1	DPOSUP	If data is output by the DPRINT command, leading zeros are output as space characters/as they are.
0040#5	TMCR	A T code is processed as the code of the tool function/code for calling O9000.
0040#6	COMC	When a reset occurs, common variables (#100 to #149) are made null/are not made null.
0040#7	LOCC	When a reset occurs, local variables (#01 to #33) are made null/are not made null.
0042	ASTCD	Hole pattern of the EIA code of an asterisk (*)
0043	EQCD	Hole pattern of the EIA code of an equal sign (=)
0044	SHPCD	Hole pattern of the EIA code of a sharp (#)
0053	LBLCD	Hole pattern of the EIA code of a square bracket ([)
0054	RBLCD	Hole pattern of the EIA code of a square bracket (])
0056#1	MSKT	At an interrupt, absolute coordinates are not set as skip coordinates/are set as skip coordinates.
0056#2	MBLK	Custom macro interrupt of type I/type II
0056#3	MSTE	The interrupt signal uses the edge trigger method/status trigger method.
0056#4	MPRM	The M codes for enabling and disabling an interrupt are M96 and M97 respectively/are specified in parameters.
0056#5	MSUB	When an interrupt occurs, local variables are of the macro type/subprogram type.
0056#6	MCYL	During a cycle operation, a custom macro interrupt is disabled/enabled.
0056#7	MUSR	The custom macro interrupt function is disabled/enabled.
0057#4	CROUT	After data output in ISO code is completed with B/D PRINT, LF is output/CR/LF is output.
0220 to 0229	– – – – – –	G code for calling custom macro from O9010 to O9019
0230 to 0239	– – – – – –	M code for calling a custom macro from O9020 to O9029
0240 to 0242	– – – – – –	M code for calling a subprogram from O9001 to O9003
0246	– – – – – –	M code for enabling a custom macro interrupt
0247	– – – – – –	M code for disabling a custom macro interrupt
0248	– – – – – –	M code for calling a program registered in a file

(20) Parameters related to the display of operation time and number of parts (1/1)

No.	Symbol	Description
0040#3	RWCNT	With M02 or M30, the total number of parts to be machined and the number of parts machined are counted/are not counted.
0219	− − − − −	M code for counting the total number of parts to be machined and the number of parts machined
0600	− − − − −	Number of parts required
0779	− − − − −	Total number of parts to be machined

(21) Parameters related to manual handle feed (1/1)

No.	Symbol	Description
0002#6	TJHD	During teaching in jog mode, the manual pulse generator is disabled/enabled.
0013#0	JHD	In the jog mode, the manual pulse generator is disable/enabled.
0018#0 to #3	N✻MP2	For each axis, the magnification of handle feed (x 100) is enabled/disabled.
0060#4	HDLPM	If the handle of the manual pulse generator is rotated quickly, the reading and travel distance may not agree/the travel distance depends on the reading.
0386#4 to #7	HDPIG✻	For each axis, the magnification of manual handle feed (x 1000) is enabled/disabled.
0121	− − − − −	Magnification of manual handle feed (M)
0699	− − − − −	Magnification of manual handle feed (N)

(22) Parameters related to the software operator's panel (1/1)

No.	Symbol	Description
0017#0	OPG1	On the software operator's panel, the mode is not selected/is selected.
0017#1	OPG2	On the software operator's panel, the selection of a jog feed axis or rapid traverse is not executed/is executed.
0017#2	OPG3	On the software operator's panel, the selection of the manual pulse generator axis switch or magnification switch is not executed/is executed.
0017#3	OPG4	On the software operator's panel, jog feedrate override switch is not executed/is executed.
0017#4	OPG5	On the software operator's panel, BDT, SBK, MLK, or DRN switch is not executed/is executed.
0017#5	OPG6	On the software operator's panel, protect switch is not executed/is executed.
0017#6	OPG7	On the software operator's panel, feed hold switch is not executed/is executed.
0130 to 0137	− − − − −	Axis and direction of jog feed corresponding to keys on the software operator's panel
0140 to 0203	− − − − −	Character code of general–purpose switches on the software operator's panel

(23) Parameters related to PMC axis control (1/1)

No.	Symbol	Description
0030#0, #1	EAC✻	Axis setting for executing PMC axis control (specification A)
0032#4	PNGMLK	On a PMC axis, a machine lock is enabled/disabled.
0032#6	EACSB	PMC axis control of specification A/specification B
0049#5	EFML10	Under PMC axis control, the specified feedrate (cutting feed) is multiplied by one/ten.
0052#0 to #7	NODIC✻	Under PMC axis control, the current position display depends on the position of the decimal point with increment system 1 or 10/depends on the standard specifications.
0061#0 to #5	EBC✻	Under PMC axis control (specification B), DI and DO used for each axis are of group A/B.
0062#6	AXPCF	To the actual speed display, traveling along a PMC controlled axis is added/is not added.
0063#5	EAXOV	On a PMC axis, a dry run and override are disabled/enabled.
0066#3	EPMSKP	The skip signal used under PMC axis control is the same as the corresponding signal of the CNC/is a unique signal.
0078#4	OVRIE	Under PMC axis control, the speed increases when the override signal is set to 0/1.
0078#6	RDRNE	Under PMC axis control, a dry run for the rapid traverse command is disable/enabled.
0078#7	EAXOVE	The dry run signal and override signal used under PMC axis control are the same as the corresponding signals of the CNC/are unique signals.
0387#7	EFERPD	Under PMC axis control, the parameter of the rapid traverse rate is the same as that of the CNC/the rapid traverse rate is determined by the feedrate data specified with the axis control command.
0350	−−−−−−	Axis for which the velocity command is executed under PMC axis control
0462	−−−−−−	Time constant of linear acceleration/deceleration for the velocity specified with the velocity command
0657 to 0662	−−−−−−	(X to 4) FL speed of exponential acceleration/deceleration on a PMC axis during cutting feed
0672	−−−−−−	FL speed on a PMC controlled axis during reference position return
0685	−−−−−−	F0 speed of independent rapid traverse override on a PMC controlled axis

(24) Parameters related to the surface grinding machine (1/1)

No.	Symbol	Description
0838	−−−−−−	Minimum diameter of the grinding wheel when the diameter is checked

(25) Parameters related to the PMC (1/1)

No.	Symbol	Description
0024#0	IGNPMC	PMC control is enabled/disabled.
0028#1	PRCMSG	On the program check screen, the remaining travel distance is displayed/a message from the PMC is displayed.
0060#1	PCLDB	The baud rate during ladder loading is 4800 bps/9600 bps.
0356 to 0359	– – – – – –	Number of characters that can be displayed in the remaining travel distance field on the program check screen
0476 to 0479	– – – – – –	First PMC address at which the characters in the remaining travel distance field are set

2 PARAMETER DESCRIPTION

[01. Setting method]

1) Preparation

    (A) Select the MDI mode.

    (B) Press the function button [DGNOS/PARAM] to display the parameter setting screen.

    (C) Key in address "No." and value "0" in the stated order, then press the [INPUT] button; the setting parameter screen will appear. Set PWE = 1.

    (D) Executing the above steps enables parameter input.

2) Setting

    (A) On the parameter setting screen, key in address "No." and the desired parameter number in the stated order, then press the [INPUT] button. The desired number will be searched for. Using the cursor/page key can also switch the screen sequentially.

    (B–1) Bit–type parameter

        Specify 0 or 1 in the 8 bits of the parameter. One parameter consists of 8 bits. Bit 7 is the highest bit, and bit 0 is the lowest. It is impossible to set or reset an individual bit separately from another bit. All bits must be manipulated simultaneously.

        Example)

        If you want to change "00001000" to "10001000", key in "10001000" [INPUT].

        The highest bit must be entered first, then the next highest, and so on. The lowest bit must be entered last. If only less than 8 bits are entered, any bit left unspecified is regarded as 0.

        "1001[INPUT]" is equivalent to "0001001[INPUT]".

    (B–2) Nonbit–type parameter

        Key in a value within the valid data range, and press the [INPUT] button.

3) Resume the setting that was changed in item 1).

> **NOTE**
> Set all parameters that were not explained to 0.

[02. Terminology]

Least input increment (input unit):

The unit of measure used in programming. The least input increment varies with the increment system used (1/10 or 10 times). For the linear axis, it also varies depending on whether a metric or inch input is selected.

Least command increment (output unit):

The unit of measure used by the NC when it gives instructions to the machine. The least command increment varies depending on whether the machine is a metric or inch type.

Detection increment:
The unit of measure used in detecting the machine position.

IS–A: The input/output unit is 0.01 [mm]/0.001 [inch].

IS–B: The input/output unit is 0.001 [mm]/0.0001 [inch].

IS–C: The input/output unit is 0.0001 [mm]/0.00001 [inch].

No. 0380#6 FODIC	No. 0024#1 LII10	Input increment
0	0	IS–B
0	1	IS–A
1	0	IS–C
1	1	IS–B

[03. Cautions]

1) If a parameter with "POWER OFF" is rewritten, the P/S 000 alarm (turn off the power) occurs. In this case, it is necessary to turn off the power. This also applies when the programmable parameter input (G10) function is used to rewrite the parameter.

2) Always set undefined parameter numbers/bits to 0.

3 SETTING PARAMETER

[SETTING 1]

(1) REVX:

REVY: Specify whether to enable a mirror image for the X/Y–axis.

1: Enable

0: Disable

> **NOTE**
> If a mirror image is enabled for an axis, the movement of the axis is reversed during automatic operation except for a movement from the middle point to the reference position for an automatic reference position return. The mirror image function is ineffective during manual operation.

(2) TVON: Specifies whether to make a TV check when a program is registered in memory.

1 : Makes a TV check.

0 : Does not make a TV check.

> **NOTE**
> 1 The TV check (tape vertical parity check) function makes a parity check for each block. This function issues an alarm (P/S 002) if one block (from one EOB to the next EOB) contains an odd number of characters.
> 2 Parameter No. 0018#6 (TVC) determines whether to make a TV check on comments in a program.

(3) ISO: Specifies which code system is to be used in outputting a program from memory.

1: ISO code

0: EIA code

> **NOTE**
> 1 This parameter is valid under the following condition.
> No. 0002#3 (I/O = 0), No. 0012#3 (I/O = 1), RSASCI = 0
> 2 An automatic decision is made on the code to be used in registering programs in memory according to the first EOB code.
> LF: ISO code is assumed.
> CR: EIA code is assumed.

(4) INCH: Specifies the type of least input increment (input unit) for programs.

　　1: Inch input

　　0: Metric input

> **NOTE**
>
> The least command increment (output unit) is specified by No. 0001#0 (SCW).

(5) I/O: Specifies an input/output unit to be used on the reader/punch interface.

　　0: Selects a unit on channel 1.
　　　(Miscellaneous setting = No. 0002, I/O unit setting = No. 0038#6/7, baud rate = No. 0552)

　　1: Selects a unit on channel 1.
　　　(Miscellaneous setting = No. 0012, I/O unit setting = No. 0038#6/7, baud rate = No. 0553)

(6) ABS: Specifies whether commands issued during the MDI mode are absolute or incremental.

　　1: Absolute command

　　0: Incremental command

> **NOTE**
>
> This parameter does not depend on G90/G91. (See descriptions of No. 0029#5, or MABS.)

(7) SEQ: Specifies whether to insert sequence numbers automatically.

　　1: Automatic insertion

　　0: No automatic insertion

> **NOTE**
>
> No. 0550 specifies what increment is to be used in automatic insertion.

[SETTING 2]   (8) PWE: Specifies whether to enable parameter writing.

　　1: Enables.

　　0: Disables.

(9) REV4:   Specifies whether to enable a mirror image for the fourth axis.

　　1: Enable

　　0: Disable

4 DESCRIPTION OF PARAMETERS

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0001		RDRN	DECI	IOF	RS43	DCS	PROD	SCW

SCW 1 : Least command increment is input in inch system.
(Machine tool: inch system)

0 : Least command increment is input in metric system.
(Machine tool:metric system)
If you want to change this parameter, turn off power.

PROD 1 : In the display of relative coordinate value, the programmed position is displayed.

0 : In the display of relative coordinate value, the actual position considering the offset is displayed

DCS 1 : Pushing the START button on the MDI panel directly actuate the CNC start without going through the machine side (MDI mode only)

0 : Pushing the START button on the MDI panel issues the signal to the machine side. The CNC start is actuated when the CNC receives the start signal from machine side.

RS43 1 : Offset vector in G43, G44 remains in reset state.

0 : Offset vector in G43, G44 is cleared in reset state.

IOF 1 : Offset value is input in absolute value.

0 : Offset value is input in incremental value.

DECI 1 : Decelaration signal "1" in refernce point return indicates deceleration.

0 : Decelaration signal "0" in refernce point return indicates deceleration.

RDRN 1 : Dry run is effective for rapid traverse.

0 : Dry run is not effective for rapid traverse.

	#7	#6	#5	#4	#3	#2	#1	#0
0002	NFED	TJHD	PMXY2	PMXY1	RSASCI	ASR33	PPD	STP2

STP2 1 : In the reader/puncher interface, the stop bit is set by 2 bits.

0 : In the reader/puncher interface, the stop bit is set by 1 bit.
(Effective when the setting paramerter I/O is 0.)

> **NOTE**
> The band rate is set by parameter No.0552.

PPD 1 : The relative coordinate value is preset when the coordinate system is set.

0 : The relative coordinate value is not preset when the coordinate system is set.

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ARS33 1 : The 20mA current interface is used as the reader/puncher interface.

0 : FANUC PPR, FANUC cassette, or portable tape reader are used as the reader/punch interface. (Effective when the setting parameter I/O is 0.)

RSASCI 1 : ASCII code is used for reader/puncher interface.

0 : ISO/ EIA code is used for reader/puncher interface.

> **NOTE**
> This parameter is valid only when I/O on (SETTING 1) is set to "0".

PMXY2, 1 Set the tool escape direction in the fixed cycle G76 or G87.

The setting is as shown below according to the plane selection.

PMXY2	PMXY1	G17	G18	G19
0	0	+X	+Z	+Y
0	1	–X	–Z	–Y
1	0	+Y	+X	+Z
1	1	–X	–X	–Z

TJHD 1 : Handle feed in the TEACH IN JOG mode by manual pulse generator is possible.

0 : Handle feed in the TEACH IN JOG mode by manual pulse generator is not possible.

NFED 1 : Feed is not output before and after progtam is output by using the reader/puncher interface. (Set "1" for FANUC casette.)

0 : Feed is output before and after program is output by using the reader/ puncher interface. (Effective when the seting parameter I/O is 0.)

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0003		TLCP	GST	OVRI	ZM4	ZMZ	ZMY	ZMX

ZMX, ZMY, ZMZ, ZM4

The reference point return direction and the backlash initial direction at power on for X, Y, Z and 4th axes in order.

1 : Minus

0 : Plus

> **NOTE**
> The backlash compensation is initially performed when the axis moves in the opposite direction against the direction which is set by this parameter after the power is turned on.

OVRI 1 : When the polarity of override signal (*OV1 to +OV8, ROV1, ROV2) is set to 1, the speed increases.

0 : When it is set to 0, the speed increases.

GST   1 : Gear shift is performed by SOR signal when S analog is outputted. (Spindle speed is constant)

0 : Spindle orientation is performed by SOR signal when S analog is outputted.

TLCP   1 : The tool length offset is performed in the axis direction being normal to the plane specified by plane selection (G17, G18, G19) (Tool length offset B).

0 : The tool length offset is performed in the Z axis irrespective of plane selection. (Tool length offset A).

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0004			DMRX			GRDX		

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0005			DMRY			GRDY		

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0006			DMRZ			GRDZ		

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0007			DMR4			GRD4		

GRDX to GRD4 Capacity of reference counter

Setting code				Capacity of reference counter	
3	2	1	0	Except for 0.1μ detector for digital servo	0.1μ detector for digital servo
0	0	0	0	1000	10000
0	0	0	1	2000	20000
0	0	1	0	3000	30000
0	0	1	1	4000	40000
0	1	0	0	5000	50000
0	1	0	1	6000	60000
0	1	1	0	7000	70000
0	1	1	1	8000	80000
1	0	0	0	9000	90000
1	0	0	1	10000	100000
1	0	1	0	11000	110000
1	0	1	1	12000	120000
1	1	0	0	13000	130000
1	1	0	1	14000	140000
1	1	1	0	15000	150000
1	1	1	1	16000	160000

DMRX to DMR4 Setting of detective multiplier

Setting code			Detective multiplier
#6	#5	#4	Digital servo
0	0	0	1 / 2
0	0	1	1
0	1	0	3 / 2
0	1	1	2
1	0	0	5 / 2
1	0	1	3
1	1	0	7 / 2
1	1	1	4

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0008	EILK	OTZN	ROVE	ADW2	ADW1	ADW0		

ADW2, ADW1, ADW0

Name of the 4th axis

ADW2	ADW1	ADW0	Name
0	0	0	A
0	0	1	B
0	1	0	C
0	1	1	U
1	0	0	V
1	0	1	W
1	1	0	A
1	1	1	A

ROVE 1 : Rapid traverse override signal ROV2 is not effective. (100%, Fo)

0 : Rapid traverse override signal ROV2 is effective.
(100%, 50%, 25%, Fo)

OTZN 1 : Z axis stored strok check is not done.

0 : Z axis stored strok check is done.

EILK 1 : Interlock is performed for each axis.
(FANUC PMC–MODEL L is necessary.)

0 : Interlock is performed for all axes or for Z axis only
(it needs that No. 012 ZILK=1).

	#7	#6	#5	#4	#3	#2	#1	#0
0009			TMF				TFIN	

TFIN Time of reception width of FIN.
Setting range : 16 to 256 msec. (16 msec increment).

TMF Time from M, S, T code issue to MF, SF, TF issue.
Setting range : 16 to 256 msec. (16 msec increment).

TMF	TFIN	Parameter setting			
16msec	More then 16 msec	0	0	0	0
32msec	More then 32 msec	0	0	0	1
48msec	More then 48 msec	0	0	1	0
64msec	More then 64 msec	0	0	1	1
80msec	More then 80 msec	0	1	0	0
96msec	More then 96 msec	0	1	0	1
112msec	More then 112 msec	0	1	1	0
128msec	More then 128 msec	0	1	1	1
144msec	More then 144 msec	1	0	0	0
160msec	More then 160 msec	1	0	0	1
176msec	More then 176 msec	1	0	1	0
192msec	More then 192 msec	1	0	1	1
208msec	More then 208 msec	1	1	0	0
224msec	More then 224 msec	1	1	0	1
240msec	More then 240 msec	1	1	1	0
256msec	More then 256 msec	1	1	1	1

	#7	#6	#5	#4	#3	#2	#1	#0
0010	APRS			PRG9		OFFVY	EBCL	ISOT

ISOT 1 : Rapid traverse is effective even when reference point return is not conducted after turning the power on.

0 : Rapid traverse is invalid unless refernce point return is conducted after turning the power on.

EBCL 1 : In the display of the program stored in the memory, the EOB code is indicated by *(asterrisk).

0 : In the desplay of the program stored in the memory, the EOB code is indicated by; (semicolon).

OFFVY 1 : Servo alarm is not actuated when VRDY is on before PRDY is output.

0 : Servo alarm is acturated when VRDY is on before PRDY is output.

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PRG9 1 : The subprograms with program number 9000 to 9999 are protected. The following edit function are disabled.

(1) Deletion of program

When the deletion of all program is specified, the programs with programs number 9000 to 9999 are not deleted.

(2) Punch of program

These subprograms are not punched out when the punch of all programs is specified.

(3) Program number search.

(4) Edit of program after registration

(5) Registration of program

Registration by MDI key and through paper tape.

(6) Collation of program

(7) Display of program

0 : The subprograms with program number 9000 to 9999 can also be edited.

APRS 1 : Automatic coordinate system setting is conducted when manual reference point return is perfomed.

0 : Automatic coordinate system setting is not conducted.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0011	MCINP	G01	SBKM	MCF	ADNW	ADLN	PML2	PML1

PML2, 1 Pitch error compensation magnification. The value, with this magnification multiplied to the set compensation value, is output

PML2	PML1	Magnification
0	0	×1
0	1	×2
1	0	×4
1	1	×8

(Common to all axes)

ADLN 1 : 4th axis is used as a linear axis.

0 : 4th axis is used as a rotary axis.

When 4th axis used as linear axis, there are following restrictions.

1) Circular interpolation including the 4th axis cannot be performed.

2) Cutter compensation B/C in the 4th axis cannot be applied.

3) Tool length compensation in the 4th axis cannot be applied.

ADNW 1 : Select B type for feed rate.

0 : Select A type for feed rate.

(A type)

(1) JOG feed rate

JOG feed rate of additional (rotary) axis is the same as that of basic axes (X, Y, Z).

(2) Cutting feed upper limit feed rate

Tangential speed is clamped at parameter value for all axis.

(B type)

(1) JOG feed rate

JOG feed rates of basic axes and additional axis can be set by differnt parameter (No.565, 566). When an additional axis is moved with another axis in simulteneously 2 or more axes control, feed rate is the same as that of basic axes.

(2) Cutting feed upper limit feed rate

When command linear interpolation including additoional axis, (G01), clamp each axis feed rate at smaller than the setting value in another parameter (No.567). In circular interpolation, tangential speed is clamped at parameter value. (Same as A Type)

(3) Minimum rapid traverse rate (Fo)

Only additional axis is set by another parameter. (No.0568)

(4) Low feedrate (FL) additonal axis at reference point return is set to another parameter. (No.0569)

MCF　1 : EF (external operation signal) is output when G81 positioning is not completed.

0 : EF (external operation signal) is not output when G81 positioning is not completed.

SBKM　1 : Machine is stopped in single block skip by macro command.

0 : Machine is not stopped in single block skip by macro command.

G01　1 : G01 mode when power is on.

0 : G00 mode when power is on.

MCINP　1 : Program input is started with the data input external start signal MINP.

0 : Program input is not started with the data input external start signal MINP.

