

Chapter 1 Overview

1-1. Functional Differences between the OMNUC G Series and the OMNUC W Series

■ Speed Frequency Responsiveness

W Series	G Series
600Hz (400Hz for the Servo Drive of 1.5kw or more)	1kHz

■ Servomotor Output Capacity (Categorized by Servo Drive Input Power)

3,000r/min Cylindrical Type

Input Power	W Series	G Series
Single-phase 100 V/115 V AC	50w/100w/200w/400w	50w/100w/200w/400w
Single-phase 200 V/230 V AC	50w/100w/200w/400w	50w/100w/200w/400w
Three-phase 200 V/230 V AC	750w/1.0kw/1.5kw/2.0kw/3.0kw	750w/1.0kw/1.5kw/2.0kw/3.0kw/4.0kw/ 5.0kw

3,000r/min Flat Type

Input Power	W Series	G Series
Single-phase 100 V/115 V AC	100w/200w/400w	50w/100w/200w/400w
Single-phase 200 V/230 V AC	100w/200w/400w	50w/100w/200w/400w
Three-phase 200 V/230 V AC	750w/1.5kw	-

1,000r/min Type

Input Power	W Series	G Series
Three-phase 200 V/230 V AC	300w/600w/900w/1.2kw/2.0kw	900w/2.0kw/3.0kw/4.5kw/6.0kw

1,500r/min Type ⇔ 2,000r/min Type

Input Power	W Series (1,500r/min)	G Series (2,000r/min)
Three-phase 200 V/230 V AC	450w/850w/1.3kw/1.8kw	1.0kw/1.5kw/2.0kw/3.0kw/4.0kw/5.0kw / 7.5kw (1,500r/min)

■ Monitor Functions

Servo Drive's operational status is displayed on the Parameter Unit.

Monitor Contents	Explanation	W Series	G Series
Speed Feedback	Displays the Servomotor's rotation speed.	r/min	r/min
Speed Command	Displays the command value to the speed loop. In position control via the pulse string input, the display shows 0.	r/min	×
Torque Command	Displays the command value to the current loop.	% (Rated torque = 100%)	% (Rated torque = 100%)
The Number of Pulses from Phase Z	Displays the rotation position from phase Z.	Pulse (4 multiplication conversion)	×
Electrical Angle	Displays Servomotor's electrical angle.	Degree	×
Internal Status	Displays the I/O data in the Servo Drive.	Input/Output (Bit display)	Input/Output (Status display)
Command Pulse Speed	Displays the converted value of the command pulse frequency.	r/min	×
Position Deviation (Deviation Counter)	Displays accumulated pulses in the deviation counter.	Command units	Pulse
Accumulated Load Ratio	Displays the effective torque.	% (Rated torque = 100% 10 seconds cycle)	×
Regeneration Load Ratio	Displays the regeneration absorption electric power of the regeneration resistor.	%	%
DB Resistor Electric Power Consumption	Displays the electric power consumed when the dynamic brake is activated in a 10 seconds cycle.	%	×
Input Pulse Counter	Counts and displays the input pulse.	Command unit (Displays in hexadecimal)	Pulse
Feedback Pulse Counter	Counts and displays the feedback pulse.	Pulse (4 multiplication conversion, displayed in hexadecimal)	Pulse

Chapter1 Overview

■ Analogue Monitor

This function reduces the positioning time.

W Series	G Series
<p>Any two circuits of the following can be allocated to the monitor output connector output (CN4). Functions can be selected in the same way for both analogue monitor 1 signal and analogue monitor 2 signal.</p> <ul style="list-style-type: none"> ① Speed command:1V/1,000r/min ② Servomotor rotation speed:1V/1,000r/min ③ Torque command-Gravity compensation torque 0:1V/rated torque ④ Position deviation:0.05v/command unit ⑤ Position command speed (rotation speed conversion) : 1V/1,000r/min ⑥ Positioning completedPositioning completed 5V/Positioning not completed 0V ⑦ Speed feed forward:1V/1000r/min ⑧ Torque feed forward:1V/rated torque 	<p>Any one circuit of the following can be allocated to the speed monitor output pin (SP).</p> <ul style="list-style-type: none"> ① Servomotor rotation speed:47r/min / 6V ② Servomotor rotation speed:188r/min / 6V ③ Servomotor rotation speed:750r/min / 6V ④ Servomotor rotation speed:3000r/min / 6V ⑤ Servomotor rotation speed:12000r/min / 6V ⑥ Command speed:47r/min / 6V ⑦ Command speed:188r/min / 6V ⑧ Command speed:750r/min / 6V ⑨ Command speed:3000r/min / 6V ⑩ Command speed:12000r/min / 6V ⑪ Issuance completed (DEN):Issuance completed 5V/ During issuance 0V ⑫ Gain selection status : Gain 1, 5V/ Gain 2, 0V <p>Any one circuit of the following can be allocated to the torque monitor output pin (IM).</p> <ul style="list-style-type: none"> ① Torque command : rated torque/3V ② Position deviation:31 pulses/3V ③ Position deviation:125 pulses/3V ④ Position deviation:500 pulses /3V ⑤ Position deviation:2000 pulses/3V ⑥ Position deviation:8000 pulses/3V ⑦ Torque command : 200%/3V ⑧ Torque command : 400%/3V ⑨ Issuance completed (DEN):Issuance completed 5V/ During issuance 0V ⑩ Gain selection status : Gain 1, 5V/ Gain 2, 0V
<p>Offset adjustment:±10000×0.1V</p> <p>Scaling adjustment:1/100·1/10·10 times·100 times</p>	None

■ Personal Computer Monitor

W Series	G Series
Wmon win ML2 CX-Drive	CX-Drive

■ Harmonic Current Suppression Measure

W Series	G Series
DC Reactor (with DC reactor connection terminal)	AC Reactor (installed on the power line)

1-2.Functions Not Available with the OMNUC G Series

■ AC/DC Power Input Selection

For the W Series, DC input is available by supplying DC power from the positive (+) and negative (-) terminals. However, the G Series is not equipped with the negative (-) terminal.

■ Encoder Dividing Function (Encoder Signal Pulse Output)

The W Series Servo Drive has encoder signal output via the control I/O connector. However, the G Series does not have encoder signal output via the control I/O connector.

■ Bias Function

This function reduces positioning time by adding bias rotation speed to speed commands when the deviation counter value exceeds the bias addition width.

■ Program JOG Operation

The G Series is not equipped with the program JOG operation function, which enables you to perform continuous automatic operation determined by the preset operation pattern, travel distance, travel speed, acceleration/deceleration time and the number of repeat operations.

■ Speed Feedback Compensation

The W Series can reduce positioning time by increasing speed loop gain and position loop gain after lowering feedback gain of the speed loop, thus improving responsiveness to the command. The G Series is not equipped with this function. Use damping control to suppress vibration.

■ Predictive Control

This control works to minimize the future deviation by predicting the deviation using the machine characteristics and target values in position control mode.

■ Less-deviation Control

This function realizes the reduction of stabilization time and tracking deviation by minimizing the deviation during movement in position control mode.

■ Vibration Suppression at Stopping

This function is designed to lower the internal servo gain only at stopping to suppress vibration at stopping.

■ Password Setting Function

The W Series has a function to prohibit parameter rewrite with the password setting.

■ Parameter Initialization

The W Series can restore the settings to the default values with the Parameter Unit and front panel key operations. The G Series can do the same only with the personal computer setting tool (Cx-Drive).

■ Servomotor Origin Search

This function is designed to rotate and stop the Servomotor at the origin pulse (phase Z) position of the encoder via the Parameter Unit and personal computer setting tool.

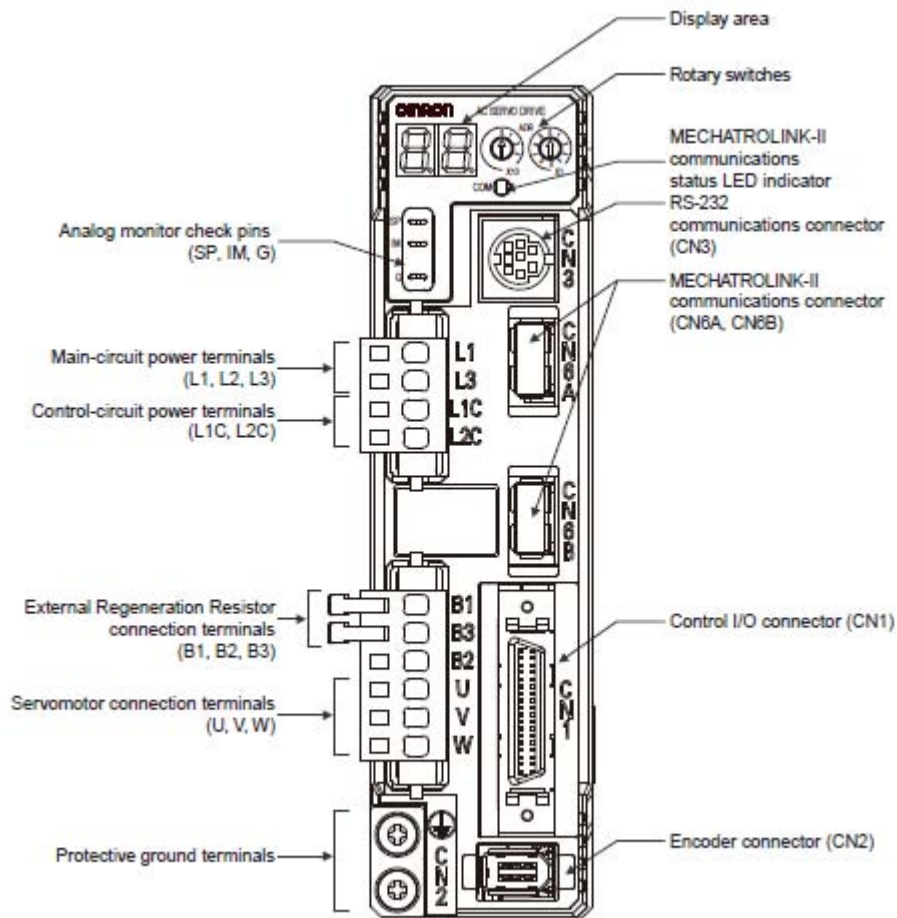
■ Analogue Monitor Output Signal Multiplier Selection Offset Adjustment /Scaling Function

The W Series can make offset adjustment and scale setting of the analogue monitor output individually.

Chapter1 Overview

1-3.Names of Parts of the OMNUC G Series Servo Drives

■ Servo Drive Part Names



Servo Drive Part Functions

■ Display Area

Shows the Servo Drive status, alarm code No. and parameters on the 2-digit 7-segment LED display.

■ Analogue Monitor Check Pins (SP, IM, G)

The actual Servomotor speed, command speed, torque, and accumulated pulses can be measured based on the analogue voltage level by using an oscilloscope. The type of output signal and output voltage level are set in the Speed Monitor (SP) Selection (Pn007) and the Torque Monitor (IM) Selection (Pn008).

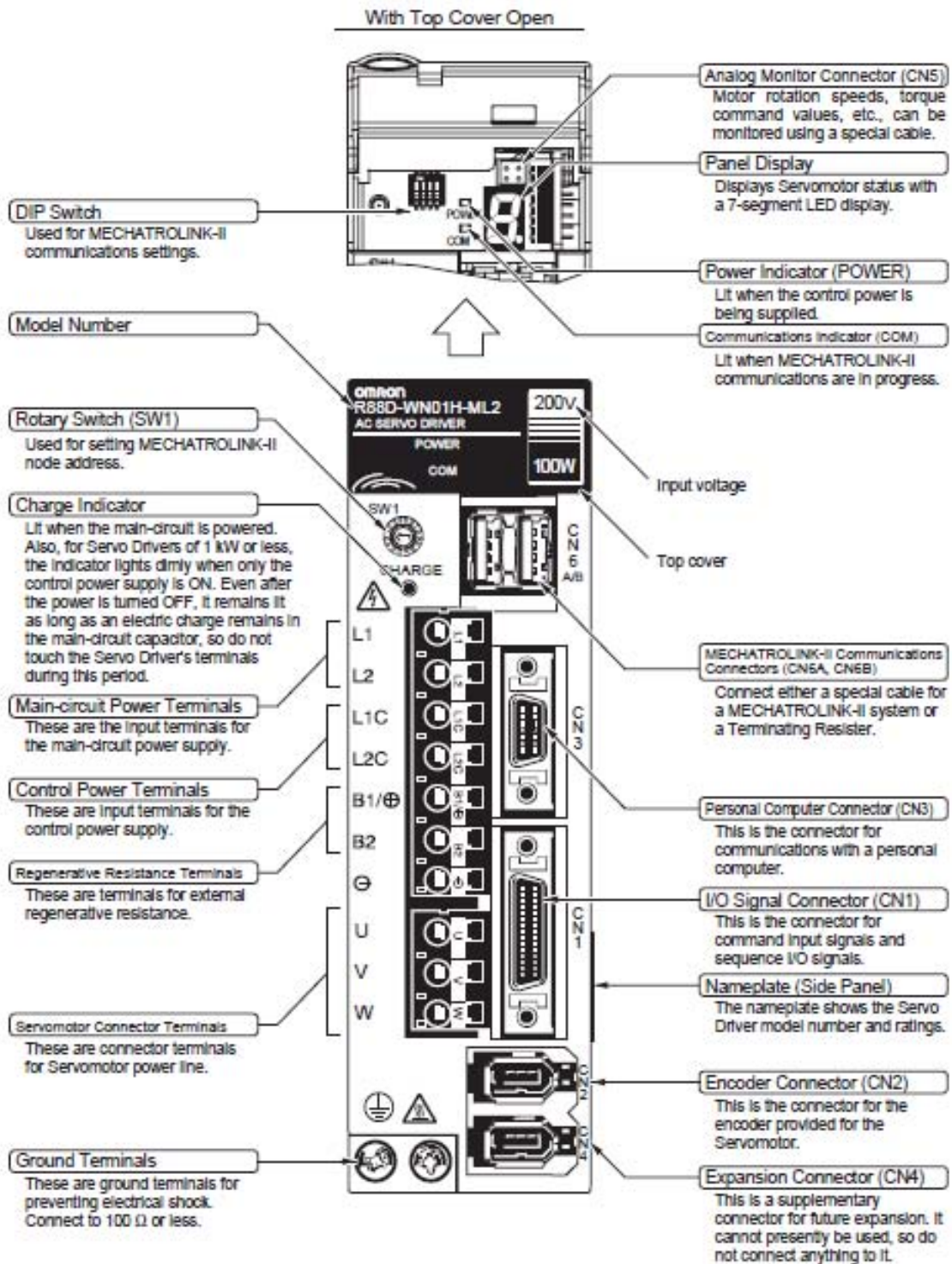
■ MECHATROLINK-II Status LED

Displays the status of MECHATROLINK-II Communications.

■ Rotary Switch

Sets the node address.

1-4.Names of Parts of the OMNUC W Series Servo Drives



Chapter2 Replacement List

2-1.AC Servomotors/Servo Drives Replacement Lists

3,000r/min Servomotors

Input Power	W Series			G Series		
	Servomotor Capacity	Servo Drive Model R88D	Servomotor Model R88M	Servomotor Capacity	Servo Drive Model R88D	Servomotor Model R88M
Single-phase 100 V AC	50w	-WNA5L-ML2	-W05030H/T	50w	-GNA5L-ML2	-G05030H/T
	100w	-WN01L-ML2	-W10030H/T	100w	-GN01L-ML2	-G10030L/S
	200w	-WN02L-ML2	-W20030H/T	200w	-GN02L-ML2	-G20030L/S
	400W	-WN04L-ML2	-W40030H/T	400w	-GN04L-ML2	-G40030L/S
Single-phase 200 V AC	50w	-WNA5H-ML2	-W05030H/T	50w	-GN01H-ML2	-G05030H/T
	100w	-WN01H-ML2	-W10030H/T	100w	-GN01H-ML2	-G10030H/T
	200w	-WNO2H-ML2	-W20030H/T	200w	-GN02H-ML2	-G20030H/T
	400w	-WN04H-ML2	-W40030H/T	400w	-GN04H-ML2	-G40030H/T
	750w	-WN08H-ML2	-W75030H/T	750w	-GN08H-ML2	-G75030H/T
Three-phase 200 V AC	750w	-WN08H-ML2	-W75030H/T	750w	-GN08H-ML2	-G75030H/T
	1.0kw	-WN10H-ML2	-W1K030H/T	1.0kw	-GN15H-ML2	-G1K030T
	1.5kw	-WN15H-ML2	-W1k530H/T	1.5kw	-GN15H-ML2	-G1K530T
	2.0kw	-WN20H-ML2	-W2K030H/T	2.0kw	-GN20H-ML2	-G2K030T
	3.0kw	-WN30H-ML2	-W3K030H/T	3.0kw	-GN30H-ML2	-G3K030T

■ 1,000r/min Servomotors

Input Power	W Series			G Series		
	Servomotor Capacity	Servo Drive Model R88D -	Servomotor Model R88M -	Servomotor Capacity	Servo Drive Model R88D -	Servomotor Model R88M -
Three-phase 200 V AC	300w	-WN05H-ML2	-W30010H/T	900w	-GN15H-ML2	-G90010T
	600w	-WN08H-ML2	-W60010H/T	900w	-GN15H-ML2	-G90010T
	900w	-WN10H-ML2	-W90010H/T	900w	-GN15H-ML2	-G90010T
	1.2kw	-WN15H-ML2	-W1K210H/T	2.0kw	-GN30H-ML2	-G2K010T
	2.0kw	-WN20H-ML2	-W2K010H/T	2.0kw	-GN30H-ML2	-G2K010T

■ 1,500r/min Servomotors

Input Power	W Series			G Series		
	Servomotor Capacity	Servo Drive Model R88D	Servomotor Model R88M	Servomotor Capacity	Servo Drive Model R88D	Servomotor Model R88M
Three-phase 200 V AC	450w	-WN05H-ML2	-W45015T	1.0kw	-GN10H-ML2	-G1K020T
	850w	-WN10H-ML2	-W85015T	1.5kw	-GN15H-ML2	-G1K520T
	1.3kw	-WN15H-ML2	-W1K315T	2.0kw	-GN20H-ML2	-G2K020T
	1.8kw	-WN20H-ML2	-W1K815T	3.0kw	-GN30H-ML2	-G3K020T

■ 3,000r/min Flat Type Servomotors

Input Power	W Series			G Series		
	Servomotor Capacity	Servo Drive Model R88D –	Servomotor Model R88M –	Servomotor Capacity	Servo Drive Model R88D –	Servomotor Model R88M –
Single-phase 100 V AC	100w	-WN01L-ML2	-WP10030H/T	100w	-GN01L-ML2	-GP10030L/S
	200w	-WN02L-ML2	-WP20030H/T	200w	-GN02L-ML2	-GP20030L/S
	400w	-WN04L-ML2	-WP40030H/T	400w	-GN04L-ML2	-GP40030L/S
Single-phase 200 V AC	100w	-WN01H-ML2	-WP10030H/T	100w	-GN01H-ML2	-GP10030H/T
	200w	-WN02H-ML2	-WP20030H/T	200w	-GN02H-ML2	-GP20030H/T
	400w	-WN04H-ML2	-WP40030H/T	400w	-GN04H-ML2	-GP40030H/T
	750w	-WN08H-ML2	-WP75030H/T	No models for replacement		
Three-phase 200 V AC	750w	-WN08H-ML2	-WP75030H/T			
	1.5kw	-WN15H-ML2	-WP1K030H/T			

Chapter 2 Replacement List

2-2. Precautions When Replacing the AC Servomotors

■ 3,000r/min Servomotors

Input Power	W Series		G Series		Precautions (Changes after replacement)
Single-phase 100 V / 115 V AC	30w	R88M-W03030L/S	50w	R88M-G05030H/T	Shaft diameter is larger.
	50w	R88M-W05030L/S	50w	R88M-G05030H/T	Shaft diameter is larger.
	100w	R88M-W10030L/S	100w	R88M-G10030L/S	
	200w	R88M-W20030L/S	200w	R88M-G20030L/S	Shaft diameter is smaller.
Single-phase 200 V / 230 V AC	30w	R88M-W03030H/T	50w	R88M-G05030H/T	Shaft diameter is larger.
	50w	R88M-W05030H/T	50w	R88M-G05030H/T	
	100w	R88M-W10030H/T	100w	R88M-G10030H/T	
	200w	R88M-W20030H/T	200w	R88M-G20030H/T	Shaft diameter is smaller.
	400w	R88M-W40030H/T	400w	R88M-G40030H/T	
	750w	R88M-W75030H/T	750w	R88M-G75030H/T	Shaft diameter is larger. Effective shaft length is longer.
Three-phase 200 V / 230 V AC	750w	R88M-W75030H/T	750w	R88M-G75030H/T	Shaft diameter is larger. Effective shaft length is longer.
	1.0kw	R88M-W1K030H/T	1.0kw	R88M-G1K030T	Mounting hole positions are different. Inner diameter is smaller. Effective shaft length is longer. Shaft diameter is smaller.
	1.5kw	R88M-W1k530H/T	1.5kw	R88M-G1k530T	Effective shaft length is longer. Shaft diameter is smaller.
	2.0kw	R88M-W2K030H/T	2.0kw	R88M-G2K030T	Effective shaft length is longer. Shaft diameter is smaller.
	3.0kw	R88M-W3K030H/T	3.0kw	R88M-G3K030T	Effective shaft length is shorter. Shaft diameter is smaller.
	4.0kw	R88M-W4K030H/T	4.0kw	R88M-G4K030T	Shaft diameter is smaller.
	5.0kw	R88M-W5K030H/T	5.0kw	R88M-W5K030T	Shaft diameter is smaller.

■ 1,000r/min Servomotors

Input Power	W Series		G Series		Precautions (Changes after replacement)
Three-phase 200 V /230 V AC	300w	R88M-W30010H/T	900w	R88M-G90010T	Effective shaft length is longer. Shaft diameter is larger.
	600w	R88M-W60010H/T	900w	R88M-G90010T	Effective shaft length is longer. Shaft diameter is larger.
	900w	R88M-W90010H/T	900w	R88M-G90010T	Effective shaft length is longer.
	1.2kw	R88M-W1K210H/T	2.0kw	R88M-G2K010T	
	2.0kw	R88M-W2K010H/T	2.0kw	R88M-G2K010T	
	3.0kw	R88M-W3K010H/T	3.0kw	R88M-G3K010T	
	4.0kw	R88M-W4K010H/T	4.5kw	R88M-G4K510T	
	5.0kw	R88M-W5K010H/T	6.0kw	R88M-G6K010T	

■ 1,500r/min Servomotors

Input Power	W Series		G Series		Precautions (Changes after replacement)
	Power	Model	Power	Model	
Three-phase 200 V /230 V AC	450w	R88M-W45015T	1.0kw	R88M-G1K020T	Shaft diameter is larger. Effective shaft length is longer.
	850w	R88M-W85015T	1.5kw	R88M-G1K520T	Shaft diameter is larger. Effective shaft length is longer.
	1.3kw	R88M-W1K315T	2.0kw	R88M-G2K020T	Effective shaft length is longer.
	1.8kw	R88M-W1K815T	3.0kw	R88M-G3K020T	Mounting hole positions are different. Inner diameter is smaller. Effective shaft length is shorter. Shaft diameter is smaller.
	2.9kw	R88M-W2K915T	4.0kw	R88M-G4K020T	Mounting hole positions are different. Inner diameter is smaller. Effective shaft length is shorter. Shaft diameter is smaller.
	4.4kw	R88M-W4K415T	5.0kw	R88M-G5K020T	Effective shaft length is shorter. Rated torque is approx. 15% lower.
	5.5kw	R88M-W5K515T	7.5kw	R88M-G7K515T	
	7.5kw	R88M-W7K515T	7.5kw	R88M-G7K515T	
	11kw	R88M-W11K015T	—	—	No models for Replacement
	15kw	R88M-W15K015T	—	—	No models for replacement

■ 3,000r/min Flat Type Servomotors

Input Power	W Series		G Series		Precautions (Changes after replacement)
	Power	Model	Power	Model	
Single-phase 100 V /115 V AC	100w	R88M-WP10030L/S	100w	R88M-GP10030L/S	
	200w	R88M-WP20030L/S	200w	R88M-GP20030L/S	Servomotor shaft diameter is smaller.
Single-phase 200 V /230 V AC	100w	R88M-WP10030H/T	100w	R88M-GP10030H/T	
	200w	R88M-WP20030H/T	200w	R88M-GP20030H/T	Servomotor shaft diameter is smaller.
	400w	R88M-WP40030H/T	400w	R88M-GP40030H/T	
	750w	R88M-WP75030H/T	—	—	No models for replacement
Three-phase 200 V /230 V AC	750w	R88M-WP75030H/T	—	—	No models for replacement
	1.5kw	R88M-WP1K030H/T	—	—	No models for replacement

Chapter 2 Replacement List

2-3. Precautions When Replacing the AC Servo Drives

When replacing the W Series with the G Series, mounting hole positions need to be changed because of different mounting dimensions.

