

Instructions for replacement with Σ -7 series

Replacement target

Motor: **Σ -II (SGMAH, SGMPH, SGMGH, SGMSH)**

SERVOPACK : **Σ -II AC power input Type (SGDM, SGDH, SGDJ)**

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1. Precautions concerning use

1.1. Precautions concerning use

You may need to pay attention to application at the time of replacing Σ -II Series with Σ -7 Series. The details are given in the table below.

Verification items	Precautions	
	Usage status in Σ -II	Usage method in Σ -7
Using SGDM SERVOPACK or SGDH SERVOPACK	Using Auto Tuning function	There is no Auto Tuning function in SGD7□. Tuning-less function is the substitute function. If you wish to know the inertia moment ratio, please use advanced Auto Tuning function or inertia moment identification function of SigmaWin+.
	Using Speed Bias function	There is no speed bias function in SGD7□. Positioning time can be shortened by “positioning application (model follow-up control)” of Advanced Auto Tuning function.
	Using Automatic Gain Switching function	The specifications of Automatic Gain Switching function are different. Please change to a setting that suits the existing objective, and use.
	Using Duct Ventilation type	There is a model that is compatible with duct ventilation type but the mounting dimensions are different. Therefore, please contact the Sales Department of our company.

Using application module in SGDH SERVOPACK	Using full-closed I/F unit (JUSP-FC100)	In the case of executing full-close control by SGD7S, it can be replaced with a combination of SGD7S and SGD7V-OFA01A. It cannot be replaced in SGD7W. Change the feedback signal from linear scale from 90-degree phase difference 2-phase pulse string to $\pm 1V$ analog signal output, and use serial conversion unit.
	Using Device Net I/F unit (JUSP-NS300)	There is no successor model in Σ -7 Series. Please consult with the Sales Department of the company or with the agency.
	Using ProfieBus I/F unit (JUSP-NS500)	There is no successor model in Σ -7 Series. Please consult with the Sales Department of the company or with the agency.
	Using INDEXER module (JUSP-NS600)	There is no successor model in Σ -7 Series. Please consult with the Sales Department of the company or with the agency.
	Using MECHATROLINK I/F unit (JUSP-NS100/-NS115)	Use MECHATROLINK-II communication command-type SERVOPACK (SGD7□-□□□□10□ type). <ul style="list-style-type: none"> • The MECHATROLINK commands supported by SGD7 + JUSP-NS100/-NS115 type and SGD7□-□□□□10□ type are different. Therefore, software change may be required in the upper controller side. • The connector (CN1) for input/output signal is not compatible. So, wiring needs to be reviewed. For details, please see section 3-2. (2).
Using single-shaft machine controller MP940	There is no part suitable for MP940 in option module. Please study the combination of multi-shaft controllers MP2400 & MP2300S with MECHATROLINK-II communication command-type SERVOPACK (SGD7S-□□□□10□ type), or replacement with MP3300 and MECHATROLINK-III communication command-type SERVOPACK (SGD7S-□□□□20□ type).	

Using SGDJ SERVOPACK	Using Auto Tuning function	There is no Auto Tuning function in SGD7□. Tuning-less function is the substitute function. If you wish to know the inertia moment ratio, please use advanced Auto Tuning function or inertia moment identification function of SigmaWin+.
	Using speed bias function	There is no speed bias function in SGD7□. Positioning time can be shortened by “positioning application (model follow-up control)” of Advanced Auto Tuning function.
	Using analog monitor	Motor rotation speed of SGDJ is 0.5V/1000min ⁻¹ , while it is 1V/1000 min ⁻¹ in SGD7□.

The main points related to improvement in function/performance at the time of replacing Σ -II (SGDM, SGDH, SGDJ) type SERVOPACK with Σ -7 are as follows.