	#7	#6	#5	#4	#3	#2	#1	#0
0012	NFED	G84S	FXCO	FXCS	RSASCI	ASR33	ZILK	STP2

STP2　1 : In the reader/puncher interface, the stop bit is set by 2 bits.

0 : In the reader/puncher interface, the stop bit isset by 1 bit.
(Effective when the setting parameter I/O is 1.)

ZILK　1 : Interlock is effective only for Z axis.

0 : Interlock is effective for all axes.

Remarks　Associated parameter is EILK at No.008.

ASR33　1 : The 20mA current interface is used as the reader/puncher interface.

0 : FANUC PRR, FANUC cassette, or portable tape reder are used as the reader/puncher interface (Effective when the setting parameter I/O is 1.)

RSASCI　1 : ASCII code is used for reader/puncher interface.

0 : ISO/ EIA code is used for reader/puncher interface.

NOTE
This parameter is valid only when I/O on (SETTING 1) is set to "1".

FXCS 1 : In canned cycle G74 or G84, spindle CW/CCW rotatioin is performed without M05 code output.

0 : In canned cycle G74 or G84, spindle CW/CCW rotation is performed after M05 signal output.

FXCO 1 : In canned cycle G76 and G87, the oriented spindle stop is performed without outputting M05.

0 : In canned cycle G76 and G87, the oriented spindle stop is performed after outputting M05.

G84S When a G74/G84 cycle is specified, gear switching is performed:

1 : At the gear switching points specified with parameters No. 0540 and 0556.

0 : At the gear switching points specified based on S analog output gear switching type A or B.

> **NOTE**
>
> Whether S analog output gear switching function A or B is used depends on the setting of bit 6 (LGCM) of parameter No. 0035.

NFED 1 : Feed is not output before and after the program is output by using the reader/puncher interface (Set to "1" when FANUC cassette is used.)

0 : Feed is output before and after the program is output by using the reader/puncher interface. (Effective when the setting parameter I/O is 1.)

Remarks   Baudrate is set by parameter No.0553.

	#7	#6	#5	#4	#3	#2	#1	#0
0013	TCW	CWM	ORCW					JHD

JHD 1 : The manual pulse generator is valid in JOG mode.

0 : The manual pulse generator is invalid in JOG mode.

ORCW 1 : Minus output in orientation S analog output.

0 : Plus output in orientation S analog output.

TCW, CWM Output code at S analog output.

TCW	CWM	Output code
0	0	Plus output for both M03 and M04
0	1	Minus output for both M03 and M04
1	0	Plus ouptut for M03, minus output for M04.
1	1	Minus output for M03, Plus output for M04

	#7	#6	#5	#4	#3	#2	#1	#0
0014								SCTA

SCTA 1 : Spindle speed arrival signal (SAR) is always checked during cutting.

0 : Spindle speed arrival signal (SAR) is checked at the start of cutting.

0015	#7	#6	#5	#4	#3	#2	#1	#0
	CPRD	REP	PRWD	LM2	SKPF	RILK		CBLNK

CBLNK 1 : The cursor does not blink.

0 : The cursor blinks.

RILK 1 : Interlock processing is done at high speed.
(FANUC PMC–MODEL L or M is necessary.)

0 : Normal interlock processing is done.

SKPF 1 : Dry run, override and automatic acceleration/deceleration is effective in skip function (G31).

0 : Dry run, override and automatic acceleration/deceleration is ineffective in skip function (G31).

LM2 1 : Makes valid stroke limit 2 switching signal (EXLM2 G129.6).

0 : Makes invalid stroke limit 2 switching signal (EXLM2, G129.6).

PRWD 1 : Rewind signal is output by portable tape reader.

0 : Rewind signal is not output by portable tape reader.

REP 1 : When the program with same program number in the memory is registered through reader/puncher interface , the alarm does not occur and the registered program is replaced.

0 : When the program with same program number in the memory is registered through reader/puncher interface, the alarm occurs.

CPRD 1 : Unit is set to mm, inch or sec. when the decimal point is omitted in the address for which the decimal point can be used.

0 : The least input increment is set when the decimal point is omitted in the address for which the decimal point can be used.

0016	#7	#6	#5	#4	#3	#2	#1	#0
					NPRD	SUPM		

SUPM 1 : Start–up B type is effec–tive in cutter compensation C.

0 : Start–up A type is effective in cutter compensation C. For details of start–up, refer to the item of cutter compensation.

NPRD 1 : Input and display with dicimal point is ineffective.

0 : Input and display with decimal point is effective.

0017	#7	#6	#5	#4	#3	#2	#1	#0
		OPG7	OPG6	OPG5	OPG4	OPG3	OPG2	OPG1

OPG1 1 : Mode select (MD1 to MD4, ZRN) is conducted from the software operator's panel.

0 : Mode select is not conducted from the software operator's panel.

NOTE

The above parameters are effective only when the optional software operator's panel is selected.

OPG2 1 : Jog feed axis select and jog rapid traverse buttons are actuated with the software operators's panel.

0 : The above buttons are not actuated with the software operator's panel.

OPG3 1 : Axis select (HX, HY, HZ) and magnification ($\times 10$, $\times 100$) switches for manual pulse generator are actuated with the software operator's panel.

0 : The above switches are not actuated with the software operator's panel.

OPG4 1 : Jog feed rate, override, and rapid traverse override switches are actuated with the software operator's panel.

0 : The above switches are not actuated with the software operator's panel.

OPG5 1 : Optional block skip, single block, machine lock and dry run switches are actuated with the software operator's panel.

0 : The above switches are not actuated with the software operator's panel.

OPG6 1 : Pct key is actuated with the software operator's panel .

0 : Protect key is not actuated with the software operator's panel.

OPG7 1 : Feed hold is effected with the software operator's panel.

0 : Feed hold is not effected with the software operator's panel.

	#7	#6	#5	#4	#3	#2	#1	#0
0018	EDITB	TVC	PROAD	SQTYP	NZMP4	NZMP2	NYMP2	NXMP2

NXMP2, NYMP2, NZMP2, NZMP4

1 : Handle feed magnificaiton x100 is ineffective for X, Y, Z and 4th axes, respectively.

0 : Handle feed magnification x100 is effective for X, Y, Z and 4th axis, respectively.

> **NOTE**
> The magnification of an axis whose magnification x100 is ineffective becomes x1 or x10 by singnal MP1.
> MP1 = 1 : x 10
> MP1 = 0 : x 1

SQTYP 1 : The program restart method should be R type. (not available)

0 : The program restart method should be P or Q type.

PROAD 1 : In the display of absolute coordinate value, the programmed position is displayed.

0 : In the display of absolute coordinate value, the actualposition considering the offset is displayed.

TVC 1 : No TV check at the comment.

0 : TV check at the comment.

EDITB 1 : Editing on standard keyboard shall be editing operation B.

0 : Editing operation shall be as specified in standard specifications.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0019	DBCD	NEOP	M02NR	SRGTP	TLCD		C4NG	

C4NG   1 : 4th axis neglect signal is valid.

0 : 4th axis neglect signal is invalid.

TLCD   1 : Tool length compensation is the type C.

0 : Normal tool length compensation.

> **NOTE**
> When this parameter is set to 1, be sure to set OFRD (PRM No. 36 bit6) to 1.

SRGTP   1 : G135.0 is used for the rigid tap selection signal

0 : G123.1 is used for the rigid tap selection signal.

M02NR   1 : Return to the head of program after executing M02.

0 : Do not return to the head of program after executing M02.

NEOP   1 : M02, M30 and M99 command the end of registration into part program storage editing area.

0 : M02, M30 and M99 do not command the end of registration into part program storage editing area.

DBCD   1 : In the diagnosis display, the timer counter data is displayed in decimal.

0 : The diagnosis display is displayed in binary as usual.

	#7	#6	#5	#4	#3	#2	#1	#0
0020	SFOUT		NCIPS	BCD3				

BCD3   1 : B code is 3–digit output.

0 : B code is 6–digit output.

NCIPS   1 : In deceleration, the control proceeds to the next block after the specified speed has become zero. The control does not confirm that the machine position meets a specified position.(No inposition checking).

0 : The control proceeds to the next block after the specified speed has become zero and confirms that the machine position has reached the specified position in deceleration. (Inposition checking).

SFOUT   1 : SF is output in S4/5 digit even if gear change is not performed.

0 : SF is output in S4/5 digit on changing a gear.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0021		NOFLUP			APC4	APCZ	APCY	APCX

APCX, Y, Z, 4   1 : When absolute pulse coder is optioned.

0 : When absolute pulse coder is not optioned.

NOFLUP   When equipping absolute pulse coder,

1 : there is no coordinate running without axes motion at initial power–up.

0 : there is coordinate running without axes motion at initial power–up.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0022					ABS4	ABSZ	ABSY	ABSX

ABSX, Y, Z, 4 1 : Reference point position in absolute pulse coder is settled.

        0 : Reference point position in absolute pulse coder is not settled.
(It is automatically set to "1" when manualreference point return is executed. Do not change the setting without changing the detector.)

	#7	#6	#5	#4	#3	#2	#1	#0
0023		DSPN		DITA	DCHI	DFRN	DGRM	DJPN

DJPN CRT screen is displayed in Japanese.

DGRM CRT screen is displayed in German.

DFRN CRT screen is displayed in French.

DCHI CRT screen is displayed in Chinese (Formosan).

DITA CRT screen is displayed in Italian

DSPN CRT screen is displayed in Spanish.

	#7	#6	#5	#4	#3	#2	#1	#0
0024		CLCL				SCTO	LII10	IGNPMC

IGNPMC 1 : Control by PMC is made ineffective. (Same as without PMC.)

        0 : Control by PMC is made effective.

LII10 1 : Inputting/Outputting unit is 0.01mm/0.01deg/0.001 inch.

        0 : Inputting/Outputting unit is 0.001mm/0.001deg/0.0001 inch (Usual)

SCTO 1 : Spindle speed reach signal is checked.

        0 : Spindle speed reach signal is not checked.

CLCL 1 : The local coordinate system is canceled by automatic reference point return.

        0 : Not canceled.

	#7	#6	#5	#4	#3	#2	#1	#0
0028	PSG2	PSG1	EX10D	EXTS		DACTF	PRGMSG	PRCPOS

PRCPOS 1 : On the program check screen, the absolute coordinates are displayed.

        0 : The relative coordinates are displayed.

PRCMSG 1 : On the program check screen, a message from PMC is displayed. (not available)

        0 : The remaining motion is displayed.

DACTF 1 : Actual speed is displayed on the current positon display screen and program check screen.

        0 : Not displayed.

EXTS 1 : External program number search is valid.

        0 : External program number search is invalid.

EX10D 1 : External work coordinate system shift function: 10 times the input value corresponds to the external work zero point offset value.

        0 : The input value corresponds to the external work zero point offset value.

PSG1, 2 Gear ratio of spindle and position coder

$$\text{Scale} = \frac{\text{Spindle speed}}{\text{Position coder speed}}$$

Scale	PSG2	PSG1
×1	0	0
×2	0	1
×4	1	0
×8	1	1

	#7	#6	#5	#4	#3	#2	#1	#0
0029					G604	G60Z	G60Y	G60X

G60X to 4 Specify the approach direction in the single direction positioning of X–axis, Y–axis, Z–axis and 4th axis in sequence.

1 : Minus direction

0 : Plus direction

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0030	G91	AXS4D				OFCDH	EAC1	EAC0

EAC0, EAC1 Axis setting for PMC axis control

EAC1	EAC0	Controlled axis
0	0	4th axis
0	1	X axis
1	0	Y axis
1	1	Z axis

OFCDH 1 : Tool offset memory C is used.

0 : Tool offset memory C is not used.

> **NOTE**
> It is necessary to set parameter 036#6 (OFRD) to "1" when this parameter is set to "1".

AXS4D 1 : 4th–axis name is displayed depending on parameter 280.

0 : 4th–axis name depends on parameter 008 ADW0, ADW1 and ADW2.

G91 1 : When the power is turned on, G91 mode is set.

0 : When the power is turned on, G90 mode is set.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0032		EACSB		PNGMLK				

PNGMLK 1 : In PMC axis control, machine lock shall be invalid.

0 : In PMC axis control, machine lock shall be valid.

EACSB 1 : PMC axis control is of the B specification.

0 : PMC axis control is of the A specification.

0035	#7	#6	#5	#4	#3	#2	#1	#0
	ACMR	LGCM	RGCTO		NDSP4	NDSPZ	NDSPY	NDSPX

NDSPX, Y, Z, 4 Whether the current positions of X, Y, Z and 4th axes are displayed or not

   1 : The current position is not displayed.

   0 : The current position is displayed.

RGCTO When using rigid tapping,

   1 : time constant during pulling out spindle is different from that of tapping.
   (Time constants are set in parameter 400, 401 and 402.)

   0 : time constant during pulling out spindle is same as that of tapping.

LGCM The motor speeds used for gear switching are:

   1 : Those specified with parameters No. 0585 and 0586 (gear switching type B).

   0 : The maximum motor speed for each gear (gear switching type A).

ACMR 1 : Optional CMR is used.

   0 : Optional CMR is not used.

0036	#7	#6	#5	#4	#3	#2	#1	#0
		OFRD	TLCDOK					

TLCDOK 1 : An alarm is not given even if more than two axes are offset in the tool length compensation of type C.

   0 : An alarm is given when more than two axes are offset in the tool length compensation of type C.

OFRD 1 : Tool length compensation is specified by H–code, and cutter compensation is specified by D–code.

   0 : Tool length compensation and cutter compensation are specified by H–code as usual.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0037	PLC01	VALT			SPTP4	SPTPZ	SPTPY	SPTPX

SPTPX to SPTP4 Types of position detector of the X, Y, Z and to the 4th axis in this order.

1 : The separate type pulse coder is to be used as a detector.

0 : The separate type pulse coder is not to be used as a detector.

In case of the 0–GSD with 0.1μ pulse coder, set the following parameters in units of 1μ. (The set data is multiplied by ten within the CNC)

No.	Parameter∗	Contents
0504	SERRX (X)	Limitation value of position deviation amount during movement of X axis.
0505	SERRT (Z)	Limitation value of position deviation amount during movement of Y axis.
0506	SERRZ (3)	Limitation value of position deviation amount during movement of Z axis.
0507	SERRZ4 (4)	Limitation value of position deviation amount during movement of 4th axis.
0508	GRDSX (X)	Grid shift amount of the X – axis.
0509	GRSDY (Z)	Grid shift amount of the Y – axis.
0510	GRDSZ (3)	Grid shift amount of the Z – axis.
0511	GRDS4 (4)	Grid shift amount of the 4th axis.

> **NOTE**
> Above explanation is applied when the parameter "PLC01" (No. 0037 bit 7) = 1

VALT 1 : Time constant is steplessly switched in rigid tapping.

0 : Time constant is not steplessly switched in rigid tapping.

> **NOTE**
> In the case of stepless switching of time constant, specify the gear to make tapping by using the S–analog output type B (parameter No.12 G84S=1) if the gear is one stage or more stages. Don't use it in the system in which tapping is made over several stages of gear.

PLC01 1 : A pulse coder of 0.1μ detection is to be used.

0 : A pulse coder of 0.1μ detection is not to be used.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0038	RSCMD1	DEVFL1						

RSCMD1, DEVFL 1

Setting I/O device of reader/puncher interface channel 1.

RSCMD	DEVFL1	I/O device used
0	0	Bubble cassette
0	1	Floppy cassette
1	0	RS232, PPR
1	1	New interface

	#7	#6	#5	#4	#3	#2	#1	#0
0040	LOCC	COMC	TMCR	SORT	RWCNT	RGTPE	DPOSUP	NAMPR

NAMPR 1 : Displays the program name on the directory display screen.

0 : Does not display the program name on the program directory display screen.

DPOSUP 1 : At data output by DPRINT command, a space is outputted for reading zero.

0 : At data output by DPRINT command, nothing is done for reading zero.

RGTPE When releasing rigid tapping mode,

1 : rigid tapping signal (RGTAP/RGTPN) off is not checked.

0 : rigid tapping signal (RGTAP/RGTPN) off is checked.

RWCNT 1 : Does not count the total number of parts machinedand the number of parts machined even when M02/M30 are executed.

0 : Counts the total number of parts machined and the number of parts machined each time M02/M30 are executed.

SORT 1 : At the display of program library, it is displayed in numerical order.

0 : Program library is displayed in normal specification.

TMCR 1 : T code calling subprogram O9000

0 : T code as a normal tool function

COMC 1 : Does not place common variables (#100 to 149) in <vacant> state during resetting.

0 : Places common variables (#100 to 149) in <vacant> state during resetting.

LOCC 1 : Does not place local variables (#1 to 33) in <vacant> state during resetting.

0 : Places local variables (#1 to 33) in <vacant> state during resetting.

	#7	#6	#5	#4	#3	#2	#1	#0
0042				ASTCD				

ASTCD Specifies the hole pattern for the EIA code corresponding to symbol *, using 8 bits, for custom macro B.

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	#7	#6	#5	#4	#3	#2	#1	#0
0043				EQCD				

EQCD Specifies the hole pattern for the EIA code corresponding to symbol =, using 8 bits, for custom macro B.

	#7	#6	#5	#4	#3	#2	#1	#0
0044				SHPCD				

SHPCD Specifies the hole pattern for the EIA code corresponding to symbol #, using 8 bits, for custom macro B.

	#7	#6	#5	#4	#3	#2	#1	#0
0045	HSIF	CLER		CCINP		RWDOUT	RAL	RDL

RDL 1 : Registers a program after all programs are erased for reading for I/O device external control.

0 : The reading is the same as in normal specification for I/O device external control.

RAL 1 : Registers only one program for reading through reader/puncher interface.

0 : Registers all programs for reading through reader/puncher interface.

RWDOUT 1 : No signal is outputted in rewinding.

0 : A signal is outputted in rewinding.

CCINP 1 : The in–position width for cutting feed is specified with different parameters from those used for rapid traverse (No.0609 to 0612).

0 : The in–position width for cutting feed is specified with the same parameters as those used for rapid traverse (No.0500 to 0503).

CLER 1 : Selects clear conditions, using the reset button,external reset signal and emergency stop.

0 : Selects reset conditions, using the reset button, external signal and emergency stop.

HSIF 1 : M/S/T/B code processing shall be a high–speed interface.

0 : M/S/T/B code processing shall be a normal interface.

	#7	#6	#5	#4	#3	#2	#1	#0
0048	SFFDSP			SMZCT				

SMZCT 1 : Rapid traverse block overlap is used.

0 : Rapid traverse block overlap is not used.

SFFDSP 1 : Soft–key is displayed regardless of equipping options.

0 : Whether soft–key is displayed or not depends on equipping options.

	#7	#6	#5	#4	#3	#2	#1	#0
0049	FML10	NPRV	EFML10	S3JOG			RDIK	DILK

DILK 1 : The each axis interlock signal shall be valid, only in manual operation.

0 : The each axis interlock signal shall be invalid.

RDIK   1 : The high–speed interlock signal shall be invalid when the each axis interlock signal goes off.

0 : The high–speed interlock signal shall be always valid.

S3JOG   1 : The number of simultaneously controlled axes in manual operation is 3 maximum.

0 : The number of simultaneously controlled axes in manual operation is 1 maximum.

EFML10   1 : The feedrate command (cutting feed) of PMC axis control is used by 10 times.

0 : Standard specification.

NPRV   1 : Even when no position coder is provided, the per–revolution feed command shall be valid. (The per–revolution feed command is converted automatically to the per–minute feed in CNC.)

0 : When no position coder is provided, the per–revolution feed command shall be invalid.

FML10   1 : The rapid traverse rate and cutting feed upper limit speed parameter increment system shall be 10 mm/min or 1 inch/min.

  e.g) For 100 m/min, the setting value shall be 10000.

0 : As per normal specifications.

> **NOTE**
> If the 1/10 increment system function is used, this parameter is invalid and must be set to 0.

	#7	#6	#5	#4	#3	#2	#1	#0
0050							NOFMK	

NOFMK   1 : Tape format check is not done during sequence No. search.

0 : Tape format check is done during sequence No. search.

	#7	#6	#5	#4	#3	#2	#1	#0
0052					NODIC4			

NODIC4   1 : The current position display of PMC axis control shall be the same as in standard specifications, not in accordance with the decimal point position of increment system 1/10.

0 : The current position display of PMC axis control is in accordance with the decimal point position of increment system 1/10.

	#7	#6	#5	#4	#3	#2	#1	#0
0053				LBLCD				
	#7	#6	#5	#4	#3	#2	#1	#0
0054				RBLCD				

LBLCD/RBLCD   The hole pattern of and in EIA code in custom macro B is set by 8–bit data in sequence.

	#7	#6	#5	#4	#3	#2	#1	#0
0056								NOCND

NOCND When equipping tape storage memory 120/ 320m or back–ground edit,

1 : condensing part program memory is not automatically done. (Condensing is done by pressing soft–key "CONDNS".)

0 : condensing part program memory is automatically done by CNC reset after edit operation.)

	#7	#6	#5	#4	#3	#2	#1	#0
0057		FXY	HOT3	CROUT	MIC			

MIC 1 : At omission of decimal point, the minimum set unit is multiplied by ten.

0 : At omission of decimal point, the minimum set unit is notmultiplied by ten.

CROUT In B/D PRINT, after the data is outputted in ISO code:

1 : "LF" and "CR" are outputted.

0 : Only the "LF" is outputted.

HOT3 1 : Signals (X020#0 *+LX to *–LZ) of hardware OT is valid.

0 : Signals (X020#0 *+LX to *–LZ) of hardware OT is invalid.

FXY 1 : The drilling axis in a fixed cycle is the axis selected by a program.

0 : The drilling axis in a fixed cycle is usually Z–axis.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0060		EXTSP	OPMNDP	HDLPM		LDDSPG	PCLDB	DADRDP

DADRDP 1 : Addresses X, Y, G, F, R and D are displayed on DGN screen.

0 : Addresses X, Y, G, F, R and D are not displayed on DGN screen.

PCLDB 1 : Baud rate for ladder program loading is 9600.

0 : Baud rate for ladder program loading is 4800.

LDDSPG 1 : Ladder dynamic display is valid.