Input Power	W Series R88D –	G Series R88D –	Precautions (Changes after replacement)
Single-phase 100 V AC	-WNA5L-ML2	-GNA5L-ML2	Larger by 2mm in depth.
	-WN01L-ML2	-GN01L-ML2	Larger by 2mm in depth.
	-WN02L-ML2	-GN02L-ML2	Larger by 10mm in width and 2mm in depth.
	-WN04L-ML2	-GN04L-ML2	
Single-phase 200 V AC	-WNA3H-ML2	-GN01H-ML2	Larger by 2mm in depth.
	-WNA5H-ML2	-GN01H-ML2	Larger by 2mm in depth.
	-WN01H-ML2	-GN01H-ML2	Larger by 2mm in depth.
	-WN02H-ML2	-GN02H-ML2	Larger by 2mm in depth.
	-WN04H-ML2	-GN04H-ML2	Larger by 2mm in depth.
	-WN08H-ML2	-GN08H-ML2	
Three-phase 200 V AC	-WN05H-ML2	-GN10H-ML2	Larger by 15mm in width.
	-WN05H-ML2	-GN15H-ML2	Larger by 15mm in width.
	-WN08H-ML2	-GN08H-ML2	
	-WN08H-ML2	-GN15H-ML2	Larger by 15mm in width.
	-WN10H-ML2	-GN15H-ML2	Larger by 15mm in width.
	-WN15H-ML2	-GN15H-ML2	
	-WN15H-ML2	-GN20H-ML2	Larger by 38mm in height and 20mm in depth.
	-WN15H-ML2	-GN30H-ML2	Larger by 40mm in width, 90mm in height and 20mm in depth.
	-WN20H-ML2	-GN20H-ML2	Larger by 20mm in height and 20mm in depth.
	-WN20H-ML2	-GN30H-ML2	Larger by 30mm in width, 60mm in height and 20mm in depth.
	-WN30H-ML2	-GN30H-ML2	Larger by 30mm in width, 60mm in height and 20mm in depth.

2-4.Compatibility of Peripheral Devices

■ Servo Relay Unit Cables (for the Servo Drives)

W Series Cable Model For R88D-WN□-ML2	W Series Cable Model For R88D-WT□	G Series Cable Model For R88D-GN□-ML2	Compatibility/ Usability
XW2Z-□00J-B16	XW2Z-□00J-B15	XW2Z-□00J-B33	×

■ Servo Relay Unit Cables (for the Position Control Units)

Specifications	Relay Unit Model	Compatibility / Usability
M3 Screw Type (Through Type)	XW2B-20G4	○
M3.5 Screw Type (Through Type)	XW2B-20G5	○
M3 Screw Type (Slim Type)	XW2D-20G6	○

■ AC Servomotors with a Decelerator

● 3,000r/min Servomotors with a Standard Type Decelerator(30W to 750W)

Servomotor Capacity	Deceleration Ratio	W Series Servomotors with a Decelerator Model	Decelerator Model for the G Series Servomotors	Precautions (Changes after replacement)
50W	1/5	R88M-W05030□-□G05BJ	R88G-HPG11A05100BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/9	R88M-W05030□-□G09BJ	R88G-HPG11A09050BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/21	R88M-W05030□-□G21BJ	R88G-HPG14A21100BJ	Mounting dimensions are smaller.
	1/33	R88M-W05030□-□G33BJ	R88G-HPG14A33050BJ	Mounting dimensions are smaller.
100W	1/5	R88M-W10030□-□G05BJ	R88G-HPG11A05100BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/9	R88M-W10030□-□G11BJ	R88G-HPG14A11100BJ	Mounting dimensions are smaller.
	1/21	R88M-W10030□-□G21BJ	R88G-HPG14A21100BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/33	R88M-W10030□-□G33BJ	R88G-HPG20A33100BJ	Shaft diameter is larger.
200W	1/5	R88M-W20030□-□G05BJ	R88G-HPG14A05200BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/9	R88M-W20030□-□G11BJ	R88G-HPG14A11200BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/21	R88M-W20030□-□G21BJ	R88G-HPG20A21200BJ	Mounting dimensions are smaller.
	1/33	R88M-W20030□-□G33BJ	R88G-HPG20A33200BJ	Mounting dimensions are smaller.
400W	1/5	R88M-W40030□-□G05BJ	R88G-HPG14A05400BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/9	R88M-W40030□-□G09BJ	R88G-HPG20A11400BJ	Mounting dimensions are smaller.
	1/21	R88M-W40030□-□G21BJ	R88G-HPG20A21400BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/33	R88M-W40030□-□G33BJ	R88G-HPG32A33400BJ	Shaft diameter is larger.
750W	1/5	R88M-W75030□-□G05BJ	R88G-HPG20A05750BJ	Mounting dimensions are smaller.
	1/9	R88M-W75030□-□G11BJ	R88G-HPG20A11750BJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/21	R88M-W75030□-□G21BJ	R88G-HPG32A21750BJ	Mounting dimensions are smaller.
	1/33	R88M-W75030□-□G33BJ	R88G-HPG32A33750BJ	Mounting dimensions are smaller.

Chapter 2 Replacement List

● 3,000r/min Servomotors with an Economical Type Decelerator

Servomotor Capacity	Deceleration Ratio	W Series Servomotors with a Decelerator Model	Decelerator Model for the G Series Servomotors	Precautions (Changes after replacement)
100W	1/5	R88M-W10030□-□G05CJ	R88G-VRSF05B100CJ	
	1/9	R88M-W10030□-□G09CJ	R88G-VRSF09B100CJ	
	1/15	R88M-W10030□-□G15CJ	R88G-VRSF15B100CJ	
	1/25	R88M-W10030□-□G25CJ	R88G-VRSF25B100CJ	Decelerator mounting hole positions are different. Decelerator mounting inner diameter is different. Decelerator shaft diameter is different. Decelerator shaft length is different.
200W	1/5	R88M-W20030□-□G05CJ	R88G-VRSF05B200CJ	
	1/9	R88M-W20030□-□G09CJ	R88G-VRSF09C200CJ	
	1/15	R88M-W20030□-□G15CJ	R88G-VRSF15C200CJ	
	1/25	R88M-W20030□-□G25CJ	R88G-VRSF25C200CJ	
400W	1/5	R88M-W40030□-□G05CJ	R88G-VRSF05C400CJ	
	1/9	R88M-W40030□-□G09CJ	R88G-VRSF09C400CJ	
	1/15	R88M-W40030□-□G15CJ	R88G-VRSF15C400CJ	
	1/25	R88M-W40030□-□G25CJ	R88G-VRSF25C400CJ	Decelerator mounting hole positions are different. Decelerator mounting inner diameter is different. Decelerator shaft diameter is different. Decelerator shaft length is different.
750W	1/5	R88M-W75030□-□G05CJ	R88G-VRSF05C750CJ	
	1/9	R88M-W75030□-□G09CJ	R88G-VRSF09D750CJ	
	1/15	R88M-W75030□-□G15CJ	R88G-VRSF15D750CJ	
	1/25	R88M-W75030□-□G25CJ	R88G-VRSF25D750CJ	Decelerator mounting hole positions are different. Decelerator mounting inner diameter is different. Decelerator shaft diameter is different. Decelerator shaft length is different.

Chapter2 Replacement List

● 3,000r/min Flat Type Servomotors with a Standard Type Decelerator

Servomotor Capacity	Deceleration Ratio	W Series Servomotors with a Decelerator Model	Decelerator Model for the G Series Servomotors	Precautions (Changes after replacement)
100W	1/5	R88M-WP10030□-□G05BJ	R88G-HPG11A05100PBJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/9	R88M-WP10030□-□G11BJ	R88G-HPG14A11100PBJ	Mounting dimensions are smaller.
	1/21	R88M-WP10030□-□G21BJ	R88G-HPG14A21100PBJ	Mounting dimensions are smaller. Shaft length is shorter.
	1/33	R88M-WP10030□-□G33BJ	R88G-HPG20A33100PBJ	Shaft diameter is larger.
200W	1/5	R88M-WP20030□-□G05BJ	R88G-HPG20A05200PBJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/9	R88M-WP20030□-□G11BJ	R88G-HPG20A11200PBJ	Shaft diameter is larger.
	1/21	R88M-WP20030□-□G21BJ	R88G-HPG20A21200PBJ	Mounting dimensions are smaller.
	1/33	R88M-WP20030□-□G33BJ	R88G-HPG20A33200PBJ	Mounting dimensions are smaller.
400W	1/5	R88M-WP40030□-□G05BJ	R88G-HPG20A05400PBJ	Shaft diameter is larger.
	1/9	R88M-WP40030□-□G09BJ	R88G-HPG20A11400PBJ	Mounting dimensions are smaller.
	1/21	R88M-WP40030□-□G21BJ	R88G-HPG20A21400PBJ	Mounting dimensions are smaller. Shaft diameter is smaller.
	1/33	R88M-WP40030□-□G33BJ	R88G-HPG32A33400PBJ	Shaft diameter is larger.
750W	All	R88M-WP75030□-□G□BJ		No Servomotors for replacement

● 3,000r/min Servomotors with an Economical Type Decelerator

Servomotor Capacity	Deceleration Ratio	W Series Servomotors with a Decelerator Model	Decelerator Model for the G Series Servomotors	Precautions (Changes after replacement)
100W	1/5	R88M-WP10030□-□G05CJ	R88G-VRSF05B100PCJ	
	1/9	R88M-WP10030□-□G09CJ	R88G-VRSF09B100PCJ	
	1/15	R88M-WP10030□-□G15CJ	R88G-VRSF15B100PCJ	
	1/25	R88M-WP10030□-□G25CJ	R88G-VRSF25B100PCJ	Decelerator mounting hole positions are different. Decelerator mounting inner diameter is different. Decelerator shaft diameter is different. Decelerator shaft length is different.
200W	1/5	R88M-WP20030□-□G05CJ	R88G-VRSF05B200PCJ	
	1/9	R88M-WP20030□-□G09CJ	R88G-VRSF09C200PCJ	
	1/15	R88M-WP20030□-□G15CJ	R88G-VRSF15C200PCJ	
	1/25	R88M-WP20030□-□G25CJ	R88G-VRSF25C200PCJ	
400W	1/5	R88M-WP40030□-□G05CJ	R88G-VRSF05C400PCJ	
	1/9	R88M-WP40030□-□G09CJ	R88G-VRSF09C400PCJ	
	1/15	R88M-WP40030□-□G15CJ	R88G-VRSF15C400PCJ	
	1/25	R88M-WP40030□-□G25CJ	R88G-VRSF25C400PCJ	Decelerator mounting hole positions are different. Decelerator mounting inner diameter is different. Decelerator shaft diameter is different. Decelerator shaft length is different.
750W	All	R88M-WP75030□-□G□CJ		No Servomotors for replacement

Chapter 2 Replacement List

- 3,000r/min Servomotors with a Standard Type Decelerator(1.0kW and more)
- 1,000r/min Servomotors with a Standard Type Decelerator(300W and more)
- 1,500r/min Servomotors with a Standard Type Decelerator(450W and more)

Decelerators for the G Series Servomotors of medium level capacity shown above are not compatible with the W Series Decelerators.

For the customers who place emphasis on the compatibility with the W Series, "MC Drive IB Series

Decelerators manufactured by Sumitomo Heavy Industries, Ltd." can be purchased at OMRON FIELD ENGINEERING CO., LTD. Use the Decelerator after installing it to the G Series Servomotor.

【 For Inquiries and Consultation 】

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Chapter 3 Replacement Procedure

3-1. Servomotor Replacement Procedures

(1) Servomotor Mounting Procedure

Some of the W Series Servomotors and the G Series Servomotors differ in the (shaft) inner diameters and the hole positions for mounting on the machine. When replacing these Servomotors, you're required to make new holes on the machine side for the installation, or additionally prepare machine attachment parts. (Refer to *Chapter 7 Reference Data* for preparation.)

(2) Precautions When Replacing the Servomotors

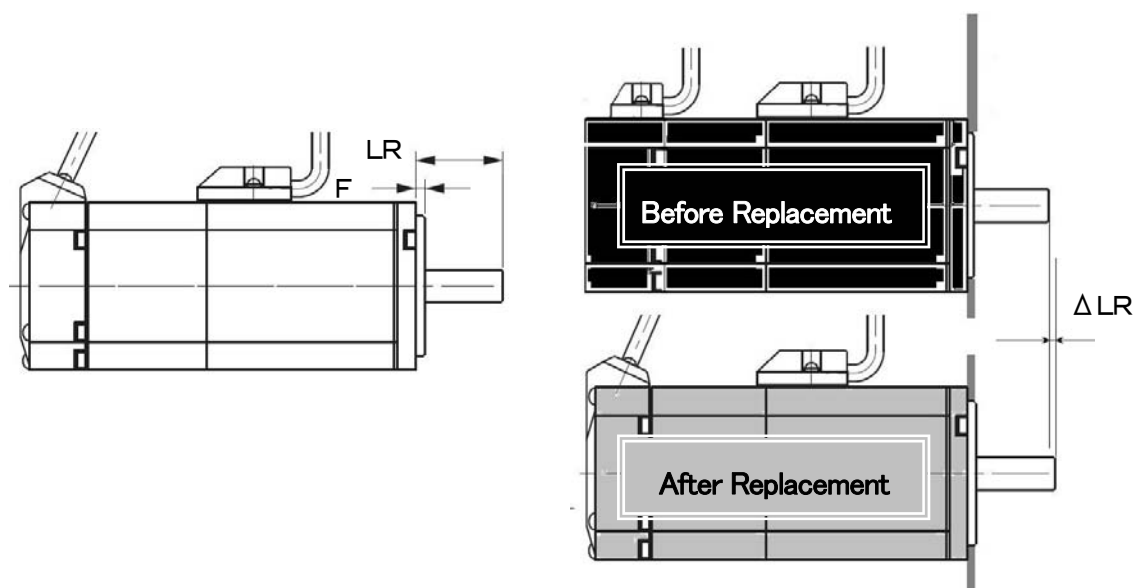
When replacing the Servomotors, note the following three precautions regarding:

- Change of the Servomotor's shaft length
- Change of the Servomotor capacity and shaft diameter
- Change of the axial load position

i) Precautions for the Servomotor Shaft Length Change

Servomotor's shaft length changes when replacing the W Series Servomotors with the G Series Servomotors.

Refer to Servomotor's "Shaft End Position Change Amount" in the table below, and make an adjustment of length using couplings or others.



● 3,000r/min Servomotors (Cylindrical Type, Small Capacity)

W Series				G Series				Shaft End Position Change Amt. ΔLR
Servomotor Capacity	Servomotor Model	LR dim.	F dim.	Servomotor Capacity	Servomotor Model	LR dim.	F dim.	
50w	R88M-W05030□	25	2.5	50w	R88M-G05030H/T	25	3.0	0
100w	R88M-W10030□	25	2.5	100w	R88M-G10030□	25	3.0	0
200w	R88M-W20030□	30	3.0	200w	R88M-G20030□	30	3.0	0
400w	R88M-W40030H/T	30	3.0	400w	R88M-G40030□	30	3.0	0
750w	R88M-W75030H/T	40	3.0	750w	R88M-G75030□	35	3.0	-5.0

[Units: mm]

Chapter3 Replacement Procedure

3,000r/min Servomotors (Medium Capacity)

W Series				G Series				Shaft End Position Change Amt. Δ LR
Servomotor Capacity	Servomotor Model	LR dim.	F dim.	Servomotor Capacity	Servomotor Model	LR dim.	F dim.	
1.0kw	R88M -W1K030H/T	45	3.0	1.0kw	R88M -G1K030T	55	3.0	10.0
1.5kw	R88M -W1k530H/T	45	3.0	1.5kw	R88M -G1k530T	55	3.0	10.0
2.0kw	R88M -W2K030H/T	45	3.0	2.0kw	R88M -G2K030T	55	3.0	10.0
3.0kw	R88M -W3K030H/T	63	6.0	3.0kw	R88M -G3K030T	55	3.0	-8.0

[Units: mm]

■ 1,000r/min Servomotors

W Series				G Series				Shaft End Position Change Amt. Δ LR
Servomotor Capacity	Servomotor Model	LR dim.	F dim.	Servomotor Capacity	Servomotor Model	LR dim.	F dim.	
300w	R88M -W30010H/T	58	6.0	900w	R88M -G90010T	70	6.0	12.0
600w	R88M -W60010H/T	58	6.0	900w	R88M -G90010T	70	6.0	12.0
900w	R88M -W90010H/T	58	6.0	900w	R88M -G90010T	70	6.0	12.0
1.2kw	R88M -W1K210H/T	79	3.2	2.0kw	R88M -G2K010T	80	3.2	1.0
2.0kw	R88M -W2K010H/T	79	3.2	2.0kw	R88M -G2K010T	80	3.2	1.0

[Units: mm]

■ 1,500r/min Servomotors

W Series				G Series				Shaft End Position Change Amt. Δ LR
Servomotor Capacity	Servomotor Model	LR dim.	F dim.	Servomotor Capacity	Servomotor Model	LR dim.	F dim.	
450w	R88M -W45015T	58	6.0	1.0kw	R88M -G1K020T	55	6.0	-3.0
850w	R88M -W85015T	58	6.0	1.5kw	R88M -G1K520T	55	6.0	-3.0
1.3kw	R88M -W1K315T	58	6.0	2.0kw	R88M -G1K520T	55	6.0	-3.0
1.8kw	R88M -W1K815T	79	3.2	3.0kw	R88M -G3K020T	65	6.0	-14.0

[Units: mm]

■ 3,000r/min Flat Type Servomotors

W Series				G Series				Shaft End Position Change Amt. Δ LR
Servomotor Capacity	Servomotor Model	LR dim.	F dim.	Servomotor Capacity	Servomotor Model	LR dim.	F dim.	
100w	R88M -WP10030H/T	25	3.0	100w	R88M -GP10030H/T	25	3.0	0
200w	R88M -WP20030H/T	30	3.0	200w	R88M -GP20030H/T	30	5.0	0
400w	R88M -WP40030H/T	30	3.0	400w	R88M -GP40030H/T	30	5.0	0
750w	R88M -WP75030H/T	40	3.5	No models for replacement				
1.5kw	R88M -WP1K030H/T	40	3.5					

[Units: mm]

Chapter 3 Replacement Procedure

ii) Precautions for the Servomotor Capacity and Shaft Diameter Changes

Some of the W Series Servomotors and the G Series Servomotors differ in the shaft diameter.

■ 3,000r/min Servomotors (Cylindrical Type)

W Series			G Series			Shaft Dia. Change Amt. ΔS
Servomotor Capacity	Servomotor Model	ϕS	Servomotor Capacity	Servomotor Model	ϕS	
30w	R88M-W03030□	6h6	50w	R88M-G05030H/T	8h6	+2.0
50w	R88M-W05030□	6h6	50w	R88M-G05030H/T	8h6	+2.0
100w	R88M-W10030□	8h6	100w	R88M-G10030□	8h6	+2.0
200w	R88M-W20030□	14h6	200w	R88M-G20030□	11h6	-3.0
400w	R88M-W40030H/T	14h6	400w	R88M-G40030H/T	14h6	± 0
750w	R88M-W75030H/T	16h6	750w	R88M-G75030H/T	19h6	+3.0
1.0kw	R88M-W1K030H/T	24h6	1.0kw	R88M-G1K030T	19h6	-5.0
1.5kw	R88M-W1k530H/T	24h6	1.5kw	R88M-G1k530T	19h6	-5.0
2.0kw	R88M-W2K030H/T	24h6	2.0kw	R88M-G2K030T	19h6	-5.0

[Units: mm]

■ 1,000r/min Servomotors

W Series			G Series			Shaft Dia. Change Amt. ΔS
Servomotor Capacity	Servomotor Model	ϕS	Servomotor Capacity	Servomotor Model	ϕS	
300w	R88M-W30010H/T	19h6	900w	R88M-G90010T	22h6	+3.0
600w	R88M-W60010H/T	19h6	900w	R88M-G90010T	22h6	+3.0
900w	R88M-W90010H/T	22h6	900w	R88M-G90010T	22h6	± 0
1.2kw	R88M-W1K210H/T	35 + 0.01	2.0kw	R88M-G2K010T	35h6	± 0
2.0kw	R88M-W2K010H/T	35 + 0.01	2.0kw	R88M-G2K010T	35h6	± 0

[Units: mm]

■ 1,500r/min Servomotors

W Series			G Series			Shaft Dia. Change Amt. ΔS
Servomotor Capacity	Servomotor Model	ϕS	Servomotor Capacity	Servomotor Model	ϕS	
450w	R88M-W45015T	19h6	1.0kw	R88M-G1K020T	22h6	-3.0
850w	R88M-W85015T	19h6	1.5kw	R88M-G1K520T	22h6	-3.0
1.3kw	R88M-W1K315T	22h6	2.0kw	R88M-G1K520T	22h6	± 0
1.8kw	R88M-W1K815T	35 + 0.01	3.0kw	R88M-G3K020T	24h6	-11.0

[Units: mm]

■ 3,000r/min Flat Type Servomotors

W Series			G Series			Shaft Dia. Change Amt. ΔS
Servomotor Capacity	Servomotor Model	ϕS	Servomotor Capacity	Servomotor Model	ϕS	
100w	R88M-WP10030H/T	8h6	100w	R88M-GP10030H/T	8h6	0
200w	R88M-WP20030H/T	14h6	200w	R88M-GP20030H/T	11h6	-3.0
400w	R88M-WP40030H/T	14h6	400w	R88M-GP40030H/T	14h6	0
750w	R88M-WP75030H/T	16h6	No models for replacement			
1.5kw	R88M-WP1K030H/T	19h6				

[Units: mm]

iii) Precautions for the Axial Load Position Change

When replacing the W Series Servomotors with the G Series Servomotors, the allowable radial load and thrust load change. If the shaft ends position changes, the applying point of the radial load, in particular, changes.

W Series		G Series	
Servomotor Series	Allowable Radial Load Applying Position	Servomotor Series	Allowable Radial Load Applying Position
3,000rpm Small Capacity Cylindrical Type	5mm from the shaft end	3,000rpm Small Capacity Cylindrical Type	Shaft center
3,000rpm Medium Capacity Type	Shaft end	3,000rpm Medium Capacity Type	Shaft center
1,000rpm Type	Shaft end	1,000rpm Type	Shaft center
1,500rpm Type	Shaft end	1,500rpm Type	Shaft center
3,000rpm Flat Type	5mm from the shaft end	3,000rpm Flat Type	Shaft center

Chapter 3 Replacement Procedure

3-2. Servo Drive Replacement Procedure

When replacing the Servo Drives, note the following six precautions regarding:

- Operation start-up
- Making mounting holes
- Changing Servo Drive's parameter settings
- Difference of the control I/O interface
- Difference of the mounting dimensions
- Regeneration absorption amount

i) Precautions for Operation Start-up

At operation start-up, note the following precautions.

- Make sure that wiring is correct before turning ON the power.
- Before connecting to the mechanical system, check the Servomotor rotation speed and direction under no-load status by performing JOG operation.
- Some of the Servo Drive parameters are enabled only by turning OFF the power and turning it ON again, and some require writing operation into EEPROM.

ii) Precautions for Making Mounting Holes

When making holes in the control panel, be sure not to let cutting bits or other objects get inside the machinery. If it is difficult to make holes in the control panel, manufacture attachment parts on which the G Series Servo Drive can be mounted by using the mounting holes for the W Series Servo Drive.

iii) Precautions for Changing Servo Drive's Parameter Settings

When replacing the W Series Servo Drives, the parameter settings of the G Series Servo Drive need to be changed from the default settings. The following are the relations of the parameter settings between the W Series and the G Series.