- Added low-capacity medium inertia Series (SGM7J) to the motor product line-up.
- Integrated the low/medium capacity low-inertia Series. (SGMAH, SGMSH → SGM7A)
- Change the maximum speed of motor from 5000min⁻¹ to 6000min⁻¹. (SGM7A, SGM7J, SGM7P)
- Improved the operating environment conditions.
 - Operating temperature: -5°C ~ +60°C (derating required at +55°C and above), elevation: 2000_m or less (derating required at 1000_m and above)
- Improved the motor waterproofing protection structure to IP67. (At the time of using Σ -7 cable)
- Improved the motor encoder resolution to 24 bit.
- Improved the speed frequency response.
 - SGDM/SGDH/SGDJ: 400Hz ⇒ SGD7S: 3.1kHz
- Made changes to support pulse string command input frequency of 4Mpps.
 - Line driver output code + pulse string, CW + CCW pulse string: 4 Mpps, 90° phase difference 2-phase pulse: 1 Mpps
 - However, it is 200 kHz if connected to open corrector output.
- Addition of various functions: Enhancement of vibration suppression function, ripple compensation function, friction model compensation function, force stop function, etc.
- Addition of monitor and warning detection
 - Life prediction monitor, power consumption monitor, FANS warning detection, etc.
- Standard products have been made RoHS-compliant.
- All products have been made compliant with safety standards (Safety Stop-0).
- Changed the system of PC connection from RS-422A communication to USB

1.2. Σ -7/ Σ -II, MP3300/MP2000 compatibility table

(As of April 4, 2014)

		Σ -7		Σ -II		MP3300 (Built-in SVC)	MP3200 (Built-in SVC)	MP2000 (Built-in SVC, SVC-01)	MP2000 (Built-in SVB, SVB-01)	MPE720 Ver7.26	MPLoader	SigmaWin+ Ver5.70
		Amplifier	Motor	Amplifier	Motor							
Σ -7	Amplifier		○		△	○	△	△	△	○		○
	Motor	○		×								
Σ -II	Amplifier		×		○	×	×	×	○	○		○
	Motor	△		○								
MP3300 (Built-in SVC)		○		×							△	
MP3200 (Built-in SVC)		△		×							○	
MP2000 (Built-in SVC, SVC-01)		△		×							○	
MP2000 (Built-in SVB, SVB-01)		△		○							○	
MPE720 Ver7.26		○		○								
MPLoader						△	○	○	○			
SigmaWin+ Ver5.70		○		○								

[Σ -7]

Use motor of Σ -7. Motor connection of Σ -II shall be estimated separately.

[MP3300]

There is no problem in Σ -7 connection. Σ -II can also be connected by using SVB-01 module.

[MP3200]

To support Σ -7 by version upgrade. Ver1.12

[MP2000 (SVC)]

To support Σ -7 by version upgrade. Built-in Ver2.88/Optional Ver1.12 (Planned to be released in end of June 2014)

※ A combination of an unsupported version SVC (Built-in: Ver2.87 and earlier, Optional: Ver1.11 and earlier) and Σ -7 can be used but there are certain restrictions as given below.

- 1 In the case of ABS finite length setting, the range of motion is restricted as follows.
-2147483648~2147483647 [pulse] (± 128 rotations in case of 24bit)
- 2 The range of positioning movement amount converted to pulse is restricted to the following range.
-2147483648~2147483647[pulse]

- 3 The reported feedback speed is an invalid value according to the relationship between high-speed scan setting and operation speed.

[MP2000 (SVB)]

To support Σ -7 by version upgrade. Built-in: Ver2.89/Optional: Ver1.33 (Planned to be released in end of September 2014)

- ※ Combination of unsupported version SVB (Built-in: Ver2.88 and earlier versions, Optional: Ver1.32 and earlier versions) and Σ -7 can be used by assigning as Wild CardServo.
However, set the electronic gear ratio in Servo so that the command resolution is 1 command unit ≥ 16 pulse. Also, there are restrictions on usage method in the case of Wild Card Servo setting, such as restriction on usable motion command and inability to use parameter automatic reflection function.

[MPE720]

MP3300 and Σ -7 will be supported by version upgrade.

SVC will be supported by Ver7.27 for Σ -7S, and Σ -7W will be supported by version upgrade Ver7.28 (Planned to be released in June 2014), while support for SVB is being worked out (planned to be supported in Ver. 7.29).