0 : Ladder dynamic display is invalid.

HDLPM When manual pulse generator is rotated rapidly,

1 : movements always coincide with rotated amounts.

0 : movements happens not to coincide with rotated amounts by clamping with rapid traverse rate.

OPMNDP 1 : Operating monitor display is valid.

0 : Operating monitor display is invalid.

EXTSP 1 : Program No. search and display are valid for the protected part programs by parameter PRG9.

0 : Program No. search and display are inhibited for the protected part programs by parameter PRG9.

0061	#7	#6	#5	#4	#3	#2	#1	#0
					EBC4	EBCZ	EBCY	EBCX

EBCX to EBC4   1 : B is used for DI/DO of PMC axis control.

0 : A is used for DI/DO of PMC axis control.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0062		AXPCF			SPMRPM	G40V		

G40V   When G40, G41 and G42 are commanded without motion,

1 : offset motion is vertical to the next start movement in case of start–up or it is vertical to the previous end movement in case of cancelling.

0 : offset motion is as described in operator's manual.

SPMRPM   1 : Unit of parameters related to the spindle rotation speed is 10 rpm.

0 : Unit of parameters related to the spindle rotation speed is 1 rpm.

> **NOTE**
> When setting this parameter, setting unit of parameter 0539, 0540, 0541, 0542 ,0543, 0551, 0555 and 0556 is 10rpm.

AXPCF   1 : Axes movement by PMC axis control is not added in actual speed display.

0 : Axes movement by PMC axis control is added in actual speed display.

0063	#7	#6	#5	#4	#3	#2	#1	#0
			EAXOV	RGDOV	VALPC		PRSTIN	MTDSPI

MTDSPI   1 : Machine coordinate system is displayed to meet the input system.

0 : Machine coordinate system is not displayed to meet the input system.

PRSTIN   1 : When the input is of the inch system, automatic coordinate system setting is handled as a separate parameter.

0 : When the input is of the inch system, automatic coordinate system setting is not handled as a separate parameter.

VALPC   1 : Optional gear ratio is used between the spindle and the position coder in rigid tapping.

0 : Optional gear ratio is not used between the spindle and the position coder in rigid tapping.

> **NOTE**
> When VALPC = 1, the optional gear ratio between the spindle and the position coder is set in parameters No. 259 –264. When VALPC = 0, the gear ratio between the spindle and the position coder is set in the parameter No. 28.

RGDOV   1 : Override is valid in drawing in rigid tapping.

0 : Override is invalid in drawing in rigid tapping.

> **NOTE**
> Override value is specified by the parameter No. 258 (RGOVR).

EAXOV 1 : Dry run and override is valid for the PMC axis.

0 : Dry run and override is invalid for the PMC axis.

	#7	#6	#5	#4	#3	#2	#1	#0
0064			NPA				ALLPRE	SETREL

SETREL 1 : Preset is made for each axis in the relative position display.

0 : Preset is as usual.

ALLPRE 1 : Origin setting of relative coordinates is performed by numeric key.

0 : Origin setting of relative coordinates is performed by address key.

NPA 1 : The screen is not switched to the alarm/message screen at occurrence of alarm or at the entry of operator message.

0 : The screen is switched to the alarm/message screen at occurrence of alarm or at the entry of operator message.

	#7	#6	#5	#4	#3	#2	#1	#0
0065	M3B		TAPDRN		PSOT			

PSOT 1 : Stored stroke check is ignored until reference point return is finished after CNC power–up.

0 : Stored stroke check is valid just after CNC power–up.

TAPDRN 1 : Dry–run is ignored for tapping cycle (G74, G84).

0 : Dry–run is valid for tapping cycle (G74, G84).

M3B 1 : Maximum 3M codes can be disignated in one block.

2 : M–code designations in one block are as usual.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0066					EPMSKP			

EPMSKP 1 : Skip signal for PMC axis control is independent of CNC skip signal.

0 : Skip signal for PMC axis control is same as CNC skip signal.

	#7	#6	#5	#4	#3	#2	#1	#0
0070	ICR	PEXRD		DSTBGE				

DSTBGE 1 : "DST" is not output when pressing START key in background edit in order to punch out part programs.

0 : "DST" is output always when pressing START key.

PEXRD 1 : Expanded R/D data on PMC–M is used.

0 : Expanded R/D data on PMC–M is not used.

ICR 1 : EOB is punched out as "LF" when punching with ISO code.

0 : EOB is punched out as "LF" "CR" "CR" when punching with ISO code.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0071	FSRSP	DPCRAM		SRL2SP				ISRLPC

ISRLPC 1 : Position coder cable is connected to M27 on memory PCB when using serial interface spindle.

0 : Position coder cable is connected to spindle amplifier when using serial interface spindle.

SRL2SP 1 : Two serial interface spindles are connected serially.

0 : One serial interface spindle is connected.

DPCRAM 1 : PMC starts automatically at power–up when using PMC RAM board.

0 : "PMC LOAD MENU" is displayed at power–up when using PMC RAM board.

FSRSP 1 : Serial interface spindles are used.

0 : Serial interface spindles are not used.

	#7	#6	#5	#4	#3	#2	#1	#0
0074					CRF4	CRFZ	CRFY	CRFX

CRFX When the motion other than G28 is commanded for X–axis whose machine coordinate is not fixed yet,

1 : alarm 224 appears.
0 : no alarm appears.

CRFY When the motion other than G28 is commanded for Y–axis whose machine coordinate is not fixed yet,

1 : alarm 224 appears.
0 : no alarm appears.

CRFZ When the motion other than G28 is commanded for Z–axis whose machine coordinate is not fixed yet,

1 : alarm 224 appears.
0 : no alarm appears.

CRF4 When the motion other than G28 is commanded for 4th–axis whose machine coordinate is not fixed yet,

1 : alarm 224 appears.
0 : no alarm appears.

	#7	#6	#5	#4	#3	#2	#1	#0
0075	IONUL							

IONUL 1 : Alarm appears when detecting a null code in reading EIA code.

0 : No alarm appears when detecting a null code in reading EIA code.

	#7	#6	#5	#4	#3	#2	#1	#0
0076	OTRFOM			ADBLS	G84RGD	IOP	JZRN	ERDT

ERDT 1 : Error detect function is effective.

0 : Error detect function is ineffective.

JZRN 1 : Dogless reference point return is effective. (Note)

0 : Dogless reference point return is ineffective.

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> **NOTE**
> This parameter is applied to all axes. To set each axis individually, set this parameter to 1, then set bits 0 to 5 of parameter No. 0391 as required.

IOP　1 : Soft–key "STOP" interrupts reading/punching.
(Reset operation does not stop reading/punching.)

　　　　0 : Reset operation stops reading/punching.

G84RGD　1 : M29 is not necessary for shifting rigid tapping mode.

　　　　　0 : M29 is necessary for shifting rigid tapping mode.

ADBLS　1 : Cutting feed and rapid traverse separate backlash compensation is valid.

　　　　0 : Cutting feed and rapid traverse separate backlash compensation is invalid.

> **NOTE**
> The backlash compensation values for rapid traverse are specified with parameters No. 0686 to 0691.

OTRFOM　1 : Stored stroke limit alarm appears just before exceeding it.

　　　　　0 : Stored stroke limit alarm appears just after exceeding it.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0077		HLKEY					CT3G	

CT3G　1 : Time constant on rigid tapping is changing according to gear selection.

　　　　0 : Time constant on rigid tapping is fixed although gear selection changes.

HLKEY　1 : MDI key operation is treated with high priority.

　　　　0 : MDI key operation is treated with normal priority.

	#7	#6	#5	#4	#3	#2	#1	#0
0078	EAXOVE	RDRNE		OVRIE	NOINWZ	NOINMV		NOINOW

NOINOW　1 : Changing offset values by using MDI key is prohibited.

　　　　　0 : Changing offset values by using MDI key is allowed.

NOINMV　1 : Changing macro variables by using MDI key is prohibited.

　　　　　0 : Changing macro variables by using MDI key is allowed.

NOINWZ　1 : Changing work zero offset values by using MDI key is prohibited.

　　　　　0 : Changing work zero offset values by using MDI key is allowed.

OVRIE　1 : The logic of override signals for PMC axis control is that "1" means high speed.

　　　　0 : The logic of override signals for PMC axis control is that "1" means low speed.

> **NOTE**
> This parameter is effective only when parameter 078#7 (EAXOVE) is set to "1".

RDRNE 1 : Dry–run signals is effective for rapid traverse of PMC axis control.

0 : Dry–run signals is ineffective for rapid traverse of PMC axis control.

> **NOTE**
> This parameter is effective only when parameter 078#7 (EAXOVE) is set to "1".

EAXOVE 1 : Dry–run and over–ride signals of PMC axis control are different from CNC axis control.

0 : Dry–run and over–ride signals of PMC axis control are same as CNC axis control.

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0080						MORCM1		

MORCM1 1 : Spindle orientation whose position is specified from PMC is used for 1st serial interface spindle.

0 : Spindle orientation whose position is specified from PMC is not used for 1st serial interface spindle.

POWER OFF

0100	CMRX
0101	CMRY
0102	CMRZ
0103	CMR4

CMRX, CMRY, CMRZ, CMR4

Command multiply for X, Y, Z and 4th axes, respectively.

Setting code	Multiplier
1	0.5
2	1
4	2
10	5
20	10

When an arbitrary command multiply (No. 0035 ACMR=1) is used, there are 2 types of setting methods as follows.

(1) When a command multiply is 1/2 to 1/27:

$$\text{Preset value} = \frac{1}{\text{Command multiply}} + 100$$

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(2) When a command multiply is 2 to 48 :
Preset value = $2 \times$ (Command multiply)

NOTE
1 For (2) above, be sure to set a value such that the command multiply should be always an integer.
2 Set the backlash compensation and pitch error compensation values with detection unit when an arbitrary command multiply is used.

0108	SPLOW

SPLOW Spindle speed during constant speed spindle rotation, or spindle speed at gear shift. (when parameter No. 0003, GST=1),

$$\text{Setting value} = \frac{\text{Spindle motor speed at gear shift}}{\text{Max. motor speed}} \times 4095$$

[Setting value] 0 to 255 (unit : rpm (10rpm at parameter No.0062#3=1))

0110	SCTTIM

SCTTIM Set the delay timer for checking the spindle speed reach signal. This sets the time required from execution of the S function to the beginning of checking the spindle speed reach signal.

[Setting value] 0 to 255 (unit: msec)
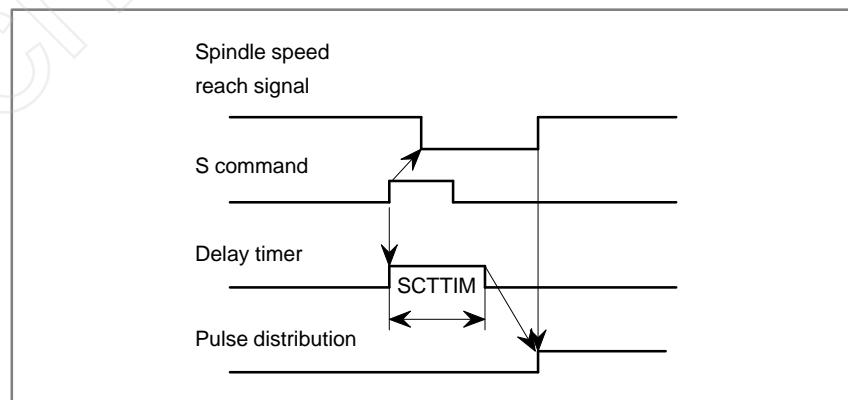
0111	MBUF1

0112	MBUF2

MBUF1, 2 Up to two M codes which are not subjected to buffering for the next block can be set.When 03 is set, M03 is not subjected to buffering for the next block.

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0121	MULHPG

MULHPG   Multiplier n of the manual handle feed.

[Setting value]   1 – 127

Multiplier n when selection signal MP2 for the manual hand feed move distance in on, set to 100 as a standard value.

0130	UPKY

0131	DWNKY

0132	RGTKY

0133	LFTKY

0134	FWDKY

0135	BACKY

0136	RTDKY

0137	LTULY

URKY to LTUKY   Set the jog feed axes and directions on the software operator's panel corresponding to ↑, ↓, →, ←, ↙, ↗, and keys.

Axis/Direction	Setting Value
+X	1
−X	2
+Y	3
−Y	4
+Z	5
−Z	6
+4	7
−4	8

Example)
When setting ↑ to +X, ↓ to –X, → to +Z and ← to –Z, set as follows. UPKY=5, DWNKY=6, RGTKY=1, LFTKY=2, FWDKY=4, BACKY=3.

0140	NSW11

0203	NSW88

The names of general purpose switches (SIGNAL 0 – SIGNAL 7) on the software operator's panel in the following figure are set as follows.

```
OPERATOR'S  PANEL   O1234 N5678
   SIGNAL0 :    ■      OFF      ON
   SIGNAL1 :            OFF  ■  ON
   SIGNAL2 :            OFF  ■  ON
   SIGNAL3 :    ■  OFF           ON
   SIGNAL4 :    ■  OFF           ON
   SIGNAL5 :    ■  OFF           ON
   SIGNAL6 :    ■  OFF           ON
   SIGNAL7 :    OFF ■           ON
                            AUTO
```

Characters are set by codes in parameters 0140 to 0203 as follows:

PRM. No. 140
  Code (083) corresponding to character "S" of SIGNAL in the above
  figure is set.

PRM. No. 141
  Code (073) corresponding to character "I" of SIGNAL 0 in the above
  figure is set.

PRM. No. 142
  Code (071) corresponding to character "G" of SIGNAL 0 in the above
  figure is set.

PRM. No. 143
  Code (078) corresponding to character "N" of SIGNAL 0 in the above
  figure is set.

PRM. No. 144
  Code (065) corresponding to character "A" of SIGNAL 0 in the above
  figure is set.

PRM. No. 145
  Code (076) corresponding to character "L" of SIGNAL 0 in the above
  figure is set.

PRM. No. 146
  Code (032) corresponding to character " "(space) of SIGNAL 0 in the
  above figure is set.

PRM. No. 147
  Code (048) corresponding to character "0" of SIGNAL 0 in the above
  figure is set.

PRM. No. 0148–0155
  Characters corresponding to SIGNAL 1 in the above figure.

PRM. No. 0156–0163
  Characters corresponding to SIGNAL 2 in the above figure.

PRM. No. 0164–0171
  Characters corresponding to SIGNAL 3 in the above figure.

PRM. No. 0172–0179
  Characters corresponding to SIGNAL 4 in the above figure.

PRM. No. 0180–0187
  Characters corre–sponding to SIGNAL 5 in the above figure.

PRM. No. 0188–0195
  Characters corresponding to SIGNAL 6 in the above figure.

PRM. No. 0196–0203
  Characters corre–sponding to SIGNAL 7 in the above figure.

For character codes, refer to the characters–to–codes table in the next page.
Setting value 0 is a space.

Character–to–codes correspondence table

Character	Code	Comment	Character	Code	Comment
A	065		6	054	
B	066		7	055	
C	067		8	056	
D	068		9	057	
E	069			032	Space
F	070		!	033	Exclamation mark
G	071		"	034	Quotation mark
H	072		#	035	Sharp
I	073		$	036	Dollar symbol
J	074		%	037	Percent
K	075		&	038	Ampersand
L	076		'	039	Apostrophe
M	077		(	040	Left parenthesis
N	078		)	041	Right parenthesis
O	079		*	042	Asterrisk
P	080		+	043	Plus sign
Q	081		,	044	Comma
R	082		–	045	Minus sign
S	083		.	046	Period
T	084		/	047	Slash
U	085		:	058	Colon
V	086		;	059	Semi – colon
W	087		<	060	Left angle bracket
X	088		=	061	Sign of equality
Y	089		>	062	Right angle bracket
Z	090		?	063	Question mark
0	048		@	064	Commercial at mark
1	049		[	091	Left square bracket
2	050		^	092	
3	051		¥	093	Yen symbol
4	052		]	094	Right square bracket
5	053		_	095	Underline

0204	POSTN1

0205	POSTN2

0206	POSTN3

0207	POSTN4

POSTN1 to 4   Approach amount for single direction positioning of X–axis, Y–axis, Z–axis and 4th axis

[Setting value] 0 to 255

[Unit] 0.01 mm (metric output)
0.001 inch (inch output)

> **NOTE**
> In increment system 1/10, the unit is the same as above. But the Max. value is 163.

0212	INTPLN

INTPLN   0 : G17 is selected with power on.
1 : G18 is selected with power on.
2 : G19 is selected with power on.

0219	MCDCNT

MCDCNT   When the preset M code is executed, the total number of machined parts and the number of machined parts are counted.

[Setting value] 1 to 255
(0 is equivalent to no setting.98 and 99 cannot be set.)

0220	UMGCD0
:	:
0229	UMGCD9

Set up to 10 G codes calling custom macro.

UMGCD0   G code calling custom macro body O9010

UMGCD1   G code calling custom macro body O9011

UMGCD2   G code calling custom macro body O9012

UMGCD3   G code calling custom macro body O9013

UMGCD4   G code calling custom macro body O9014

UMGCD5   G code calling custom macro body 09015

UMGCD6   G code calling custom macro body O9016

UMGCD7   G code calling custom macro body O9017

UMGCD8   G code calling custom macro body O9018

UMGCD9   G code calling custom macro body O9019

[Setting value] 001 to 225

> (With M00, no custom macro can be called. Even when 0 is set, it is equivalent to no setting.)

0230	UMMCD4

. . .

0239	UMMCD13

> Set up to 10 M codes calling custom macro.

UMMCD4   M code calling custom macro body O9020

UMMCD5   M code calling custom macro body O9021

UMMCD6   M code calling custom macro body O9022

UMMCD7   M code calling custom macro body O9023

UMMCD8   M code calling custom macro body O9024

UMMCD9   M code calling custom macro body O9025

UMMCD10   M code calling custom macro body O9026

UMMCD11   M code calling custom macro body O9027

UMMCD12   M code calling custom macro body O9028

UMMCD13   M code calling custom macro body O9029

[Setting value] 006 to 255

> (With M00, no custom macro can be called. Even when 0 is set, it is equivalent to no setting.)

240	UMMCD1
241	UMMCD2
242	UMMCD3

> Set up to 3 M codes calling sub program.

UMMCD1   M code calling sub program body O9001

UMMCD2   M code calling sub program body O9002

UMMCD3   M code calling sub program body O9003

[Setting value] 003 to 255

> (With M00, no sub program can be called. Even when 0 is set, it is equivalent to no setting.)

0252	PRSTCT

PRSTCT Set this parameter to prolong the RST signal output time. The time is set by the parameter in units of 16 msec.

(RST signal output time) = (Reset time) + (Parameter value) $\times$ 16 msec

[Setting value] 0 to 255

0254	TPSUP

TPSUP Spindle and Z–axis acceleration/deceleration type in the rigid tapping.

[Data type] Byte

[Setting value] 0 : Exponential acceleration/ deceleration

1 : Linear acceleration/deceleration

[Standard set value] 0

0255	BKL9

BKL9 Spindle backlash amount in the rigid tapping mode

[Data type] Byte

[Setting value] 0 to 127

[Unit] Detection unit

0256	MCODE

MCODE M–code to specify the rigid tapping mode

[Data type] Byte

[Setting value] 0 to 256

NOTE

When 0 is set, regard as 29 (M29).
Please caution no to double with M code using for other purpose.

0258	RGOVR

RGOVR This is used to set the override value at drawing in rigid tapping.

[Data type] Byte

[Setting value] 0 to 20

[Unit] 10 %

0265	Time interval of averaging servo current on servo tune screen

[Data type] Byte

[Data range] 0 to 7

Time interval of averaging servo current to display on servo tune screen is set.
The relation of time interval and setting value "n" is as follows.

$$\text{Time interval (msec)} = 64 \times 2^n$$

POWER OFF

0269	SVAXX

0270	SVAXY

0271	SVAXZ

0272	SVAX4

SVAXX Set the servo axis number to output the X–axis command.

SVAXY Set the servo axis number to output the Y–axis command.

SVAXZ Set the servo axis number to output the Z–axis command.

SVAX4 Set the servo axis number to output the 4th axis command.

[Setting value] 1 to 4

Set Value	Axis Number
1	1 (M34, M35)
2	2 (M27, M38)
3	3 (M44, M45)
4	4 (M47, M48)

Remark:　The normal setting is 0

Example)

When 1 is set to No.269, 3 is set to No.270, and 5 is set to No.271, a pulse will be output to the following.

X axis : Servo axis No.1

Y axis : Servo axis No.3

Z axis : Servo axis No.7

> **NOTE**
> Set these parameters for all of the control axis. A servo alarm will be generated when all of the axis are not set or when there are errors in the setting.

POWER OFF

0279	Fourth–axis attribute

[Data unit] None

[Data range] 5 to 7

[Description] Specifies which axis of the basic coordinate system is to be used as the fourth axis.

Set value	Attribute
5	Axis parallel to the X–axis
6	Axis parallel to the Y–axis
7	Axis parallel to the Z–axis

POWER OFF

0280	Display name of 4th–axis

[Data type] Byte

Display name of 4th–axis is set.

> **NOTE**
> 1 Setting value is same as software operator's panel general purpose switch.
> 2 Available letter is X, Y, Z, U, V, W, A, B, C, H, 0 to 9, O, N, D, F, – , and . .
> 3 Parameter 030#6 AXS4D must be set to "1".
> 4 It is necessary to turn off CNC power after changing the parameter.

0337	Character code–1 of title at power–up

to

0346	Character code–10 of title at power–up

[Data type] Byte

The setting 10–charactor are displayed on CRT at power–up instead of CNC software series/ edition.

> **NOTE**
> 1 Setting value is same as software operator's panel general purpose switch.
> 2 Available charactor is numerals, alphabets, minus, period and space.
> 3 When undefined charactors are specified, they are regarded as "space".

POWER OFF

0350	Axis No. for controlling continuous feed without position loop

[Data type] Byte

[Data range] 0 to 4

Axis No. for controlling continuous feed without position loop by using PMC axis control is set as follows.