■ Function Selection Parameters

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
000.0	Reverse Rotation	043	Operating Direction Setting
000.1	Not used		
000.2	Unit No. Setting		
000.3	Not used		
001.0	Stop Selection If an Alarm Occurs When Servomotor is OFF	068	Stop Selection for Alarm Generation
		069	Stop Selection with Servo OFF
001.1	Stop Selection When Drive Prohibited is Input	066	Stop Selection for Drive Prohibition Input
001.2	AC/DC Power Input Selection		
001.3	Not used		
002.0	Torque Command Input Change (during speed control)	003	Torque Limit Selection
002.1	Speed Command Input Change (during torque control)	05B	Speed Limit Selection
002.2	Operation Switch When Using Absolute Encoder	00B	Operation Switch When Using Absolute Encoder
003~005	Not used		
006	Analog Monitor 1 (AM) Signal Selection	008	Torque Monitor (IM) Selection
007	Analog Monitor 2 (NM) Signal Selection	007	Speed Monitor (SP) Selection
008.0	Lowered Battery Voltage Alarm/Warning Selection		
008.1	Not used		
008.2	Warning Detection Selection		

■ Gain Related Parameters

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
100	Speed Loop Gain	011	Speed Loop Gain
101	Speed Loop Integration Time Constant	012	Speed Loop Integration Time Constant
102	Position Loop Gain	010	Position Loop Gain
103	Inertia Ratio	020	Inertia Ratio
104	Speed Loop Gain 2	019	Speed Loop Gain 2
105	Speed Loop Integration Time Constant 2	01A	Speed Loop Integration Time Constant
106	Position Loop Gain 2	018	Position Loop Gain 2
107	Bias Rotational Speed	—	This function is not available.
108	Bias Addition Band	—	This function is not available.
109	Feed-forward Amount	015	Speed Feed-forward Amount
10A	Feed-forward Command Filter	016	Feed-forward Filter Time Constant
10B.0	P Control Switching Conditions	—	This function is not available.
10B.1	Speed Control Loop Switching	—	This function is not available.
10B.2	Position Loop Control Method	—	This function is not available.
10C	P Control Switching (torque command)	—	This function is not available.
10D	P Control Switching (speed command)	—	This function is not available.
10E	P Control Switching (acceleration command)	—	This function is not available.
10F	P Control Switching (deviation pulse)	—	This function is not available.
110.0	Normal Autotuning Switches	—	This function is not available.
110.1	Speed Feedback Compensation Function Selection	—	This function is not available.
111	Speed Feedback Compensating Gain	—	This function is not available.
112 to 11E	Not used		
11F	Position Integral Time Constant	—	This function is not available.
120 to 130	Not used		
131	Gain Switching Time 1	030 to 035	Gain Switching Operating Mode Selection and others (*1)
132	Gain Switching Time 2		
133,134	Not used		
135	Gain Switching Waiting Time 1	030 to 035	Gain Switching Operating Mode Selection and others (*1)
136	Gain Switching Waiting Time 2		
137,138	Not used		
139.0	Gain Switching Selection Switch	030 to 035	Gain Switching Operating Mode Selection and others (*1)
139.1	Gain Switching Condition A		
139.2	Gain Switching Condition B		
13A to 14F	Not used		
150.0	Predictive Control Selection	—	This function is not available.
150.1	Predictive Control Type	—	This function is not available.
151	Predictive Control Acceleration/Deceleration Gain	—	This function is not available.
152	Predictive Control Weighting Ratio	—	This function is not available.
153 to 19F	Not used		
1A0	Servo Rigidity	—	This function is not available.
1A1	Servo Rigidity 2	—	This function is not available.

Note #1: Functionally the same when comparing the G Series and the W Series. But the setting method is different.

Chapter 3 Replacement Procedure

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
1A2	Speed Feedback Filter Time Constant	—	This function is not available.
1A3	Speed Feedback Filter Time Constant 2	—	This function is not available.
1A4	Torque Command Filter Time Constant 2	—	This function is not available.
1A5,1A6	Not used		
1A7.0	Integral Compensation Processing	—	This function is not available.
1A8	Not used		
1A9	Utility Integral Gain	—	This function is not available.
1AA	Position Proportional Gain	—	This function is not available.
1AB	Speed Integral Gain	—	This function is not available.
1AC	Speed Proportional Gain	—	This function is not available.

■ Position Control Related Parameters

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
200 to 204	Not used		
205	Absolute Encoder Multi-turn Limit Setting	—	This function is not available.
206	Not used		
207.0,1	Not used		
207.2	Backlash Compensation Selection	100	Backlash Compensation Selection
207.3	INP 1 Output Timing	—	This function is not available.
208 to 20D	Not used		
20E	Electronic Gear Ratio G1 (numerator)	205	Electronic Gear Ratio 1 (Numerator)
20F	Not used		
210	Electronic Gear Ratio G2 (denominator)	206	Electronic Gear Ratio 2 (Denominator)
211	Not used		
212	Encoder Divider Rate	—	This function is not available.
213	Not used		
214	Backlash Compensation Amount	101	Backlash Compensation
215	Backlash Compensation Time Constant	102	Backlash Compensation Time Constant

■ Speed Related Parameters

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
300 to 303	Not used		
304	Jog Speed	03D	Jog Speed
305	Soft Start Acceleration Time	058	Soft Start Acceleration Time
306	Soft Start Deceleration Time	059	Soft Start Deceleration Time
307	Not used		
308	Speed Feedback Filter Time Constant	013	Speed Feedback Filter Time Constant
309	Not used		
310.0	Vibration Detection Selection	—	This function is not available.
311	Vibration Detection Sensitivity	—	This function is not available.
312	Vibration Detection Level	—	This function is not available.

■ Torque Related Parameters

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
400	Not used		
401	1st Step 1st Torque Command Filter Time Constant	014	Torque Command Filter Time Constant
402	Forward Torque Limit	05E	No.1 Torque Limit
403	Reverse Torque Limit	05F	No.2 Torque Limit
404	Forward Rotation External Current Limit	05E	No.1 Torque Limit
405	Reverse Rotation External Current Limit	05F	No.2 Torque Limit
406	Emergency Stop Torque	06E	Emergency Stop Torque
407	Speed Limit	053	Speed Limit
408.0	Selects Notch Filter 1 Function	01D	Notch Filter 1 Frequency(*2)
408.1	Not used		
408.2	Selects Notch Filter 2 Function	028	Notch Filter 2 Frequency(*2)
409	Notch Filter 1 Frequency	01D	Notch Filter 1 Frequency(*2)
40A	Notch Filter 1 Q Value	01E	Notch Filter 1 Width(*2)
40B	Not used		
40C	Notch Filter 2 Frequency	028	Notch Filter 2 Frequency(*2)
40D	Notch Filter 2 Q Value	029	Notch Filter 2 Width(*2)
40E	Not used		
40F	2nd Step 2nd Torque Command Filter Frequency	—	
410	2nd Step 2nd Torque Command Filter Q Value	—	
411	3rd Step Torque Command Filter Time Constant	—	
412	1st Step 2nd Torque Command Filter Time Constant	01C	Torque Command Filter Time Constant 2
413 to 41F	Not used		
420	Damping for Vibration Suppression on Stopping	—	
421	Vibration Suppression Starting Time	—	
422	Gravity Compensation Torque	—	
423 to 455	Not used		
456	Sweep Torque Command Amplitude	—	

Note *2: Functionally the same when comparing the G Series and the W Series. But the setting method is different.

■ Sequence Related Parameters

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
500,501	Not used		
502	Rotation Speed for Motor Rotation Detection	062	Rotation Speed for Motor Rotation Detection
503	Speed Conformity Signal Output Width	061	Speed Conformity Signal Output Width
504,505	Not used		
506	Brake Timing 1	06B	Brake Timing during Operation
507	Brake Command Speed		
508	Brake Timing 2	06A	Brake Timing When Stopped
509	Momentary Hold Time	06D	Momentary Hold Time
50A.0 to 2	Not used		

Chapter 3 Replacement Procedure

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
50A.3	POT Signal Input Terminal Allocation	004/044	Drive Prohibit Input Selection/Input Signal Selection
50B.0	NOT Signal Input Terminal Allocation	004/044	Drive Prohibit Input Selection/Input Signal Selection
50C,50D	Not used		
50E.0	INP1 Signal (positioning completed 1) Output Terminal Allocation	112 113 114	General-purpose Output 1 General-purpose Output 2 General-purpose Output 3 Function Selection
50E.1	VCMP Signal Output Terminal Allocation		
50E.2	TGON Signal Output Terminal Allocation		
50E.3	READY Signal Output Terminal Allocation		
50F.0	CLIMT Signal Output Terminal Allocation		
50F.1	VLIMT Signal Output Terminal Allocation		
50F.2	BKIR Signal Output Terminal Allocation		
50F.3	WARN Signal Output Terminal Allocation		
510.0	INP2 Signal (positioning completed 2) Output Terminal Allocation		
511.0	DEC Signal Input Terminal Allocation	042	Origin Proximity Input Logic Setting
511.1	EXT1 Signal Input Terminal Allocation	—	
511.2	EXT2 Signal Input Terminal Allocation	—	
511.3	EXT3 Signal Input Terminal Allocation	—	
512.0	Output Signal Reverse for CN1 pins 1, 2	—	
512.1	Output Signal Reverse for CN1 pins 23, 24	—	
512.2	Output Signal Reverse for CN1 pins 25, 26	—	
513 to 51D	Not used		
51E	Deviation Counter Overflow Warning Level	—	
51F	Not used		
520	Deviation Counter Overflow Level	209	Deviation Counter Overflow Level
522	Positioning Completed Range 1	060	Positioning Completion Range 1
523	Not used		
524	Positioning Completed Range 2	063	Positioning Completion Range 2
525	Not used		
526	Deviation Counter Overflow Level at Servo-ON	—	
527	Not used		
528	Deviation Counter Overflow Warning Level at Servo-ON	—	
529	Speed Limit Level at Servo-ON	—	
530	Program JOG Operation Related Switches	—	
531	Program JOG Movement Distance	—	
532	Not used		
533	Program JOG Movement Speed	—	
534	Program JOG Acceleration/Deceleration Time	—	
535	Program JOG Waiting Time	—	
536	Number of Program JOG Movements	—	
537 to 53F	Not used		
540	Gain Limit	—	

Chapter3 Replacement Procedure

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
541 to 54F	Not used		
550	Analog Monitor 1 Offset Voltage	—	
551	Analog Monitor 2 Offset Voltage	—	

■ Other Parameters

W Series		G Series	
Pn No.	Parameter Name	Pn No.	Parameter Name
600	Regeneration Resistor Capacity	06C	Regeneration Resistor Selection
601 to 7FF	Not used		
800.0	MECHATROLINK- II Communications Check Mask	005.0-3	MECHATROLINK- II Communications Alarms Mask
800.1	Warning Check Mask	005.4-7	MECHATROLINK- II Communications Warnings Mask
800.2	Communications Error Count at Single Transmission	005.8-11	Consecutive Communications Error Detection Count
801.0	Software Limit Function	104	Soft Limit
801.1	Not used		
801.2	Software Limit Check Using Reference	—	
802	Not used		
803	Zero Point Width	105	Origin Range
804	Forward Software Limit	201	Forward Software Limit
805	Not used		
806	Reverse Software Limit	202	Reverse Software Limit
808	Absolute Encoder Zero Point Position Offset	200	Absolute Origin Offset
809	Not used		
80A	First Step Linear Acceleration Parameter	—	
80B	Second Step Linear Acceleration Parameter	107	Linear Acceleration Constant
80C	Acceleration Parameter Switching Speed	—	
80D	First Step Linear Deceleration Parameter	—	
80E	Second Step Linear Deceleration Parameter	10A	Linear Deceleration Constant
80F	Deceleration Parameter Switching Speed	—	
810	Exponential Acceleration/Deceleration Bias	—	
811	Exponential Acceleration/Deceleration Time Constant	—	
812	Moving Average Time	10E	Moving Average Time
813	Not used		
814	Final Travel Distance for External Positioning	203	Final Distance for External Input Positioning
815	Not used		
816.0	Zero Point Return Mode Settings	10F	Origin Return Mode Settings
817	Zero Point Return Approach Speed 1	110	Origin Return Approach Speed 1
818	Zero Point Return Approach Speed 2	111	Origin Return Approach Speed 2
819	Final Travel Distance to Return to Zero Point	204	Origin Return Final Distance

Chapter 3 Replacement Procedure

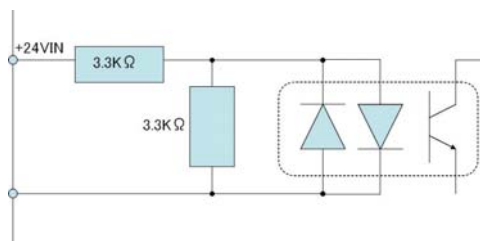
iv) Precautions for the Difference of the Control I/O Interface

The following is the difference of the control I/O interface between the W Series and the G Series.

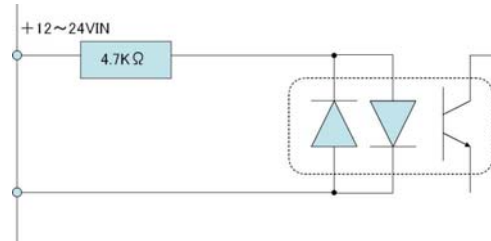
W Series I/O	Precautions
+24 V power input	For the W Series, 24 V DC is used for the control power supply input. For the G Series, 12 V to 24 V DC can be used.
Sequence input (2 to 8, 19 to 23)	For the W Series, pin arrangements of six input signals (POT/NOT/DEC/EXT1/EXT2/EXT3) can be made and the input logic can be allocated freely via the parameter selection. However, for the G Series, these signals have fixed allocations. (Pin arrangements can be changed for POT/NOT.)
Sequence output (29 to 35)	For the W Series, the logic (ON/OFF) of the output signal allocated via the parameter selection can be reversed. However, the G Series has the fixed output characteristics.
Encoder Feedback Output	The G Series does not have an encoder feedback output.

• +24V Input

【 W Series Servo Drive 】



【 G Series Servo Drive 】



For the W Series, 24 V DC is used for the control power supply input. However, for the G Series, 12V to 24 V DC can be used.

• Sequence Input

For the W Series, input logic and connector allocations can be made freely via the parameter selection. However, the G Series has the fixed allocations.

Pin No.	Symbol	Name	Logic	
1	+24	12 to 24 V DC Power Supply Input		
2	STOP	Emergency Stop Input	N.C	Enable or disable this signal in Pn041.
3	EXT3	External Latch Signal 3	N.O	
4	EXT2	External Latch Signal 2	N.O	
5	EXT1	External Latch Signal 1	N.O	
6	IN1	External General-purpose Input 1	N.O	
7	PCL	Forward Torque Limit Input	N.O	Enable or disable this signal in Pn003.
8	NCL	Reverse Torque Limit Input	N.O	Enable or disable this signal in Pn003.
19/20	POT	Forward Drive Prohibit Input	N.C	Enable or disable this signal in Pn044.
	NOT	Reverse Drive Prohibit Input	N.C	Allocations can be made in Pn044.
21	DEC	Origin Proximity Input	N.C/ N.O	Input logic can be selected in Pn042.
22	INO	External General-purpose Input 0	N.O	
23	IN2	External General-purpose Input 2	N.O	

- Sequence Output

For the W Series, the logic of the output signal can be reversed via the parameter selection.

However, the G Series has the fixed allocations.

Symbol	Name	Control Mode
/ALM	Alarm Output	N.C
INP1	Positioning Completed Output 1	N.O
VCMP	Speed Conformity Output	N.O
TGON	Servomotor Rotation Detection Output	N.O
READY	Servo Ready Output	N.O
CLIMT	Current Limit Detection Output	N.O
BKIR	Brake Interlock Output	N.O
WARN	Warning Output	N.O
INP2	Positioning Completed Output 2	N.O

v) Precautions for the Difference of the Mounting Dimensions

When replacing the W Series Servo Drives with the G Series Servo Drives, mounting holes positions need to be changed because of the different dimensions as follows.

Input Power	W Series R88D	G Series R88D	Δ Dimensional Difference (mm)			Precautions (Changes after replacement)
			Width	Height	Depth	
Single phase 100 V /115 V AC	-WNA5L-ML2	-GTA5L-ML2	5	0	-2	Larger by 2mm in depth
	-WN01L-ML2	-GT01L-ML2	5	0	-2	Larger by 2mm in depth
	-WN02L-ML2	-GT02L-ML2	-10	0	-2	Larger by 10mm in width and 2mm in depth
	-WN04L-ML2	-GT04L-ML2	5	0	10	
Single phase 200 V /230 V AC	-WNA5H-ML2	-GT01H-ML2	5	0	-2	Larger by 2mm in depth
	-WN01H-ML2	-GT01H-ML2	5	0	-2	Larger by 2mm in depth
	-WN02H-ML2	-GT02H-ML2	5	0	-2	Larger by 2mm in depth
	-WN04H-ML2	-GT04H-ML2	10	0	-2	Larger by 2mm in depth
	-WN08H-ML2	-GT08H-ML2	5	0	10	
Three phase 200 V /230 V AC	-WN05H-ML2	-GT10H-ML2	-5	0	10	Larger by 5mm in width
	-WN05H-ML2	-GT15H-ML2	-5	0	10	Larger by 5mm in width
	-WN08H-ML2	-GT08H-ML2	5	0	10	
	-WN08H-ML2	-GT15H-ML2	-5	0	10	Larger by 5mm in width
	-WN10H-ML2	-GT15H-ML2	-5	0	10	Larger by 5mm in width
	-WN15H-ML2	-GT15H-ML2	5	0	10	
	-WN15H-ML2	-GT20H-ML2	5	-48	-20	Larger by 48mm in height and 20mm in depth
	-WN15H-ML2	-GT30H-ML2	-40	-100	-20	Larger by 40mm in width, 100mm in height and 20mm in depth.
	-WN20H-ML2	-GT20H-ML2	15	-18	-20	Larger by 20mm in depth
-WN20H-ML2	-GT30H-ML2	-30	-70	-20	Larger by 30mm in width and 20mm in depth	
-WN30H-ML2	-GT30H-ML2	-30	-70	-20	Larger by 30mm in width and 20mm in depth	

Chapter 3 Replacement Procedure

vi) Precautions for the Regeneration Absorption Amount

When replacing the W Series Servo Drives with the G Series Servo Drives, regeneration absorption amount may be reduced. Calculate the regeneration energy. If the amount exceeds the G Series regeneration absorption capability, improve the regeneration processing capability by using an external regeneration resistor or taking other measures.

Input Power	W Series				G Series			
	Model	①	②	③	Model	①	②	③
Single phase 100 V /115 V AC	-WNA5L-ML2	28.6	—	—	-GTA5L-ML2	12	—	—
	-WN01L-ML2	28.6	—	—	-GT01L-ML2	12	—	—
	-WN02L-ML2	28.6	—	—	-GT02L-ML2	12	—	—
	-WN04L-ML2	39.0	—	—	-GT04L-ML2	18	—	—
Single phase 200 V /230 V AC	-WNA5H-ML2	15.2	—	—	-GT01H-ML2	16	—	—
	-WN01H-ML2	30.5	—	—	-GT01H-ML2	16	—	—
	-WN02H-ML2	30.5	—	—	-GT02H-ML2	16	—	—
	-WN04H-ML2	39.5	—	—	-GT04H-ML2	25	12	50
Three phase 200 V /230 V AC	-WN08H-ML2	—	12	50	-GT08H-ML2	43	—	—
	-WN05H-ML2	—	8	50	-GT10H-ML2	70	—	—
	-WN05H-ML2	—	8	50	-GT15H-ML2	70	—	—
	-WN08H-ML2	—	12	50	-GT08H-ML2	43	12	100
	-WN08H-ML2	—	12	50	-GT15H-ML2	70	20	30
	-WN10H-ML2	—	12	50	-GT15H-ML2	70	20	30
	-WN15H-ML2	—	14	20	-GT15H-ML2	70	20	30
	-WN15H-ML2	—	14	20	-GT20H-ML2	70	40	15
	-WN15H-ML2	—	14	20	-GT30H-ML2	70	40	15
	-WN20H-ML2	—	28	12	-GT20H-ML2	70	40	15
	-WN20H-ML2	—	28	12	-GT30H-ML2	70	40	15
	-WN30H-ML2	—	28	12	-GT30H-ML2	70	40	15

① Regeneration energy that can be absorbed by the internal capacitor (J)

② Average regeneration amount that can be absorbed by the internal regeneration resistor (W)

③ Resistance value of the internal regeneration resistor (Ω)

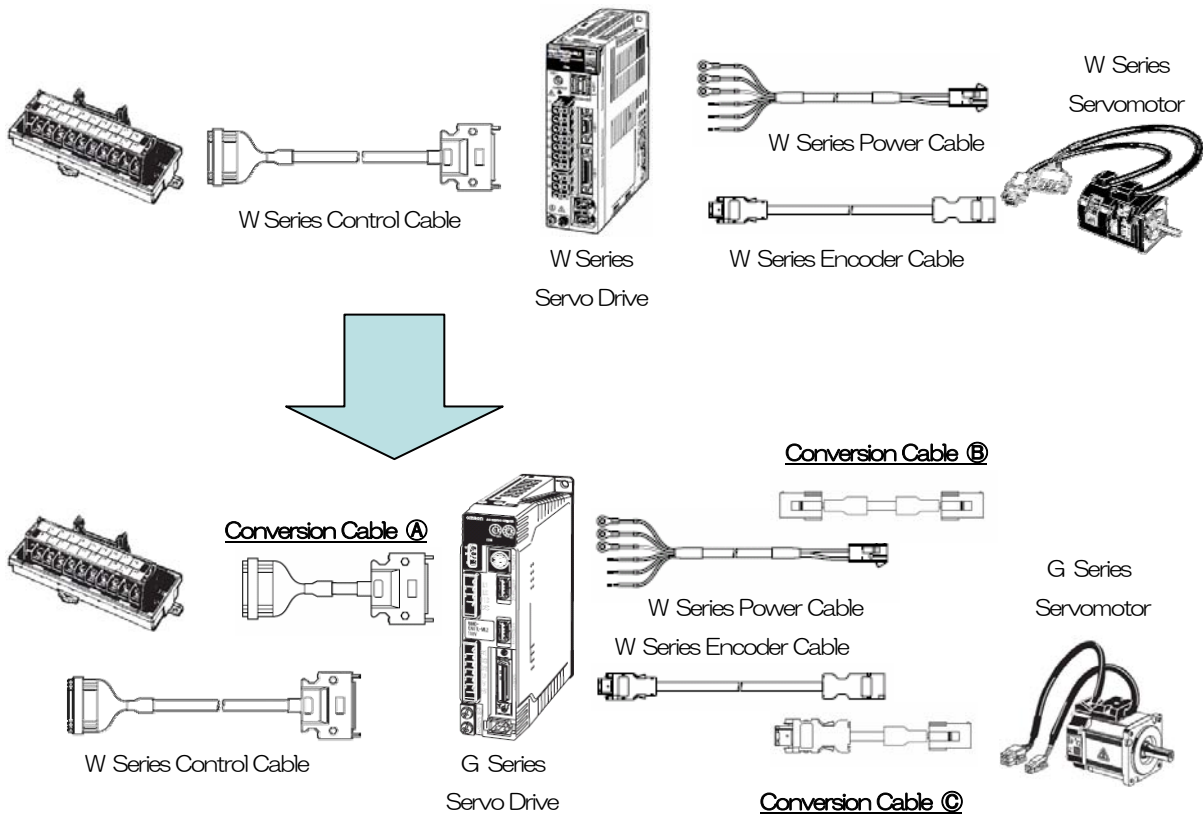
3-3. Cable Replacement Procedure

When replacing the cables, note the following two precautions.

- The W Series Cables and G Series Cables are not compatible with each other.
- The Servo relay units cannot be used for some of the G Series.

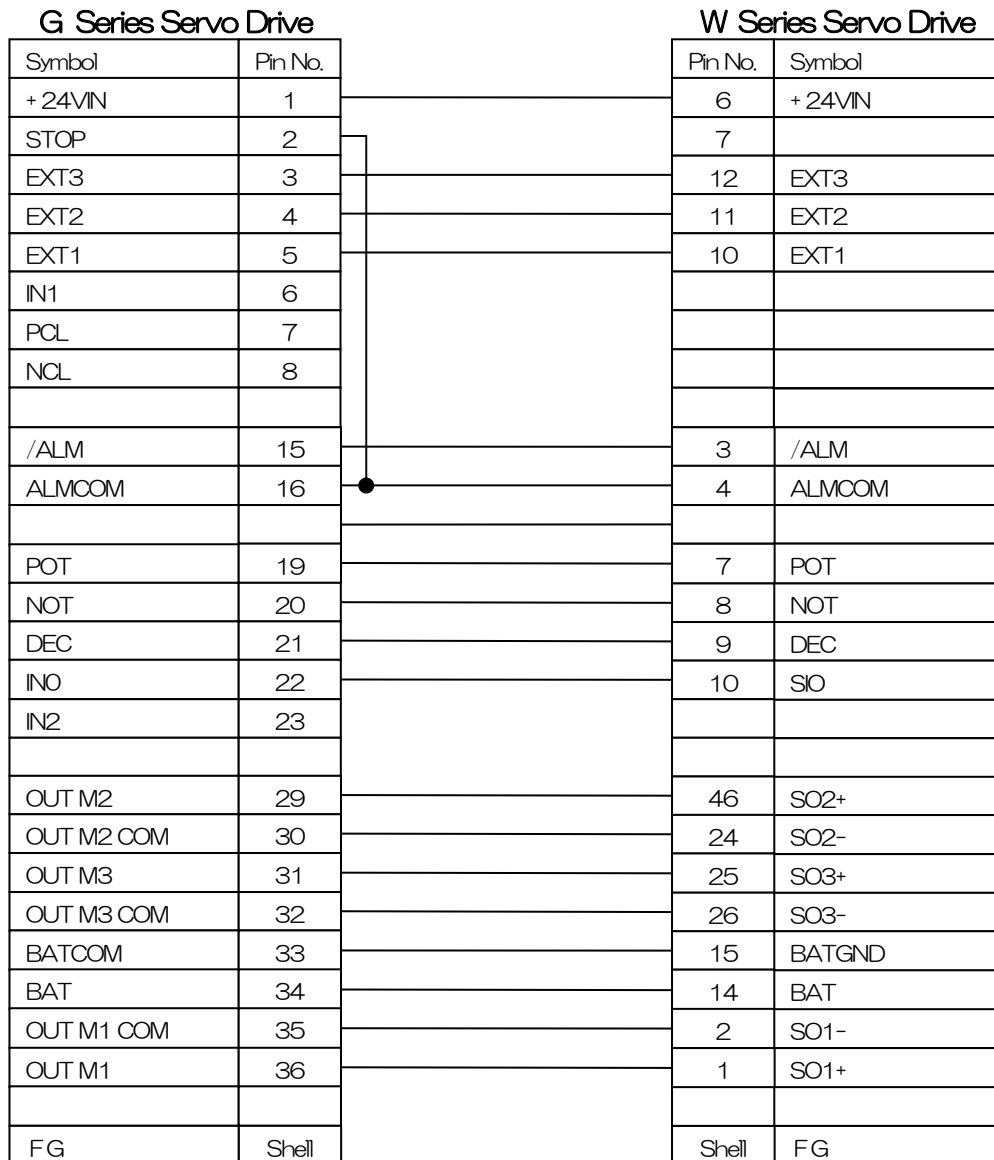
■ Example of Using a Conversion Cable for the Replacement

Here's an example of making a conversion cable for the replacement in case you cannot change the Controller or cables now in use.