[MPLoader]

MP3300 will be supported by version upgrade. Ver4.02 (Planned to be released at the end of May in 2014)

[SigmaWin+]

To support Σ -7 by version upgrade. Ver5.70

1.3. Check sheet for replacement of Σ-II by Σ-7

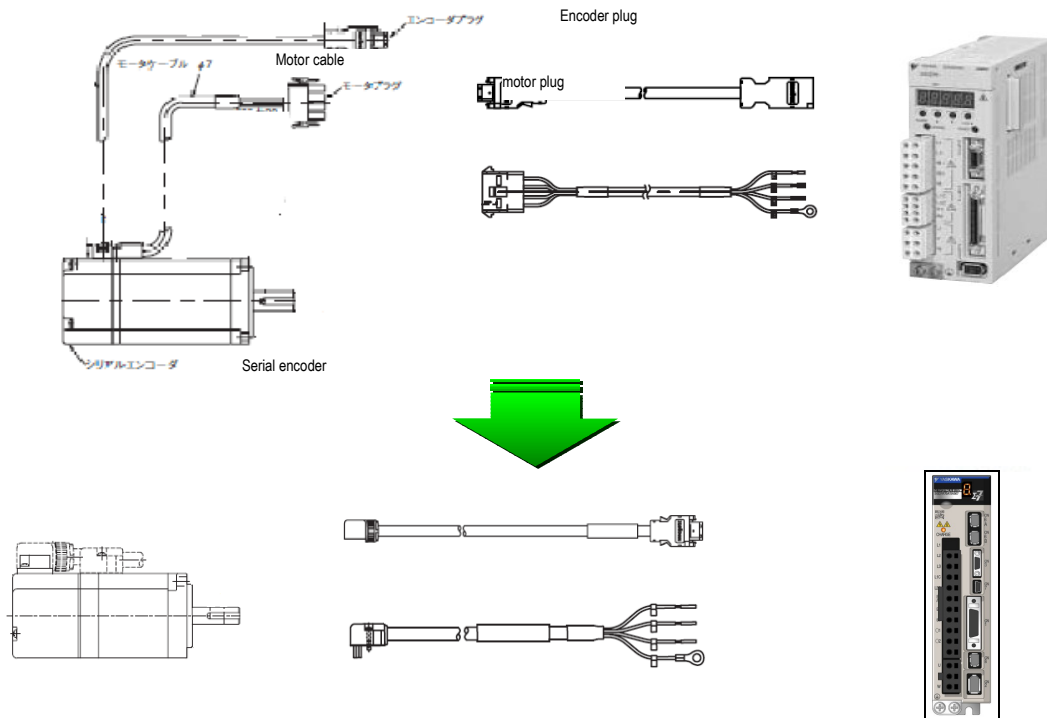
Classification	Item	Check point	Check
Motor	Body	<p><Check body mounting position></p> <ul style="list-style-type: none"> • Check the dimension for attaching an operating motor and a machine. <p>Spigot joint diameter, mounting hole pitch, mounting hole diameter, shaft diameter, shaft shape (straight, key, center tap, taper), etc.</p>	
		<p><Check of special specifications></p> <ul style="list-style-type: none"> • Check that the motor being used currently is not a customer-specific type. • If it is a customer-specific type, check the specifications from the delivery specifications document. 	
	Cable	<p><Check cable lead direction></p> <ul style="list-style-type: none"> • Check if there is any interference with the cable lead direction or machine. 	

Servo Pack (Body)	Body	<Check body mounting position>	
		<ul style="list-style-type: none"> Check the dimensions (W/H/D) of the SERVOPACK being used and the position of mounting hole. 	
	Option	<Check of special specifications>	
		<ul style="list-style-type: none"> Check the delivery specifications to ascertain if the NP, shape and processes (special treatment etc.) of the SERVOPACK being used are customer-specific. 	
	Main circuit	<Check optional specifications>	
		<ul style="list-style-type: none"> Check if the SERVOPACK being used is using option module. 	
		< Wiring check>	
		<ul style="list-style-type: none"> The position of connector, sequence and partition method of the SERVOPACK being used and SERVOPACK to be replaced are different. 	
		<Compatibility with single-phase power input>	
		<ul style="list-style-type: none"> In the case of using with single-phase power input, connect the main circuit power cable to L1 and L2. In the case of using with single-phase power input, change the parameter “function selection switch E”. (Pn00E.2=1) 	
<Compatibility with DC power input>			
<ul style="list-style-type: none"> It is necessary to add an inrush current prevention circuit between the DC power and SERVOPACK, according to the protection fuse and machine type. To add, contact our Sales Department. In case of using with DC power input, change the parameter “function selection switch 1”. (Pn00E.0=1) <p>Note: Connect the DC power of main circuit after changing the parameter.</p>			
<Check regenerative capacity>			
<ul style="list-style-type: none"> The built-in regenerative resistance capacities of Σ-II Series and Σ-7 Series are different. Addition of an external regenerative resistor may be required depending on the operating conditions. 			
<Operation of dynamic brake (DB)>			
<ul style="list-style-type: none"> The DB circuit specifications of Σ-II Series and Σ-7 Series are different. Therefore, the operations are different in DB. If the change in speed or coasting distance until stop affects the device, contact our Applications Technology Department. 			