Value	Axis Name
0	No–axis
1	X–axis
2	Y–axis
3	Z–axis
4	4th–axis

0351	Character code–1 of title

to

0355	Character code–5 of title

[Data type] Byte

The setting 5–characters are displayed on screen instead of program number.

> **NOTE**
> See Character–to–Code Table for setting code.

0356	Character length of 1st line on "DIST TO GO" display

to

0359	Character length of 4th line on "DIST TO GO" display

[Data type] Byte

[Data range] 0 to 11

Character length of 1st, 2nd, 3rd and 4th line which is displayed instead of "DISTANCE TO GO" on program check screen is set respectively. The display characters should be set on R– data on PMC.

0378	The override value for rigid tapping return

[Data unit] 10 [%]

[Data range] 0 to 20

[Description] This parameter specifies the override value for rigid tapping return. If 0 is set, no override is applied.

NOTE
> This parameter is effective when bit 4 of parameter 0063 (RGDOV) is set to 1.

0379	Feedrate ratio at which the next block is started for rapid traverse block overlap

[Data unit] 0 [%]

[Data range] 0 to 100

[Description] For rapid traverse block overlap, the feedrate ratio at which the next block will be started is set. If this parameter is set to 80, the next block is started once the feedrate has decelerated to 80% at the end point of the current block. The value to be set is determined using the following formula:

Current block feedrate at which next block is started
= Specified current block feedrate $\times$ set value/100

NOTE
> If this parameter is set to 100, the next block is started up on the start of deceleration for the current block.

	#7	#6	#5	#4	#3	#2	#1	#0
0380	MTCHK	FODIC		KEYPR	KEYWZ	KEYMV		KEYOW

KEYOW Specifies whether to inhibit changes to the tool wear offset amount from the MDI when KEY (G122#3) = 0.

1 : Inhibit
0 : Do not inhibit

KEYMV Specifies whether to inhibit changes to the macro variable from the MDI when KEY (G122#3) = 0.

1 : Inhibit
0 : Do not inhibit

KEYWZ Specifies whether to inhibit changes to the workpiece reference position offset amount from the MDI when KEY (G122#3) = 0.

1 : Inhibit
0 : Do not inhibit

KEYPR Specifies whether to inhibit changes to the parameter from the MDI when KEY (G122#3) = 0.

1 : Inhibit
0 : Do not inhibit

NOTE
> Be particularly careful when using this setting, because changing of the parameters may be disabled unless KEY (G122#3) = 1.

FODIC Specifies the units of the input/output data, as follows:

    1 : 0.0001 (mm), 0.0001 (degrees), or 0.00001 (inches). (IS–C)

    0 : 0.001 (mm), 0.001 (degrees), or 0.0001 (inches). (IS–B)

MTCHK Specifies whether to check for deviation in the machine position when the power is switched off.

    1 : Check

    0 : Do not check

> **NOTE**
>
> This check is performed when the power is switched on .If a positional deviation is detected, an overtravel alarm 5n6 occurs (where n = axis number) .The limits on the deviation are specified using parameter Nos. 0988 to 0990.

	#7	#6	#5	#4	#3	#2	#1	#0
0386	HDPIGB4	HDPIGBZ	HDPIGBY	HDPIGBX				

HDPIGBX 1 : Handle multiply of both MP1 and MP2 on is effective for X–axis.

    0 : Handle multiply of both MP1 and MP2 on is ineffective for X–axis.

HDPIGBY 1 : Handle multiply of both MP1 and MP2 on is effective for Y–axis.

    0 : Handle multiply of both MP1 and MP2 on is ineffective for Y–axis.

HDPIGBZ 1 : Handle multiply of both MP1 and MP2 on is effective for Z–axis.

    0 : Handle multiply of both MP1 and MP2 on is ineffective for Z–axis.

HDPIGB4 1 : Handle multiply of both MP1 and MP2 on is effective for 4th–axis.

    0 : Handle multiply of both MP1 and MP2 on is ineffective for 4th–axis.

	#7	#6	#5	#4	#3	#2	#1	#0
0387	EFERPD							

EFERPD 1 : Rapid traverse rate for PMC axis control is specified in feedrate command of PMC axis control.

    0 : Rapid traverse rate for PMC axis control is same as rapid feedrate in parameter.

	#7	#6	#5	#4	#3	#2	#1	#0
0388		CHKERC	SIG		RGORT	RGMFH		PCTPH

PCTPH When using rigid tapping cycle for deep hole,

    1 : Z–axis returns to R–position for each pecking motion.

    0 : Z–axis returns to previous cutting start position for each pecking motion.

RGMFH 1 : Feedhold and single block are ineffective during rigid tapping.

    0 : Feedhold and single block are effective even during rigid tapping.

RGORT 1 : Spindle orientation is performed before rigid tapping.

    0 : Spindle orientation is not performed before rigid tapping.
      (This parameter is effective only for serial interface spindle.)

SIG 1 : SIND signal is effective in rigid tapping mode.

0 : SIND signal is ineffective in rigid tapping mode.

CHKERC 1 : Excess error check of spindle is performed based on command spindle speed in program during rigid tapping.

0 : Excess error check of spindle is performed based on maximum spindle speed in parameter during rigid tapping.

POWER OFF

	#7	#6	#5	#4	#3	#2	#1	#0
0389						PRG8		SRVSET

SRVSET 1 : Servo tuning/setting screen is not displayed.

0 : Servo tuning/setting screen is displayed.

PRG8 1 : Editing of part program No. from 8000 to 8999 is protected.

0 : Editing of part program No. from 8000 to 8999 is not protected.

	#7	#6	#5	#4	#3	#2	#1	#0
0390	NODC3				NREQ4	NREQZ	NREQY	NREQX

NREQX When machine coordinate of X–axis is not fixed at power–up with using absolute pulse coder,

1 : no alarm is displayed.

0 : alarm 310 is displayed.

NREQY When machine coordinate of Y–axis is not fixed at power–up with using absolute pulse coder,

1 : no alarm is displayed.

0 : alarm 320 is displayed.

NREQZ When machine coordinate of Z–axis is not fixed at power–up with using absolute pulse coder,

1 : no alarm is displayed.

0 : alarm 330 is displayed.

NREQ4 When machine coordinate of 4th–axis is not fixed at power–up with using absolute pulse coder,

1 : no alarm is displayed.

0 : alarm 340 is displayed.

NODC3 1 : DC3 is not output until CNC buffer becomes full in DNC operation with using reader/ puncher interface channel–1 or –2.

0 : DC3 is output when EOB is read in DNC operation with using reader/ puncher interface channel–1 or –2.

	#7	#6	#5	#4	#3	#2	#1	#0
0391	NOCLR	RS23BN			JZRN4	JZRNZ	JZRNY	JZRNX

JZRNX 1 : Dogless reference point return of X–axis is not available.

0 : Dogless reference point return of X–axis is available.

> **NOTE**
> This parameter has meaning only when parameter 076#1 (JZRN) is set to "1".

JZRNY   1 : Dogless reference point return of Y–axis is not available.

0 : Dogless reference point return of Y–axis is available.

> **NOTE**
> This parameter has meaning only when parameter 076#1 (JZRN) is set to "1".

JZRNZ   1 : Dogless reference point return of Z–axis is not available.

0 : Dogless reference point return of Z–axis is available.

> **NOTE**
> This parameter has meaning only when parameter 076#1 (JZRN) is set to "1".

JZRN4   1 : Dogless reference point return of 4th–axis is not available.

0 : Dogless reference point return of 4th–axis is available.

> **NOTE**
> This parameter has meaning only when parameter 076#1 (JZRN) is set to "1".

RS23BN 1 : DC code is not used for controlling reader/ puncher interface.

0 : DC code is used for controlling reader/ puncher interface.

NOCLR   1 : Special G–codes are not cleared by reset operation.

0 : All G–codes are cleared by reset operation.

> **NOTE**
> This parameter has meaning only when parameter 045#6 (CLER) is set to "1".

	#7	#6	#5	#4	#3	#2	#1	#0
0393	DGNWEB	RADCHK	STOV0		M3RQNG	WKNOMDI	COVOUT	

COVOUT 1 : Corner override is effective for moving not only inside of circles but also outside of circles.

0 : Corner override is effective only for moving inside of the circle.

WKNOMDI 1 : Work zero offset can not be changed from MDI–key during feed–hold or cycle start status.

0 : Work zero offset can be changed from MDI–key always.

M3RQNG 1 : 3–digit M–code causes alarm 003.

0 : 3–digit M–code is available.

STOV0   1 : Feedrate override 0 stops rapid traverse (G00).

0 : Feedrate override 0 does not influence rapid traverse (G00).

RADCHK   1 : Tolerance check of circle radius between start point and end point is effective.

   0 : Tolerance check of circle radius between start point and end point is ineffective.

DGNWEB   1 : Changing PMC parameter from MDI key is allowed regardless of PWE setting.

   0 : Changing PMC parameter from MDI key is allowed only in PWE setting = 1.

	#7	#6	#5	#4	#3	#2	#1	#0
0394	CAKEY	WKZRST						

WKZRST   1 : Work coordinate is changed to G54 by reset operation.

   0 : Work coordinate is not changed by reset operation.

CAKEY   1 : One charactor cancel by "CAN" key is available in parameter/DGN and offset screen.

   0 : One charactor cancel by "CAN" key is not available.

	#7	#6	#5	#4	#3	#2	#1	#0
0395							TLSCUR	

TLSCUR   1 : Cursor returns to the previous position when displaying offset screen again.

   0 : Cursor returns to top position when displaying offset screen again.

	#7	#6	#5	#4	#3	#2	#1	#0
0396	EORRE					NCKER		

NCKER   1 : The ER (RS–232C) or TR (RS–422) signal is not checked.

   0 : The ER (RS–232C) or TR (RS–422) signal is checked.

EORRE   When detecting EOB or % during auto operation,

   1 : CNC turns to reset status internally.

   0 : alarm 008 appears.

	#7	#6	#5	#4	#3	#2	#1	#0
0397	SERNAI					OVR255		

OVR255   1 : Feedrate override is 1% unit.

   0 : Feedrate override is 10% unit.

SERNAI   1 : Details of serial interface spindle alarm 409 are displayed on alarm screen.

   0 : Details of serial interface spindle alarm 409 are not displayed.

	#7	#6	#5	#4	#3	#2	#1	#0
0398					ROCNT	RODRC	ROAX	WKINC

WKINC   1 : Input of work zero offset with MDI key is regarded as incremental value.

   0 : Input of work zero offset with MDI key is regarded as absolute value.

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ROAX 1 : Roll–over of absolute coordinate for rotary axis is available.

  0 : Roll–over of absolute coordinate for rotary axis is not available.

> **NOTE**
> This parameter is effective only for 4th axis

RODRC 1 : Sign of command is regarded as direction when commanding absolute value for rotary axis.

  0 : Shorter motion is selected when commanding absolute value for rotary axis.

> **NOTE**
> This parameter is effective only when parameter 0398#1 (ROAX) is set to "1".

ROCNT 1 : Roll–over of relative coordinate for rotary axis is available.

  0 : Roll–over of relative coordinate for rotary axis is not available.

> **NOTE**
> This parameter is effective only when parameter 0398#1 (ROAX) is set to "1".

	#7	#6	#5	#4	#3	#2	#1	#0
0399	OUTZRN	FEDNUL	FUNO	CINPS		RPDFF		

RPDFF 1 : Feed forward control is applied to both cutting feed and rapid traverse.

  0 : Feed forward control is applied only to cutting feed.

CINPS 1 : For feed–type–based in–position check (CCINP: bit 4 of parameter 0045), the in–position width for cutting feed is specified with parameters other than those used for rapid traverse, regardless of the type of feed specified in the next block.

  0 : For feed–type–based in–position check (CCINP: bit 4 of parameter 0045), the in–position width for cutting feed is specified with parameters other than those used for rapid traverse, only when the next block also specifies cutting feed.

NOTE

		No. 0399#4 CINPS					
		0			1		
No. 0045#4 CCINP	0	Rapid traverse $\rightarrow$ Rapid traverse	A	Rapid traverse $\rightarrow$ Rapid traverse	A		
		Rapid traverse $\rightarrow$ Cutting feed	A	Rapid traverse $\rightarrow$ Cutting feed	A		
		Cutting feed $\rightarrow$ Rapid traverse	A	Cutting feed $\rightarrow$ Rapid traverse	A		
		Cutting feed $\rightarrow$ Cutting feed	A	Cutting feed $\rightarrow$ Cutting feed	A		
	1	Rapid traverse $\rightarrow$ Rapid traverse	A	Rapid traverse $\rightarrow$ Rapid traverse	A		
		Rapid traverse $\rightarrow$ Cutting feed	A	Rapid traverse $\rightarrow$ Cutting feed	A		
		Cutting feed $\rightarrow$ Rapid traverse	A	Cutting feed $\rightarrow$ Rapid traverse	B		
		Cutting feed $\rightarrow$ Cutting feed	B	Cutting feed $\rightarrow$ Cutting feed	B		

A : Same parameters as those used for rapid traverse (No. 0500 to 0503).

B : Different parameters from those used for rapid traverse (No. 0609 to 0612) .

> **FUNO** 1 : Absolute position is read from absolute pulse coder only after detection error appears.
>
> 0 : Absolute position is read from absolute pulse coder after servo alarm appears.
>
> **FEDNUL** 1 : "NULL" code is output as feed data during meaning information.
>
> 0 : "SPACE" code is output as feed data during meaning information.
>
> **OUTZRN** When reference point return is operated during feed–hold status,
>
> 1 : no alarm appears.
> 0 : alarm 91 appears. (P/S 091)

0400	Time constant of rigid tapping during pulling–up motion (for Low Gear)

[Data type] Word

[Data unit] msec

[Data range] 0 to 4000

Time constant of rigid tapping during pulling–up motion for low gear is set.

> **NOTE**
> This parameter is effective when both parameter 077#1 (CT3G) and 035#5 (RGCTO) are set "1".

0401	Time constant of rigid tapping during pulling–up motion (for Middle Gear)

[Data type] Word

[Data unit] msec

[Data range] 0 to 4000

Time constant of rigid tapping during pulling– up motion for middle gear is set.

> **NOTE**
> This parameter is effective when both parameter 077#1 (CT3G) and 035#5 (RGCTO) are set "1".

0402	Time constant of rigid tapping during pulling–up motion

[Data type] Word

[Data unit] msec

[Data range] 0 to 4000

Time constant of rigid tapping during pulling–up motion is set.

When parameter 077#1 (CT3G) is set to "0", this parameter is common with all gear selection. However, if parameter 077#1 (CT3G) is set to "1", this parameter is effective only for high gear selection.

> **NOTE**
> This parameter is effective when parameter 035#5 (RGCTO) is set "1".

0403	Clearance of rigid tap pecking cycle

[Data type] Word

[Data unit] minimum input increment

[Data range] 0 to 32767

Clearance of rigid tap pecking cycle is set.

0452	Absolute counter value of X–axis at reference point
0453	Absolute counter value of Y–axis at reference point
0454	Absolute counter value of Z–axis at reference point
0455	Absolute counter value of 4th–axis at reference point

[Data type] Word

These parameters are set automatically when using absolute encoder with serial interface.

0462	Time constant of velocity loop on continuous feed without position loop

[Data type] Word

[Data unit] 1 msec/1000rpm

[Data range] 0 to 32767

Time constant of velocity loop on continuous feed without position loop by using PMC axis control is set. The value is required acceleration time from 0 to 1000 rpm.

0476	Stored address of 1st line characters displayed on "DISTANCE TO GO"
to	
0479	Stored address of 4th line characters displayed on "DISTANCE TO GO"

[Data type] Word

[Data range] 300 to 699

The stored address of 1st, 2nd 3rd and 4th line which is displayed instead of "DISTANCE TO GO" on program check screen is set.
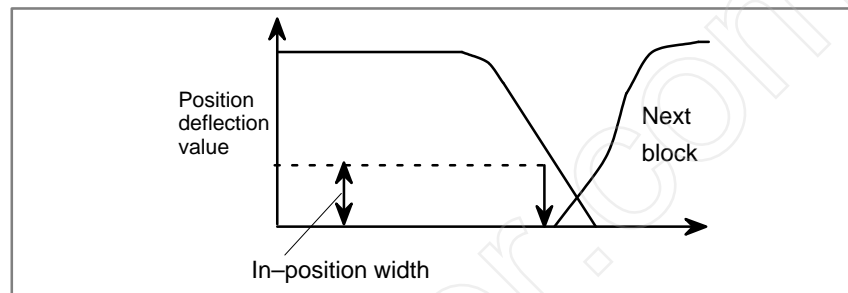
0500	INPX

Remarks: Standard setting 20 (metric output)
12 (inch output)

0501	INPY

0502	INPZ

0503	INP4

INPX, INPY, INPZ, INP4

In–position width for X, Y, Z and 4th axis,respectively.

[Setting range] 0 to 32767 (detection unit)

In position check is performed when the feed mode changes from rapid traverse to rapid traverse, rapid traverse to cutting feed, or cutting feed to rapid traverse.

0504	SERRX

0505	SERRY

0506	SERRZ

0507	SERR4

SERRX, SERRY, SERRZ, SERR4

Limitation value of position deviation amount during movement for X, Y, Z and 4th axis, respectively.

[Setting value] 0 to 32767 (detection unit)

(Example)

When the rapid traverse rate is 10 m/min. and the position gain is 30, the error is calculated by: Conversion of 10 m/min. into $E = \dfrac{F}{G}$

pulses/sec. with the detection unit of 1μ/pulse gives 166,666 pulses/sec. Therefore, $E = 166,666/30 = 5,555$ pulses. Multiply this value by a factor of 1.5, and set the obtained value 8333 as the parameter.

POWER OFF

0508	GRDSX

0509	GRDSY

0510	GRDSZ

0511	GRDS4

GRDSX, GRDSY, GRDSZ, GRDS4

Setting of grid shift amount of X , Y , Z and 4th axis, respectively.

**[Setting value]** 0 to ± 32767 (detection unit).

When the reference point is shifted, the sign of this parameter is necessary.

(1) Reference point return procedure (Grid method)

Select manual continuous feed mode, and turn signal ZRN on (connect it with +24V). When feed towards the reference point is designated with the manual feed button, the moving part of the machine moves at rapid traverse. When the deceleration limit switch is operated and the contact of reference point return deceleration signal *DCX, *DCY, *DCZ, *DC4 opens, and the feed is decelerated. Thereafter, the moving part moves at a pre– determined low speed.

Thereafter, when the deceleration limit switch is operated and the moving part reaches the electric grid position, feed stops, and reference point return completion signal ZPX, ZPY, ZPZ, ZP4 is output. The direction in which an axis is returned to reference point can be set for each axis.

Once an axis is returned to reference point and the corresponding signal ZPX, ZPY, ZPZ or ZP4 is output, jog feed for that axis is invalid until signal ZRN is turned off.

(2) Reference point return Timing chart (Grid method)

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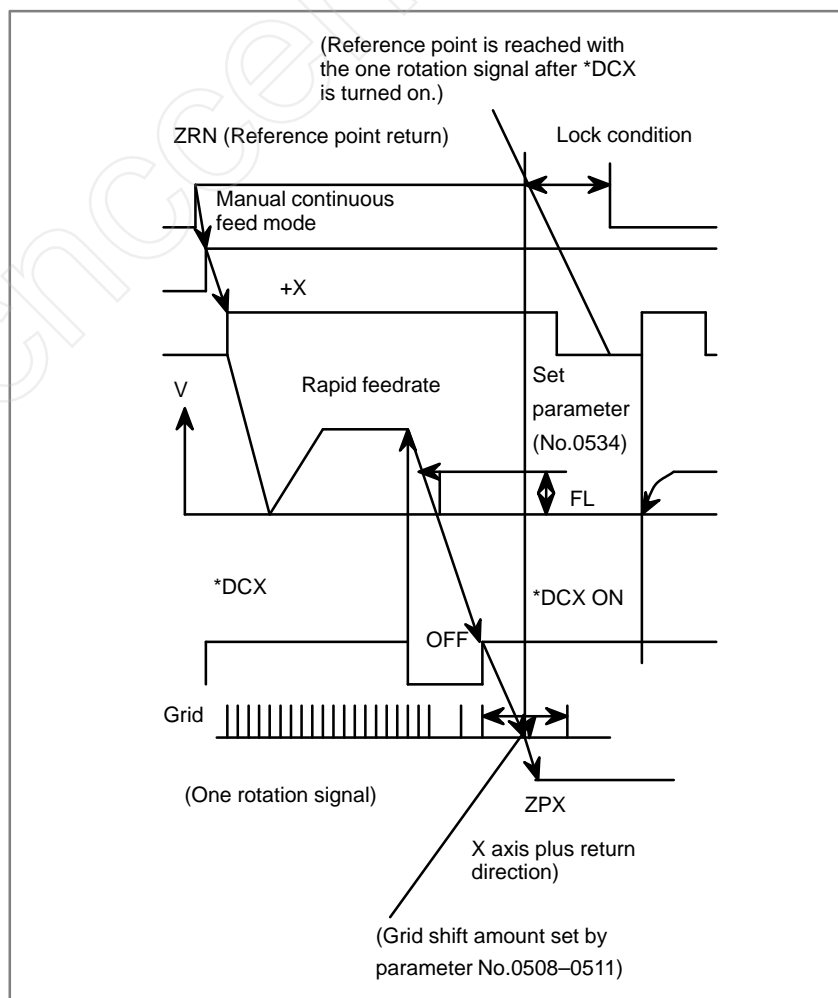
POWER OFF

0512	Position loop gain of X–axis

0513	Position loop gain of Y–axis

0514	Position loop gain of Z–axis

0515	Position loop gain of 4th–axis

[Data type] Word

[Data unit] 0.01/sec

[Data range] 1 to 9999

Position loop gains of X, Y, Z and 4th– axis are set in order.

> **NOTE**
> 1 These parameters are effective only when parameter 517 (position loop gain for all axes) is set to "0".
> 2 It is necessary to turn off CNC power after changing these parameters.