Chapter 3 Replacement Procedure

Ⓐ. Control Signal Conversion Cable Example



Connector plug : 10136-3000PE

Connector case : 10336-52A0-008

Manufacturer : Sumitomo 3M

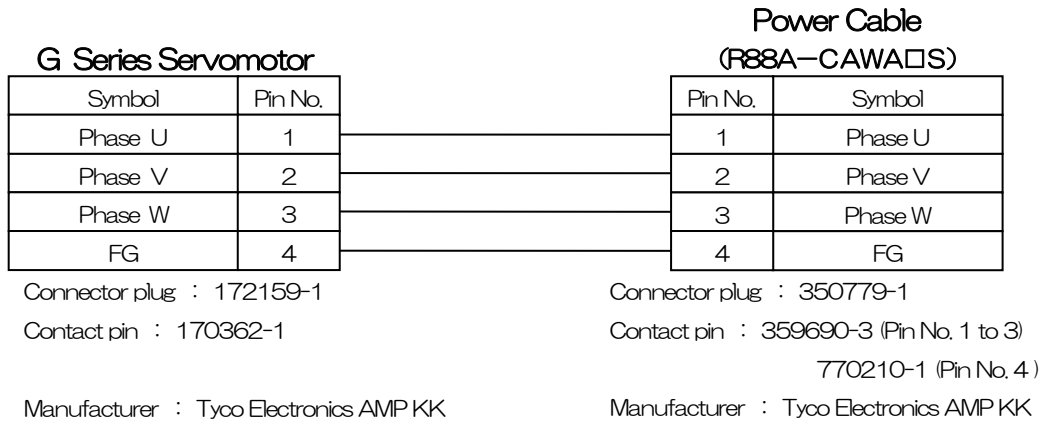
Receptacle : 10236-0200EL

Manufacturer : Sumitomo 3M

- ※ 1 For the W Series Servo Drive, functional allocations for the sequence inputs of pin No.7 to 13 [SIO to 6] and the sequence outputs of No.23 to 26 can be set in user parameters Ph50A, 50B, 511 and 50E to 510 respectively.
- ※ 2 For the G Series Servo Drive, functional allocations for the sequence outputs of OUTM1 to M3 can be set in user parameters Ph112 to 114.

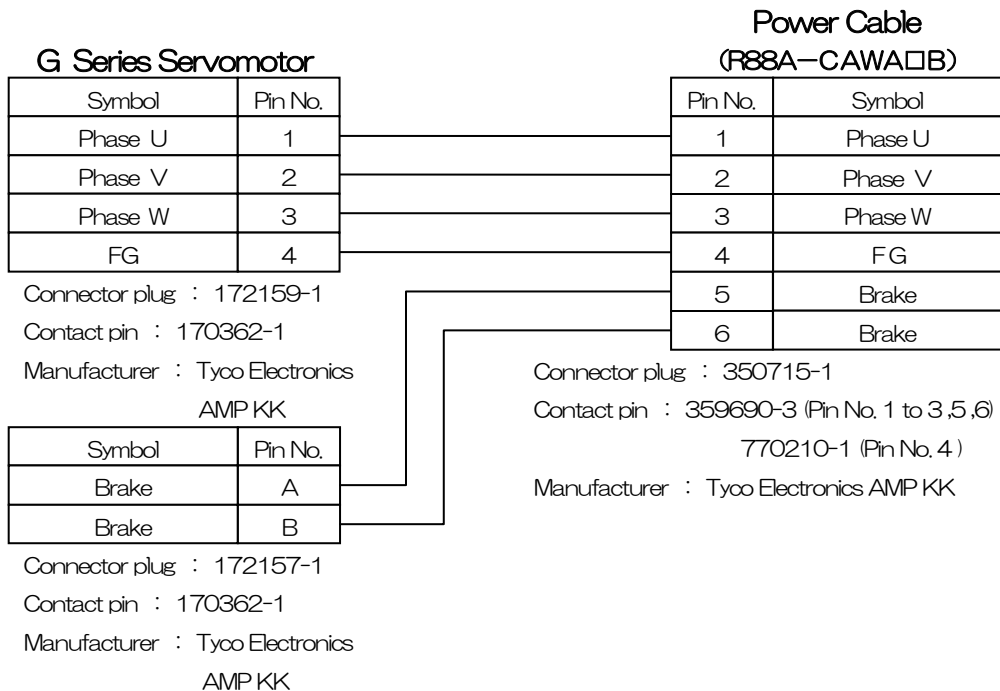
㊦-1. Servomotor Power Conversion Cable Example

【 Without a Brake, 3,000r/min 50 to 750w Flat Type Servomotors 】



㊦-2. Servomotor Conversion Cable Example

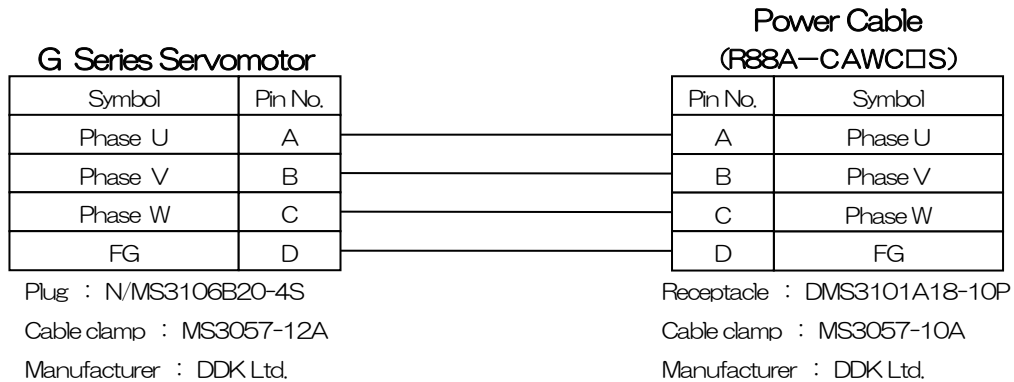
【 With a Brake, 3,000r/min 50 to 750w Flat Type Servomotor 】



Chapter 3 Replacement Procedure

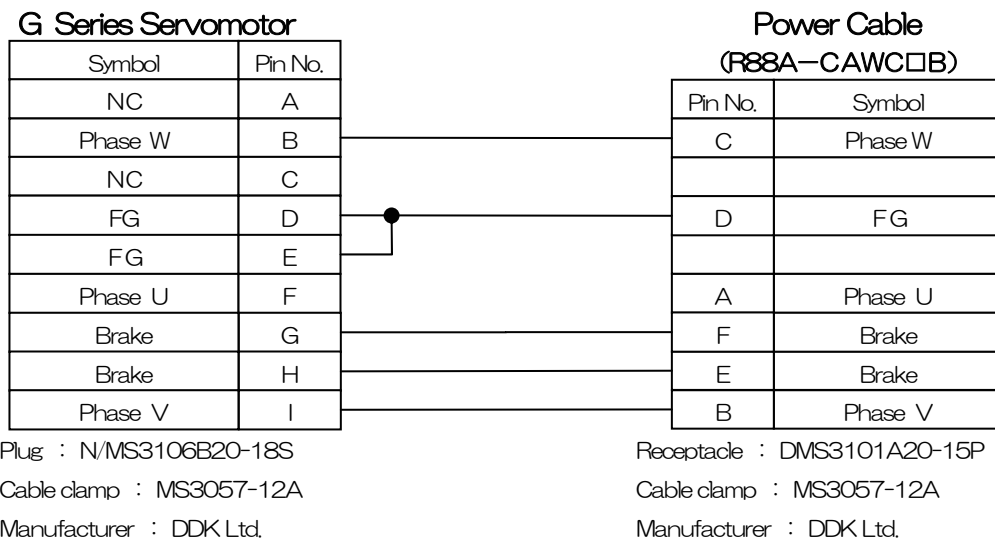
③-3. Servomotor Power Conversion Cable Example

【 Without a Brake, 3,000r/min 1.0k to 2.0Kw, 1000r/min: 300 to 900w,
1500r/min: 450 to 1.3Kw Servomotors 】



③-4. Servomotor Conversion Cable Example

【 With a Brake, 3,000r/min 1.0k to 2.0Kw, 1000r/min: 300 to 900w,
1500r/min: 450 to 1.3Kw Servomotors 】



⑤—5. Servomotor Power Conversion Cable Example

【 Without a Brake, 3,000r/min 3.0Kw, 1000r/min:1.2K to 1.2Kw, 1500r/min:1.8Kw Servomotors 】

The W Series Servomotor Power Cables are compatible with the G Series Servomotor Power Cables, and can be used for the replacement.

G Series Power Cable
R88A-CAGD□□□S

Pin No.	Symbol
A	Phase U
B	Phase V
C	Phase W
D	FG

Plug : N/MS3106B22-22S

Cable clamp : MS3057-12A

Manufacturer : DDK Ltd.

W Series Power Cable
R88A-CAWD□□□S

Pin No.	Symbol
A	Phase U
B	Phase V
C	Phase W
D	FG

Plug : MS3106B22-22S

Cable clamp : MS3057-12A

Manufacturer : DDK Ltd.

⑤—6. Servomotor Conversion Cable Example

【 With a Brake, 3,000r/min 3.0Kw, 1000r/min:1.2K to 1.2Kw, 1500r/min:1.8Kw Servomotors 】

G Series Servomotor

Symbol	Pin No.
Brake	A
Brake	B
NC	C
Phase U	D
Phase V	E
Phase W	F
FG	G
FG	H
NC	I

Plug : N/MS3106B24-11S

Cable clamp : MS3057-16A

Manufacturer : DDK Ltd.

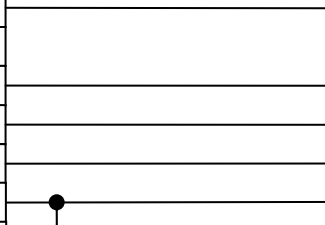
Power Cable
(R88A-CAWD□□B)

Pin No.	Symbol
F	Brake
E	Brake
A	Phase U
B	Phase V
C	Phase W
D	FG

Receptacle : DMS3101A24-10P

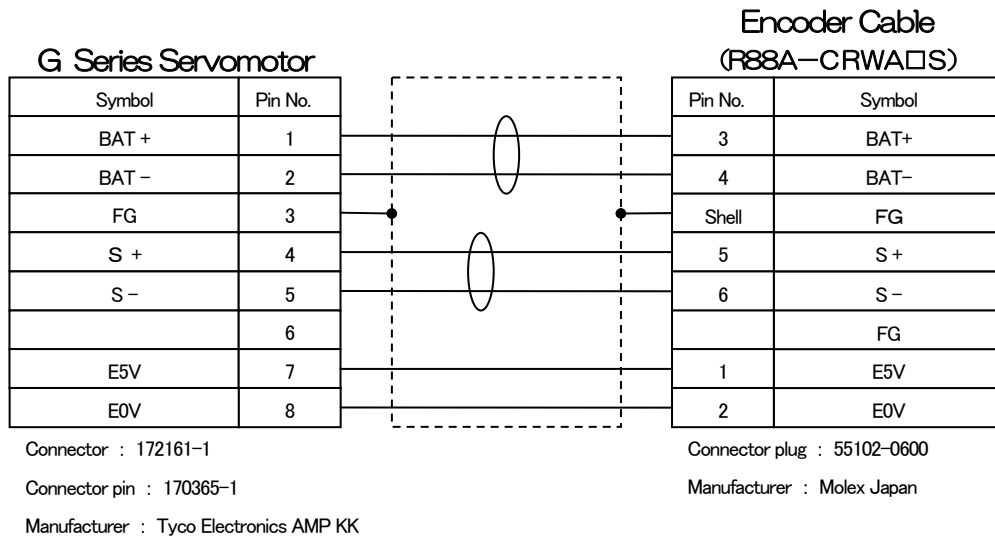
Cable clamp : MS3057-16A

Manufacturer : DDK Ltd.

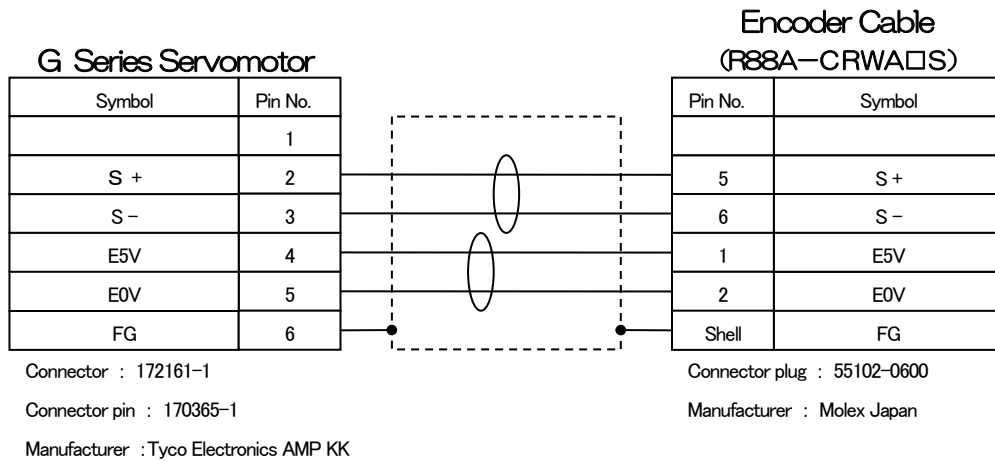


Chapter 3 Replacement Procedure

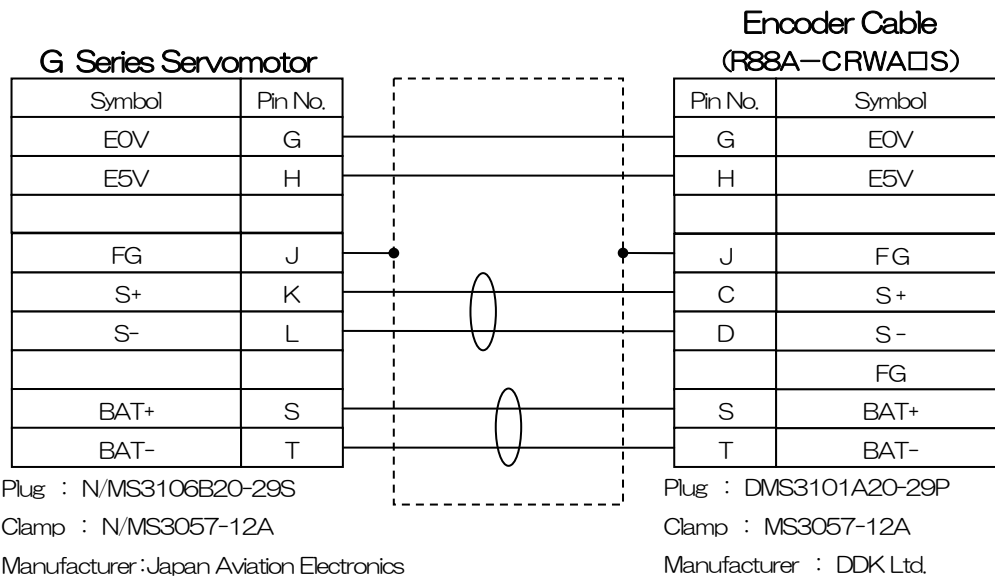
©—1. Encoder Conversion Cable Example【 ABS 3,000r/min 50 to 750w, Flat Type Servomotors 】



©—2. Encoder Conversion Cable Example【 INC 3,000r/min 50 to 750w, Flat Type Servomotors 】



©—3. Encoder Conversion Cable Example【 Medium Capacity Type Servomotors 】



Chapter 3 Replacement Procedure

■ Replacement Cable Usage Examples (Categorized by the Servomotor Capacity)

● 3,000r/min Servomotors

	W Series R88M -	G Series R88M -	Power Cables		Encoder Cables	
			Without a Brake	With a Brake	ABS	INC
50w	-W05030H/T	-G05030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
100w	-W10030H/T	-G10030L/S	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
200w	-W20030H/T	-G20030L/S	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
400w	-W40030H/T	-G40030L/S	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
50w	-W05030H/T	-G05030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
100w	-W10030H/T	-G10030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
200w	-W20030H/T	-G20030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
400w	-W40030H/T	-G40030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
750w	-W75030H/T	-G75030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
1.0Kw	-W1K030H/T	-G1K030T	Ⓑ-3	Ⓑ-4	Ⓒ-3	-
1.5Kw	-W1K530H/T	-G1K530T	Ⓑ-3	Ⓑ-4	Ⓒ-3	-
2.0Kw	-W2K030H/T	-G2K030T	Ⓑ-3	Ⓑ-4	Ⓒ-3	-
3.0Kw	-W3K030H/T	-G3K030T	Ⓑ-5	Ⓑ-6	Ⓒ-3	-

● 1,000r/min Servomotors

	W Series R88M -	G Series R88M -	Power Cables		Encoder Cables
			Without a Brake	With a Brake	
300w	-W30010H/T	-G90010T	Ⓑ-3	Ⓑ-4	Ⓒ-3
600w	-W60010H/T	-G90010T	Ⓑ-3	Ⓑ-4	Ⓒ-3
900w	-W90010H/T	-G90010T	Ⓑ-3	Ⓑ-4	Ⓒ-3
1.2Kw	-W1K210H/T	-G2K010T	Ⓑ-5	Ⓑ-6	Ⓒ-3
2.0Kw	-W2K010H/T	-G2K010T	Ⓑ-5	Ⓑ-6	Ⓒ-3

● 1,500r/min Servomotors

	W Series R88M -	G Series R88M -	Power Cables		Encoder Cables
			Without a Brake	With a Brake	
450w	-W45015T	-G1K020T	Ⓑ-3	Ⓑ-4	Ⓒ-3
850w	-W85015T	-G1K520T	Ⓑ-3	Ⓑ-4	Ⓒ-3
1.3Kw	-W1K315T	-G2K020T	Ⓑ-3	Ⓑ-4	Ⓒ-3
1.8Kw	-W1K815T	-G3K020T	Ⓑ-5	Ⓑ-6	Ⓒ-3

● 3,000r/min Flat Type Servomotors

	W Series R88M -	G Series R88M-	Power Cables		Encoder Cables	
			Without a Brake	With a Brake	ABS	INC
100w	-WP10030H/T	-GP10030L/S	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
200w	-WP20030H/T	-GP20030L/S	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
400w	-WP40030H/T	-GP40030L/S	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
100w	-WP10030H/T	-GP10030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
200w	-WP20030H/T	-GP20030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2
400w	-WP40030H/T	-GP40030H/T	Ⓑ-1	Ⓑ-2	Ⓒ-1	Ⓒ-2

Chapter4 Function Specifications Comparison

4-1.Comparing Functions Based on the Control Method

■ Control Functions

Control Method	W Series	G Series
Speed Control	<p>Speed control is performed by commands from MECHATROLINK II. Main functions that can be used during speed control are as follows:</p> <ul style="list-style-type: none"> • Soft start function • Torque limit function • P control switching function 	<p>Speed control is performed by commands from the MECHATROLINK II type Position Control Unit (CJ1W-NCF71 / CS1W-NCF71).</p> <p>Main functions that can be used during speed control are as follows:</p> <ul style="list-style-type: none"> • Torque feed-forward function • Soft start function • Torque limit function • P control switching function • Speed feedback filter selection
Position Control	<p>Position control is performed by commands from MECHATROLINK II.</p> <p>The Servomotor is rotated with command values multiplied by the Electronic Gear (Pn20E/Pn210). Main functions that can be used during position control are as follows:</p> <ul style="list-style-type: none"> • Feed-forward function • Bias function • Torque limit function • P control switching function 	<p>Position control is performed by commands from the MECHATROLINK II type Position Control Unit (CJ1W-NCF71 / CS1W-NCF71).</p> <p>The Servomotor is rotated with command values multiplied by the Electronic Gear (Pn205/Pn206). Main functions that can be used during position control are as follows:</p> <ul style="list-style-type: none"> • Speed feed-forward function • Damping control function • Moving average time function • Soft limit function • Backlash compensation function • Torque limit function • P control switching function
Torque Control	<p>Torque control is performed by commands from MECHATROLINK II.</p> <p>Main functions that can be used during torque control are as follows:</p> <ul style="list-style-type: none"> • Speed limit function • Torque limit function 	<p>Torque control is performed by commands from the MECHATROLINK II type Position Control Unit (CJ1W-NCF71 / CS1W-NCF71).</p> <p>Main functions that can be used during torque control are as follows:</p> <ul style="list-style-type: none"> • Torque command filter time constant • Notch filter • Speed limit function • Torque limit function • Speed feedback filter selection

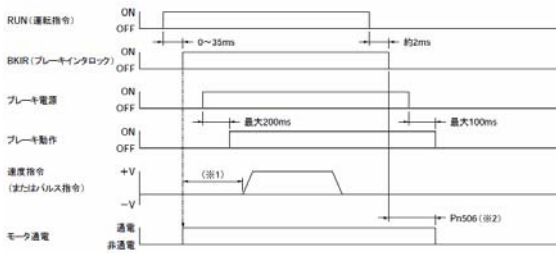
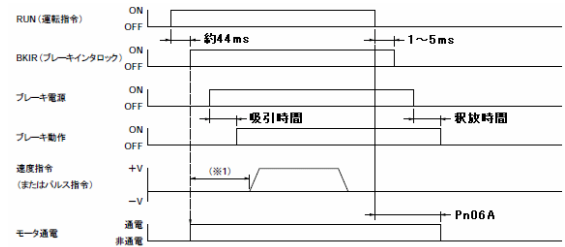
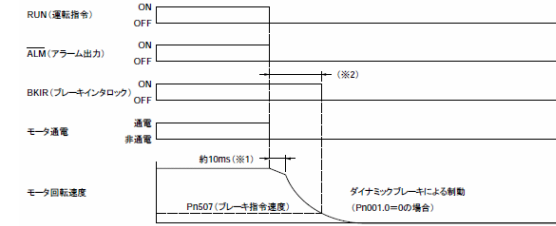
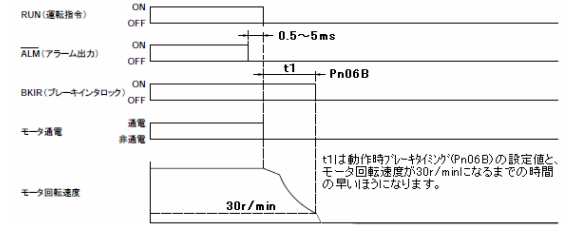
4-2. Comparing Functional Operations and Settings