Classification	Item	Check point	Check
Servo Pack (software)	Software	<p><Check presence/absence of dedicated software ></p> <ul style="list-style-type: none"> • Please verify if the software of the SERVOPACK being used is a standard software, from the version number. If it is not clear if the software is a standard version or not, please check the version number with our company. • You can verify if the software version is auxiliary function Fn012 of Handy Type digital operator or built-in panel operator, by using the product information reading function of PC software SigmaWin+ for support. 	
	Constant	<p><Check user constant></p> <ul style="list-style-type: none"> • Check the user constant of the SERVOPACK being used. • The setting of Σ-7 Servo tuning parameter at the time of shipping is “activate tuning-less function” (Pn170.0=1). To perform Servo tuning, change to “inactivate tuning-less function” (Pn170.0=0). 	
	Others	<ul style="list-style-type: none"> • In Σ-II Series, the method to stop motor when alarm occurs is to stop DB or stop free-run. However, in Σ-7 Series, the method to stop is to stop DB in the case of Gr.1 alarm, and zero-speed stop in the case of Gr.2 alarm. The method to stop motor when alarm occurs can be changed by parameter Pn001, Pn00A and Pn00B. 	
Others	Peripheral equipment	<p><Check Digital Operator></p> <ul style="list-style-type: none"> • The Digital Operators for Σ-II and Σ-7 are different. To use a Digital Operator, please purchase a new one. 	
		<p><Check PC connection cable></p> <ul style="list-style-type: none"> • The PC connection cables for Σ-II and Σ-7 are different. To use SigmaWin+, please purchase a new one. 	

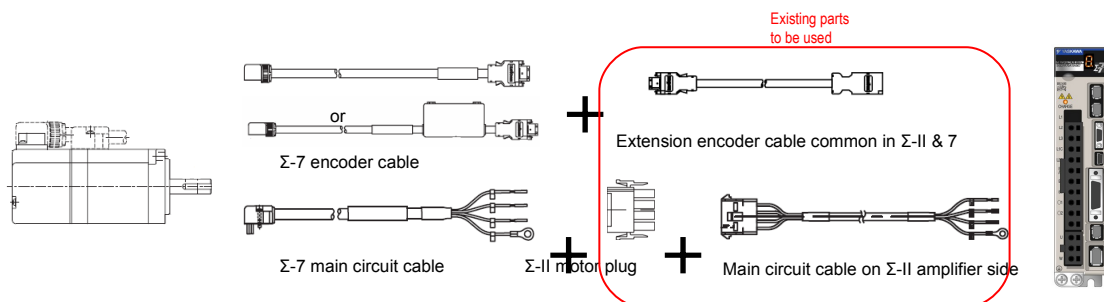
1.4. Concept of replacement

The method for replacing the currently used Σ -II Series Servo Motor /SERVOPACK with the Σ -7 Series is as follows.



●Pattern 1
Replace the Motor, SERVOPACK and cables with Σ -7 Series.

●Pattern 2
Replace only motor and SERVOPACK. Use the existing cable of Σ -II as far as possible. This pattern is to be used when it is difficult to remove the existing Σ -II cable.



The shapes of motor connectors are different. So, the cable of Σ -7 has to be used in motor. Σ -II cable is used as extension cable.

1.5. List of replacements

AC100V, AC400V and DC power input are not yet released. They are scheduled to be released in sequence.