0516	PSANGN

S4/S5 digits control (Analog output)

PSANGN Sets the data for adjusting the gain of analog ouptut.

[Setting range] 700 to 1250

[Standard setting value] 1000

(Adjusting method)

(1) Set the standard setting value 1000.

(2) Designate the maximum S analog value (10V).

(3) Measure the output voltage.

(4) Set this value according to the following

$$\text{Setting value} = \frac{10.0}{\text{Measured voltage (V)}} \times 1000$$

(5) After setting the parameter, designate the maximum S analog value (10V) again, and make sure that the output voltage is 10V.

POWER OFF

0517	LPGIN

LPGIN Setting of servo loop gain in position control.

[Setting range] 1 to 9999 (unit: 0.01 sec)

> **NOTE**
> To set a loop gain to each axis, set No. 517 to 0 and set a loop gain of X axis, Y axis and so on. (The increment system is the same.)

Remarks: Generally set 3000.

0518	RPDFX

0519	RPDFY

0520	RPDFZ

0521	PRDF4

RPDFX, RPDFY, RPDFZ, RPFD4

Rapid traverse rate of X, Y, Z and 4th axes in turn.

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	30 to 24000	30 to 12000
Inch machine	0.1 [inch/min]	30 to 9600	30 to 4800
Rotation axis	1 [deg/min]	30 to 24000	30 to 12000

> **NOTE**
> Set "1" to the FML10 of parameter No. 49 for the other seting values.

0522	LINTX

0523	LINTY

0524	LINTZ

0525	LINT4

LINTX, LINTY, LINTZ, LINT4

Time constant of linear acceleration/deceleration of X, Y, Z and 4th axes in turn during rapid traverse.

[Setting range] 8 to 4000 (unit: msec.)

0527	FEDMX

FEDMX Upper speed of cutting feed (available for X, Y, Z axes)

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

> **NOTE**
> Set "1" to the FML10 of parameter No. 49 for the other cutting values.

0529	FEEDT

FEEDT Time constant of the exponential acceleration/deceleration in cutting feed and jog feed.

[Setting range] 0 to 4000

[Data unit] msec

Set this to "0", when the exponential acceleration/deceleration is not used.

0530	FEDFL

FEDFL The lower feed rate in exponential acceleration/deceleration.

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

0531	CYCR

CYCR Setting of relief amount in canned cycle G73 (high speed peck drilling cycle)

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001

[Setting range] 0 to 32767

0532	CYCD

CYCD Setting of the cutting start point in canned cycle G73 (peck drilling cycle)

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting range] 0 to 32767

0533	RPDFL

RPDFL The least speed of rapid traverse override (Fo) (Common to all axes)

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

0534	ZRNFL

ZRNFL   Low feed speed at reference point return (FL) (Common to all axes)

[Data range]

[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

0535	BKLX

0536	BKLY

0537	BKLZ

0538	BKL4

BKLX, BKLY, BKLZ, BKL4

Backlash amount of X, Y, Z and 4th axes, respectively.

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting amount]   0 to 32767

> **NOTE**
> Set a backlash compensation value with a detection unit when an arbitrary command multiply is used.

0539	GRHMAX

GRHMAX   Maximum spindle speed (for analog output with spindle function) at high gear (middle gear in case of 3–stage gear).
(Spindle speed with spindle speed voltage of 10V)

[Data range]

[Data unit]

	No. 0062#3 SMPRPM	
	0	1
Data unit	[RPM]	10 [RPM]
Data range	1 to 19999	1 to 9999

Remarks: In case of only one gear, set this value to low gear.

0540	Minimum spindle speed for the medium–speed gear in a tapping cycle (high–speed gear for two–stage gear switching)

[Data range]

[Data unit]

	No. 0062#3 SPMRPM	
	0	1
Data unit	[RPM]	10 [RPM]
Data range	1 to 19999	1 to 9999

[Description] <For three–stage gear switching>

Minimum spindle speed for the medium–speed gear in a G74/G84 tapping cycle

<For two–stage gear switching>

Minimum spindle speed for the high–speed gear in a G74/G84 tapping cycle

---

NOTE
1 This parameter is valid only when bit 6 (G84S) of parameter No. 0012 is set to 1.
2 The setting of this parameter is used regardless of whether S analog output gear switching type A or B is being selected (with bit 6 (LGCM) of parameter No. 0035).
3 This parameter is used for analog output for the spindle function.
4 See also "Setting the parameters related to S analog output."

0541	GRLMAX

GRLMAX Setting of the max. spindle speed at low speed gear (for S analog output). Set the spindle speed when the velocity command voltage is 10V.

[Data range]

[Data unit]

		No. 0062#3 SMPRPM	
		0	1
	Data unit	[RPM]	10 [RPM]
	Data range	1 to 19999	1 to 9999

0542	SPDMAX

SPDMAX Setting of the upper limit of output value to the spindle motor. (for S analog output)

$$\text{Setting value} = \frac{\text{Upper limit spindle motor speed}}{\text{Max. spindle motor speed}} \times 4095$$

[Setting range] 0 to 4095

0543	SPDMIN

SPDMIN Setting of the lower limit of output value to the spindle motor. (for S analog output)

$$\text{Setting value} = \frac{\text{Lower limit spindle motor speed}}{\text{Max. spindle motor speed}} \times 4095$$

[Setting range] 0 to 4095

Setting the parameters related to S analog output

For an analog interface spindle, a voltage of between 0 and 10 V is used to control the spindle motor. In the NC, however, 12–bit integers between 0 and 4095 (= FFFh) are used, thus supporting a resolution of 4096 steps. The minimum voltage increments are thus 10/4095 V.

Conversion from the value of a constant to a voltage

$$\text{Voltage (V)} = \frac{\text{Value}}{4095} \times 10 \text{ [V]}$$

Example:

When the value of a constant is 3071

$$\text{Voltage (V)} = \frac{3071}{4095} \times 10 \text{ [V]} = 7.5 \text{ [V]}$$

1) No. 0542: Sets the constant which specifies the upper limit on the output to the spindle motor.

2) No. 0543: Sets the constant which specifies the lower limit on the output to the spindle motor.

Clamping and gear switching are based on the voltages equivalent to these constants.

Example:

Spindle motor speed when the specified voltage is 10 V (specific to the motor) = 6000 [rpm]

Upper limit on the spindle motor speed (specified by the user) = 5000 [rpm]

Lower limit on the spindle motor speed (specified by the user) = 50 [rpm]

Given the above conditions, set the parameters as follows:

$$\text{No. } 0542 = \frac{\text{Upper limit on the spindle motor speed (specified by the user)}}{\text{Spindle motor speed when the specified voltage is 10 V (specific to the motor)}} \times 4095$$

$$= \frac{5000 \text{ [RPM]}}{6000 \text{ [RPM]}} \times 4095 = 3413 \text{ (equivalent to approx. 8.33 V)}$$

$$\text{No. } 0543 = \frac{\text{Lower limit on the spindle motor speed (specified by the user)}}{\text{Spindle motor speed when the specified voltage is 10 V (specific to the motor)}}$$

$$\times 4095 \frac{50 \text{ [RPM]}}{6000 \text{ [RPM]}} \times 4095 = 34 \text{ (equivalent to approx. 0.08 V)}$$

3) Set the gear switching points for S analog output.

The following two types of gear switching are supported for S analog output:

No. 0035 bit 6

LGCM = 0: S analog output gear switching type A

LGCM = 1: S analog output gear switching type B

(a) S analog output gear switching type A

Clamping or gear switching is performed so that the voltage specified for each gear does not exceed the limits specified with parameters No. 0542 and 0543.
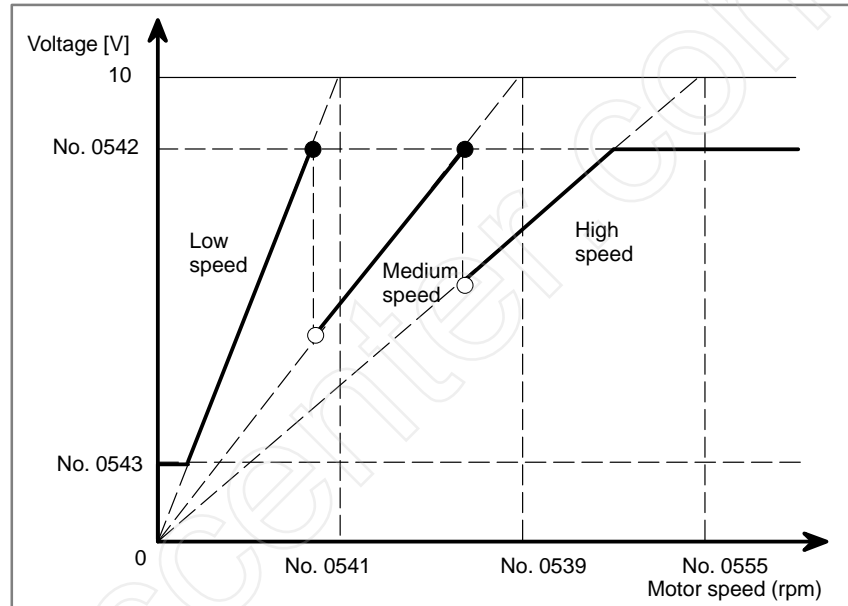
(b) S analog output gear switching type B

Gear switching is performed at the voltages obtained by converting the constants specified with parameters No. 0585 and 0586. Clamping is performed so that the limits specified with parameters No. 0542 and 0543 are not exceeded.
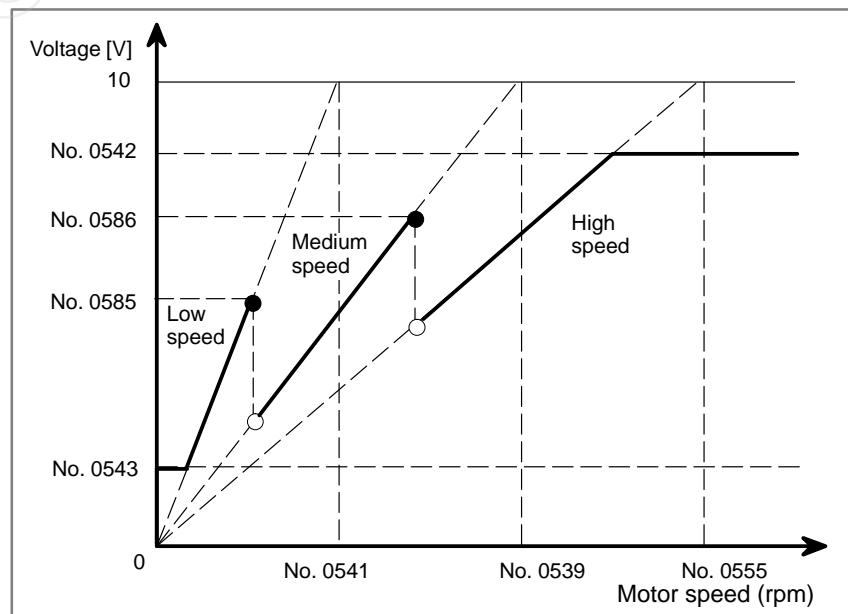
4) Gear switching in a tapping cycle (G74, G84)

Setting bit 6 (G84S) of parameter No. 0012 to 1 enables gear switching in a tapping cycle (G74, G84) to be performed based on the motor speeds specified with parameters No. 0540 and 0556.

0548		JOGFL

JOGFL   The lower limit of jog feed in exponential acceleration/deceleration (FL)
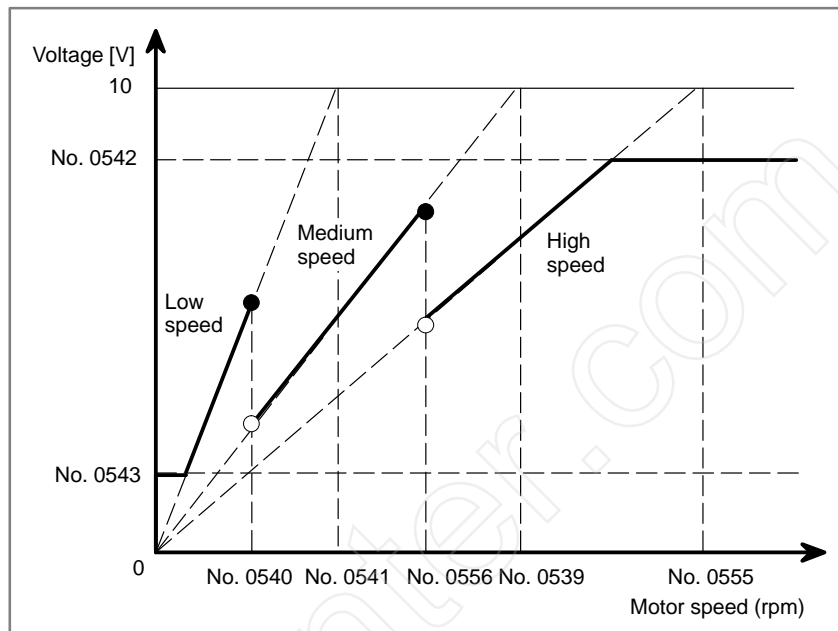
[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

0549		FINT

FINT   The cutting feedrate in AUTO mode at turning power on.

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800

(Generally, set "0" to this parameter and change it by program command. When the feedrate is constant and it is not necessary to change, set the feedrate to this parameter.)

0550		SEQINC

SEQINC   Number increment value in automatic insertion of equence No.

[Setting range]   0 to 9999

0552	BRATE0

BRATE0 This sets the baud rate when the reader/puncher interface is used.
(Effective when the setting parameter I/O is 0.)
Relation between the setting value and the baud rate is as follows:

Setting value	Baud rate
1	50
2	100
3	110
4	150
5	200
6	300
7	600
8	1200
9	2400
10	4800
11	9600

0553	BRATE1

BRATE1 This sets the baud rate when the reader/puncher interface is used.
(Effective when the setting parameter I/O is 1.)
Relation between the setting value and the baud rate is as follows:

Setting value	Baud rate
1	50
2	100
3	110
4	150
5	200
6	300
7	600
8	1200
9	2400
10	4800
11	9600

0555	GRTMAX

GRTMAX Setting of the max. spindle speed at high speed gear in 3–step gear selection (for S analog output)

[Data range]

[Data unit]

	No. 0062#3 SMPRPM	
	0	1
Data unit	[RPM]	10 [RPM]
Data range	1 to 19999	1 to 9999

0556	GRTMIN

GRTMIN Setting of the lower limit of the spindle speed when using high speed gear in 3–step gear selection.

[Data range]
[Data unit]

	No. 0062#3 SMPRPM	
	0	1
Data unit	[RPM]	10 [RPM]
Data range	1 to 19999	1 to 9999

0557	CRCDL

CRCDL When tool moves along the outside of an acute angle close to 90° during cutter compensation, limitations on ignoring a small movement amount. If both ΔX and ΔY are less than the set value, vector (2) is ignored.

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting range] 0 to 16383
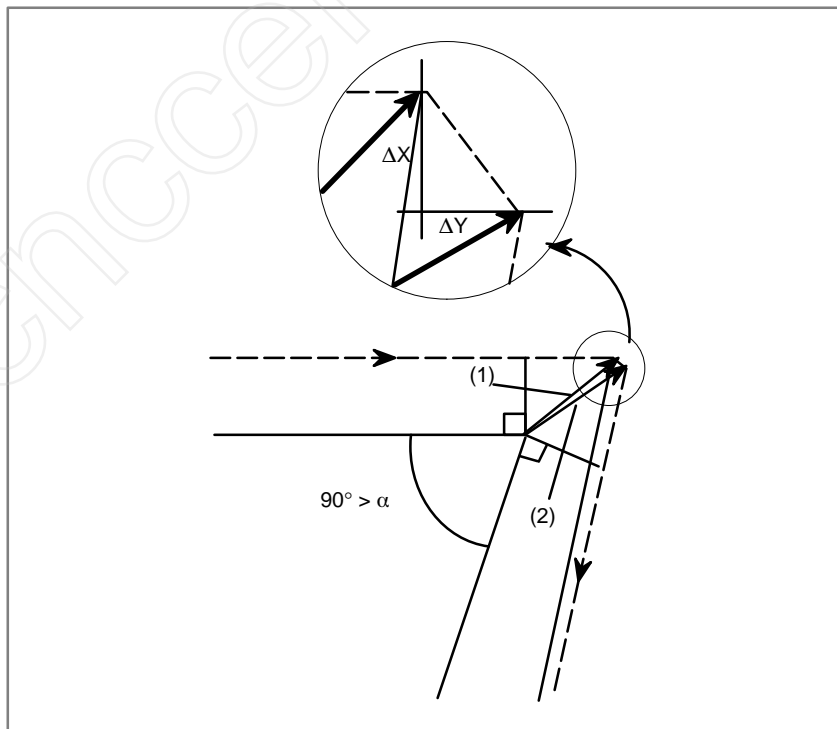
If $\Delta X <$ CRCDL and $\Delta Z\,(\Delta Y) <$ CRCDL, the small movement is ignored. This prevents the workpiece from being affected by stopping the tool at the corner.

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0559	RPDJX

0560	RPDJY

0561	RPDJZ

0562	RPDJ4

RPDJX, RPDJY, RPDJZ, RPDJ4

Rapid traverse rate in JOG mode for X, Y, Z and 4th axis in turn.

[Data range]

[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

If "0" is set to these parameters, the set values of parameter No.0518, 0519, 0520 and 0521 are used.

> **NOTE**
> Set the FML10 of parameter No. 49 to 1 for the other setting values.

0565	JOGF

JOGF Jog feed rate when the rotary switch position is 10 in feed rate B specification:

[Setting value] 1 to 2000

　　　[Unit] mm/min. deg/min (Metric output)

[Setting value] 1 to 800

　　　[Unit] 0.1 inch/min deg/min (Inch output)

> **NOTE**
> In increment system 1/10, the unit is the same.

e.g) When 200 is set to Parameter No. 565:
Feed rate becomes geometrical series of 200 mm/min (for metric output) or 20 inch/min (for inch output) in rotary Switch position 10.

0566	JOGFAD

JOGFAD Jog feed rate when rotary switch position is 10 for the additional axis (rotary axis) in feed rate B specification.

[Setting value] 1 to 2000

　　　[Unit] deg/min

e.g) When 200 is set to parameter No.566:
Feed rate becomes geometrical series of 200 deg/min in rotary switch position 10.

0567	FEDMAD

FEDMAD Upper limit of feed rate of all axes in case of feed rate B specification.

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

0568	RPDFLAD

RPDFLAD Low speed (Fo) of rapid traverse override for the additional axis in case of feed rate B specification.

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

0569	ZRNFLAD

ZRNFLAD Low feed rate (FL) at reference point return of the additional axis in case of feed rate B specification.

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

POWER OFF

0570	Capacity of reference counter for X–axis

0571	Capacity of reference counter for Y–axis

0572	Capacity of reference counter for Z–axis

0573	Capacity of reference counter for 4th–axis

[Data type] Word

[Data range] 0 to 32767

Capacities of reference counter for X, Y, Z and 4th–axis are set in order.

NOTE
1 The setting value is multiplied with 10 when using high resolution pulse coder.
2 Parameter 004 to 007 are valid when the these parameters are set to "0".
3 It is necessary to turn off CNC power after changing these parameters.

0577	SPDLC

SPDLC Set the compensation value for zero offset of spindle speed command voltage (for S4/S5 digits control option)

[Setting range] 0 to ±8191

[Unit] VELO

0585	SPDMXL

SPDMXL Sets the spindle speed rpm when low– and high–speed gears are changed over. Or set the spindle speed rpm when low– and medium–gears (3–step gears are used) are changed over.

$$\text{Setting value} = \frac{\text{Spindle changing speed}}{\text{Spindle max. speed}} \times 4095$$

[Setting value] 1 to 4095

0586	SPDMXH

SPDMXH Sets the spindle motor speed rpm at the time of medium– and high–speed gear change when 3–step gears are used.

$$\text{Setting value} = \frac{\text{Spindle changing speed}}{\text{Spindle max. speed}} \times 4095$$

[Setting value] 1 to 4095

0593	STPEX
0594	STPEY
0595	STPEZ
0596	STPE4

STPEX, Y, Z, 4 Position error limit value during X–axis, Y–axis, Z –axis and 4th axis stop in sequence

[Setting value] 0 to 32767

[Unit] Detection

0600	PARTRQ

PARTRQ Sets the number of machined parts required.

[Setting value] 0 to 9999

0601	PEXPJX

0602	PEXPJY

0603	PEXPJ3

0604	PEXPJ4

PEXPJX–PEXPJ4 Sets exponential acceleration/deceleration time constant sequentially in manual feed.

[Setting value] 0 to 4000

[Unit] msec

> **NOTE**
> If 0 is set then cutting feed and common data (PRM529) is used.

0605	PFLJGX

0606	PFLJGY

0607	PFLJGZ

0608	PFLJG4

PFLJGX–PFLJG4 Sets exponential acceleration/ deceleration rate sequentially in manual feed.

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

> **NOTE**
> If 0 is set then all axes common data (PRM548) is used.

0609	In–position width for cutting feed for X–axis

0610	In–position width for cutting feed for Y–axis

0611	In–position width for cutting feed for Z–axis

0612	In–position width for cutting feed for 4th axis

[Data unit] Detection unit

[Data range] 0 to 32767

[Description] These parameters specify the in–position width for cutting feed, for the cutting feed and rapid traverse separate in–position check function.

> **NOTE**
> These parameters are effective when bit 4 of parameter 0045 (CCINP) is set to 1.

POWER OFF

0613	TPFDT

TPFDT Time constants of spindle and Z–axis acceleration/deceleration in the tapping in the rigid mode (Exponential/linear type is selected by TPSUP.) The threading accuracy is affected when the time constant is either too long or too short.

[Data type] Word

[Setting value] 0 to 4000

**[Unit]** msec

[Standard setting] 200 to 150

○ When VALT (parameter No. 37) =1

Set the time constant when cutting the thread of

$$\text{standard lead} = \frac{\text{TPFBS (parameter No. 626)}}{\text{TPSMX (parameter No. 617)}}$$

The inclination of the acceleration/deceleration of the spindle is defined by this.