■ Forward Drive Prohibit·Reverse Drive Prohibit

W Series	G Series
Functions	
<ul style="list-style-type: none"> • The Servomotor rotation stops when Forward Drive Prohibit (POT : CN1-7) and Reverse Drive Prohibit (NOT : CN1-8) are turned OFF. (Pin No. is allocated by default settings.) • This function prevents the Servomotor from rotating outside the allowable operating range by connecting the limit inputs of the machinery. • The position Loop does not work when the Servomotor is stopped with Servo lock status during position control. • During torque control, stopping method depends on Pn001.0. (Pn001.1 setting has nothing to do with this.) • If commands in the prohibited direction are input in the drive prohibited range, the Servomotor will stop according to the stopping method set in Pn001.1. If commands in the opposite direction are input, the Servomotor will automatically be put in operating status. • During position control, accumulated pulses of the deviation counter will not be reset in drive prohibit status, and the counter will continue to count feedback pulses and command pulses. If the drive prohibit input is turned ON (drive is permitted) in this status, the Servomotor will move by the distance of accumulated pulses. Be cautious about this. 	<ul style="list-style-type: none"> • Sets the operation for Forward Drive Prohibit Input (POT) and Reverse Drive Prohibit Input (NOT) of the Servo Drive control I/O connector CN1. • This function prevents the Servomotor from rotating outside the allowable operating range by connecting the limit inputs of the machinery. • When Pn004 = 0 and both Forward Drive Prohibit / Reverse Drive Prohibit Inputs are OFF, drive prohibit input error (alarm code 38) will occur. • When Pn004 = 1, both Forward Drive Prohibit / Reverse Drive Prohibit Inputs are disabled. • When Pn004 = 2 and both Forward Drive Prohibit / Reverse Drive Prohibit Inputs are OFF, drive prohibit input error (alarm code 38) will occur, and command in the drive prohibited direction issued after stopping will cause a command warning.
Settings	
<p>Allocations can be made to desired input terminals by parameters. (Settings of "Always Disabled" can also be made.)</p> <p>The input condition logic for enabling the functions can be set by parameters.</p>	<p>Pins 19 and 20 for CN1 can be switched by parameter settings. (Settings of "Always Disabled" can also be made.)</p> <p>The input condition for enabling the functions is NC contact input only.</p>
Stopping Method for Drive Prohibit Input	
<p>Select any of the followings in the parameters Pn001.1 (Stop Selection When Drive Prohibited is Input) and Pn001.0 (Stop Selection If an Alarm Occurs When Servomotor is OFF).</p> <ul style="list-style-type: none"> ① DB operation during deceleration · Free DB status after stopping · Deviation counter content clear ② Free-running stop during deceleration · Free status after stopping · Deviation counter content clear ③ Emergency stop during deceleration · Free status after stopping · Deviation counter content clear ④ Emergency stop during deceleration · Servo lock status after stopping · Deviation counter content clear 	<p>Select any of the followings in the parameter Pn066 (Stop Selection for Drive Prohibition Input).</p> <ul style="list-style-type: none"> ① DB operation during deceleration · Torque command = 0 in the drive prohibit direction after stopping · Deviation counter retained ② Torque command = 0 in the drive prohibit direction during deceleration · Torque command = 0 in the drive prohibit direction after stopping · Deviation counter retained ③ Emergency stop during deceleration · Torque command = 0 in the drive prohibit direction after stopping · Deviation counter retained

Chapter4 Function Specifications Comparison

■ Brake Interlock

W Series	G Series
Functions	
<p>Sets the output timing for BKIR (Brake Interlock) signal that controls the electromagnetic brake ON and OFF.</p> <ul style="list-style-type: none"> RUN signal and operation timing  <p>It takes up to 200ms from the brake power ON to brake release. Take into account the delay and issue a speed command (pulse command) after the brake has been released. It takes up to 100ms from the brake power OFF to the brake retained. When using the Servomotor for a vertical axis, take into account the delay and set in Pn506 (Braking Timing 1) so that the Servomotor will be de-energized after the brake has been retained.</p>	<p>Sets the output timing for Brake Interlock (BKIR) signal that activates the holding brake when an alarm occurs, at Servo ON and Servo OFF.</p> <ul style="list-style-type: none"> RUN signal and operation timing  <p>Servo ON does not occur until the Servomotor rotation speed drops to approximately 30r/min or less. Dynamic brake operation at Servo OFF depends on the setting in the Stop Selection with Servo OFF (Pn069). Brake Interlock (BKIR) signal is output at the release request command from either the Servo controller or MECHATROLINK-II, whichever comes first. BKIR signal is allocated to CN1 general-purpose outputs when it's used. Brake attraction time and release time vary depending on the Servomotor brake.</p>
<ul style="list-style-type: none"> Operation timing when an alarm occurs.  <p>The Servomotor free-runs for approximately 10ms from the time the Servomotor is de-energized until the dynamic brake is activated. BKIR (Brake Interlock) signal turns OFF when the Servomotor rotation speed drops below the value set in Pn507 (Brake Command Speed), or the time set in Pn508 (Brake Timing 2) elapses after the Servomotor is de-energized.</p>	<ul style="list-style-type: none"> Operation timing when an alarm occurs.  <p>Dynamic brake operation when an alarm occurs depends on the Stop Selection with Servo OFF (Pn069). t1 is either the Brake Timing during Operation (Pn06B) setting or the time for the Servomotor rotation speed to drop to approximately 30r/min or less, whichever occurs first. t1 becomes 0 when an alarm occurs while the Servomotor is stopped. The Servomotor will not shift to Servo ON until it stops even if the Servo ON input is turned ON again while it is decelerating. Brake Interlock (BKIR) signal is allocated to CN1 general-purpose outputs when it is used. When the main circuit power is turned OFF while the Servomotor is rotating, this operation timing is applied because of the missing phase alarm and main circuit low voltage alarm.</p>

Chapter4 Function Specifications Comparison

Settings	
W Series	G Series
<p>Set with the following three parameters.</p> <ul style="list-style-type: none"> • Brake Timing 1 (Pn506) <div style="margin-left: 20px;">Delay time from BKIR output signal OFF to Servo OFF</div> <div style="margin-left: 100px;">Setting range : 0 to 500ms</div> • Brake Command Speed (Pn507) <div style="margin-left: 20px;">The Servomotor rotation speed to turn OFF BKIR output signal</div> <div style="margin-left: 100px;">Setting range : 0 to 10000r/min</div> • Brake Timing 2 (Pn508) <div style="margin-left: 20px;">Wait time from Servo OFF to BKIR output signal OFF</div> <div style="margin-left: 100px;">Setting range : 0 to 500ms</div> <p>(If the Servomotor rotation speed drops below the Brake Command Speed before the Brake Timing 2 setting, BKIR will turn OFF.)</p>	<p>Set with the following two parameters.</p> <ul style="list-style-type: none"> • Brake Timing When Stopped (Pn06A) <div style="margin-left: 20px;">Delay time from when BKIR output signal is turned OFF at the Servo OFF command at Servo lock stop to when the Servomotor is de-energized.</div> <div style="margin-left: 100px;">Setting range : 0 to 2000ms</div> • Brake Timing during Operation (Pn06B) <div style="margin-left: 20px;">The time from when BKIR output signal is turned OFF at the Servo OFF command while the Servomotor is rotating to when the Servomotor is de-energized. (If the Servomotor rotation speed drops below 30r/min before this setting time, BKIR will turn OFF.)</div> <div style="margin-left: 100px;">Setting range : 0 to 2000ms</div>

■ Speed Limit Function

W Series	G Series
Functions	
<ul style="list-style-type: none"> • This function limits the Servomotor rotation speed during torque control. • Set the limit value so that the Servomotor rotation speed does not exceed the maximum speed of the mechanical system. • In the range outside the speed limit, this function tries to reduce the Servomotor rotation speed by generating torque which is in proportion to the difference from the speed limit value. The Servomotor rotation speed here does not necessarily match the speed limit value. (The Servomotor rotation speed varies depending on the load torque.) • There are two ways of the speed limit as follows. <ul style="list-style-type: none"> ① Always limits with a constant speed (parameter setting value) in torque control. Limits with the user parameter Pn407 (Speed Limit). ② Limits with the optional command value. Optional command value 1 is used as the speed limit value. The same speed limit value is applied for both forward and reverse rotations when the speed limit is performed with the optional command value. 	<p>Sets the Servomotor rotation speed limit during torque control.</p> <p>There are two ways of the speed limit performed either with the internal limit value (Pn053) or via the host controller.</p> <ul style="list-style-type: none"> ① Sets the speed limit during torque control. Use the same user parameter Pn053 (Speed Limit) for both forward and reverse rotations. The setting is made below the Servomotor maximum rotation speed. ② Selects the speed limit either by optional command 1 (Speed Limit) via MECHATROLINK-II or by the Speed Limit (Pn053), whichever is smaller.
Settings	
<p>Pn002.1 : Speed Command Input Change</p> <p>0 : Optional command value is not used.</p> <p>1 : Optional command value 1 is used as the speed limit value.</p> <p>Pn407 : Speed Limit Setting range : 0 to 10000r/min</p>	<p>Pn05B : Speed Limit Selection</p> <p>0 : The Speed Limit (Pn053) is used for the speed limit.</p> <p>1 : Performs the speed limit with the value via MECHATROLINK-II or the Speed Limit (Pn053), whichever is smaller.</p> <p>Pn053 : Speed Limit Setting range : -20000 to 20000r/min</p>

Chapter4 Function Specifications Comparison

■ Torque Limit

W Series	G Series
Functions	
<ul style="list-style-type: none"> • This function limits the Servomotor output torque. • There are four ways of torque limit, which will be performed as follows depending on a controller to be connected. <ol style="list-style-type: none"> ① Always limits with a constant torque (parameter setting value) during operation. Limits with the user parameters Pn402 (Forward Torque Limit) and Pn403 (Reverse Torque Limit). ② Limits with parameter setting values by turning ON the external signal. Limits with the user parameters Pn404 (Forward Rotation External Current Limit) and Pn405 (Reverse Rotation External Current Limit) by turning ON the forward torque limit specification and reverse torque limit specification for the axis operation output relay area and activating the axis operation. ③ Limits with the optional command value in speed control only. The optional command value is used as the torque limit value. The torque limit value can be specified by the optional command value if Pn002.0 (Torque Command Input Change) is set to 1. Units : % Command range : 0 to 399% (Percentage of the Servomotor momentary maximum torque) The torque limit via the optional command value works with optional command value 1 as forward torque limit and optional command value 2 as reverse torque limit. ④ Limits with the optional command value from the network by turning ON the external signal in speed control only. Limits with the optional command value as the torque limit value by turning ON the forward torque limit specification and reverse torque limit specification for the axis operation output relay area, and activating the axis operation. The torque limit value can be specified by the optional command value if the forward torque limit specification and reverse torque limit specification are turned ON when Pn002.0 (Torque Command Input Change) is set to 3. Units : % Command range : 0 to 399% (Percentage of the Servomotor momentary maximum torque) The torque limit works in the forward direction with optional command value 1 as forward torque limit when the forward torque limit specification turns ON. The torque limit works in the reverse direction with optional command value 2 as reverse torque limit when the reverse torque limit specification turns ON. ⑤ Limits with parameter setting values by turning ON the external signal. Limits with the user parameters Pn404 (Forward Rotation External Current Limit) and Pn405 (Reverse Rotation External Current Limit) by turning ON the forward torque limit specification and reverse torque limit specification for the axis operation output relay area and activating the axis operation. 	<ul style="list-style-type: none"> • This function limits the Servomotor output torque. • There are various ways of torque limit as in the Torque Limit Selection (Pn003). <ol style="list-style-type: none"> ① Always limits with a constant torque (parameter setting value) during operation. When the user parameter Pn003 (Torque Limit Selection) is set to 1, the user parameter Pn05E is used as the torque limit value for both forward and reverse directions. ② Always limits with a constant torque (parameter setting value) during operation. Limits with the user parameters Pn05E (No.1 Torque Limit) and Pn05F (No.2 Torque Limit) when the user parameter Pn003 (Torque Limit Selection) is set to 2. ③ Limits with parameter setting values by turning ON the external signal. Switches the limit with the forward torque limit specification and reverse torque limit specification for the axis operation output relay area, or the forward torque limit input and reverse torque limit input of the sequence input connector when the user parameter Pn003 (Torque Limit Selection) is set to 3. Forward direction limit PCL is OFF, Pn05E / PCL is ON, Pn05F Reverse direction limit NCL is OFF, Pn05E / NCL is ON, Pn05F ④ Switches the limit with the torque limit value from the network in speed control only as follows. When the user parameter Pn003 (Torque Limit Selection) is set to 4, Forward direction limit : Limits with the smaller value of either Pn05E or MECHATROLINK-II command optional command value 1. Reverse direction limit : Limits with the smaller value of either Pn05F or MECHATROLINK-II command optional command value 2. ⑤ Switches the limit with the torque limit value from the network and the input signal in speed control only as follows. When the user parameter Pn003 (Torque Limit Selection) is set to 5, Forward direction limit : PCL is OFF, Pn05E PCL is ON, Pn05E or MECHATROLINK-II command optional command value 1, whichever is smaller Reverse direction limit : NCL is OFF, Pn05F NCL is ON, Pn05F or MECHATROLINK-II command optional command value 1, whichever is smaller.

Chapter4 Function Specifications Comparison

W Series	G Series
<p>⑥ Limits with the optional command value in speed control only. The optional command value is used as the torque limit value. The torque limit value can be specified by the optional command value when Pn002.0 (Torque Command Input Change) is set to 1.</p> <p>Units : %</p> <p style="padding-left: 20px;">Command range : 0 to 399%</p> <p style="padding-left: 20px;">(Percentage of the Servomotor momentary maximum torque)</p> <p>The torque limit via the optional command value works with optional command value 1 as forward torque limit and optional command value 2 as reverse torque limit.</p> <p>⑦ Limits with the optional command value from the network by turning ON the external signal in speed control only. Limits with the optional command value as the torque limit value by turning ON the forward torque limit specification and reverse torque limit specification for the axis operation output relay area, and activating the axis operation. The torque limit value can be specified by the optional command value if the forward torque limit specification and reverse torque limit specification are turned ON when Pn002.0 (Torque Command Input Change) is set to 3.</p> <p>Units : %</p> <p style="padding-left: 20px;">Command range : 0 to 399%</p> <p style="padding-left: 20px;">(Percentage of the Servomotor momentary maximum torque)</p> <p>The torque limit works in the forward direction with optional command value 1 as forward torque limit when the forward torque limit specification turns ON. The torque limit works in the reverse direction with optional command value 2 as reverse torque limit when the reverse torque limit specification turns ON.</p>	<p>⑥ Always limits with a constant torque (parameter setting value) during operation. Limits with the user parameters Pn05E (No.1 Torque Limit) and Pn05F (No.2 Torque Limit) when the user parameter Pn003 (Torque Limit Selection) is set to 2.</p> <p>⑦ Limits with parameter setting values by turning ON the external signal. Switches the limit with the forward torque limit specification and reverse torque limit specification for the axis operation output relay area, or the forward torque limit input and reverse torque limit input of the sequence input connector when the user parameter Pn003 (Torque Limit Selection) is set to 3.</p> <p>Forward direction limit : PCL is OFF, Pn05E / PCL is ON, Pn05F Reverse direction limit : NCL is OFF, Pn05E / NCL is ON, Pn05F</p> <p>⑧ Switches the limit with the torque limit value from the network in speed control only as follows. When the user parameter Pn003 (Torque Limit Selection) is set to 4,</p> <p>Forward direction limit :</p> <p style="padding-left: 40px;">Limits with the smaller value of either Pn05E or MECHATROLINK-II command optional command value 1.</p> <p>Reverse direction limit :</p> <p style="padding-left: 40px;">Limits with the smaller value of either Pn05F or MECHATROLINK-II command optional command value 2.</p> <p>⑨ Switches the limit with the torque limit value from the network and the input signal in speed control only as follows. When the user parameter Pn003 (Torque Limit Selection) is set to 5,</p> <p>Forward direction limit :</p> <p style="padding-left: 40px;">PCL is OFF, Pn05E PCL is ON, Pn05E or MECHATROLINK-II command optional command value 1, whichever is smaller.</p> <p>Reverse direction limit :</p> <p style="padding-left: 40px;">NCL is OFF, Pn05F NCL is ON, Pn05F or MECHATROLINK-II command optional command value 1, whichever is smaller.</p>
Settings	
<p>Pn002.0: Torque Command Input Change</p> <p>0: Optional command value is not used.</p> <p>1 : Optional command value 1 is used as the torque limit value.</p> <p>2: Optional command value 1 is used as the torque feed forward command value.</p> <p>3: Use optional command value 1 for the forward torque limit specification and use optional command value 2 for the reverse torque limit specification.</p> <p>Pn402: Forward Torque Limit 0 to 800%</p> <p>Pn403: Reverse Torque Limit 0 to 800%</p> <p>Pn404: Forward Rotation External Current Limit 0 to 800%</p> <p>Pn405: Reverse Rotation External Current Limit 0 to 800%</p>	<p>Pn003: Torque Limit Selection</p> <p>1 to 5: Refer to functional descriptions.</p> <p>Pn05E: No.1 Torque Limit 0 to 500%</p> <p>Pn05F: No.2 Torque Limit 0 to 500%</p>

Chapter4 Function Specifications Comparison

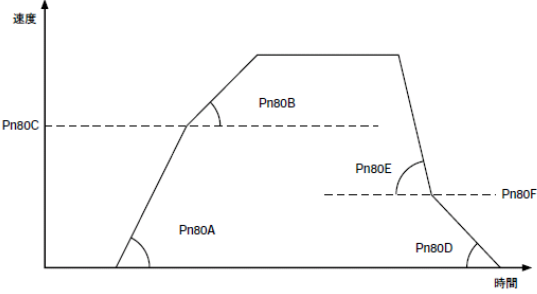
■ Soft Start Function

W Series	G Series
Functions	
<ul style="list-style-type: none"> This function is designed to accelerate or decelerate the Servomotor based on the set acceleration/ deceleration time. The acceleration/deceleration curve is formed in a trapezoidal shape. Acceleration and deceleration time can be set separately. By using the soft start when switching speed command values, the impact of acceleration/ deceleration can be reduced. This function is effective when performing simple positioning and switching speeds. <p> $\text{実際の加速(減速)時間} = \frac{\text{速度指令 (r/min)}}{\text{最大回転数 (r/min)}} \times \text{ソフトスタート加速(減速)時間}$ </p> <p> $\text{加速時間 } t_a \text{ [s]} = \text{Pn058} \times 0.002 \times \frac{\text{速度指令回転数}}{\text{最大回転数}}$ </p> <p> $\text{減速時間 } t_d \text{ [s]} = \text{Pn059} \times 0.002 \times \frac{\text{速度指令回転数}}{\text{最大回転数}}$ </p> <p> <small>※最大回転数</small> 3000r/min-モータ ... 5000r/min 3000r/minフラットタイプモータ ... 5000r/min 1000r/min-モータ ... 2000r/min 1500r/min-モータ (450W~1.8kW) ... 3000r/min </p>	<ul style="list-style-type: none"> Sets the acceleration and deceleration time for the speed command value from the host controller. Sets the acceleration and deceleration time for the Servomotor maximum rotation speed. <p> $\text{加速時間 } t_a \text{ [s]} = \text{Pn058} \times 0.002 \times \frac{\text{速度指令回転数}}{\text{最大回転数}}$ </p> <p> $\text{減速時間 } t_d \text{ [s]} = \text{Pn059} \times 0.002 \times \frac{\text{速度指令回転数}}{\text{最大回転数}}$ </p>
Settings	
Pn305 Soft Start Acceleration Time Setting range 0 to 1000ms Pn306 Soft Start Deceleration Time Setting range 0 to 1000ms	Pn058 Soft Start Acceleration Time Setting range 0 to 10000ms Pn059 Soft Start Deceleration Time Setting range 0 to 10000ms

■ Electronic Gear Function

W Series	G Series
Functions	
<p>The Servomotor is rotated by the number of pulses provided with the command pulse multiplied by the electronic gear ratio. Set the command pulse and the pulse rate of the Servomotor travel distance.</p> <p>When $G1/G2=1$ and (encoder resolution $\times 4$) pulses are input, the Servomotor will rotate once.</p> <p>(Operates with 4 multiplication in the Servo Drive.)</p>	<p>The Servomotor is rotated by the number of pulses provided with the position command value multiplied by the electronic gear. In speed and torque control, the encoder pulse number from the Servomotor is divided by the electronic gear and converted into command units for feedback. If the setting of the Electronic Gear Ratio 1 is 0, the encoder resolution is set automatically for the numerator. (The setting for a 17-bit absolute encoder is 131072 and the setting for a 2500p/r incremental encoder is 10000.)</p>
Settings	
Pn20E: Electronic Gear Ratio G1 (numerator) Setting range: 1 to 1073741824 Pn210: Electronic Gear Ratio G2 (denominator) Setting range: 1 to 1073741824 However, these parameters have to be $0.001 \leq \text{Pn20E/Pn210} \leq 1000$	Pn205: Electronic Gear Ratio 1 (numerator) Setting range: 0 to 131072 Pn206: Electronic Gear Ratio 2 (denominator) Setting range: 1 to 131072 However, these parameters have to be $0.01 \leq \text{Pn205/Pn206} \leq 100$

■ Acceleration/Deceleration Function

W Series	G Series
Functions	
<p>This function sets the acceleration/deceleration speeds in two steps. Setting is made by the host controller via MECHATROLINK—II.</p> 	<p>Sets the angular acceleration to reach the target speed, and the angular deceleration to stop in position command. Acceleration and deceleration speeds cannot be set in two steps.</p>
Settings	
<p>Pn80A: First Step Linear Acceleration Parameter Setting range: 10000 to 655350000 command unit/s²</p> <p>Pn80B: Second Step Linear Acceleration Parameter Setting range: 10000 to 655350000 command unit/s²</p> <p>Pn80C: Acceleration Parameter Switching Speed Setting range: 0 to 6553500 command unit/s</p> <p>Pn80D: First Step Linear Deceleration Parameter Setting range: 10000 to 655350000 command unit/s²</p> <p>Pn80E: Second Step Linear Deceleration Parameter Setting range: 10000 to 655350000 command unit/s²</p> <p>Pn80F: Deceleration Parameter Switching Speed Setting range: 0 to 6553500 command unit/s</p> <p>Pn810: Exponential Acceleration/Deceleration Bias Setting range: 0 to 32767 command unit/s</p> <p>Pn811: Exponential Acceleration/Deceleration Time Constant Setting range: 0 to 510.0 ms</p> <p>Pn812: Moving Average Time Setting range: 0 to 510.0 ms</p> <p>※ When performing trapezoidal acceleration/deceleration (when not using two step acceleration/deceleration), set Pn80C and Pn80F to 0, and set acceleration speed in Pn80B and deceleration speed in Pn80E.</p>	<p>Pn107: Linear Acceleration Constant Setting range: 10000 to 655350000 command unit/s²</p> <p>Pn10A: Linear Deceleration Constant Setting range: 10000 to 655350000 command unit/s²</p> <p>Pn10E: Moving Average Time Setting range: 0 to 510.0 ms</p>

Chapter4 Function Specifications Comparison

■ Feed-forward Function

W Series	G Series
Functions	
This function is designed to reduce positioning time by automatically adding the differential value of position command values to the speed loop in the Servo Drive.	This function is designed to reduce positioning time by adding the change amount of position command values to the speed loop directly without going through the deviation counter.
Settings	
Pn109 Feed-forward Amount Setting range: 0 to 100.0%	Pn015 Speed Feed-forward Amount Setting range: 0 to 100.0%
Pn10A Feed-forward Command Filter Setting range: 0 to 64.00ms	Pn016 Feed-forward Filter Time Constant Setting range: 0 to 64.00ms

■ Torque Feed-forward Function

W Series	G Series
Functions	
This function is designed to reduce acceleration/deceleration time by adding the torque feed-forward command value in speed command control to the current loop. Normally the differential value of speed command is made in the controller and provided as the torque feed-forward command value.	By issuing the torque feed-forward command in speed command control, you can eliminate delay time caused by the integration time of the speed loop, and make acceleration/deceleration faster. For a vertical axis, use this function to compensate for the gravity load and to eliminate the vertical (up and down) difference of the torque command amount from the speed command operation.
Settings	
Pn002.0: Torque Command Input Change 0: Optional command value is not used. 1: Optional command value 1 is used as the torque limit value. 2: Optional command value 1 is used as the torque feed-forward command value. 3: Use optional command value 1 for the forward torque limit specification and use optional command value 2 for the reverse torque limit specification.	No parameter settings. Commands are issued from MECHATROLINK- II.