Replacement of SGMAH (for200V) with SGM7A

Model used Σ -II Series		Replacement model Σ -7 Series		Replacement method		Precautions
SERVOPACK	Servo Motor	SERVOPACK	Servo Motor	Pattern 1	Pattern 2	
SGDM-A3ADA SGDH-A3AE alone SGDJ-A3A* SGDH-A3AE +JUSP-NS1**	SGMAH-A3A	SGD7S-R70A00A SGD7W-1R6A00A SGD7S-R70A10A SGD7W-1R6A10A	SGM7A-A5A	○	○	<ul style="list-style-type: none"> • Use 50W as there is no setting for 30W. • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 10 mm longer than SGDM/SGDH and 20mm longer than SGDJ. • Motor Shaft diameter will be changed from $\phi 6$ to $\phi 8$ [mm].
SGDM-A5ADA SGDH-A5AE alone SGDJ-A5A* SGDH-A5AE +JUSP-NS1**	SGMAH-A5A	SGD7S-R70A00A SGD7W-1R6A00A SGD7S-R70A10A SGD7W-1R6A10A	SGM7A-A5A	○	○	<ul style="list-style-type: none"> • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 10 mm longer than SGDM/SGDH and 20mm longer than SGDJ. • Motor Shaft diameter will be changed from $\phi 6$ to $\phi 8$ [mm].
SGDM-01ADA SGDH-01AE alone SGDJ-01A* SGDH-01AE +JUSP-NS1**	SGMAH-01A	SGD7S-R90A00A SGD7W-1R6A00A SGD7S-R90A10A SGD7W-1R6A10A	SGM7A-01A	○	○	<ul style="list-style-type: none"> • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 10 mm longer than SGDM/SGDH and 20mm longer than SGDJ. • The condenser capacity of main circuit is different. Please investigate the regenerative capacity again.
SGDM-02ADA SGDH-02AE alone SGDJ-02A* SGDH-02AE +JUSP-NS1**	SGMAH-02A	SGD7S-1R6A00A SGD7W-1R6A00A SGD7S-1R6A10A SGD7W-1R6A10A	SGM7A-02A	○	○	<ul style="list-style-type: none"> • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 10 mm longer than SGDM/SGDH and 20mm longer than SGDJ. • The condenser capacity of main circuit is different. Please investigate the regenerative capacity again.

SGDM-04ADA	SGMAH-04A	SGD7S-2R8A00A	SGM7A-04A	○	○	<ul style="list-style-type: none"> • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 40 mm longer than SGDM/SGDH and 50mm longer than SGDJ. • The condenser capacity of main circuit is different. Please investigate the regenerative capacity again.
SGDH-04AE		SGD7W-2R8A00A				
alone		SGD7S-2R8A10A				
SGDJ-04A*		SGD7W-2R8A10A				
SGDH-04AE						
+JUSP-NS1**						
SGDM-08ADA	SGMAH-08A	SGD7S-5R5A00A	SGM7A-08A	○	○	<ul style="list-style-type: none"> • Motor Shaft diameter is changed from $\phi 16$ to $\phi 19$ [mm]. • The condenser capacity of main circuit is different. Please investigate the regenerative capacity again.
SGDH-08AE		SGD7W-5R5A00A				
alone		SGD7S-5R5A10A				
SGDH-08AE		SGD7W-5R5A10A				
SGDH-08AE						
+JUSP-NS1**						

Replacement of SGMAH (for200V) with SGM7J

Model used Σ -II Series		Replacement model Σ -7 Series		Replacement method		Precautions
SERVOPACK	Servo Motor	SERVOPACK	Servo Motor	Pattern 1	Pattern 2	
SGDM-A3ADA SGDH-A3AE alone SGDJ-A3A* SGDH-A3AE +JUSP-NS1**	SGMAH-A3A	SGD7S-R70A00A SGD7W-1R6A00A SGD7S-R70A10A SGD7W-1R6A10A	SGM7J-A5A	○	○	<ul style="list-style-type: none"> • Use 50W as there is no setting for 30W. • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 10 mm longer than SGDM/SGDH and 20mm longer than SGDJ. • Motor Shaft diameter will be changed from $\phi 6$ to $\phi 8$ [mm].
SGDM-A5ADA SGDH-A5AE alone SGDJ-A5A* SGDH-A5AE +JUSP-NS1**	SGMAH-A5A	SGD7S-R70A00A SGD7W-1R6A00A SGD7S-R70A10A SGD7W-1R6A10A	SGM7J-A5A	○	○	<ul style="list-style-type: none"> • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 10 mm longer than SGDM/SGDH and 20mm longer than SGDJ. • Motor Shaft diameter will be changed from $\phi 6$ to $\phi 8$ [mm]. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-01ADA SGDH-01AE alone SGDJ-01A* SGDH-01AE +JUSP-NS1**	SGMAH-01A	SGD7S-R90A00A SGD7W-1R6A00A SGD7S-R90A10A SGD7W-1R6A10A	SGM7J-01A	○	○	<ul style="list-style-type: none"> • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 10 mm longer than SGDM/SGDH and 20mm longer than SGDJ. • The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-02ADA SGDH-02AE alone SGDJ-02A* SGDH-02AE +JUSP-NS1**	SGMAH-02A	SGD7S-1R6A00A SGD7W-1R6A00A SGD7S-1R6A10A SGD7W-1R6A10A	SGM7J-02A	○	○	<ul style="list-style-type: none"> • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 10 mm longer than SGDM/SGDH and 20mm longer than SGDJ. • The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.