This function adjusts the actual time constant so as to maintain the inclination of the acceleration/dcelartion of the spindle even when any lead thread is cut under any conditions.
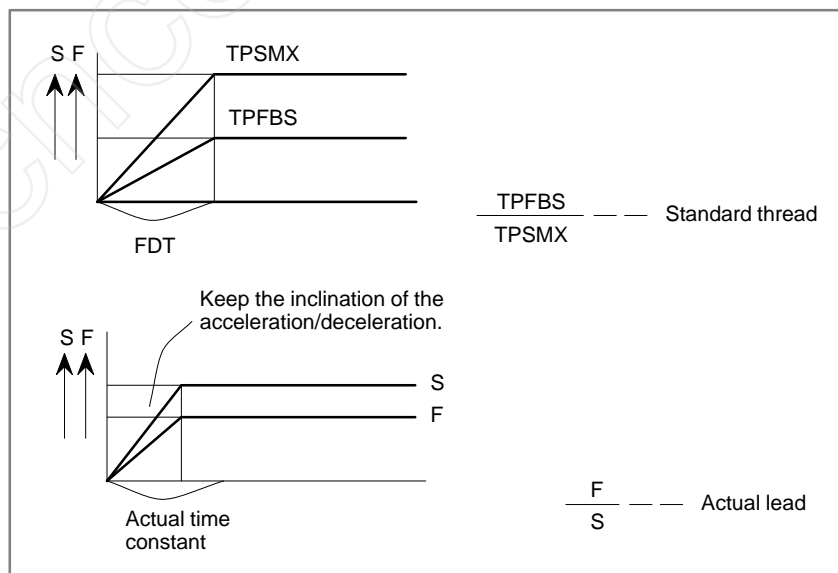
> **NOTE**
> Becauses the time constant is produced by proportional calculation even in the case of exponential–type aceleration/deceleration, there will be a small increase in error compared to linear–type acceleration/deceleration.

○ When VALT (parameter No. 37) =0

1. In case of exponential–type acceleration/deceleration

Time constat
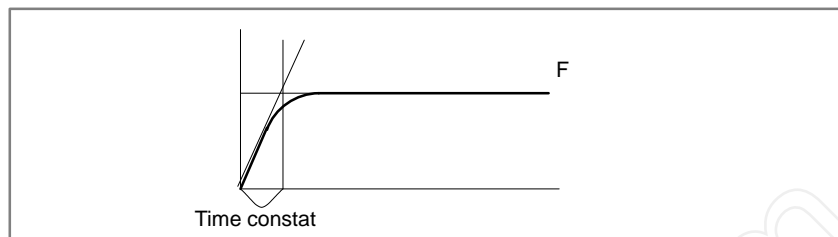
2. In case of linear–type acceleration/deceleration

Set the time taken to reach the lower limit speed (parameter No. 527 FEDMX) of the cutting feed.

Time constat

POWER OFF

0614	TPFFL

TPFFL Lower speed limit (valid only when TPSUP=0) at exponential acceleration/deceleration of the spindle and Z–axis in the rigid tapping. When this is increased, tact time is reduced, but the threading accuracy is affected.

[Data type] Word

[Setting value] 6 to 15000

[Unit] mm/min

[Standard setting] 30 to 10

POWER OFF

0615	TPLPG

TPLPG Spindle and Z–axis position control loop gain in the parameter in rigid tapping.
This has a large influence upon the threading accuracy. Make fine adjustment to obtain theoptimum value by performing the cutting test and matching with the loop gain multiplier.

[Data type] Word

[Setting value] 1 to 9999

[Unit] 0.01 msec–1

[Standard set value] 1500 to 3000

> **NOTE**
> To change the loop gain for each gear, reset the value of this parameter to 0 and set the loop gain for each gear in TPLGL (No. 0669), TPLGM (No. 0670) and TPLGH (No. 0671). If this parameter is not 0, the loop gain for each gear becomes invalid and the value set in this parameter is taken as a loop gain common to all gears.

POWER OFF

0616	LPGM9

LPGM9   Loop gain multiplier of the spindle in the rigid tapping for the high speed range. This has a large influence upon the thread accuracy.
Make fine adjustment to obtain the optimum value by performing the cutting test and matching with the loop gain.

[Data type] Word

[Setting value] 1 to 32767

Set value= $2048 \times E/L \times @ \times 1000$
E = Speed command voltage at 1000 rpm
L = Spindle rotation angle per spindle motor rotation
$@$ = Detection unit

Calculation example:
When the configuration is as shown in the following figure:
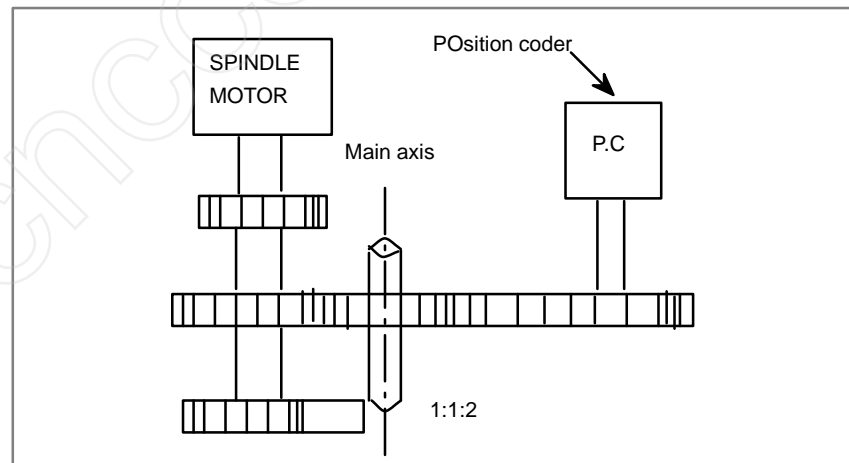
$E = 1.667$ [V]
(motor of 6000 rpm at 10 [V])
$L = 360°$
(Spindle is rotated one turn by one spindle motor rotation.)
$@ = La/4096$
   $= 720°/4096$
   $= 0.17587°$

$La = 720°$

Spindle must make two rotations $= 360° * 2$ for rotating the position coder one turn.)

$4096 =$ Detection pulse per position coder rotation.

○ Gear ratio between the spindle and the position coder
   1 : 1 . . . 0.08789 deg
   1 : 2 . . . 0.17578 deg
   1 : 4 . . . 0.35156 deg
   1 : 8 . . . 0.70313 deg

   Therefore, the loop gain multiplier
   $= 2048 \times 1.667/360 \times 0.17578 \times 1000$
   $= 1667$

NOTE
   Donot miss to set the gear ratio parameter (No. 0028) between the detection unit based on this parameter.

POWER OFF

0617	TPSMX

TPSMX   Maximum allowable speed of the spindle in the rigid tapping.

[Data type] Word

[Setting value] (for spindle and position coder gear ratio)

Gear ratio	Setting range
1 : 1	0 to 7400
1 : 2	0 to 9999
1 : 4	0 to 9999
1 : 8	0 to 9999

[Unit] PRM

[Standard setting] 3600

0618	TPIPZ

TPIPZ   Z–axis in–position width in the rigid tapping

[Data type] Word

[Setting value] 1 to 32767

[Unit] Detection unit

[Standard setting] 20

0619	INP9

INP9   Spindle in–position width in the rigid tapping When this is too much increased, the threading accuracy is affected.

[Data type] Word

[Setting value] 0 to 32767

[Unit] Detection unit

[Standard setting] 20

0620	TPERZ

TPERZ Limit value of position deviation during movement of Z axis in the rigid tapping mode

[Data type] Word

[Setting value] 0 to 32767

[Unit] Detection unit

When a one–tenth resolution detector is used, the unit becomes ten times the detection unit.

0621	TPER9

TPER9 Limit value of position deviation during movement of the spindle in the rigid mode tapping

[Data type] Word

[Setting value] 1 to 32767

Set value $= S \times 360/60 \times 1/G \times 1/@ \times 100 \times 1.5$

S: Maximum spindle speed to perform the rigid tapping
   (Value of parameter No. 0617)

G: Loop gain in the rigid mode tapping axis
   (Value of parameter No. 0615)

@: Detection unit for spindle and position coder gear ratio

   Gear ratio   Detection unit
   1 : 1 .... 0.8789 deg
   1 : 2 .... 0.17578 deg
   1 : 4 .... 0.35156 deg
   1 : 8 .... 0.70313 deg

Calculation example:
   S = 3600
   G = 3000
   @ = 0.17578
      (Gear ratio between spindle and position coder 1:2)
   TPER9 $= (3600 \times 360)/60 \times 1/3000 \times 1/0.17578 \times 100 \times 1.5 = 6144$

0622	TPESZ

TPESZ Limit value of position deviation during stop of Z axis in the rigid mode tapping

[Data type] Word

[Setting value] 0 to 32767

[Unit] Detection unit

[Standard setting] 500

0623	TPES9

TPES9 Limit value of position deviation during stop of the spindle in the rigid mode tapping

[Data type] Word

[Setting value] 0 to 32767

[Unit] Detection unit

[Standard setting] 500

POWER OFF

0624	LGM9M

LGM9M Spindle loop gain multiplier in the rigid mode tapping for middle gear. (Set when two–stage or more gears are used).

[Data type] Word

[Setting value] 1 to 32767

Set value $= 2048 \times E/L \times @ \times 1000$
- E = Speed command voltage at 1000 rpm
- L = Spindle rotation angle per spindle motor rotation
- $@$ = Detection unit

Calculation example:
When the configuration is as shown in the following figure:
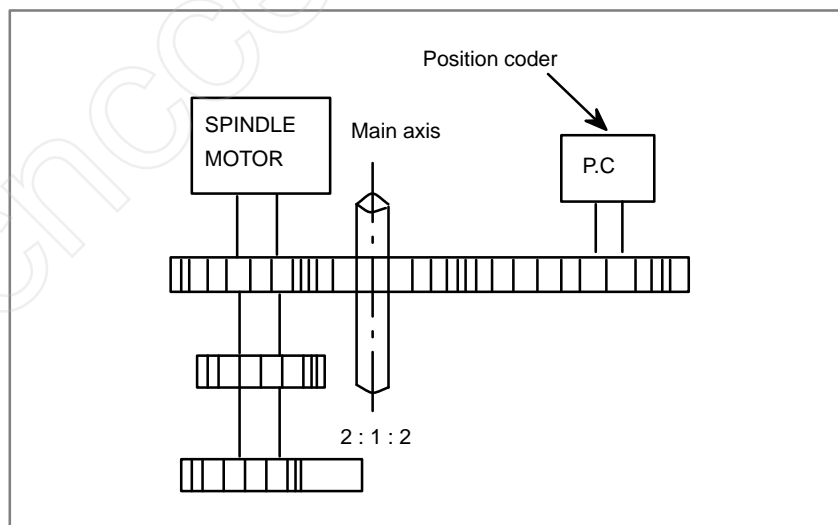
$E = 1.667$ [V] (motor of 6000 rpm at 10 [V])

$L = 720°$
(Spindle is rotated one turn by one spindle motor rotation.)

$@ = La/4096$
$= 720°/4096 = 0.17578°$

$La = 720°$
(Spindle must make two rotations$=360° \times 2$ for rotating the position coder one turn.)
4096 = Detection pulse per position coder rotation

Loop gain multiplier $= 2048 \times 1.667 \times 360 \times 0.17578 \times 1000$

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POWER OFF

0625	LGM9H

LGM9H Spindle loop gain multiplier for high speed gear in parameter is the rigid tapping. (Used for 3–stage gear).

[Data type] Word

[Setting value] 1 to 32767

> **NOTE**
> Refer to parameter No. 0624 for calculation formula.

Send speed for rigid mode tapping standard lead constant

TPFBS: Send speed for standard read constant for rigid mode tapping.

POWER OFF

0626	TPPBS

TPFBS Feedrate for standard lead constant for rigid mode tapping

[Data type] Word

[Setting value] 6 to 15000

[Unit] mm/min

> **NOTE**
> VALT (parameter No.37)=1 is valid.
> Outside the above setting range, use FML10=1 of parameter No.49. Also, even when setting unit is 1/10 the unit is the same.

0627	ERR9

ERR9 Spindle position deviation value in the rigid tapping.
(Used for diagnosis)

[Data type] Word

[Unit] Detection unit

0628	IPR9

IPR9 Spindle distribution amount in the rigid tapping. (Used for diagnosis)

[Data type] Word

[Unit] Detection unit

0651	PEFDTX

0652	PEFDTY

0653	PEFDTZ

0654	PEFDT4

PEFDTX – 4   Time constants of exponential acceleration/ deceleration of PMC axis cutting feed for each axis.

[Setting value] 0 to 4000

[Unit] msec

> **NOTE**
> When 0 is set, the data for NC (PRM No. 529) is used.

0657	PEFLX

0658	PEFLY

0659	PEFLZ

0660	PEFL4

PEAFLX – 4   Lower limit speeds (FL) at exponential acceleration/deceleration of PMC axis cutting feed for each axis.

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

> **NOTE**
> When 0 is set, the cutting FL speed for NC (PRM No. 530) is used.

0663	GRPLW

GRPLW   Set the number of teeth of the 1st stage gear in the spindle when the gear ratio is optional in the rigid tapping mode.

[Data type] Word

[Setting value] 1 to 32767

> **NOTE**
> Valid when VALPC (parameter No.63) = 1. When the position coder is provided in the spindle, set the same value in GRPLW, GRPMD and GRPHI.

0664	GRPMD

GRPMD Set the number of teeth of the 2nd stage gear in the spindle when the gear ratio is optional in the rigid tapping mode.

[Data type] Word

[Setting value] 1 to 32767

> **NOTE**
> Valid when VALPC (parameter No.63) = 1.

0665	GRPHI

GRPHI Set the number of teeth of the 3rd stage gear in the spindle when the gear ratio is optional in the rigid tapping mode.

[Data type] Word

[Setting value] 1 to 32767

> **NOTE**
> Valid when VALPC (parameter No.63) = 1.

0666	GRQLW

GRQLW Set the number of teeth of the 1st stage gear in the position coder when the gear ratio is optional in the rigid tapping mode.

[Data type] Word

[Setting value] 1 to 32767

> **NOTE**
> Valid when VALPC (parameter No.63) = 1. When the position coder is provided in the spindle, set the same value in GRQLW, GRQMD and GRQHI. When the spindle coder is built in the spindle motor, a position coder of 2048 p/rev is available. At this time, set the number of teeth by the value double the actual number. (For converting to 4096 p/rev) This is the same for GRQMD and GRQHI.

0667	GRQMD

GRQMD Set the number of teeth of the 2nd stage gear in the position coder when the gear ratio is optional in the rigid tapping mode.

[Data type] Word

[Setting value] 1 to 32767

> **NOTE**
> Valid when VALPC (parameter No.63) = 1

0668	GRQHI

GRQHI Set the number of teeth of the 3rd stage gear in the position coder when the gear ratio is optional in the rigid tapping mode.

[Data type] Word

[Setting value] 1 to 32767

> **NOTE**
> Valid when VALPC (parameter No.63) = 1.

POWER OFF

0669	TPLGL

TPLGL Loop gain for position control of the spindle and Z–axis of each gear in the rigid tapping mode. Set the position control loop gain of the 1st stage gear.

[Data type] Word

[Setting value] 1 to 9999

[Unit] 0.01 msec–1

POWER OFF

0670	TRLGM

TRLGM Loop gain for position control of the spindle and Z–axis of each gear in the rigid tapping mode. Set the position control loop gain of the 2nd stage gear.

[Data type] Word

[Setting value] 1 to 9999

[Unit] 0.01 msec–1

POWER OFF

0671	TPLGH

TPLGH Loop gain for position control of the spindle and Z–axis of each gear in the rigid tapping mode. Set the position control loop gain of the 3rd stage gear.

[Data type] Word

[Setting value] 1 to 9999

[Unit] 0.01 msec–1

| 0672 | | FL speed of reference point return by PMC axis control |

[Data type] Word

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

FL speed of reference point return by PMC axis control is set. When "0" is set, parameter 534 is used for FL spped of PMC axis control.

| 0683 | | Rotation speed of normal direction control |

[Data type] Word

[Data unit] 1 deg/min

[Data range] 6 to 15000

Rotation speed for inserted rotary axis motion at the corner is set when using normal direction control.

| 0684 | | Declaration end speed of error detect function |

[Data type] Word

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

Declaration end speed of error detect function is set. When command speed becomes less than the setting value, the next block starts.

| 0685 | | F0 speed of PMC axis control with using independent rapid override |

[Data type] Word

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	IS–C
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

F0 speed of PMC axis control is set when using override independent of CNC axis control.

NOTE
This parameter is effective when setting both parameter 078#7 (EAXOVE) and 078#6 (RDRNE) are set to "1".

0686	Backlash compensation value for rapid traverse for X–axis

0687	Backlash compensation value for rapid traverse for Y–axis

0688	Backlash compensation value for rapid traverse for Z–axis

0689	Backlash compensation value for rapid traverse for 4th axis

[Data unit]

Setting system	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001

[Data range] 0 to 2550

[Description] These parameters specify the backlash compensation value for rapid traverse for each axis.

0692	Time constant of rigid tapping for low gear

[Data type] Word

[Data unit] 1 msec

[Data range] 0 to 4000

Time constant of acc/dec in rigid tapping for middle gear is set. When linear acc/dec (parameter 254 = 1) and parameter 037#6 (VALT) = 1 is selected, this parameter indicates the required time from spindle speed 0 to parameter 695. Actual time constant varys proportionally to the actual spindle speed. When parameter 037#6 (VALT) is set to 0, this parameter indicates real time constant for all tapping with middle gear.

> **NOTE**
> 1 This parameter is effective only when parameter 077#1 (CT3G) is set to "1".
> 2 Parameter 0613 should be set the time constant for high gear .

0693	Time constant of rigid tapping for middle gear

[Data type] Word

[Data unit] 1 msec

[Data range] 0 to 4000

Time constant of acc/dec in rigid tapping for middle gear is set. When linear acc/dec (parameter 254 = 1) and parameter 037#6 (VALT) = 1 is selected, this parameter indicates the required time from spindle speed 0 to parameter 695. Actual time constant varys proportionally to the actual spindle speed. When parameter 037#6 (VALT) is set to 0, this parameter indicates real time constant for all tapping with middle gear.

NOTE
1 This parameter is effective only when parameter 077#1 (CT3G) is set to "1".
2 Parameter 0613 should be set the time constant for high gear.

| 0694 | Maximum spindle speed of rigid tapping for low gear |

[Data type] Word

[Data unit] rpm

Gear ratio between spindle and position coder	Data range
1 :1	0 to 7400
1:2	0 to 9999
1:4	0 to 9999
1:8	0 to 9999

Maximun spindle speed of rigid tapping for low gear is set.

NOTE
1 This parameter is effective only when both parameter 077#1 (CT3G) and 037#6 (VALT) are set to "1".
2 Maximum spindle speed of rigid tapping for high gear should be set in parameter 617.

| 0695 | Maximum spindle speed of rigid tapping for middle gear |

[Data type] Word

[Data unit] rpm

Gear ratio between spindle and position coder	Data range
1 :1	0 to 7400
1:2	0 to 9999
1:4	0 to 9999
1:8	0 to 9999

Maximun spindle speed of rigid tapping for middle gear is set.

NOTE
1 This parameter is effective only when both parameter 077#1 (CT3G) and 037#6 (VALT)are set to "1".
2 Maximum spindle speed of rigid tapping for high gear should be set in parameter 617.

0696	Instantaneous difference of servo lags between tapping axis and spindle

[Data type] Word

[Data unit] %

Instantaneous difference of servo lags between tapping axis and spindle is indicated as DGN data.

0697	Maximum difference of servo lags between tapping axis and spindle

[Data type] Word

[Data unit] %

Maximum difference of servo lags between tapping axis and spindle is indicated as DGN data.

0698	Maximum feedrate per revolution by PMC axis control

[Data type] Word

[Data range]
[Data unit]

Setting unit	Data unit	Data range	
		IS–A, IS–B	**IS–C**
Millimeter machine	1 [mm/min]	6 to 15000	6 to 12000
Inch machine	0.1 [inch/min]	6 to 6000	6 to 4800
Rotation axis	1 [deg/min]	6 to 15000	6 to 12000

Maximum feedrate per revolution by PMC axis control is set.

| 0699	Multiplier for handle feed

[Data type] Word

[Data range] 0t ot ± 1000

The multiplier of handle feed with both handle motion select signals MP1 and MP2 on is set. When minus value is specified, the actual motion is opposite of handle direction.

> **NOTE**
> When "0" is specified, parameter 121 becomes effective instead of this parameter .

0700	LT1X1
0701	LT1Y1
0702	LT1Z1
0703	LT141
0704	LT1X2
0705	LT1Y2
0706	LT1Z2
0707	LT142
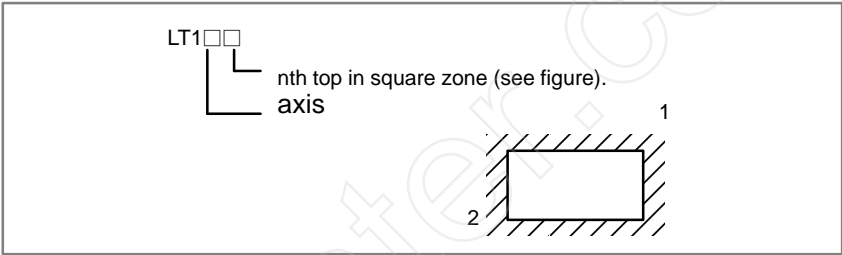
Set stroke limit mentioned above.

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001

[Setting value] 0 to ±99999999

Set with the distance from the reference point.

In the case of diameter designation, set with the diameter designation value.

The outside of the boundary set with the parameter is set as the inhibited region. Normally, set at the max. stroke of the machine.