■ Speed Feedback Filter Function

W Series	G Series
Functions	
<ul style="list-style-type: none"> The first-order lag filter can be set for the speed feedback gain. The filter function is used when the speed loop gain cannot be set high because of mechanical vibrations. Set the first-order lag filter to the speed feedback of the speed loop. This will smooth the feedback speed and reduce vibrations. 	<ul style="list-style-type: none"> Selects the filter for the speed feedback. This function is used when the speed loop gain can not be increased because of mechanical vibrations. The higher you increase the value, the smaller the Servomotor noise becomes, but its responsiveness declines. (first-order lag filter) When the Instantaneous Speed Observer Setting (Pn027 = 1) is enabled, Pn013 and Pn01B settings are regarded as 0 and disabled.
Settings	
Pn308 Speed Feedback Filter Time Constant Setting range 0 to 655.35ms	Pn013 Speed Feedback Filter Time Constant 0=—, 1=1820, 2=1120, 3=740, 4=680, 5= 330 Hz

■ Automatic Gain Switching Function

W Series	G Series
Functions	
<p>This function automatically switches gain for the speed loop and position loop.</p> <p>If Pn139.0 (Gain Switching Selection Switch) is set to 1, gain 1 and gain 2 are switched alternately when conditions set in Pn139.1 (Gain Switching Condition A) and Pn139.2 (Gain Switching Condition B) are met. Gain 1 is switched to gain 2 when the Gain Switching Condition A is met and Gain 2 is switched to gain1 when the Gain Switching Condition B is met.</p>	<p>This function switches gain for the position loop and speed loop. Selects to enable or disable this function in the Gain Switching Operating Mode Selection (Pn030). Switching conditions are set in the Gain Switch Setting (Pn031). Optimum control can be realized by switching gain if the load inertia changes, or if you want to obtain different responsiveness during operation and stopping. When gain 2 is selected, real-time auto tuning does not work normally. If gain switching is used, make a setting (Pn021 = 0) to disable real-time auto tuning.</p>
Settings	
<p>Pn139.0 Gain Switching Selection Switch</p> <p>0: Manual Gain Switching</p> <p>1: Automatic Switching Pattern 1</p> <p>Pn139.1 Gain Switching Condition A</p> <p>0: Positioning Completed Output 1 (INP1) ON</p> <p>1: Positioning Completed Output 1 (INP1) OFF</p> <p>2: Positioning Completed Output 2 (INP2) ON</p> <p>3: Positioning Completed Output 2 (INP2) OFF</p> <p>4: Position Command Filter Output = 0 and Position Command Input = 0</p> <p>5: Position Command Input \neq 0</p> <p>Pn139.2 Gain Switching Condition B</p> <p>The same as the Gain Switching Condition A.</p>	<p>Pn030 Gain Switching Operating Mode Selection</p> <p>0: Disabled. Gain 1 is used.</p> <p>1: Gain is switched between gain 1 and gain 2.</p> <p>Pn031 Gain Switch Setting</p> <p>0, 4: Fixed to gain 1</p> <p>1: Fixed to gain 2</p> <p>2: Switching via MECHATROLINK-II</p> <p>3: Torque command change amount</p> <p>5: Speed command</p> <p>6: Position deviation amount</p> <p>7: Position command input \neq 0</p> <p>8: Positioning Completed Output 1 (INP1) OFF</p> <p>9: Actual Servomotor speed</p> <p>10: Position command input \neq 0 and speed</p>
<p>【 Gain 1 】</p> <p>Pn100 Speed Loop Gain Setting range : 1 to 2000Hz</p> <p>Pn101 Speed Loop Integration Time Constant</p> <p style="padding-left: 150px;">Setting range : 0.15 to 512.00ms</p> <p>Pn102 Position Loop Gain</p> <p style="padding-left: 150px;">Setting range : 1.0 to 2000.0 /s</p> <p>Pn401 1st Step 1st Torque Command Filter Time Constant</p> <p style="padding-left: 150px;">Setting range : 0 to 655.35ms</p> <p>【 Gain 2 】</p> <p>Pn104 Speed Loop Gain 2 Setting range : 1 to 2000Hz</p> <p>Pn105 Speed Loop Integration Time Constant 2</p> <p style="padding-left: 150px;">Setting range : 0.15 to 512.00ms</p> <p>Pn106 Position Loop Gain 2</p> <p style="padding-left: 150px;">Setting range : 1.0 to 2000.0 /s</p> <p>Pn412 1st Step 2nd Torque Command Filter Time Constant</p> <p style="padding-left: 150px;">Setting range : 0 to 655.35ms</p>	<p>【 Gain 1 】</p> <p>Pn011 Speed Loop Gain Setting range : 1 to 3000.0Hz</p> <p>Pn012 Speed Loop Integration Time Constant</p> <p style="padding-left: 150px;">Setting range : 0.1 to 1000.0ms</p> <p>Pn013 Speed Feedback Filter Time Constant</p> <p style="padding-left: 150px;">0 = —, 1=1820, 2=1120, 3=740, 4=680, 5= 330 Hz</p> <p>Pn010 Position Loop Gain Setting range : 0 to 3000.0 /s</p> <p>Pn014 Torque Command Filter Time Constant</p> <p style="padding-left: 150px;">Setting range : 0 to 25.00ms</p> <p>【 Gain 2 】</p> <p>Pn019 Speed Loop Gain 2</p> <p style="padding-left: 150px;">Setting range : 1 to 3000.0Hz</p> <p>Pn01A Speed Loop Integration Time Constant 2</p> <p style="padding-left: 150px;">Setting range : 0.1 to 1000.0ms</p> <p>Pn01B Speed Feedback Filter Time Constant 2</p> <p style="padding-left: 150px;">0 = —, 1=1820, 2=1120, 3=740, 4=680, 5= 330 Hz</p> <p>Pn018 Position Loop Gain 2</p> <p style="padding-left: 150px;">Setting range : 0 to 3000.0 /s</p> <p>Pn01C Torque Command Filter Time Constant</p> <p style="padding-left: 150px;">Setting range : 0 to 25.00ms</p>

Chapter4 Function Specifications Comparison

■ P Control Switching

W Series	G Series
Functions	
This function is used to prevent overshooting of acceleration / deceleration in speed control, and to shorten the stabilization time by preventing undershooting of positioning operation in position control. This function automatically changes the speed control mode from PI control to P control depending on whether actual values in the Servo Drive are above or below the detection points set in the user parameters.	This function changes the speed loop control from PI control to P control. Switching to P control lowers the Servo rigidity, thus eliminating vibrations. Because there's no integration time, the speed deviation and position deviation will increase due to the external force and load torque.
Switching Conditions	
Pn10B.0 P Control Switching Conditions 0: Internal torque command value(Pn10C) 1: Speed command value(Pn10D) 2: Acceleration command value(Pn10E) 3: Deviation pulses(Pn10F) 4: No P control switching	No parameter settings. P control switching from MECHATROLINK-II only.

■ Torque Command Filter Function

W Series	G Series
Functions	
If the machine generates vibrations which seem to have been caused by the Servo Drive, there are cases in which vibrations can be suppressed by adjusting the torque command filter time constant. The smaller the value is, the better the responsiveness for the control, but the effect is limited by mechanical conditions. The unit for the 3rd Step Torque Command Filter Time Constant is different from those of the 1st and 2nd Step. The 2nd Step 2nd Torque Command Filter will be disabled if Pn40F (2nd Step 2nd Torque Command Filter Frequency) is set to 2000Hz.	Sets the first-order lag filter for the torque command. Gain switching changes gain 1 and gain 2. The torque command filter can suppress mechanical vibrations occurring when the Servo loop is configured. There are cases in which vibrations can be suppressed by adjusting the torque command filter time constant. Increasing the time constant worsens the responsiveness. It also lowers the Servo rigidity and may cause overshooting. Make optimum settings as well as for the notch filter on the next page according to the machinery.
Settings	
Pn401 1st Step 1st Torque Command Filter Time Constant Setting range : 0 to 655.35ms Pn40F 2nd Step 2nd Torque Command Filter Frequency Setting range : 100 to 2000Hz Pn410 2nd Step 2nd Torque Command Filter Q Value Setting range : 0.50 to 10.00 Pn411 3rd Step Torque Command Filter Time Constant Setting range : 0 to 65535 μ s	Pn014 Torque Command Filter Time Constant Setting range : 0 to 25.00ms Pn01C Torque Command Filter Time Constant 2 Setting range : 0 to 25.00ms

■ Notch Filter Function

W Series	G Series
Functions	
<ul style="list-style-type: none"> • Notch filter can be set to the internal torque command (command to the current loop). Notch filter has a function to lower the responsiveness of the set frequency. The degree of lowering the responsiveness can be set by the Q value. • If machine resonance occurs, use the notch filter to prevent it. By doing this, the speed loop gain can be set high, thus reducing positioning time. • For the W Series AC Servo Drives, two notch filters (notch filter 1 and notch filter 2) can be set. 	<p>Notch filter is a filter that eliminates certain frequency elements. If machine resonance occurs, use the notch filter to suppress it. Two notch filters can be set for the torque command. Sets the resonance frequency to suppress the resonance when resonance is occurring at certain locations, such as ball screws.</p>
Settings	
<p>Pn408.0 Selects Notch Filter 1 Function</p> <p>0:Notch filter 1 is not used.</p> <p>1:Notch filter 1 is used for the torque command.</p> <p>Pn409 Notch Filter 1 Frequency Setting range : 50 to 2000Hz</p> <p>Pn40A Notch Filter 1 Q Value Setting range : 0.50 to 1000</p> <p>Pn408.2 Selects Notch Filter 2 Function</p> <p>0:Notch filter 2 is not used.</p> <p>1:Notch filter 2 is used for the torque command.</p> <p>Pn40C Notch Filter 2 Frequency Setting range : 50 to 2000Hz</p> <p>Pn40D Notch Filter 2 Q Value Setting range : 0.50 to 1000</p>	<p>Pn01D Notch Filter 1 Frequency Setting range : 100 to 1499Hz</p> <p>Pn01E Notch Filter 1 Width Setting range : 0 to 4</p> <p>Pn028 Notch Filter 2 Frequency Setting range : 100 to 1499Hz</p> <p>Pn029 Notch Filter 2 Width Setting range : 0 to 4</p> <p>Pn02A Notch Filter 2 Depth Setting range : 0 to 99</p>

■ Backlash Compensation Function

W Series	G Series
Functions	
<p>Compensates the position deviation caused by the machine backlash.</p> <p>Compensates by the amount of command unit set when the operation direction was changed.</p>	<p>Compensates the position deviation caused by the machine backlash.</p> <p>Compensates by the amount of command unit set when the operation direction was changed.</p>
Settings	
<p>Pn207.2 Backlash Compensation Selection</p> <p>0:Disabled</p> <p>1:Compensates in the forward direction.</p> <p>2:Compensates in the reverse direction.</p> <p>Pn214 Backlash Compensation Amount</p> <p style="padding-left: 40px;">Setting range : -32767 to 32767 command unit</p> <p>Pn215 Backlash Compensation Time Constant</p> <p style="padding-left: 40px;">Setting range : 0 to 655.35ms</p>	<p>Pn100 Backlash Compensation Selection</p> <p>0:Disabled</p> <p>1:Compensates when operating in the first forward direction after Servo ON.</p> <p>2:Compensates when operating in the first reverse direction after Servo ON.</p> <p>Pn101 Backlash Compensation</p> <p style="padding-left: 40px;">Setting range : -32767 to 32767 command unit</p> <p>Pn102 Backlash Compensation Time Constant</p> <p style="padding-left: 40px;">Setting range : 0 to 64.00ms</p>

Chapter4 Function Specifications Comparison

■ Over Travel Sequence

	W Series	G Series
When Drive Prohibited	Pn001.1 Stop Selection When Drive Prohibited is Input Pn001.0 Stop Selection If an Alarm Occurs When Servomotor is OFF 0:DB deceleration · Servo free stop 0.1:DB deceleration · Servo free stop (DB released) 0.2:Decelerates in free-running status · Servo free stop 1.-:Decelerates with the Emergency Stop Torque (Pn406), Servo lock stop 2.-:Decelerates with the Emergency Stop Torque (Pn406), Servo free stop	Pn066 Stop Selection for Drive Prohibition Input 0: DB deceleration, torque command = 0 in drive prohibited direction after stopping, the deviation counter is cleared during deceleration and retained after stopping. 1:Decelerates in free-running status, torque command = 0 in drive prohibited direction after stopping, the deviation counter is cleared during deceleration and retained after stopping. 2:Decelerates with the Emergency Stop Torque (Pn06E), Servo lock after stopping, the deviation counter is retained during deceleration, cleared when deceleration completed and retained after stopping.
When an Alarm Occurs	Pn001.0 Stop Selection If an Alarm Occurs When Servomotor is OFF 0: DB deceleration · Servo free stop 1: DB deceleration · Servo free stop (DB released) 2: Decelerates in free-running status · Servo free stop	Pn068 Stop Selection for Alarm Generation 0: DB deceleration, DB stop after stopping 1: Free-running deceleration, DB stop after stopping 2: DB deceleration, Servo free after stopping 3: Free-running deceleration, Servo free after stopping The deviation counter is cleared when an alarm occurs.
When Servo OFF	Pn001.0 Stop Selection If an Alarm Occurs When Servomotor is OFF 0: DB deceleration · Servo free stop 1: DB deceleration · Servo free stop (DB released) 2: Decelerates in free-running status · Servo free stop	Pn069 Stop Selection with Servo OFF 0.4: DB deceleration, DB stop after stopping 1.5: Free-running deceleration, DB stop after stopping 2.6: DB deceleration, Servo free after stopping 3.7: Free-running deceleration, Servo free after stopping
When Main Power OFF	Pn001.0 Stop Selection If an Alarm Occurs When Servomotor is OFF 0: DB deceleration · Servo free stop 1: DB deceleration · Servo free stop (DB released) 2: Decelerates in free-running status · Servo free stop	Pn067 Stop Selection with Main Power OFF 0.4: DB deceleration, DB stop after stopping 1.5: Free-running deceleration, DB stop after stopping 2.6: DB deceleration, Servo free after stopping 3.7: Free-running deceleration, Servo free after stopping

■ Input Signal Function Selection

W Series	G Series
<ul style="list-style-type: none"> • POT (Forward Drive Prohibit Input) • NOT (Reverse Drive Prohibit Input) • DEC (Origin Return Switch) • EXT1 (External Latch Signal 1) • EXT2 (External Latch Signal 2) • EXT3 (External Latch Signal 3) <p>Above input signals can be allocated to any of the seven input circuits. The logic of effective conditions for the input signals can also be reversed. Input circuits with no allocations of above signals can be monitored via MECHATROLINK- II as general-purpose inputs.</p>	<ul style="list-style-type: none"> • POT (Forward Drive Prohibit Input) • NOT (Reverse Drive Prohibit Input) • DEC (Origin Proximity Input) • EXT1 (External Latch Signal 1) • EXT2 (External Latch Signal 2) • EXT3 (External Latch Signal 3) <p>Above input signals have fixed allocations. (The logic of input conditions cannot be changed.) For POT/NOT input signals, pin allocations and enable/disable settings can be made by parameters. In addition to the above signals, there are general-purpose inputs 0 to 2 which can be monitored via MECHATROLINK- II.</p>

■ Output Signal Function Selection

W Series	G Series
<ul style="list-style-type: none"> • INP1 (Positioning Completed Output 1) • INP2 (Positioning Completed Output 2) • VCMP (Speed Conformity Output) • TGON (Servomotor Rotation Detection Output) • READY (Servo Ready Output) • CLIMIT (Current Limit Detection Output) • VLIMIT (Speed Limit Detection Output) • BKIR (Brake Interlock Output) • WARN (Warning Output) <p>Any three of the above output signals are selected for output. The logic for the output signals can be reversed.</p>	<ul style="list-style-type: none"> • INP1 (Positioning Completed Output 1) • INP2 (Positioning Completed Output 2) • VCMP (Speed Conformity Signal Output) • TGON (Servomotor Rotation Speed Detection Output) • READY (Servo Ready Output) • CLIMIT (Current Limit Detection Output) • VLIMIT (Speed Limit Detection Output) • BKIR (Brake Interlock Output) • WARN (Warning Signal Output) <p>Any three of the above output signals are selected for output.</p>

■ Positioning Completed Output

W Series	G Series
<p>Positioning Completed Output 1 (INP1) will turn ON if any one of the following conditions is met according to the parameter settings.</p> <ol style="list-style-type: none"> ① Position deviation is less than Pn522 (Positioning Completed Range 1). ② Position deviation is less than Pn522 (Positioning Completed Range 1) and the command after the position command filter becomes 0. ③ The absolute value of position deviation is less than Pn522 (Positioning Completed Range 1) and the command after the position command filter becomes 0. <p>Positioning Completed Output 2 (INP2) will turn ON if the position deviation is less than Pn524 (Positioning Completed Range 2).</p> <p>If the command speed is low and the setting value of the Positioning Completed Range is large, the Positioning Completed Output will continue to be ON.</p>	<ul style="list-style-type: none"> • INP1 will turn ON if the position command issuance is completed, and the absolute value of position deviation converted into command units is less than the setting value of Pn060 (Positioning Completion Range 1). INP2 will turn ON if it is less than the setting value of Pn063 (Positioning Completion Range 2).

■ JOG Operation

Servomotor's forward/reverse operation range set by the Parameter Unit

W Series	G Series
0 to 5,000r/min	0 to 500r/min

Chapter5 Parameter Specifications Comparison

5-1.Comparing Function Selection Parameters

W Series			G Series		
PRM No.	Parameter Name	Setting Range	PRM No.	Parameter Name	Setting Range
000.0	Reverse Rotation	0,1	043	Operating Direction Setting	0,1
000.1	Not used	-			
000.2	Unit No. Setting	0 to F	/	Not available with the G Series.	
000.3	Not used	-			
001.0	Stop Selection If an Alarm Occurs When Servomotor is OFF	0 to 2	068	Stop Selection for Alarm Generation	0 to 3
			069	Stop Selection with Servo OFF	0 to 7
001.1	Stop Selection When Drive Prohibited is Input	0 to 3	066	Stop Selection for Drive Prohibition Input	0 to 2
001.2	AC/DC Power Input Selection	0,1	/	Not available with the G Series.	
001.3	Not used	-	/		
002.0	Torque Command Input Change	0 to 3	/	Not available with the G Series.	
002.1	Speed Command Input Change	0,1	/	Not available with the G Series.	
002.2	Operation Switch When Using Absolute Encoder	0,1	00B	Operation Switch When Using Absolute Encoder	0 to 2
002.3	Not used	-			
006.0 to 1	Analog Monitor 1 (AM) Signal Selection	00 to 0A	008	Torque Monitor (IM) Selection	0 to 5,11,12
006.2	Analog Monitor 1 Signal Multiplier Selection	0 to 4	/	Not available with the G Series.	
006.3	Not used				
007.0 to 1	Analog Monitor 2 (NM) Signal Selection	00 to 0A	007	Speed Monitor (SP) Selection	0 to 11
007.2	Analog Monitor 2 Signal Multiplier Selection	0 to 4	/	Not available with the G Series.	
007.3	Not used				

Please note that the W Series and the G Series differ in the parameter setting ranges and data.

5-2.Comparing Gain Related Parameters

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
100	Speed Loop Gain	× 0.1Hz	10 to 20000	011	Speed Loop Gain	× 0.1Hz	1 to 30000
101	Speed Loop Integration Time Constant	× 0.01ms	15 to 51200	012	Speed Loop Integration Time Constant	× 0.1ms	1 to 10000
102	Position Loop Gain	× 0.1/s	10 to 20000	010	Position Loop Gain	× 0.1/s	0 to 30000
103	Inertia Ratio	%	0 to 20000	020	Inertia Ratio	%	0 to 10000
104	Speed Loop Gain 2	× 0.1Hz	10 to 20000	019	Speed Loop Gain 2	× 0.1Hz	1 to 30000
105	Speed Loop Integration Time Constant 2	× 0.01ms	15 to 51200	01A	Speed Loop Integration Time Constant 2	× 0.1ms	1 to 10000
106	Position Loop Gain 2	× 0.1/s	10 to 20000	018	Position Loop Gain 2	× 0.1[1/s]	0 to 30000
107	Bias Rotational Speed	r/min	0 to 450	–	This function is not available.		
108	Bias Additional Band	Command units	0 to 250	–	This function is not available.		
109	Feed-forward Amount	%	0 to 100	015	Speed Feed-forward Amount	× 0.1%	0 to 1000
10A	Feed-forward Command Filter	× 0.01ms	0 to 6400	016	Feed-forward Filter Time Constant	× 0.01ms	0 to 6400
10B.0	P Control Switching Conditions	–	0 to 4	–	This function is not available.		
10B.1	Speed Control Loop Switching	–	0, 1	–	This function is not available.		
10B.2	Position Loop Control Method	–	0, 1	–	This function is not available.		
10C	P Control Switching (Torque command)	%	0 to 800	–	This function is not available.		
10D	P Control Switching (Speed command)	r/min	0 to 10000	–	This function is not available.		
10E	P Control Switching (Acceleration command)	r/min /s	0 to 30000	–	This function is not available.		
10F	P Control Switching (Deviation pulse)	Command units	0 to 30000	–	This function is not available.		
110.0	Normal Autotuning Switches	–	0, 1	–	This function is not available.		

Note *1: Functionally the same when comparing the G Series and the W Series. But the setting method is different.

Chapter5 Parameter Specifications Comparison

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
110.1	Speed Feedback Compensation Function Selection	—	0, 1	—	This function is not available.		
111	Speed Feedback Compensating Gain	%	1 to 500	—	This function is not available.		
11F	Position Integral Time Constant	× 0.1ms	0 to 50000	—	This function is not available.		
131	Gain Switching Time 1	ms	0 to 65535	030 to 035	Gain Switching Operating Mode Selection and others (*1)		
132	Gain Switching Time 2	ms	0 to 65535				
135	Gain Switching Waiting Time 1	ms	0 to 65535	030 to 035	Gain Switching Operating Mode Selection and others (*1)		
136	Gain Switching Waiting Time 2	ms	0 to 65535				
139.0	Gain Switching Selection Switch	—	0, 1				
139.1	Gain Switching Condition A	—	0 to 5				
139.2	Gain Switching Condition B	—	0 to 5				
150.0	Predictive Control Selection	—	0, 1	—	This function is not available.		
150.1	Predictive Control Type	—	0, 1	—	This function is not available.		
151	Predictive Control Acceleration/Deceleration Gain	%	0 to 300	—	This function is not available.		
152	Predictive Control Weighting Ratio	%	0 to 300	—	This function is not available.		
1A0	Servo Rigidity	%	1 to 500	—	This function is not available.		
1A1	Servo Rigidity 2	%	1 to 500	—	This function is not available.		

Note *1 : Functionally the same when comparing the G Series and the W Series. But the setting method is different.

Chapter5 Parameter Specifications Comparison

5-3.Comparing Position Control Related Parameters

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
205	Absolute Encoder Multi-turn Limit Setting	Rotation	0 to 65535	-	This function is not available.		
207.2	Backlash Compensation Selection	-	0 to 2	100	Backlash Compensation Selection	-	0 to 2
207.3	INP 1 Output Timing	-	0 to 2	-	This function is not available.		
20E	Electronic Gear Ratio G1 (Numerator)	-	1 to 1073741824	205	Electronic Gear Ratio 1 (Numerator)	-	0 to 131072
210	Electronic Gear Ratio G2 (Denominator)	-	1 to 1073741824	206	Electronic Gear Ratio 2 (Denominator)		0 to 65535
212	Encoder Divider Rate	Pulses/rotation	16 to 1073741824	-	This function is not available.		
214	Backlash Compensation Amount	Command units	-32767 to 32767	101	Backlash Compensation	Command units	-32767 to 32767
215	Backlash Compensation Time Constant	× 0.01ms	0 to 65535	102	Backlash Compensation Time Constant	× 0.01ms	0 to 6400

5-4.Comparing Speed Related Parameters

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
304	Jog Speed	r/min	0 to 10000	03D	Jog Speed	r/min	0 to 500
305	Soft Start Acceleration Time	ms	0 to 10000	058	Soft Start Acceleration Time	× 2ms	0 to 5000
306	Soft Start Deceleration Time	ms	0 to 10000	059	Soft Start Deceleration Time	× 2ms	0 to 5000
308	Speed Feedback Filter Time Constant	× 0.01ms	0 to 65535	013	Speed Feedback Filter Time Constant	-	0 to 5
310.0	Vibration Detection Selection	-	0 to 2	-	This function is not available.		
311	Vibration Detection Sensitivity	%	50 to 500	-	This function is not available.		
312	Vibration Detection Level	r/min	0 to 5000	-	This function is not available.		