SGDM-04ADA	SGMAH-04A	SGD7S-2R8A00A	SGM7J-04A	○	○	<ul style="list-style-type: none"> • The depth (D) of SERVOPACK of single-shaft type (SGD7S) is 40 mm longer than SGDM/SGDH and 50mm longer than SGDJ. • The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDH-04AE		SGD7W-2R8A00A				
alone		SGD7S-2R8A10A				
SGDJ-04A*		SGD7W-2R8A10A				
SGDH-04AE						
+JUSP-NS1**						
SGDM-08ADA	SGMAH-08A	SGD7S-5R5A00A	SGM7J-08A	○	○	<ul style="list-style-type: none"> • Motor Shaft diameter is changed from $\phi 16$ to $\phi 19$ [mm]. • The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDH-08AE		SGD7W-5R5A00A				
alone		SGD7S-5R5A10A				
SGDH-08AE		SGD7W-5R5A10A				
+JUSP-NS1**						

Replacement of SGMPH (for200V) with SGM7P

Model used Σ -II Series		Replacement model Σ -7 Series		Replacement method		Precautions
SERVOPACK	Servo Motor	SERVOPACK	Servo Motor	Pattern 1	Pattern 2	
SGDM-01ADA SGDH-01AE alone SGDJ-01A* SGDH-01AE +JUSP-NS1**	SGMPH-01A	SGD7S-R90A00A SGD7W-1R6A00A SGD7S-R90A10A SGD7W-1R6A10A	SGM7P-01A	○	○	※ SGM7P-type is not released. Planned release in 2014.
SGDM-02ADA SGDH-02BE alone SGDJ-02A* SGDH-02AE +JUSP-NS1**	SGMPH-02A	SGD7S-1R6A00A SGD7W-1R6A00A SGD7S-1R6A10A SGD7W-1R6A10A	SGM7P-02A	○	○	
SGDM-04ADA SGDH-04AE alone SGDJ-04A* SGDH-04AE +JUSP-NS1**	SGMPH-04A	SGD7S-2R8A00A SGD7W-2R8A00A SGD7S-2R8A10A SGD7W-2R8A10A	SGM7P-04A	○	○	
SGDM-08ADA SGDH-08AE alone SGDH-08AE +JUSP-NS1**	SGMPH-08A	SGD7S-5R5A00A SGD7W-5R5A00A SGD7S-5R5A10A SGD7W-5R5A10A	SGM7P-08A	○	○	
SGDM-15ADA SGDH-15AE alone SGDH-15AE +JUSP-NS1**	SGMPH-15A	SGD7S-120A00A SGD7S-120A10A	SGM7P-15A	○	○	

Replacement of SGMPH (for200V) with SGM7J

Model used Σ -II Series		Replacement model Σ -7 Series		Replacement method		Precautions
SERVOPACK	Servo Motor	SERVOPACK	Servo Motor	Pattern 1	Pattern 2	
SGDM-01ADA SGDH-01AE alone SGDJ-01A* SGDH-01AE +JUSP-NS1**	SGMPH-01A	SGD7S-R90A00A SGD7W-1R6A00A SGD7S-R90A10A SGD7W-1R6A10A	SGM7J-01A	○	○	<ul style="list-style-type: none"> External dimension of motor is different. The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-02ADA SGDH-02BE alone SGDJ-02A* SGDH-02AE +JUSP-NS1**	SGMPH-02A	SGD7S-1R6A00A SGD7W-1R6A00A SGD7S-1R6A10A SGD7W-1R6A10A	SGM7J-02A	○	○	<ul style="list-style-type: none"> External dimension of motor is different. The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-04ADA SGDH-04AE alone SGDJ-04A* SGDH-04AE +JUSP-NS1**	SGMPH-04A	SGD7S-2R8A00A SGD7W-2R8A00A SGD7S-2R8A10A SGD7W-2R8A10A	SGM7J-04A	○	○	<ul style="list-style-type: none"> External dimension of motor is different. The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-08ADA SGDH-08AE alone SGDH-08AE +JUSP-NS1**	SGMPH-08A	SGD7S-5R5A00A SGD7W-5R5A00A SGD7S-5R5A10A SGD7W-5R5A10A	SGM7J-08A	○	○	<ul style="list-style-type: none"> External dimension of motor is different. The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-15ADA SGDH-15AE alone SGDH-15AE +JUSP-NS1**	SGMPH-15A	- -	-	-	-	<p>※SGM7J-type has up to 850w variant in the product lineup. 1.5kW SGMPH cannot be replaced with SGM7J.</p>