When the axis enters the inhibited region, overtravel alarm is indicated. A margin should be provided with respect to the stroke to cope with the fluctuation in the detecting operation. As a rule, in the case of metric designation, multiply the rapid traverse by a factor of 1/5 and set it as the margin.

Example) Rapid traverse 10 m/min.

$10 \times 1/5 = 2$ mm

The actual position of the machine slightly differs from the position stored in the CNC unit after the power is turned on, emergency stop is reset, or servo alarm is reset. Therefore, before starting operation, be sure to return the axes to reference point. Otherwise, overtravel detecting position deviates by the value corresponding to the above–described deviation in the position.

When the parameters are set as follows, the stroke limit becomes infinite.

LT1□1<LT1□2

Axis name

Example) LT1Z1 = –1 and LT1Z2 = 1
         the Z axis stroke becomes infinite.

NOTE
1 For the axis whose stroke is infinite, the incremental command can be specified. If the absolute command is specified, the absolute register may overflow and it is not operated normally.
2 These parameters cannot be set for the rotary axis.

0708	PRSX

0709	PRSY

0710	PRSZ

0711	PRS4

PRSX, PRSY, PRSZ, PRS4

These set the coordinate values of the reference point of the X, Y, Z and 4th axes when automatic   coordinate system setting is conducted, respectively.

[Setting range] 0 to ±99999999

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

POWER OFF

0712	PECINTX

0713	PECINTY

0714	PECINTZ

0715	PECINT4

PECINTX, PECINTY, PECINTZ, PECINT4

Pitch error compensation interval for each axis.

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting range] 8000 to 99999999
          4000 to 99999999

NOTE
   If zero is set, no compensation is done.

0735	REF2X

0736	REF2Y

0737	REF2Z

0738	REF24

REF2X, REF2Y, REF2Z, REF24

Distance frim the reference point to the 2nd reference point for X, Y, Z, and 4th axes, respectively.

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting range] 0 to ±99999999

POWER OFF

0739	ABSXP

0740	ABSYP

0741	ABSZP

0742	ABS4P

ABSXP, ABSYP, ABSZP, ABS4P

Counter data at the reference point when the absolute pulse ABSYP, coder is used.

These parameters are automatically set when the tool has returned to the reference point. So it is not necessary to set values to these parameters.

0743	LT2X1

0744	LT2Y1

0745	LT2Z1

0746	LT241

0747	LT2X2

0748	LT2Y2

0749	LT2Z2

0750	LT242

LT2X1–LT242 Check stroke limit using these parameters, not parameter Nos. 0700 to 0707 when EXLM2 (G129.6) signal is ON.

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001

[Data range] 0 to ±99999999

> **NOTE**
> Valid only when parameter No. 915LM2=1.

0751	EXOFS1
0752	EXOFS2
0753	EXOFS3
0754	EXOFS4

EXOFS1 to 4 External work zero–point offset amount of X–axis, Y–axis, Z–axis and 4th–axis in sequence.

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting value] 0 to ±7999

> **NOTE**
> This parameter sets the zero–point position of work coordinate system (G54 to G59). The work zero–point offset amount is different for every work coordinate system, but this parameter sets the offset amount common to all work coordinate systems. Normally, machine–side input (external data input) is used for automatic setting.

0755	ZOF1S1
0756	ZOF1S2
0757	ZOF1S3
0758	ZOF1S4

ZOFISI to 4 1st work zero–point offset amount of X–axis, Y–axis, Z–axis and 4th axis in sequence. (G54)

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting value] 0 to ±99999999

Normally, data are inputted from the work coordinate system setting screen.

0759	ZOF2S1

0760	ZOF2S2

0761	ZOF2S3

0762	ZOF2S4

ZOF2S1 to 4   2nd work zero–point offset amount of X–axis, Y–axis, Z–axis and 4th axis in sequence. (G55)

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting value]   0 to ±99999999

Normally, data are inputted from the work coordinate system setting screen.

0763	ZOF3S1

0764	ZOF3S2

0765	ZOF3S3

0766	ZOF3S4

ZOF3S1–4   3rd work zero–point offset amount of X–axis, Y–axis, Z–axis and 4th axis in sequence.

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

Normally, data are inputted from the work coordinate system setting screen.

0767	ZOF4S1

0768	ZOF4S2

0769	ZOF4S3

0770	ZOF4S4

ZOF4S1 to 4   4th work zero–point offset amount of X–axis, Y–axis, Z–axis and 4th axis in sequence. (G57)

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting value]   0 to ±99999999

Normally, data are input from the work coordinate system setting screen.

0771	ZOF5S1

0772	ZOF5S2

0773	ZOF5S3

0774	ZOF5S4

ZOF5S1 to 4 5th work zero–point offset amount of X–axis, Y–axis, Z–axis and 4th axis in sequence. (G58)

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting value] 0 to ±99999999

Normally, data are input from the work coordinate system setting screen.

0775	ZOF6S1

0776	ZOF6S2

0777	ZOF6S3

0778	ZOF6S4

ZOF6S1 to 4 6th work zero–point offset amount of X–axis, Y–axis, Z–axis and 4th axis in sequence. (G59)

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001
Rotation axis [deg]	0.01	0.001	0.0001

[Setting value] 0 to ±99999999

Normally, data are input from the work coordinate system setting screen.

0779	PARTAL

PARTAL No. of machined parts in total

[Setting value] 0 to 99999999

0797	Lock for displaying part program No. 9000 to 9999

[Data type] 2 word

[Data range] 0 to 99999999

A number is set to prohibit displaying part programs which program number is from 9000 to 9999. This parameter is effective only when 010#4 (PRG9) is set to "1". Parameter PRG9 can not be turned to "0" unless parameter 798 is coincident with the parameter.

The actual setting value is not displayed.

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0798	Key for displaying part program No. 9000 to 9999

[Data type] 2 word

[Data range] 0 to 99999999

Parameter PRG9 can be turned to "0" if the same number as parameter 797 is set in this parameter.

The actual setting value is not displayed too.

0799	ABS9

ABS9 Spindle distribution cumulative value for the rigid tapping. (Used for diagnosis)

[Data type] 2–word

[Unit] Detection unit

0815	PRSTIX
0816	PRSTIY
0817	PRSTIZ
0818	PRSTI4

PRSTIX – PRSTI8 Coordinate values of the reference point in automatic coordinate system setting.
(Input is in inch and PRM No.63 bit 1 PRSTIN=1)

[Data unit]

Setting unit	IS–A	IS–B	IS–C
Millimeter machine [mm]	0.01	0.001	0.0001
Inch machine [inch]	0.001	0.0001	0.00001

[Setting value] 0 to ±99999999

0832	Limit angle of inserting rotary axis motion for normal direction control

[Data type] 2 word

[Data unit] 0.001 deg

[Data range] 1 to 99999999

When the rotation angle is less than the specified value, no rotary axis motion of normal direction control is inserted.
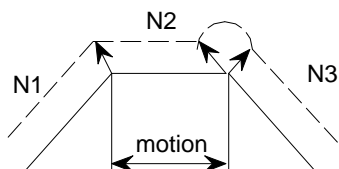
| 0833	Limit motion for inserting rotary axis motion for normal direction control

[Data type] 2 word

[Data unit] input increment

[Data range] 1 to 99999999

When tha command motion is less than the specified value, no rotary axis motion of normal direction control is inserted.

In case of linear motion, If the motion of N2 is less than the specified value, no rotary axis motion is inserted at the corner of N1/ N2.
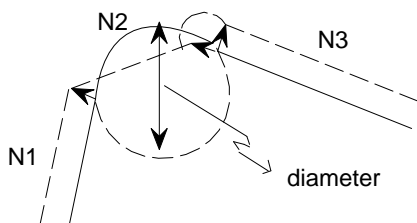
In case of circle motion, if the diameter of N2 is less than the specified value, no rotary axis motion is inserted at the corner of N1/ N2 and along the circle N2.

0838	Minimum grinding wheel diameter for a grinding wheel diameter check

[Data unit] 0.001 (mm) for metric input, or 0.0001 (inches) for inch input

[Data range] 0 to 999999

[Description] Specifies the minimum grinding wheel diameter to be used in a grinding wheel diameter check.

> **NOTE**
> Bit 3 of F165 (GWLF) becomes 1 when the specified compensation amount is less than the minimum grinding wheel diameter.

0860	Movement of rotary axis per one revolution

[Data type] 2 word

[Data unit] input increment

[Data range] 1000 to 10000000

Movement of rotary axis per one revolution is set for roll–over function.

0876	Tolerance of circle radius between start point and end point

[Data type] 2 word

[Data unit] input increment

[Data range] 0 to 99999999

The tolerance of circle radius between start point and end point is set. When the difference of radius between start point and end point exceeds the specified value, alarm 20 will appear.

0957	Maximum spindle lag of rigid tapping for low gear

0958	Maximum spindle lag of rigid tapping for middle gear

0959	Maximum spindle lag of rigid tapping for high gear

[Data type] 2 word

[Data unit] detection unit of spindle

[Data range] 0 to 32767

Maximum spindle lag of rigid tapping for low, middle and high gear is set respectively.

> **NOTE**
> These parameter are effective only when parameter 388#6 (CHKERC) is set to "1".

Setting pitch error compensation

Setting the pitch error compensation interval

Pitch error compensation points are located at equal intervals, specified for each axis. Pitch error compensation is performed at the midpoint of each compensation interval. (See the following figure.)
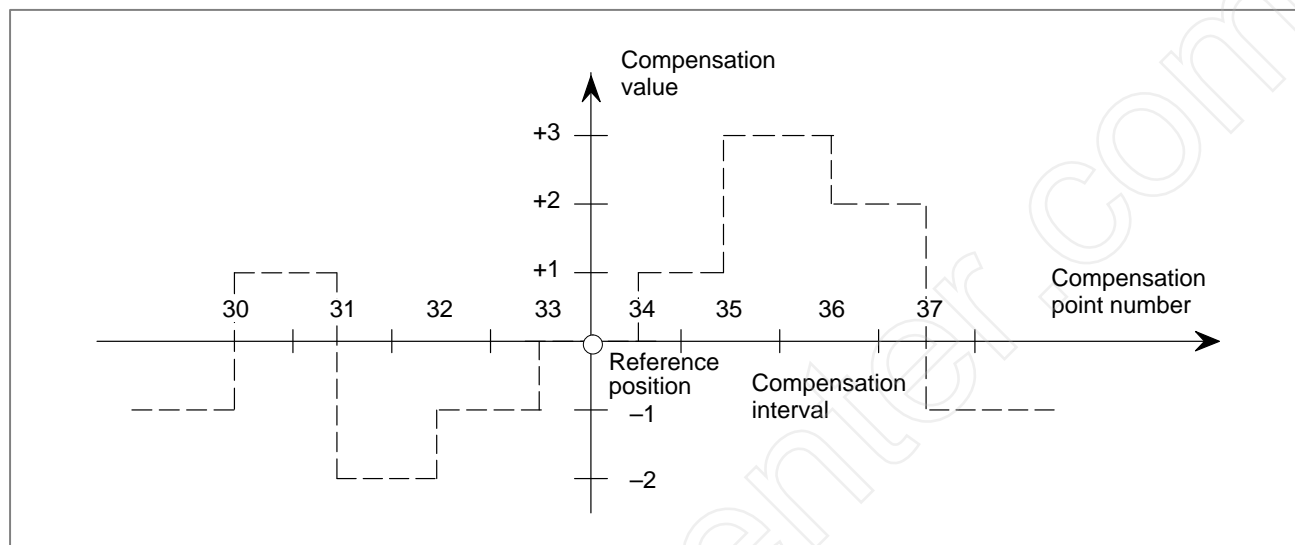
Compensation point number	30	31	32	33	34	35	36	37
Set compensation value	–2	+3	–1	–1	+1	+2	–1	–3

If the compensation interval is set to 0, pitch error compensation is not performed for that axis. The minimum interval between pitch error compensation points is limited to the following value:

Minimum pitch error compensation interval = Maximum rapid traverse rate/1875

Example:

When the maximum rapid traverse rate is 15000 mm/min, the minimum interval between pitch error compensation points is 8 mm.

0712	Compensation interval for X–axis pitch error compensation

0713	Compensation interval for Y–axis pitch error compensation

0714	Compensation interval for Z–axis pitch error compensation

0715	Compensation interval for 4th–axis pitch error compensation

[Data unit] Output units

[Data range] 8000 to 99999999 (metric output)
4000 to 99999999 (inch output)

[Description] These parameters are used to set the interval between pitch error compensation points for each axis.

Setting the pitch error compensation origin

Up to 128 pitch error compensation points can be set. Among them, specify the pitch error compensation point that corresponds to the reference position, as the pitch error compensation origin. In the following example, the pitch error compensation number corresponding to the reference position is set to 33:

| 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | Compensation point |

Reference position

| 1000 | Pitch error compensation origin for the X–axis |

to

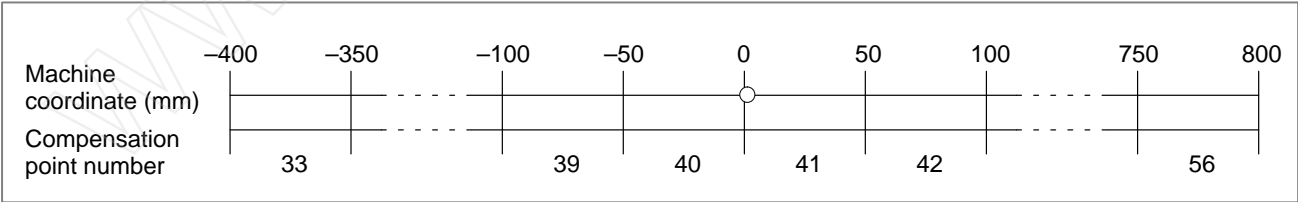| 4000 | Pitch error compensation origin for the 4th axis |

[Data range] 0 to 128

[Description] These parameters are used to set the number of the pitch error compensation origin for each axis.

Setting the pitch error compensation

Set the pitch error compensation for each compensation interval. The pitch error compensation can be set within a range of 0 to ± 7. The actual compensation values are obtained by multiplying the set values by a magnification specified with a parameter.

Example:
- Machine stroke   : –400 mm to +800 mm
- Pitch error compensation origin   :   40
- Pitch error compensation interval : 50 mm
- Farthest compensation number in the positive direction = (compensation origin number) + (positive stroke/compensation interval) = 40 + 800/50 = 56
- Farthest compensation number in the negative direction = (compensation origin number) – (negative stroke/compensation interval) + 1 = 40 – 400/50 + 1 = 33

| | –400 | –350 | –100 | –50 | 0 | 50 | 100 | 750 | 800 |
Machine coordinate (mm)

Compensation point number   33   39   40   41   42   56

The compensation corresponding to each compensation point number is output at the midpoint of the corresponding interval. The following is an example:

Number	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Compensation	+2	+1	+1	−2	0	−1	0	−1	+2	+1	0	−1	−1	−2	0	+1	+2
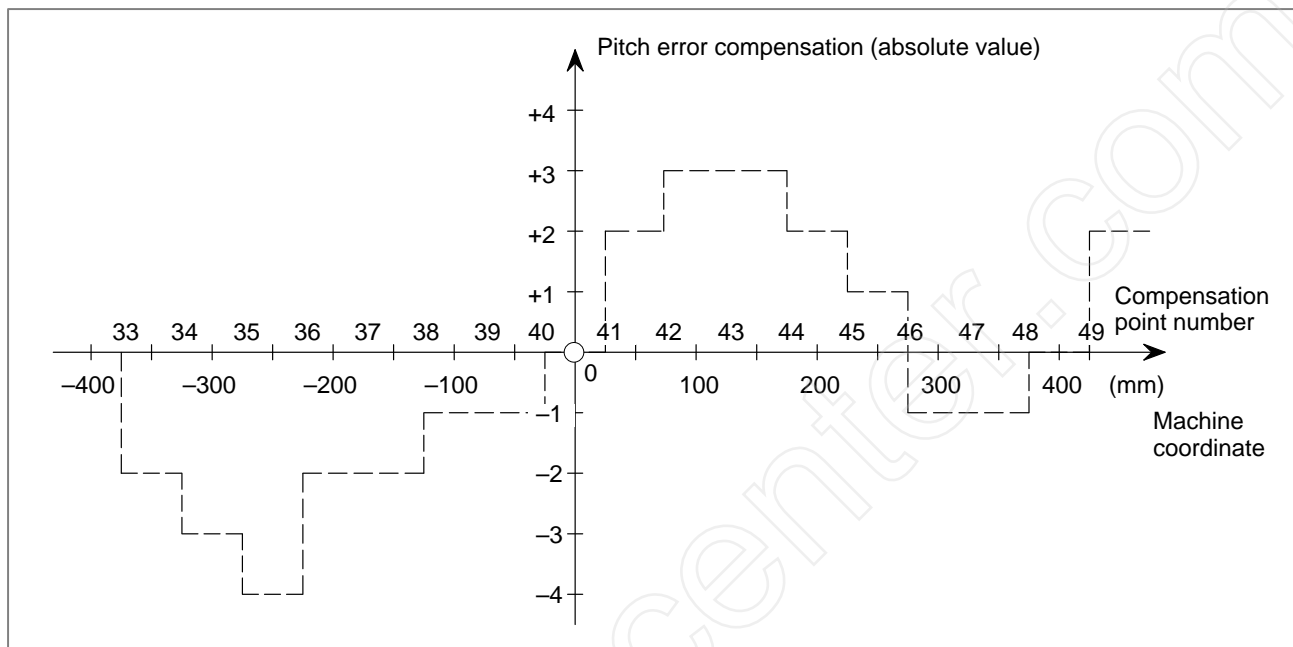
□001	Pitch error compensation value of No.0 of □–th axis

to

□128	Pitch error compensation value of No.127 of □–th axis

[Data range] 0 to ±7

[Description] Set the pitch error compensation value of No.0 to 127 of □–th axis

POWER OFF	#7	#6	#5	#4	#3	#2	#1	#0
0011							PML2	PML1

PML1, PML2 Set the magnification of pitch error compensation as below table.

#1 PML2	#0 PML1	Magnification
0	0	×1
0	1	×2
1	0	×4
1	1	×8

Setting pitch error compensation for a rotation axis

For a rotation axis, pitch error compensation of rotation axis type is performed, such that any compensation points in the negative direction are ignored. The result obtained by adding one to the result of dividing the angle corresponding to a single revolution (360000) by the pitch error compensation interval is set as the number of compensation points for a rotation axis.
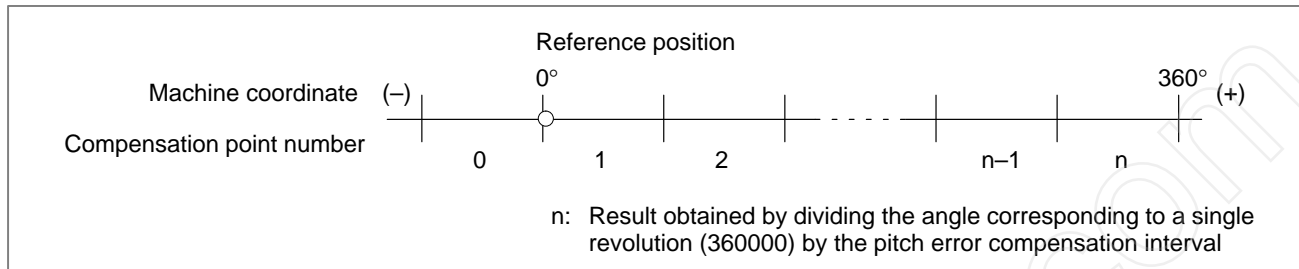
Set 0 as the pitch error compensation origin. Set an identical value for the pitch error compensation for both compensation points 0 and n.

Example:
When the pitch error compensation interval is set to 6°.

Parameter	Set value
Pitch error compensation origin	0
Pitch error compensation interval	6000

In this case, set compensation values as follows:

($\square$ indicates the axis number.)

Parameter (pitch error compensation value)	Set value of parameter
$\square$001	Compensation value between –6° and 0° (Compensation value between 354° and 360°)
$\square$002	Compensation value between 0° and 6°
$\square$003	Compensation value between 6° and 12°
$\vdots$	$\vdots$
$\square$060	Compensation value between 348° and 354°
$\square$061	Compensation value between 354° and 360° (Compensation value between –6° and 0°)

NOTE
1 Set a compensation interval such that 360000 can be divided exactly by that value, without a remainder. Otherwise, compensation will not be performed normally.
2 The sum of the compensation values for a single revolution must be 0.

Parameters related to serial interface spindle

The following parameters are not described in detail. The standard settings listed in the tables need be modified for some machine systems.