Chapter5 Parameter Specifications Comparison

5-5.Comparing Torque Related Parameters

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
401	1st Step 1st Torque Command Filter Time Constant	× 0.01ms	0 to 65535	014	Torque Command Filter Time Constant	× 0.01ms	0 to 2500
402	Forward Torque Limit	%	0 to 800	05E	No.1 Torque Limit	%	0 to 500
403	Reverse Torque Limit	%	0 to 800	05F	No.2 Torque Limit	%	0 to 500
404	Forward Rotation External Current Limit	%	0 to 800	05E	No.1 Torque Limit	%	0 to 500
405	Reverse Rotation External Current Limit	%	0 to 800	05F	No.2 Torque Limit	%	0 to 500
406	Emergency Stop Torque	%	0 to 800	06E	Emergency Stop Torque	%	0 to 300
407	Speed Limit	r/min	0 to 10000	053	Speed Limit	r/min	-20000 to 20000
408.0	Selects Notch Filter 1 Function	-	0, 1	01D	Notch Filter 1 Frequency(*2)	Hz	100 to 1500
408.2	Selects Notch Filter 2 Function	-	0, 1	028	Notch Filter 2 Frequency(*2)	Hz	100 to 1500
409	Notch Filter 1 Frequency	Hz	50 to 2000	01D	Notch Filter 1 Frequency(*2)	Hz	100 to 1500
40A	Notch Filter 1 Q Value	× 0.01	50 to 1000	01E	Notch Filter 1 Width(*2)	-	0 to 4
40C	Notch Filter 2 Frequency	Hz	50 to 2000	028	Notch Filter 2 Frequency(*2)	Hz	100 to 1500
40D	Notch Filter 2 Q Value	× 0.01	50 to 1000	029	Notch Filter 2 Width(*2)	-	0 to 4
40F	2nd Step 2 nd Torque Command Filter Frequency	Hz	100 to 2000	—	This function is not available.		
410	2nd Step 2 nd Torque Command Filter Q Value	× 0.01	50 to 1000	-	This function is not available.		
411	3rd Step Torque Command Filter Time Constant	ms	0 to 65535	—	This function is not available.		
412	1st Step 2nd Torque Command Filter Time Constant	× 0.01ms	0 to 65535	01C	Torque Command Filter Time Constant 2	× 0.01ms	0 to 2500
420	Damping for Vibration Suppression on Stopping	%	10 to 100	—	This function is not available.		
421	Vibration Suppression Starting Time	ms	0 to 65535	—	This function is not available.		
422	Gravity Compensation Torque	× 0.01%	-20000 to 20000	—	This function is not available.		
456	Sweep Torque Command Amplitude	%	1 to 800	—	This function is not available.		

Chapter5 Parameter Specifications Comparison

5-6.Comparing Sequence Related Parameters

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
502	Rotation Speed for Motor Rotation Detection	r/min	1 to 10000	062	Rotation Speed for Motor Rotation Detection	r/min	1 to 20000
503	Speed Conformity Signal Output Width	r/min	0 to 100	061	Speed Conformity Signal Output Width	r/min	10 to 20000
506	Brake Timing 1	× 10ms	0 to 50	06B	Brake Timing during Operation	2ms	0 to 1000
507	Brake Command Speed	r/min	0 to 10000	-	This function is not available.		
508	Brake Timing 2	× 10ms	10 to 100	06A	Brake Timing When Stopped	2ms	0 to 1000
509	Momentary Hold Time	ms	20 to 1000	06D	Momentary Hold Time	2ms	35 to 1000
50A.3	POT Signal Input Terminal Allocation		0 to F	004	Drive Prohibit Input Selection		0 to 2
				044	Input Signal Selection		0, 1
50B.0	NOT Signal Input Terminal Allocation		0 to F	004	Drive Prohibit Input Selection		0 to 2
				044	Input Signal Selection		0, 1
50E.0	INP 1 (Positioning Completed 1) Signal Output Terminal Allocation		0 to 3	112 113 114	General-purpose Output 1 General-purpose Output 2 General-purpose Output 3 Function Selection		0 to 9
50E.1	VCMP Signal Output Terminal Allocation		0 to 3				
50E.2	TGON Signal Output Terminal Allocation		0 to 3				
50E.3	READY Signal Output Terminal Allocation		0 to 3				
50F.0	CLIMIT Signal Output Terminal Allocation		0 to 3				
50F.1	VLIMIT Signal Output Terminal Allocation		0 to 3				
50F.2	BKIR Signal Output Terminal Allocation		0 to 3				
50F.3	WARN Signal Output Terminal Allocation		0 to 3				
510.0	INP 2 (Positioning Completed 2) Signal Output Terminal Allocation		0 to 3				
511.0	DEC Signal Input Terminal Allocation		0 to F	042	Origin Proximity Input Logic Setting		0, 1
511.1	EXT 1 Signal Input Terminal Allocation		0 to F	-	This function is not available.		

Chapter5 Parameter Specifications Comparison

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
511.2	EXT 2 Signal Input Terminal Allocation		0 to F	–	This function is not available.		
511.3	EXT 3 Signal Input Terminal Allocation		0 to F	–	This function is not available.		
512.0	Output Signal Reverse for CN1 Pins 1, 2		0 to 3	–	This function is not available.		
512.1	Output Signal Reverse for CN1 Pins 23, 24		0 to 3	–	This function is not available.		
512.2	Output Signal Reverse for CN1 Pins 25, 26		0 to 3	–	This function is not available.		
51E	Deviation Counter Overflow Warning Level	%	10 to 100	–	This function is not available.		
520	Deviation Counter Overflow Level	Command units	1 to 1073741823	209	Deviation Counter Overflow Level	Command units	1 to 2147483647
522	Positioning Completed Range 1	Command units	0 to 1073741824	060	Positioning Completion Range 1	Command units	0 to 10000
524	Positioning Completed Range 2	Command units	1 to 1073741824	063	Positioning Completion Range 2	Command units	0 to 10000
526	Deviation Counter Overflow Level at Servo-ON	Command units	1 to 1073741823	–	This function is not available.		
528	Deviation Counter Overflow Warning Level at Servo-ON	Command units	10 to 100	–	This function is not available.		
529	Speed Limit Level at Servo-ON	r/min	0 to 10000	–	This function is not available.		
530	Program JOG Operation Related Switches	–	0 to 5	–	This function is not available.		
531	Program JOG Movement Distance	Command units	1 to 1073741824	–	This function is not available.		
533	Program JOG Movement Speed	r/min	1 to 10000	–	This function is not available.		
534	Program JOG Acceleration/ Deceleration Time	ms	2 to 10000	–	This function is not available.		
535	Program JOG Waiting Time	ms	0 to 10000	–	This function is not available.		
536	Number of Program JOG Movements	Times	1 to 1000	–	This function is not available.		
540	Gain Limit	×0.1Hz	10 to 2000	–	This function is not available.		
550	Analog Monitor 1 Offset Voltage	×0.1V	–10000 to 1000	–	This function is not available.		
551	Analog Monitor 2 Offset Voltage	×0.1V	–10000 to 1000	–	This function is not available.		

Chapter5 Parameter Specifications Comparison

5-7.Comparing Other Parameters

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
600	Regeneration Resistor Capacity	× 10w	0 to Depends on the model	06C	Regeneration Resistor Selection	-	0 to 3

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
800.0	MECHATROLINK- II Communications Check Mask	-	0 to 3	005.0-3	MECHATROLINK- II Communications Alarms Mask	-	00 to 11
800.1	Warning Check Mask	-	0 to 7	005.4-7	MECHATROLINK- II Communications Warnings Mask	-	00 to 11
800.2	Communications Error Count at Single Transmission	-	0 to F	005.8-11	Consecutive Communications Error Detection Count	-	0 to F
801.0	Software Limit Function	-	0 to 3	104	Soft Limit	-	0 to 3
801.2	Software Limit Check Using Reference	-	0, 1	-	This function is not available.		
803	Zero Point Width	Command units	0 to 250	105	Origin Range	Command units	0 to 250
804	Forward Software Limit	Command units	-1073741823 to 1073741823	201	Forward Software Limit	Command units	-1073741823 to 1073741823
806	Reverse Software Limit	Command units	-1073741823 to 1073741823	202	Reverse Software Limit	Command units	-1073741823 to 1073741823
808	Absolute Encoder Zero Point Position Offset	Command units	-1073741823 to 1073741823	200	Absolute Origin Offset	Command units	-1073741823 to 1073741823
80A	First Step Linear Acceleration Parameter	× 10000 Command units /s ²	1 to 65535	-	This function is not available.		
80B	Second Step Linear Acceleration Parameter	× 10000 Command units /s ²	1 to 65535	107	Linear Acceleration Constant	× 10000 Command units /s ²	-32768 to 32768

Chapter5 Parameter Specifications Comparison

W Series				G Series			
Pn No.	Parameter Name	Units	Setting Range	Pn No.	Parameter Name	Units	Setting Range
80C	Acceleration Parameter Switching Speed	× 100 Command units /s	0 to 65535	–	This function is not available.		
80D	First Step Linear Deceleration Parameter	× 10000 Command units /s ²	1 to 65535	–	This function is not available.		
80E	Second Step Linear Deceleration Parameter	× 10000 Command units /s ²	1 to 65535	10A	Linear Deceleration Constant	× 10000 Command units /s ²	–32768 to 32768
80F	Deceleration Parameter Switching Speed	× 100 Command units /s	0 to 65535	–	This function is not available.		
810	Exponential Acceleration/ Deceleration Bias	Command units /s	1 to 32767	–	This function is not available.		
811	Exponential Acceleration/ Deceleration Time Constant	× 0.1ms	0 to 5100	–	This function is not available.		
812	Moving Average Time	× 0.1ms	0 to 5100	10E	Moving Average Time	× 0.1ms	0 to 5100
814	Final Travel Distance for External Positioning	Command units	–1073741823 to 1073741823	203	Final Distance for External Input Positioning	Command units	–1073741823 to 1073741823
816.0	Zero Point Return Mode Settings	–	0, 1	10F	Origin Return Mode Settings	–	0, 1
817	Zero Point Return Approach Speed 1	× 100 Command units /s	0 to 65535	110	Origin Return Approach Speed 1	× 100 Command units /s	0 to 32767
818	Zero Point Return Approach Speed 2	× 100 Command units /s	0 to 65535	111	Origin Return Approach Speed 2	× 100 Command units /s	0 to 32767
819	Final Travel Distance to Return to Zero Point	Command units	–1073741823 to 1073741823	204	Origin Return Final Distance	Command units	–1073741823 to 1073741823

5-8.Comparing System Check Modes

W Series		G Series		
	Function Name	Mode	No.	Function Name
Fn000	Alarm History Display	Monitor	Un_Err	
Fn001	Rigidity Setting during Online Autotuning	Parameter	Ph022	Real Time Autotuning Machine Rigidity Setting
Fn002	JOG Operation	Auxiliary function	Fn_Jog	JOG Operation
Fn003	Servomotor Origin Search	/	Not available with the G Series.	
Fn004	Program JOG Operation	/	Not available with the G Series.	
Fn005	User Parameter Initialization	/	Not available with the G Series.	
Fn006	Alarm History Data Clear	/	Not available with the G Series.	
Fn007	Store Online Autotuning Results	/	Not available with the G Series.	
Fn008	Absolute Encoder Setup	Auxiliary function	Fn_Enc	
Fn00C	Analogue Monitor Offset Manual Adjustment	/	Not available with the G Series.	
Fn00D	Analogue Monitor Output Scaling	/	Not available with the G Series.	
Fn00E	Servomotor Current Detection Offset Automatic Adjustment	/	Not available with the G Series.	
Fn00F	Servomotor Current Detection Offset Manual Adjustment	/	Not available with the G Series.	
Fn010	Password Setting	/	Not available with the G Series.	
Fn011	Servomotor Parameter Check	/	Not available with the G Series.	
Fn012	Version Check	At power-on	UEr_no	Soft Version
Fn013	Absolute Encoder Multi-turn Setting Change	/	Not available with the G Series.	
Fn017	Advanced Autotuning	Autotuning	At_no*	Normal Mode Autotuning
Fn018	Online Vibration Monitor	/	Not available with the G Series.	
Fn019	Easy FFT	/	Not available with the G Series.	
Fn01A	One Parameter Tuning	/	Not available with the G Series.	
Fn01B	Vibration Detection Level Initialization	/	Not available with the G Series.	
Fn01E	Servo Drive and Servomotor ID Check	/	Not available with the G Series.	

Chapter5 Parameter Specifications Comparison

5-9. Newly Added Parameters for the G Series

PRM No.	Parameter Name	Units	Setting Range	Functional Description
001	Default Display	-	0 to 4	Selects data to be shown on the 7-segment LED display of the front panel at the initial status of power ON.
006	Power ON Address Display Duration Setting	× 100ms	0 to 1000	Sets the node address display time when the control power is turned ON.
00A	Prohibit Parameter Changes via Network	—	0 to 2	Allows or prohibits parameter changes via the network.
00C	RS232 Baud Rate Setting	—	0 to 2	Sets the baud rate for RS232 communications.
01B	Speed Feedback Filter Time Constant 2	-	0 to 5	Sets in 6 stages the time constant of LPF (low pass filter) after speed detection when gain 2 is enabled. Normally use the setting of 0. When the Instantaneous Speed Observer Setting (Pn027) is enabled, this parameter is disabled.
021	Realtime Autotuning Mode Selection	-	0 to 7	Sets the operating mode for realtime autotuning.
022	Realtime Autotuning Machine Rigidity Selection	-	0 to F	Sets the machine rigidity for realtime autotuning.
023	Adaptive Filter Selection		0 to 2	Enables or disables the adaptive filter.
024	Vibration Filter Selection	-	0 to 5	Selects the vibration filter type and switching mode.
025	Normal Mode Autotuning Operation Setting	-	0 to 7	Sets the operating pattern for normal mode autotuning.
026	Overrun Limit Setting	× 0.1 Rotation	0 to 1000	Sets Servomotor's allowable operating range for the position command input range.
027	Instantaneous Speed Observer Setting	-	0,1	The Instantaneous Speed Observer improves speed detection accuracy, and realizes both high-responsiveness and vibration reduction when stopping. When the Instantaneous Speed Observer is enabled, the Speed Feedback Filter Time Constant (Pn013) and the Speed Feedback Filter Time Constant 2 (Pn01B) are disabled. Realtime autotuning cannot be used along with this at the same time.
02A	Notch Filter 2 Depth	-	0 to 99	Selects the notch depth of notch filter 2 for resonance suppression. Increasing this value decreases the notch depth, thereby reducing the phase lag.
02B	Vibration Frequency 1	× 0.1Hz	0 to 2000	Sets the vibration frequency 1 for damping control to suppress vibration at the end of the load. Measure and set the vibration frequency.
02C	Vibration Filter 1 Setting	× 0.1Hz	-200 to 2000	When setting the Vibration Frequency 1 (Pn02B), reduce this setting if torque saturation occurs, or increase it to make the movement faster. Normally use the setting of 0.
02D	Vibration Frequency 2	× 0.1Hz	0 to 2000	Sets the vibration frequency 2 for damping control to suppress vibration at the end of the load. Measure and set the vibration frequency.
02E	Vibration Filter 2 Setting	× 0.1Hz	-200 to 2000	Sets the vibration filter 2 for damping control to suppress vibration at the end of the load.

Chapter5 Parameter Specifications Comparison

PRM No.	Parameter Name	Units	Setting Range	Functional Description
02F	Adaptive Filter Table No. Display	–	0 to 64	Displays the table number corresponding to the frequency of the adaptive filter. This parameter is set automatically when the adaptive filter is enabled (i.e., when the Adaptive Filter Selection (Pn023) is set to a value other than 0), and cannot be changed.
041	Emergency Stop Input Setting	–	0, 1	Enables the Emergency Stop Input (STOP).
064	Motor Phase Current Offset Re-adjustment Setting	–	0 to 1	Enables or disables the offset component readjustment function of the Motor Phase Current Detector (CT) when Servo ON command is input. The readjustment is made when the control power is turned ON.
065	Undervoltage Alarm Selection	–	0,1	Selects whether to activate the main power supply undervoltage function (alarm code 13) when the main power supply is interrupted for the duration of the Momentary Hold Time (Pn06D) during Servo ON.
067	Stop Selection with Main Power OFF	–	0 to 9	Sets the operation to be performed during deceleration and after stopping after the main power supply is interrupted with the Undervoltage Alarm Selection (Pn065) set to 0. The deviation counter is cleared when the power interruption is detected.
072	Overload Detection Level Setting	%	0 to 500	Sets the overload detection level. The overload detection level will be 115% when this parameter is set to 0. Set the level only when reducing the overload detection level.
073	Overspeed Detection Level Setting	r/min	0 to 20000	Sets the overspeed detection level. The overspeed detection level is 1.2 times the maximum Servomotor rotation speed when the parameter is set to 0.

Chapter6 Control IO Specifications Comparison

6-1. Comparing Servo Drive Control Inputs Specifications

Control Inputs Comparison List

Symbol	W Series		G Series	
	Pin No.	Name	Pin No.	Name
DEC	9	Origin Return Deceleration Switch	21	Origin Proximity Input
POT	7	Forward Drive Prohibit Input	19	Forward Drive Prohibit Input
NOT	8	Reverse Drive Prohibit Input	20	Reverse Drive Prohibit Input
EXT1	10	External Latch Signal 1	5	External Latch Signal 1
EXT2	11	External Latch Signal 2	4	External Latch Signal 2
EXT3	12	External Latch Signal 3	3	External Latch Signal 3
+24VIN	6	Sequence Signal Control Power Supply	1	12 to 24 V DC Power Supply Input
BAT	14	Backup Battery Inputs	34	Backup Battery Input
BATGND	15		33	
IN(SIO)	13	General-purpose Sequence Input	22	External General-purpose Input 0
IN1	-		6	External General-purpose Input 1
IN2	-		23	External General-purpose Input 2
/STOP	-		2	Emergency Stop Input
PCL	-		7	Forward Torque Limit Input
NCL	-		8	Reverse Torque Limit Input

* Note For the W Series input signals, functional allocations can be made by parameters.

■ Origin Return Deceleration Switch Signal(DEC)

W Series	G Series
Input Impedance : approx. 3.3k Ω External Power Supply : 24 V DC \pm 1V	Input Impedance : approx. 4.7k Ω External Power Supply : 12 V DC \pm 5% to 24 V DC \pm 5%
Pin No.9: Origin Return Deceleration Switch Signal(DEC) ※ Allocated by default settings. DEC signal allocation can be made in Pn511.0.	Pin No.21: Origin Proximity Input(DEC) ※ N.O contact input by default setting. Logic for the sensor can be changed in Pn042.
<ul style="list-style-type: none"> Deceleration signal during the origin search. If this signal is input (DEC = 1) during the origin search, the Servo Drive will switch to the latch operation at signal OFF (DEC = 0) after the Zero Point Return Approach Speed 1(Pn817). 	<ul style="list-style-type: none"> Deceleration signal during the origin search. If this signal is input (DEC = 1) during the origin search, the Servo Drive will switch to the latch operation at signal OFF (DEC = 0) after the Origin Return Approach Speed 1(Pn110).

Chapter6 Control IO Specifications Comparison

■ Forward Drive Prohibit Input(POT)/ Reverse Drive Prohibit Input(NOT)

W Series	G Series
Input Impedance : approx. 3.3k Ω External Power Supply : 24 V DC \pm 1V	Input Impedance : approx. 4.7k Ω External Power Supply : 12 V DC \pm 5% to 24 V DC \pm 5%
Pin No.7: Forward Drive Prohibit Input (POT) Pin No.8: Reverse Drive Prohibit Input (NOT) ※ Allocated by default settings. The signals are set to “Always Enabled” (Status in which Drive Prohibit is activated). These settings can be changed in Pn50A3/ Pn50B.0.	Pin No.19: Forward Drive Prohibit Input(POT) Pin No.20: Reverse Drive Prohibit Input(NOT) ※ Allocated by default settings. The signals are set to “Always Enabled” (Status in which Drive Prohibit is activated). These settings can be changed in Pn004.
<ul style="list-style-type: none"> These two signals are used for the Forward and Reverse Drive Prohibit (over travel) Inputs. The Servomotor can rotate in the direction specified during the input. In Drive Prohibit status, the Servomotor will stop according to the settings in Pn001.0 and Pn001.1. (Refer to the figure below.) In Drive Prohibit status, the Servo Drive will not be put into the alarm status. 	<ul style="list-style-type: none"> These two signals are used for the Forward and Reverse Drive Prohibit (over travel) Inputs. The Servomotor can rotate in the direction specified during the input. In Drive Prohibit status, the Servomotor will decelerate and stop according to the sequence set in Pn066. (Refer to the figure below.) If Pn004 is set to 2, the Servo Drive will be put into the alarm status when it is in Drive Prohibit status.
<p>【正転/逆転側駆動禁止がOFFした時の停止方法】</p> <pre> graph LR A[POT (NOT) が OFF] -- "Pn001.1 '0'" --> B[ダイナミックブレーキで減速] A -- "Pn001.1 '1'" --> C[フリーラン状態で減速] A -- "Pn001.1 '2'" --> D[非常停止トルク (Pn406) で減速] B --> E[サーボフリー状態] C --> E D --> F[サーボフリー状態] D --> G[サーボロック状態] </pre>	<p>【正転/逆転側駆動禁止がOFFした時の停止方法】</p> <pre> graph LR A[POT (NOT) が OFF] -- "Pn066 = 0" --> B[ダイナミックブレーキで減速] A -- "Pn066 = 1" --> C[フリーラン状態で減速] A -- "Pn066 = 2" --> D[非常停止トルク (Pn066) で減速] B --> E[駆動禁止方向のトルク無効] C --> E D --> F[サーボロック状態] </pre>

■ External Latch Signals 1, 2, 3(EXT1, EXT2, EXT3)

W Series	G Series
Input Impedance : approx. 3.3k Ω External Power Supply : 24 V DC \pm 1V	Input Impedance : approx. 4.7k Ω External Power Supply : 12 V DC \pm 5% to 24 V DC \pm 5%
Pin No.10: External Latch Signal 1(EXT1) Pin No.11: External Latch Signal 2(EXT2) Pin No.12: External Latch Signal 3(EXT3) ※ Allocated by default settings. EXT1 signal can be allocated in Pn511.1, EXT2 signal in Pn511.2 and EXT3 signal in Pn511.3 respectively.	Pin No.5: External Latch Signal 1(EXT1) Pin No.4: External Latch Signal 2(EXT2) Pin No.3: External Latch Signal 3(EXT3)
This is the signal to latch the current value feedback pulse counter.	This is the external signal input to latch the current value feedback pulse counter. The position data is taken in immediately after this input is turned ON. The minimum signal width must be 1ms or more.

Chapter6 Control IO Specifications Comparison

Backup Battery Input(BAT)

W Series	G Series
Battery Voltage : 2.8 to 4.5 V Battery : Lithium Batteries by Toshiba Battery Co., Ltd. ER6V 3.6V 2000mAh	Battery Voltage : 3.0 to 3.8 V Battery : Lithium Batteries by Toshiba Battery Co., Ltd. ER6V 3.6V 1000mAh
Pin No.14: Backup Battery + Input(BAT) Pin No.15: Backup Battery - Input(BATGND)	Pin No.34: Backup Battery + Input(BAT) Pin No.33: Backup Battery - Input(BATCOM)
Connection terminals for the backup battery when there's power interruption for the absolute encoder. Do not connect anything to the terminals because normally the backup battery unit is used and the battery is connected to CN8 (Battery connector). NEVER use both connections (pins and CN8) at the same time. Doing so may lead to malfunction.	Connection terminals for the backup battery when there's power interruption for the absolute encoder. Do not connect anything to the terminals when the backup battery unit is used and the battery is connected to the absolute encoder battery cable holder. NEVER use both connections (pins and cable holder) at the same time. Doing so may lead to malfunction.

General-purpose Signal(SIO)

W Series	G Series
Input Impedance : approx. 3.3k Ω External Power Supply : 24 V DC \pm 1V	Input Impedance : approx. 4.7k Ω External Power Supply : 12 V DC \pm 5% to 24 V DC \pm 5%
Pin No.13: General-purpose Sequence Input(SIO) ※ Allocated by default settings. Functional allocations can be changed by parameters.	Pin No.22: External General-purpose Input 0(IN0) Pin No.6 : External General-purpose Input 1(IN1) Pin No.23: External General-purpose Input 2(IN2)
This is the signal to latch the current value feedback pulse counter.	This signal is used for the external general-purpose input.

Forward Torque Limit(PCL)/ Reverse Torque Limit(NCL)

W Series	G Series
	Input Impedance : approx. 4.7k Ω External Power Supply : 12 V DC \pm 5% to 24 V DC \pm 5%
	Pin No.7: Forward Torque Limit Input(PCL) Pin No.8: Reverse Torque Limit Input(NCL)
	When the Torque Limit Selection (Pn003) is set to 3 or 5, this signal input is used to switch the torque limit.

Emergency Stop Input(STOP)

W Series	G Series
	Input Impedance : approx. 4.7k Ω External Power Supply : 12 V DC \pm 5% to 24 V DC \pm 5%
	Pin No.2: Emergency Stop Input(STOP)
	This signal is used for the emergency stop input. When this signal is enabled and open, an emergency stop input error (alarm code 87) will occur. Setting can be made to enable or disable this signal in the Emergency Stop Input Setting (Pn041).