Replacement of SGMSH (for200V) with SGM7A

Model used Σ -II Series		Replacement model Σ -7 Series		Replacement method		Precautions
SERVOPACK	Servo Motor	SERVOPACK	Servo Motor	Pattern 1	Pattern 2	
SGDM-10ADA SGDH-10AE alone SGDH-10AE +JUSP-NS1**	SGMSH-10A	SGD7S-120A00A SGD7S-120A10A	SGM7A-10A	○	×	<ul style="list-style-type: none"> The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-15ADA SGDH-15AE alone SGDH-15AE +JUSP-NS1**	SGMSH-15A	SGD7S-120A00A SGD7S-120A10A	SGM7A-15A	○	×	<ul style="list-style-type: none"> The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-20ADA SGDH-20AE alone SGDH-20AE +JUSP-NS1**	SGMSH-20A	SGD7S-180A00A SGD7S-180A10A	SGM7A-20A	○	×	<ul style="list-style-type: none"> The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-30ADA SGDH-30AE alone SGDH-30AE +JUSP-NS1**	SGMSH-30A	SGD7S-200A00A SGD7S-200A10A	SGM7A-30A	○	×	<ul style="list-style-type: none"> The condenser capacity of main circuit is different. Please investigate the regenerative capacity again. Inertia moment ratio will be greater. Perform servo tuning again.
SGDM-40ADA SGDH-40AE alone SGDH-40AE +JUSP-NS1**	SGMSH-40A	- -	-	-	-	※Model with more than 3.0kW capacity is not yet released. They are scheduled to be released in sequence.
SGDM-50ADA SGDH-50AE alone SGDH-50AE +JUSP-NS1**	SGMSH-50A	- -	-	-	-	

Replacement of SGMGH (1500min⁻¹) with SGM7G

Model used Σ -II Series		Replacement model Σ -7 Series		Replacement method		Precautions
SERVOPACK	Servo Motor	SERVOPACK	Servo Motor	Pattern 1	Pattern 2	
SGDM-05ADA SGDH-05AE alone	SGMGH-05A□A	SGD7S-3R8A00A SGD7W-5R5A00A	SGM7G-05A	○	×	<ul style="list-style-type: none"> • Motor Shaft diameter will be changed from ϕ19 to ϕ16 [mm]. • Flange angle will be changed from \square130 to \square90 [mm]. • The main circuit condenser capacity and regenerative resistance capacity are different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDH-05AE +JUSP-NS1**		SGD7S-3R8A10A SGD7W-5R5A10A				
SGDM-10ADA SGDH-10AE alone	SGMGH-09A□A	SGD7S-7R6A00A	SGM7G-09A	○	×	<ul style="list-style-type: none"> • Motor Shaft diameter will be changed from ϕ19 to ϕ24 [mm]. • Regenerative resistance capacity is different. Please investigate the regenerative capacity again.
SGDH-10AE +JUSP-NS1**		SGD7S-7R6A10A				
SGDM-15ADA SGDH-15AE alone	SGMGH-13A□A	SGD7S-120A00A	SGM7G-13A	○	×	<ul style="list-style-type: none"> • Motor Shaft diameter will be changed from ϕ22 to ϕ24 [mm]. • Regenerative resistance capacity is different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDH-15AE +JUSP-NS1**		SGD7S-120A10A				
SGDM-20ADA SGDH-20AE alone	SGMGH-20A□A	SGD7S-180A00A	SGM7G-20A	○	×	<ul style="list-style-type: none"> • Motor Shaft diameter will be changed from ϕ35 to ϕ24 [mm]. • Flange angle will be changed from \square180 to \square130 [mm]. • Regenerative resistance capacity is different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDH-20AE +JUSP-NS1**		SGD7S-180A10A				
SGDM-30ADA SGDH-30AE alone	SGMGH-30A□A	-	-	-	-	<ul style="list-style-type: none"> ※ Model with more than 3.0kW capacity is not yet released. Scheduled to be released in sequence.
SGDH-30AE +JUSP-NS1**		-				
SGDM-50ADA SGDH-50AE alone	SGMGH-44A□A	-	-	-	-	
SGDH-50AE +JUSP-NS1**		-				
SGDM-60ADA SGDH-60AE alone	SGMGH-55A□A	-	-	-	-	
SGDH-60AE +JUSP-NS1**		-				
SGDM-75ADA SGDH-75AE alone	SGMGH-75A□A	-	-	-	-	
SGDH-75AE +JUSP-NS1**		-				
SGDM-1AADA SGDH-1AAE alone	SGMGH-1AA□A	-	-	-	-	
SGDH-1AAE +JUSP-NS1**		-				
SGDM-1EADA SGDH-1EAE alone	SGMGH-1EA□A	-	-	-	-	
SGDH-1EAE +JUSP-NS1**		-				