Sub–spindle parameters when the spindle switching function is provided

First spindle	Second spindle	Description	Standard setting
6140	6320	Bit parameter	00000000
6141	6321	Bit parameter	00000001
6142	6322	Bit parameter	00000000
6143	6323	Bit parameter	00000000
6144	6324	Bit parameter	00000000
6145	6325	Bit parameter	00000000
6146	6326	Bit parameter	00000000
6147	6327	Bit parameter	00000000
6148	6328	Bit parameter	00000000
6149	6329	Bit parameter	00000000
6150	6330	Bit parameter	00000000
6151	6331	Bit parameter	Model–dependent
6152	6332	Bit parameter	Model–dependent
6153	6333	Bit parameter	Model–dependent
6154	6334	Bit parameter	00000000
6155	6335	Bit parameter	00000000
6156	6336	Bit parameter	00000000
6157	6337	Bit parameter	00000000
6158	6338	Bit parameter	00000000
6159	6339	Bit parameter	00000000
6160	6340	Maximum motor speed	Model–dependent
6161	6341	Speed arrival detection level	150
6162	6342	Speed detection level	30
6163	6343	Speed zero detection level	75
6164	6344	Torque limit value	50
6165	6345	Load detection level 1	83
6166	6346	Output limit pattern	0
6167	6347	Output limit value	100
6168	6348	Position coder method orientation stop position	0
6169	6349		0
6170	6350	Normal velocity loop proportional gain (HIGH)	10
6171	6351	Normal velocity loop proportional gain (LOW)	10
6172	6352	Velocity loop proportional gain during orientation (HIGH)	10
6173	6353	Velocity loop proportional gain during orientation (LOW)	10
6174	6354	Velocity loop proportional gain in servo mode (HIGH)	10
6175	6355	Velocity loop proportional gain in servo mode (LOW)	10
6176	6356	Normal velocity loop integral gain	10
6177	6357	Velocity loop integral gain during orientation	10
6178	6358	Velocity loop integral gain in servo mode	10
6179	6359		0

Sub–spindle parameters when the spindle switching function is provided

First spindle	Second spindle	Description	Standard setting
6180	6360	Gear ratio (HIGH)	100
6181	6361	Gear ratio (LOW)	100
6182	6362	Position gain during orientation (HIGH)	1000
6183	6363	Position gain during orientation (LOW)	1000
6184	6364	Position gain change ratio when orientation is completed	100
6185	6365	Position gain in servo mode (HIGH)	1000
6186	6366	Position gain in servo mode (LOW)	1000
6187	6367	Grid shift amount in servo mode	0
6188	6368		0
6189	6369		0
6190	6370	Orientation completion signal detection level	10
6191	6371	Motor velocity limit value during orientation	33
6192	6372	Orientation stop position shift amount	0
6193	6373	MS signal constant	–
6194	6374	MS signal gain adjustment	0
6195	6375	Regenerative power limit	Model–dependent
6196	6376	Delay time prior motor power shut–off	20
6197	6377	Acceleration/deceleration time setting	10
6198	6378		0
6199	6379		0
6200	6380	Motor voltage during normal rotation	Model–dependent
6201	6381	Motor voltage during orientation	Model–dependent
6202	6382	Motor voltage in servo mode	Model–dependent
6203	6383	Position gain change ratio when returning to the origin in the servo mode	100
6204	6384	Feed forward factor	0
6205	6385	Velocity loop feed forward factor	0
6206	6386		0
6207	6387		0
6208	6388		0
6209	6389		0
6210	6390		0
6211	6391		0
6212	6392		0
6213	6393		0
6214	6394		0
6215	6395		0
6216	6396		0
6217	6397		0
6218	6398		0
6219	6399		0
6220	6400	Base velocity of the motor output specification	Model–dependent
6221	6401	Limit value for the motor output specification	Model–dependent
6222	6402	Base speed	Model–dependent
6223	6403	Magnetic flux weakening start velocity	Model–dependent
6224	6404	Current loop proportional gain during normal operation	Model–dependent
6225	6405	Current loop integral gain during normal operation	Model–dependent
6226	6406	Zero point of current loop integral gain	Model–dependent
6227	6407	Current loop proportional gain velocity factor	Model–dependent
6228	6408	Current conversion constant	Model–dependent
6229	6409	Secondary current factor for exciting current	Model–dependent

Sub–spindle parameters when the spindle switching function is provided

First spindle	Second spindle	Description	Standard setting
6230	6410	Current expectation constant	Model–dependent
6231	6411	Slip constant	Model–dependent
6232	6412	High–speed rotation slip compensation constant	Model–dependent
6233	6413	Compensation constant of voltage applied to motor in the dead zone	Model–dependent
6234	6414	Electromotive force compensation constant	Model–dependent
6235	6415	Electromotive force phase compensation constant	Model–dependent
6236	6416	Electromotive force compensation velocity factor	Model–dependent
6237	6417	Time constant for changing the torque	5
6238	6418	Load meter displayed value for maximum output	Model–dependent
6239	6419	Maximum output zero point	Model–dependent
6240	6420	Secondary current factor during rigid tapping	Model–dependent
6241	6421	Constant for compensating for the phase of the electromotive force at deceleration	Model–dependent
6242	6422	Time constant of the speed detection filter	0
6243	6423		0
6244	6424	Time constant of voltage filter for electromotive force compensation	0
6245	6425		0
6246	6426		0
6247	6427		0

Sub–spindle parameters for low–speed operation when the spindle switching function is provided and the output switching function is provided for the sub–spindle

First spindle	Second spindle	Description	Standard setting
6248	6428	Motor voltage during normal rotation	Model–dependent
6249	6429	Motor voltage in the servo mode	Model–dependent
6250	6430	Base speed of the motor output specifications	Model–dependent
6251	6431	Limit value for the motor output specifications	Model–dependent
6252	6432	Base speed	Model–dependent
6253	6433	Magnetic flux weakening start velocity	Model–dependent
6254	6434	Current loop proportional gain during normal operation	Model–dependent
6255	6435	Current loop integral gain during normal operation	Model–dependent
6256	6436	Zero point of the current loop integral gain	Model–dependent
6257	6437	Velocity factor of the current loop proportional gain	Model–dependent
6258	6438	Current conversion constant	Model–dependent
6259	6439	Secondary current factor for activating current	Model–dependent
6260	6440	Current expectation constant	Model–dependent
6261	6441	Slip constant	Model–dependent
6262	6442	High–speed rotation slip compensation constant	Model–dependent
6263	6443	Compensation constant for voltage applied to motor in the dead zone	Model–dependent
6264	6444	Electromotive force compensation constant	Model–dependent
6265	6445	Electromotive force phase compensation constant	Model–dependent
6266	6446	Velocity factor of the electromotive force compensation	Model–dependent
6267	6447	Time constant for changing the torque	Model–dependent
6268	6448	Maximum output zero point	Model–dependent
6269	6449	Secondary current factor during rigid tapping	Model–dependent
6270	6450	Voltage compensation factor during deceleration	Model–dependent
6271	6451	Regenerative power limit	Model–dependent
6272	6452	Time constant of voltage filter for electromotive force compensation	0
6273	6453	Motor model code	Model–dependent
6274	6454		0
6275	6455		0
6276	6456		0
6277	6457		0
6278	6458		0
6279	6459		0
6280	6460		0
6281	6461		0
6282	6462		0
6283	6463		0
6284	6464		0
6285	6465		0
6286	6466		0
6287	6467		0
6288	6468		0
6289	6469		0
6290	6470		0
6291	6471		0
6292	6472		0
6293	6473		0
6294	6474		0
6295	6475		0
6296	6476		0
6297	6477		0
6298	6478		0
6299	6479		0

Sub–spindle parameters for low–speed operation when the spindle switching function is provided and the output switching function is provided for the sub–spindle

First spindle	Second spindle	Description	Standard setting
6300	6480		0
6301	6481		0
6302	6482		0
6303	6483		0
6304	6484		0
6305	6485		0
6306	6486		0
6307	6487		0
6308	6488		0
6309	6489		0
6310	6490		0
6311	6491		0
6312	6492	Overload current alarm detection level (for low speed characteristic)	Model–dependent
6313	6493	Overload current alarm detection time constant	Model–dependent
6314	6494	Overload current alarm detection level (for high speed characteristic)	Model–dependent
6315	6495	Compensation for current detection offset	0

**Parameters for standard motors (parameters for high–speed operation
when the output switching function is provided)**

First spindle	Second spindle	Description	Standard setting
6500	6640	Bit parameter	00000000
6501	6641	Bit parameter	00000001
6502	6642	Bit parameter	00000000
6503	6643	Bit parameter	00000000
6504	6644	Bit parameter	00000000
6505	6645	Bit parameter	00000000
6506	6646	Bit parameter	00000000
6507	6647	Bit parameter	00000000
6508	6648	Bit parameter	00000000
6509	6649	Bit parameter	00000000
6510	6650	Bit parameter	00000000
6511	6651	Bit parameter	Model–dependent
6512	6652	Bit parameter	Model–dependent
6513	6653	Bit parameter	Model–dependent
6514	6654	Bit parameter	00000000
6515	6655	Bit parameter	00000000
6516	6656	Bit parameter	00000000
6517	6657	Bit parameter	00000000
6518	6658	Bit parameter	00000000
6519	6659	Bit parameter	00000000
6520	6660	Maximum motor speed	Model–dependent
6521	6661	Maximum speed when the Cs axis is controlled	100
6522	6662	Speed arrival detection level	150
6523	6663	Speed detection level	30
6524	6664	Speed zero detection level	75
6525	6665	Torque limit value	50
6526	6666	Load detection level 1	83
6527	6667	Load detection level 2	95
6528	6668	Output limit pattern	0
6529	6669	Output limit value	100
6530	6670	Soft start/stop time	0
6531	6671	Position coder method orientation stop position	0
6532	6672	Acc./dec. time constant when the spindle synchronization is controlled	0
6533	6673	Arrival level for the spindle synchronization speed	100
6534	6674	Shift amount when the spindle phase synchronization is controlled	0
6535	6675	Spindle phase synchronization compensation data	10
6536	6676	Feed forward factor	0
6537	6677	Velocity loop feed forward factor	0
6538	6678		0
6539	6679		0
6540	6680	Normal velocity loop proportional gain (HIGH)	10
6541	6681	Normal velocity loop proportional gain (LOW)	10
6542	6682	Velocity loop proportional gain during orientation (HIGH)	10
6543	6683	Velocity loop proportional gain during orientation (LOW)	10
6544	6684	Velocity loop proportional gain in servo mode (HIGH)	10
6545	6685	Velocity loop proportional gain in servo mode (LOW)	10
6546	6686	Velocity loop proportional gain when the Cs axis is controlled (HIGH)	30
6547	6687	Velocity loop proportional gain when the Cs axis is controlled (LOW)	30
6548	6688	Normal velocity loop integral gain (HIGH)	10
6549	6689	Normal velocity loop integral gain (LOW)	10

Parameters for standard motors (parameters for high–speed operation when the output switching function is provided)

First spindle	Second spindle	Description	Standard setting
6550	6690	Velocity loop integral gain during orientation (HIGH)	10
6551	6691	Velocity loop integral gain during orientation (LOW)	10
6552	6692	Velocity loop integral gain in servo mode (HIGH)	10
6553	6693	Velocity loop integral gain in servo mode (LOW)	10
6554	6694	Velocity loop integral gain when the Cs axis is controlled (HIGH)	50
6555	6695	Velocity loop integral gain when the Cs axis is controlled (LOW)	50
6556	6696	Gear ratio (HIGH)	100
6557	6697	Gear ratio (MEDIUM HIGH)	100
6558	6698	Gear ratio (MEDIUM LOW)	100
6559	6699	Gear ratio (LOW)	100
6560	6700	Position gain during orientation (HIGH)	1000
6561	6701	Position gain during orientation (MEDIUM HIGH)	1000
6562	6702	Position gain during orientation (MEDIUM LOW)	1000
6563	6703	Position gain during orientation (LOW)	1000
6564	6704	Position gain change ratio when orientation is completed	100
6565	6705	Position gain in servo mode (HIGH)	1000
6566	6706	Position gain in servo mode (MEDIUM HIGH)	1000
6567	6707	Position gain in servo mode (MEDIUM LOW)	1000
6568	6708	Position gain in servo mode (LOW)	1000
6569	6709	Position gain when the Cs axis is controlled (HIGH)	3000
6570	6710	Position gain when the Cs axis is controlled (MEDIUM HIGH)	3000
6571	6711	Position gain when the Cs axis is controlled (MEDIUM LOW)	3000
6572	6712	Position gain when the Cs axis is controlled (LOW)	3000
6573	6713	Grid shift amount in servo mode	0
6574	6714	Reference position return speed in Cs contouring control mode or servo mode	0
6575	6715	Orientation completion signal detection level	10
6576	6716	Motor velocity limit value during orientation	33
6577	6717	Orientation stop position shift amount	0
6578	6718	MS signal constant	–
6579	6719	MS signal gain adjustment	0
6580	6720	Regenerative power limit	Model–dependent
6581	6721	Delay time prior motor power shut–off	20
6582	6722	Acceleration/deceleration time setting	10
6583	6723	Motor voltage during normal rotation	Model–dependent
6584	6724	Motor voltage during orientation	Model–dependent
6585	6725	Motor voltage in servo mode/synchronous control	Model–dependent
6586	6726	Motor voltage when the Cs axis is controlled	Model–dependent
6587	6727	Over–speed detection level	115
6588	6728	Excessive velocity deviation detection level when the motor is constrained	75
6589	6729	Excessive velocity deviation detection level when the motor is rotated	200
6590	6730	Overload detection level	90
6591	6731	Position gain change ratio when returning to the origin in the servo mode	100
6592	6732	Position gain change ratio when returning to the origin in Cs axis control	100
6593	6733	Acceleration presumed constant	0
6594	6734	Disturbance torque compensation constant	0
6595	6735	Speed meter output voltage adjustment value	0
6596	6736	Load meter output voltage adjustment value	0
6597	6737	Spindle velocity feedback gain	0
6598	6738	Maximum speed at which position coder signal can be detected	0
6599	6739	Delay time for energizing the motor	0

Parameters for standard motors (parameters for high–speed operation when the output switching function is provided)

First spindle	Second spindle	Description	Standard setting
6600	6740	Base velocity of the motor output specification	Model–dependent
6601	6741	Limit value for the motor output specification	Model–dependent
6602	6742	Base speed	Model–dependent
6603	6743	Magnetic flux weakening start velocity	Model–dependent
6604	6744	Current loop proportional gain during normal operation	Model–dependent
6605	6745	Current loop proportional gain at the Cs contour control	Model–dependent
6606	6746	Current loop integral gain during normal operation	Model–dependent
6607	6747	Current loop integral gain at the Cs contour control	Model–dependent
6608	6748	Zero point of current loop integral gain	Model–dependent
6609	6749	Current loop proportional gain velocity factor	Model–dependent
6610	6750	Current conversion constant	Model–dependent
6611	6751	Secondary current factor for exciting current	Model–dependent
6612	6752	Current expectation constant	Model–dependent
6613	6753	Slip constant	Model–dependent
6614	6754	High–speed rotation slip compensation constant	Model–dependent
6615	6755	Compensation constant of voltage applied to motor in the dead zone	Model–dependent
6616	6756	Electromotive force compensation constant	Model–dependent
6617	6757	Electromotive force phase compensation constant	Model–dependent
6618	6758	Electromotive force compensation velocity factor	Model–dependent
6619	6759	Time constant of voltage filter for electromotive force compensation	0
6620	6760	Dead zone compensation data	Model–dependent
6621	6761	Time constant for changing the torque	5
6622	6762	Velocity filter	0
6623	6763	Overload detection time setting	30
6624	6764		0
6625	6765	Timer during automatic running	100
6626	6766	Velocity command during automatic running	1000
6627	6767	Load meter displayed value for maximum output	Model–dependent
6628	6768	Maximum output zero point	Model–dependent
6629	6769	Secondary current factor during rigid tapping	Model–dependent
6630	6770	Constant for compensating for the phase of the electromotive force at deceleration	Model–dependent
6631	6771	Time constant of the speed detection filter at the Cs contour control	0
6632	6772	Conversion constant of the phase–V current	0
6633	6773	Motor model code	Model–dependent
6634	6774		0
6635	6775	Grid shift amount when the C axis is controlled	0

Parameters for low–speed operation when the output switching function is provided

First spindle	Second spindle	Description	Standard setting
6900	6940	Motor voltage during normal rotation	Model–dependent
6901	6941	Motor voltage in the servo mode	Model–dependent
6902	6942	Base speed of the motor output specifications	Model–dependent
6903	6943	Limit value for the motor output specifications	Model–dependent
6904	6944	Base speed	Model–dependent
6905	6945	Magnetic flux weakening start velocity	Model–dependent
6906	6946	Current loop proportional gain during normal operation	Model–dependent
6907	6947	Current loop integral gain during normal operation	Model–dependent
6908	6948	Zero point of current loop integral gain	Model–dependent
6909	6949	Velocity factor of current loop proportional gain	Model–dependent
6910	6950	Current conversion constant	Model–dependent
6911	6951	Secondary current factor for excitation current	Model–dependent
6912	6952	Current expectation constant	Model–dependent
6913	6953	Slip constant	Model–dependent
6914	6954	Compensation constant for high–speed rotation slip	Model–dependent
6915	6955	Compensation constant for voltage applied to motor in the dead zone	Model–dependent
6916	6956	Electromotive force compensation constant	Model–dependent
6917	6957	Phase compensation constant for electromotive force	Model–dependent
6918	6958	Compensation velocity factor for electromotive force	Model–dependent
6919	6959		0
6920	6960		0
6921	6961	Time constant for changing the torque	Model–dependent
6922	6962	Maximum output zero point	Model–dependent
6923	6963	Secondary current factor in rigid tapping	Model–dependent
6924	6964	Hysteresis of the speed detection signal (SDT) output	0
6925	6965	Constant for compensating for the phase of the electromotive force at deceleration	Model–dependent
6926	6966	Velocity loop integral gain when the Cs axis is controlled (HIGH)	0
6927	6967	Velocity loop integral gain when the Cs axis is controlled (LOW)	0
6928	6968	Conversion constant of the phase–V current	0
6929	6969	Time constant of voltage filter for eletromotive force compensation	0
6930	6970	Regenerative power limit	Model–dependent
6931	6971		0
6932	6972	Overload current alarm detection level (for low speed characteristic)	Model–dependent
6933	6973	Overload current alarm detection time constant	Model–dependent
6934	6974	Overload current alarm detection level (for high speed characteristic)	Model–dependent
6935	6975		–
6936	6976		0
6937	6977		0
6938	6978		0
6939	6979	Delay timer at ON of electromagnetic contactor in unit	0

Parameters related to servo

The following parameters are not explained in this manual:

No.		#7	#6	#5	#4	#3	#2	#1	#1
						Contents			
8□00	POWER OFF							DGPRM	HRPLC
8□01	POWER OFF	AMR7	AMR6	AMR5	AMR4	AMR3	AMR2	AMR1	AMR0
8□02	POWER OFF				0	1			
8□03	POWER OFF	VOFST	OVSCMP	BLENBL	IPSPRS	PIENBL	OBENBL	TGALRM	1
8□04	POWER OFF	DLY1	DLY0			TRW1	TRW0	TIB0	TIA0
8□05	POWER OFF		BRKCTL					FEEDFD	
8□06			DCBEMF		MODEL ACCFB		PKVER		FCBLCM
8□07									
8□08									
8□09		BLSTP	BLCUT				ADBLSH		
8□10						BLTEN			SPBIT
8□11		BLSTP		PGEXPD					
8□12				VCMD2	VCMD1			MSFEN	
8□13									
8□14									
8□15									
8□16									
8□17									
8□18									
8□19									
8□20	POWER OFF	Motor type							
8□21		Load inertia ratio (LDINT)							
8□22	POWER OFF	Direction of motor rotation (DIRCTL)							
8□23	POWER OFF	Number of velocity detection feedback pulses (PULCO)							
8□24	POWER OFF	Number of position detection feedback pulses (PPLS)							
8□25									
8□26									
8□27									
8□28									
8□29									
8□30									
8□31									

No.		Contents							
		#7	#6	#5	#4	#3	#2	#1	#1
8☐32									
8☐33									
8☐34									
8☐35									
8☐36									
8☐37									
8☐38									
8☐39									
8☐40	POWER OFF	Current loop gain (PK1)							
8☐41	POWER OFF	Current loop gain (PK2)							
8☐42	POWER OFF	Current loop gain (PK3)							
8☐43		Velocity (integral) loop gain (PK1V)							
8☐44		Velocity (proportional) loop gain (PK2V)							
8☐45		Incomplete integral coefficient (PK3V)							
8☐46		Velocity loop gain (PK4V)							
8☐47		Velocity control observer parameter (POA1)							
8☐48		Improvement of velocity control backlash compensation (BLCMP)							
8☐49		Maximum width of dual position feedback (DPFMAX)							
8☐50		Velocity control observer parameter (POK1)							
8☐51		Velocity control observer parameter (POK2)							
8☐52									
8☐53		Compensation for current non–operating area (PPMAX)							
8☐54		Compensation for current non–operating area (PDDP)							
8☐55		Compensation for current non–operating area (PHYST)							
8☐56		Back electromotive force compensation (EMFCMP)							
8☐57		Current phase control (PVPA)							
8☐58		Current phase control (PALPH)							
8☐59		Back electromotive force compensation (EMFBAS)							
8☐60	POWER OFF	Torque limit (TQLIM)							
8☐61		Back electromotive force compensation (EMFLMT)							
8☐62		Overload protection coefficient (OVC1)							
8☐63		Overload protection coefficient (OVC2)							
8☐64		TG alarm level (TGALMLV)							
8☐65		Overload protection coefficient (OVCLMT)							
8☐66		PK2VAUX							
8☐67		Torque command filter (TCFIL)							

No.		Contents							
		#7	#6	#5	#4	#3	#2	#1	#1
8□68		Feed–forward coefficient (FALPH)							
8□69		Feed–forward coefficient of velocity loop (VFFLT)							
8□70		Backlash compensation acceleration parameter (ERBLN)							
8□71		Backlash compensation acceleration parameter (PBLCT)							
8□72									
8□73									
8□74		Velocity–dependent current loop gain (AALPH)							
8□75									
8□76		1msec acceleration feedback gain (WKAC)							
8□77		Overshoot preventive counter (OSCTP)							
8□78		Numerator of dual position feedback conversion coefficient (PDPCH)							
8□79		Denominator of dual position feedback conversion coefficient (PDPCL)							
8□80		Time constant of dual position feedback (DPFTC)							
8□81		Zero width of dual position feedback (DPFZW)							
8□82		Backlash acceleration end amount (BLEND)							
8□83		Brake control hold time of gravity axis (MOFCT)							
8□84	POWER OFF	Numerator of DMR when the flexibly feed gear is used (SDMR1)							
8□85	POWER OFF	Denominator of DMR when the flexibly feed gear is used (SDMR2)							
8□86		Rated current parameter (RTCURR)							
8□87		Torque offset of new type backlash acceleration (TCPRLD)							
8□88		Mechanical speed feedback gain (MCNFB)							
8□89		Base pulse in backslash acceleration (BLBSL)							
8□90									
8□91									
8□92									
8□93									
8□94									
8□95									
8□96									
8□97									
8□98		Phase progress compensation coefficient in deceleration (DEPVPL)							
8□99									

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Revision Record

FANUC Series 0–MD/0–GSD PARAMETER MANUAL (B–62580EN)

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