6-2. Comparing Servo Drive Control Outputs Specifications

Control Outputs Comparison List

Symbol	W Series		G Series	
	Pin No.	Name	Pin No.	Name
GND	16	Ground Common		
+A	17	Encoder Phase A + Output		Not available with the G Series.
-A	18	Encoder Phase A - Output		
+B	20	Encoder Phase B + Output		
-B	19	Encoder Phase B - Output		
+Z	21	Encoder Phase Z + Output		
-Z	22	Encoder Phase Z - Output		
/ALM	3	Alarm Output	15	
ALMCOM	4		16	
INP1	1 to 2 · 23 to 26	Positioning Completed Output 1	29 to 32 · 35 to 36	Positioning Completed Output 1
INP1COM				
INP2		Positioning Completed Output 2		Positioning Completed Output 2
INP2COM				
VCMP		Speed Conformity Output		Speed Conformity Output
VCMPCOM				
TGON		Servomotor Rotation Detection Output		Servomotor Rotation Speed Detection Output
TGONCOM				
READY		Servo Ready Output		Servo Ready Output【29·30】
READYCOM				
CLIMIT		Current Limit Detection Output		Current Limit Detection Output【31·32】
CLIMITCOM				
VLIMIT		Speed Limit Detection Output		Speed Limit Detection Output
VLIMITCOM				
BKIR		Brake Interlock Output【1·2】		Brake Interlock Output【36·35】
BKIRCOM				
/WARN	Warning Output	Warning Output		
/WARNCOM				
FG	Shell	Frame Ground	Shell	Frame Ground All

* Note : Different from the W Series in logic and functions. Use caution when replacing the products.

Chapter6 Control IO Specifications Comparison

Encoder Output(Phase A·Phase B·Phase Z)

W Series	G Series
Line Driver Output AN75ALS174 or the equivalent	Not available with the G Series.
Pin No.17 : +A Pin No.18 : -A Pin No.20 : +B Pin No.19 : -B Pin No.21 : +Z Pin No.22 : -Z	
Outputs the phase difference pulse provided by dividing the Servomotor encoder signal according to the Encoder Divider Rate (Pn212). The output mode is the line driver output, which is in compliance with EIA RS-422A. Phase Z is synchronous with phase A.	

Alarm Output(/ALM)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No.3: Alarm Output(/ALM) Pin No.4: Alarm Output Ground(ALMCOM)	Pin No.15: Alarm Output(/ALM) Pin No.16: Alarm Output Ground(ALMCOM)
When an error is detected by the Servo Drive, this output will be turned OFF, and above-mentioned alarm codes will be output. This alarm output is OFF at power-ON and it will turn ON after the Servo Drive initialization is complete.	When an error is detected by the Servo Drive, this output will be turned OFF. This alarm output is OFF at power-ON and it will turn ON after the Servo Drive initialization is complete.

Positioning Completed Output 1,2(INP1, INP2)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No. is not allocated by default settings.(INP1·INP2) ※ No allocation by default settings. INP1 signal allocation is made in Pn50E.0 and INP2 allocation is made in Pn510.0.	Pin No. is not allocated by default settings.(INP2·INP2) ※ No allocation by default settings. Allocations for the input signal are made in Pn112 to 114.
When accumulated pulses in the deviation counter are equal to or less than Pn522 (Positioning Completed Range 1), INP1 will turn ON. When they are equal to or less than Pn524 (Positioning Completed Range 2), INP2 will turn ON. When the command speed is low and the setting value of the positioning completed range is large, positioning completed output remains to be ON. ※ In control mode other than position control mode, it is always OFF.	When in position control and the position deviation is equal to or less than Pn060, INP1 will turn ON. When it is equal to or less than Pn063, INP2 will turn ON. In control mode other than position control, how to turn ON/OFF is not determined.

Chapter6 Control IO Specifications Comparison

■ Speed Conformity Output(VCMP)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No. is not allocated by default settings.(IVCMP) ※ No allocation by default settings. VCMP signal allocation is made in Pn50E.1.	Pin No. is not allocated by default settings.(IVCMP) ※ No allocation by default settings. Allocations for the input signal are made in Pn112 to 114.
When the difference between the Servomotor rotation speed and speed command is equal to or less than Pn503 (Speed Conformity Signal Output Width), this output will turn ON. ※ In control mode other than speed control mode, it is always OFF.	When in speed control and the deviation between the Servomotor speed and command speed is within the setting range of Pn061, this output will turn ON. In control mode other than speed control, how to turn ON/OFF is not determined.

■ Servomotor Rotation Detection Output(TGON)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No. is not allocated by default settings.(TGON) ※ No allocation by default settings. TGON signal allocation is made in Pn50E.2.	Pin No. is not allocated by default settings.(TGON) ※ No allocation by default settings. Allocations for the input signal are made in Pn112 to 114.
When the Servomotor rotation speed exceeds Pn502 (Rotation Speed for Motor Rotation Detection), this output will turn ON.	When the Servomotor speed absolute value exceeds the setting value of Pn062 in all control modes, this output will turn ON.

■ Servo Ready Output(READY)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No. is not allocated by default settings.(READY) ※ No allocation by default settings. READY signal allocation is made in Pn50E.3.	Pin No.29: Servo Ready Output(READY) Pin No.30: Servo Ready Output Common(READYCOM) ※ Allocated by default settings. Allocations for the input signal are made in Pn112 to 114.
If there's no error after the main circuit power is turned ON, this output will turn ON.	This output will turn ON when the main power supply is established without an alarm, and the Servo synchronization is established in all control modes.

Chapter6 Control IO Specifications Comparison

■ Current Limit Detection Output(CLIMT)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No. is not allocated by default settings.(CLIMT) ※ No allocation by default settings. CLIMT signal allocation is made in Pn50F.0.	Pin No.31: Current Limit Detection Output(CLIM) Pin No.32: Current Limit Detection Output Common (CLIMCOM) ※ Allocated by default settings. Allocations for the input signal are made in Pn112 to 114.
This output will turn ON if any of the following conditions is met. <ul style="list-style-type: none"> The output torque has reached the limit values set in Pn402 (Forward Torque Limit) and Pn403 (Reverse Torque Limit). The output torque has reached the limit values set in Pn404 (Forward Rotation External Current Limit) and Pn405 (Reverse Rotation External Current Limit) when PCL/NCL (Forward/Reverse Current Limits) are ON. The output torque has reached TREF (Analogue Torque Limit) when Pn002.0 (Torque Command Input Change) is set to 1. The output torque has reached TREF (Analogue Torque Limit) when Pn002.0 (Torque Command Input Change) is set to 3 and PCL/NCL (Forward/Reverse Current Limits) are ON. 	This output will turn ON if the torque command is limited by the torque limit at Servo lock.

■ Speed Limit Detection Output(VLIMT)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No. is not allocated by default settings.(VLIMT) ※ No allocation by default settings. VLIMT signal allocation is made in Pn50F.1.	Pin No. is not allocated by default settings.(VLIM) ※ No allocation by default settings. Allocations for the input signal are made in Pn112 to 114.
<ul style="list-style-type: none"> This output will turn ON if either of the following conditions is met. The Servomotor rotation speed has reached the limit value set in Pn407 (Speed Limit). The Servomotor rotation speed has reached the speed limit value specified in Optional Command Value 1 when Pn002.1 (Speed Command Input Change) is set to 1. ※ In control mode other than torque control mode, it is always OFF.	This output will turn ON when the Servomotor rotation speed has reached the speed limit value in torque control. In control mode other than torque control, how to turn ON/OFF is not determined.

Chapter6 Control IO Specifications Comparison

■ Brake Interlock Output(BKIR)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No.1: Brake Interlock Output(BKIR) Pin No.2: Brake Interlock Output Common(BKIRCOM) ※ Allocated by default settings. BKIR signal allocation is made in Pn50F.2.	Pin No.36: Brake Interlock Output(BKIR) Pin No.35: Brake Interlock Output Common(BKIRCOM) ※ Allocated by default settings. Allocations for the input signal are made in Pn112 to 114.
Outputs an external brake timing signal by setting in Pn506 (Brake Timing 1), Pn507 (Brake Command Speed) and Pn508 (Brake Timing 2).	Outputs an external brake timing signal by setting in Pn06A (Brake Timing When Stopped) and Pn06B (Brake Timing During Operation).

■ Warning Output(/WARN)

W Series	G Series
Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less	Maximum Operating Voltage:30 V DC or less Maximum Output Current:50 mA or less
Pin No. is not allocated by default settings.(/WARN) ※ No allocation by default settings. /WARN signal allocation is made in Pn50F.3.	Pin No. is not allocated by default settings.(/WARN) ※ No allocation by default settings. Allocations for the input signal are made in Pn112 to 114.
This output will turn ON if any of the following conditions is met. <ul style="list-style-type: none"> • The Servomotor output torque (effective value) has exceeded 115% of the rated torque. • Regeneration energy has exceeded the allowable amount of the internal regeneration resistor. Regeneration energy has exceeded Pn600 (Regeneration Resistor Capacity) when the external regeneration resistor is in use. 	This output will turn ON when a warning occurs in all control modes.

Chapter6 Control IO Specifications Comparison

6-3. Comparing Analogue Monitor Outputs Specifications

Analogue Monitor Outputs Comparison List

W Series			G Series		
Output Voltage: ±8V Max. Precision: ±15%			Output Voltage: ±10V Max.		
Symbol	Name	Functions	Symbol	Name	Functions
NM	Analogue Monitor 2	Speed Monitor 1V/1000r/min	SP	Analogue Monitor 2	Speed Monitor 1V/500r/min
AM	Analogue Monitor 1	Current Monitor 1V/Rated Torque	IM	Analogue Monitor 1	Current Monitor 3V/Rated Torque
GND	Analogue Monitor Ground		G	Analogue Monitor Ground	

The above are the functions by default settings. Each function can be changed via user parameters as shown below.

For the W Series, set values of output functions are shared by NM and AM. For the G Series, functions of set values for SP and IM are different.

W Series		G Series	
Pn006.0-1 Pn007.0-1	Functions	SP Pn07	Functions
00	Servomotor Rotation Speed 1V/1000r/min	0	Speed Monitor 6V/47r/min
01	Speed Command 1V/1000r/min	1	Speed Monitor 6V/188r/min
02	Torque Command — Gravity Compensation Torque (Pn422)1V/ 100%	2	Speed Monitor 6V/750r/min
03	Position Deviation 0.05V/1 Command unit	3	Speed Monitor 6V/3000r/min
04	Position Deviation (after electronic gear) 0.05V/Encoder pulse unit	4	Speed Monitor 1.5V/3000r/min
05	Position Command Speed 1V/1000r/min	5	Speed Command 6V/47r/min
06	Not used	6	Speed Command 6V/188r/min
07	Not used	7	Speed Command 6V/750r/min
08	Positioning Completed Command (Positioning Completed = 5V, Positioning not completed = 0V)	8	Speed Command 6V/3000r/min
09	Speed Feed Forward 1V/1000r/min	9	Speed Command 1.5V/3000r/min
0A	Torque Feed Forward(1V/100%)	10	Outputs issuance completed status (DEN). 0V : During issuance 5V : Issuance completed
		11	Outputs gain selection status. 0V : Gain 2, 5V : Gain 1

W Series		G Series	
Pn006.3 Pn007.3	Functions	Pn08 Set Value	Functions
0	1 ×	0	Torque Command 3V/Rated torque
1	10 ×	1	Position Deviation 3V/31 Pulses
2	100 ×	2	Position Deviation 3V/125 Pulses
3	1 / 10 ×	3	Position Deviation 3V/500 Pulses
4	1 / 100 ×	4	Position Deviation 3V/2000 Pulses
		5	Position Deviation 3V/8000 Pulses
		6 to 10	Not used
		11	Current Monitor 1.5V/Rated torque
		12	Current Monitor 0.75V/Rated torque
		13	Outputs issuance completed status (DEN). 0V : During issuance, 5V : Issuance completed
		14	Outputs gain selection status. 0V : Gain 2, 5V : Gain 1

Chapter7 Reference Date

7-1. AC Servomotors Specifications Comparison

■ 3,000r/min Servomotors

【 Servomotor Characteristics 】

W Series R88M -	G Series R88M -	Applicable Inertia (kg·m ²)		Rated Torque (N·m)		Max. Momentary Torque (N·m)		Shaft Radial Load (N)		Shaft Thrust Load (N)	
		W	G	W	G	W	G	W	G	W	G
-W05030H/T	-G05030□	6.60 E-05	7.50 E-05	0.16	0.16	0.477	0.45	68	68	54	58
-W10030H/T	-G10030□	1.09 E-04	1.53 E-04	0.33	0.32	0.955	0.90	78	68	54	58
-W20030H/T	-G20030□	3.18 E-04	4.20 E-04	0.64	0.64	1.91	1.78	245	245	74	98
-W40030H/T	-G40030□	5.19 E-04	7.80 E-04	1.27	1.27	3.82	3.67	245	245	74	98
-W75030H/T	-G75030H/T	1.34 E-03	1.74 E-03	2.39	2.39	7.16	7.05	392	392	147	147
-W1K030H/T	-G1K030T	1.74 E-03	2.53 E-03	3.18	3.18	9.54	9.10	686	392	196	147
-W1k530H/T	-G1k530T	2.47 E-03	3.88 E-03	4.90	4.77	14.7	12.8	686	490	196	196
-W2K030H/T	-G2K030T	3.19 E-03	5.19 E-03	6.39	6.36	19.1	18.4	686	490	196	196
-W3K030H/T	-G3K030T	7.00 E-03	1.01 E-02	9.80	9.54	29.4	27.0	980	490	392	196
-W4K030H/T	-G4K030T	9.60 E-03	1.90 E-02	12.6	12.6	37.8	36.3	1176	784	392	343
-W5K030H/T	-G5K030T	1.23 E-02	2.67 E-02	15.8	15.8	47.6	45.1	1176	784	392	434

The applicable inertia for the W Series is the conversion of rotor inertia multiplied as follows: 30 to 400w:30 times, 750w:20 times, 1.0k to 5.0kw:10 times

The applicable inertia for the G Series is the conversion of rotor inertia multiplied as follows: 50 to 400w:30 times, 750w:20 times, 1.0k to 5.0kw:15 times

【 Servomotor Dimensions 】

W Series R88M -	G Series R88M -	Side (C×C)		Mounting Hole (φD1)		Inner Diameter (φD2)		Shaft Diameter (φS)		Effective Shaft Length (LR-F)	
		W	G	W	G	W	G	W	G	W	G
-W05030H/T	-G05030□	40	40	46	46	30	30	6	8	22.5	22.0
-W10030H/T	-G10030□	40	40	46	46	30	30	8	8	22.5	22.0
-W20030H/T	-G20030□	60	60	70	70	50	50	14	11	27.0	27.0
-W40030H/T	-G40030□	60	60	70	70	50	50	14	14	27.0	27.0
-W75030H/T	-G75030H/T	80	80	90	90	70	70	16	19	37.0	32.0
-W1K030H/T	-G1K030T	100	90	115	100	95	80	24	19	40.0	52.0
-W1k530H/T	-G1k530T	100	100	115	115	95	95	24	19	40.0	52.0
-W2K030H/T	-G2K030T	100	100	115	115	95	95	24	19	40.0	52.0
-W3K030H/T	-G3K030T	130	120	145	145	110	110	28	22	55.0	52.0
-W4K030H/T	-G4K030T	130	130	145	145	110	110	28	24	55.0	59.0
-W5K030H/T	-G5K030T	130	130	145	145	110	110	28	24	55.0	59.0

■ 1,000r/min Servomotors

【 Servomotor Characteristics 】

W Series R88M -	G Series R88M -	Applicable Inertia (kg·m ²)		Rated Torque (N·m)		Max. Momentary Torque (N·m)		Shaft Radial Load (N)		Shaft Thrust Load (N)	
		W	G	W	G	W	G	W	G	W	G
-W30010H/T	-G90010T	7.24 E-03	1.12 E-02	2.84	8.62	7.17	1.84	490	686	98	196
-W60010H/T	-G90010T	1.39 E-02	1.12 E-02	5.68	8.62	14.1	1.84	490	686	98	196
-W90010H/T	-G90010T	2.05 E-02	1.12 E-02	8.62	8.62	19.3	1.84	686	686	343	196
-W1K210H/T	-G2K010T	3.17 E-02	3.55 E-02	11.5	19.1	28.0	41.5	1176	1176	490	490
-W2K010H/T	-G2K010T	4.60 E-02	3.55 E-02	19.1	19.1	44.0	41.5	1470	1176	490	490

The applicable inertia for the W Series is the conversion of rotor inertia multiplied by 10.

The applicable inertia for the G Series is the conversion of rotor inertia multiplied by 10.

【 Servomotor Dimensions 】

W Series R88M -	G Series R88M -	Side (C × C)		Mounting Hole (φD1)		Inner Diameter (φD2)		Shaft Diameter (φS)		Effective Shaft Length (LR-F)	
		W	G	W	G	W	G	W	G	W	G
-W30010H/T	-G90010T	130	130	145	145	110	110	19	22	40	64
-W60010H/T	-G90010T	130	130	145	145	110	110	19	22	40	64
-W90010H/T	-G90010T	130	130	145	145	110	110	22	22	40	64
-W1K210H/T	-G2K010T	180	176	200	200	114.3	114.3	35	35	75.8	76.8
-W2K010H/T	-G2K010T	180	176	200	200	114.3	114.3	35	35	75.8	76.8

■ 1,500r/min Servomotors

【 Servomotor Characteristics 】

W Series R88M -	G Series R88M -	Applicable Inertia (kg·m ²)		Rated Torque (N·m)		Max. Momentary Torque (N·m)		Shaft Radial Load (N)		Shaft Thrust Load (N)	
		W	G	W	G	W	G	W	G	W	G
-W45015T	-G1K020T	7.24 E-03	6.17 E-03	2.84	4.80	8.92	13.5	490	490	98	196
-W85015T	-G1K520T	1.39 E-02	1.12 E-02	5.39	7.15	13.8	19.6	490	490	98	196
-W1K315T	-G2K020T	2.05 E-02	1.52 E-02	8.34	9.54	23.3	26.5	686	490	343	196
-W1K815T	-G3K020T	3.17 E-02	2.23 E-02	11.5	14.3	28.7	41.2	1176	784	490	343

The applicable inertia for the W Series is the conversion of rotor inertia multiplied as follows : 450w to 5.5kw:10 times, 7.5kw:7 times, 11.0k to 15.0kw:5 times

The applicable inertia for the G Series is the conversion of rotor inertia multiplied by 10.

【 SERVOMOTOR DIMENSIONS 】

W SERIES R88M -	G SERIES R88M -	Side (C × C)		Mounting Hole (φD1)		Inner Diameter (φD2)		Shaft Diameter (φS)		Effective Shaft Length (LR-F)	
		W	G	W	G	W	G	W	G	W	G
-W45015T	-G1K020T	130	130	145	145	110	110	19	22	40	49
-W85015T	-G1K520T	130	130	145	145	110	110	19	22	40	49
-W1K315T	-G2K020T	130	130	145	145	110	110	22	22	40	49
-W1K815T	-G3K020T	180	130	200	145	114.3	110	35	24	75.8	59

Chapter7 Reference Data

■ 3,000r/min Flat Type Servomotors

【 Servomotor Characteristics 】

W Series R88M -	G Series R88M -	Applicable Inertia (kg·m ²)		Rated Torque (N·m)		Max. Momentary Torque (N·m)		Shaft Radial Load (N)		Shaft Trust Load (N)	
		W	G	W	G	W	G	W	G	W	G
-WP10030H/T	-GP10030□	1.22 E-04	2.00 E-04	0.318	10.32	0.955	0.86	78	68	49	58
-WP20030H/T	-GP20030□	2.89 E-04	7.00 E-04	0.637	0.64	1.91	1.8	245	245	68	98
-WP40030H/T	-GP40030□	4.96 E-04	1.30 E-03	1.27	1.3	3.82	3.65	245	245	68	98
-WP75030H/T	-	2.10 E-03		2.39		7.16		392		147	
-WP1K030H/T	-	4.02 E-03		4.77		13.3		490		147	

The applicable inertia for the W Series is the conversion of rotor inertia multiplied as follows:

100w : 25 times, 200 to 400w : 15 times, 750w to 1.5kw : 10 times

The applicable inertia for the G Series is the conversion of rotor inertia multiplied by 20.

【 Servomotor Dimensions 】

W Series R88M -	G Series R88M -	Side (C×C)		Mounting Hole (φD1)		Inner Diameter (φD2)		Shaft Diameter (φS)		Effective Shaft Length (LR-F)	
		W	G	W	G	W	G	W	G	W	G
-WP10030H/T	-GP10030□	60	60	70	70	50	50	8	8	22	22
-WP20030H/T	-GP20030□	80	80	90	90	70	70	14	11	27	25
-WP40030H/T	-GP40030□	80	80	90	90	70	70	14	14	27	25
-WP75030H/T	-	120		145		110		16		36.5	
-WP1K030H/T	-	120		145		110		19		36.5	

7-2. AC Servo Drives Specifications Comparison

Input Power	W Series R88D -	G Series R88D -	Width		Height		Depth		Depth (With connector attached)	
			W	G	W	G	W	G	W	G
Single phase 100 V /115 V AC	-WNA5L-ML2	-GTA5L-ML2	45	40	150	150	130	130	205	205
	-WN01L-ML2	-GT01L-ML2	45	40	150	150	130	130	205	205
	-WN02L-ML2	-GT02L-ML2	45	55	150	150	130	130	205	205
	-WN04L-ML2	-GT04L-ML2	70	55	150	150	180	130	255	205
Single phase 200 V /230 V AC	-WNA5H-ML2	-GT01H-ML2	45	40	150	150	130	130	205	205
	-WN01H-ML2	-GT01H-ML2	45	40	150	150	130	130	205	205
	-WN02H-ML2	-GT02H-ML2	45	40	150	150	130	130	205	205
	-WN04H-ML2	-GT04H-ML2	65	55	150	150	130	130	205	205
Three phase 200 V /230 V AC	-WN08H-ML2	-GT08H-ML2	70	65	150	150	180	170	255	245
	-WN05H-ML2	-GT10H-ML2	70	85	150	150	180	170	255	245
	-WN05H-ML2	-GT15H-ML2	70	85	150	150	180	170	255	245
	-WN08H-ML2	-GT08H-ML2	70	85	150	150	180	170	255	245
	-WN08H-ML2	-GT15H-ML2	70	85	150	150	180	170	255	245
	-WN10H-ML2	-GT15H-ML2	70	85	150	150	180	170	255	245
	-WN15H-ML2	-GT15H-ML2	90	85	150	198	180	200	255	275
	-WN15H-ML2	-GT20H-ML2	90	85	150	198	180	200	255	275
	-WN15H-ML2	-GT30H-ML2	90	85	150	198	180	200	255	275
	-WN20H-ML2	-GT20H-ML2	100	85	180	198	180	200	255	275
	-WN20H-ML2	-GT30H-ML2	100	85	180	198	180	200	255	275
	-WN30H-ML2	-GT30H-ML2	100	85	180	198	180	200	255	275

7-3. Encoders Specifications Comparison

■ 3,000r/min Servomotors with 750w or less, Flat Type Servomotors

		W Series	G Series
INC	Encoder system	Optical encoder	Optical encoder
	No. of output pulses	Phases A and B : 2,048 pulses/rotation Phase Z : 1 pulse/rotation	Phase A and B : 2,500 pulses/rotation Phase Z : 1 pulse/rotation
	Power supply voltage	5 V DC \pm 5%	5 V DC \pm 5%
	Power supply current	DC 120 mA	DC 180 mA
	Output signals	+S, -S	+S, -S
	Output interface	EIA RS-422A compliance	RS-485 compliance
ABS	Encoder system	Optical encoder	Optical encoder
	No. of output pulses	Phase A and B : 16,384 pulses/rotation Phase Z : 1 pulse/rotation	Phase A and B : 32,768 pulses/rotation Phase Z : 1 pulse/rotation
	Maximum rotations	\pm 32,768 rotations or 0 to 65,534 rotations	\pm 32,768 rotations or 0 to 65,534 rotations
	Power supply voltage	5 V DC \pm 5%	5 V DC \pm 5%
	Power supply current	DC 180 mA	DC 110 mA
	Applicable battery voltage	3.6 V DC	3.6 V DC
	Output signals	+S, -S	+S, -S
	Output interface	EIA RS-422A compliance	RS-485 compliance

■ 3,000r/min Servomotors with 1.0kw or more, 1,000r/min Servomotors, 1,500r/min Servomotors

		W Series	G Series
INC	Encoder system	Optical encoder	Only ABS type is available for the G Series.
	No. of output pulses	Phase A and B : 32,768 pulses/rotation Phase Z : 1 pulse/rotation	
	Power supply voltage	5 V DC \pm 5%	
	Power supply current	DC 120 mA	
	Output signals	+S, -S	
	Output interface	EIA RS-422A compliance	
ABS	Encoder system	Optical encoder	Optical encoder
	No. of output pulses	Phase A and B : 32,768 pulses/rotation Phase Z : 1 pulse/rotation	Phase A and B : 32,768 pulses/rotation Phase Z : 1 pulse/rotation
	Maximum rotations	\pm 32,768 rotations or 0 to 65,534 rotations	\pm 32,768 rotations or 0 to 65,534 rotations
	Power supply voltage	5 V DC \pm 5%	5 V DC \pm 5%
	Power supply current	DC 180 mA	DC 110 mA
	Applicable battery voltage	3.6 V DC	3.6 V DC
	Output signals	+S, -S	+S, -S
	Output interface	EIA RS-422A compliance	RS-485 compliance