Replacement of SGMGH (1000min⁻¹) with SGM7G

Model used Σ -II Series		Replacement model Σ -7 Series		Replacement method		Precautions
SERVOPACK	Servo Motor	SERVOPACK	Servo Motor	Pattern 1	Pattern 2	
SGDM-05ADA SGDH-05AE alone	SGMGH-03A□B	SGD7S-3R8A00A	SGM7G-05A	○	×	<ul style="list-style-type: none"> • Motor Shaft diameter will be changed from $\phi 19$ to $\phi 16$ [mm]. • Flange angle will be changed from $\square 130$ to $\square 90$ [mm]. • The main circuit condenser capacity and regenerative resistance capacity are different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDH-05AE +JUSP-NS1**		SGD7S-3R8A10A SGD7W-5R5A00A				
SGDM-08ADA SGDH-08AE alone	SGMGH-06A□B	SGD7S-7R6A00A	SGM7G-09A	○	×	<ul style="list-style-type: none"> • Motor Shaft diameter will be changed from $\phi 19$ to $\phi 24$ [mm]. • Rated torque will slightly decrease from 5.68 to 5.39 [N·m]. Caution should be taken while using when the load factor is high. • Regenerative resistance capacity is different. Please investigate the regenerative capacity again.
SGDH-08AE +JUSP-NS1**		SGD7S-7R6A10A				
SGDM-10ADA SGDH-10AE alone	SGMGH-09A□B	SGD7S-120A00A	SGM7G-13A	○	×	<ul style="list-style-type: none"> • Motor Shaft diameter will be changed from $\phi 22$ to $\phi 24$ [mm]. • Rated torque will slightly decrease from 8.62 to 8.34 [N·m]. Caution should be taken while using when the load factor is high. • Regenerative resistance capacity is different. Please investigate the regenerative capacity again. • Inertia moment ratio will be greater. Perform servo tuning again.
SGDH-10AE +JUSP-NS1**		SGD7S-120A10A				

SGDM-15ADA	SGMGH-12A□B	SGD7S-180A00A	SGMGV-20A	○	×	<ul style="list-style-type: none"> - Motor Shaft diameter will be changed from $\phi 35$ to $\phi 24$ [mm]. - Flange angle will be changed from $\square 180$ to $\square 130$ [mm]. - Height (H) of SERVOPACK will increase by 20 mm. - Rated torque will slightly decrease from 8.62 to 8.34 [N·m]. Caution should be taken while using when the load factor is high. - Regenerative resistance capacity is different. Please investigate the regenerative capacity again. - Inertia moment ratio will be greater. Perform servo tuning again.
SGDH-15AE alone		SGD7S-180A10A				
SGDH-15AE +JUSP-NS1**						

Replacement of SGMGH (1000min⁻¹) with SGM7G (Continued)

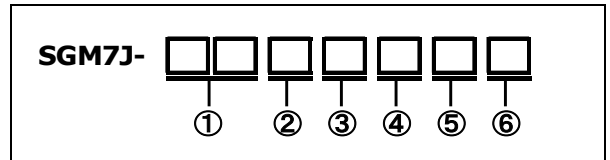
Model used Σ -II Series		Replacement model Σ -7 Series		Replacement method		Precautions
SERVOPACK	Servo Motor	SERVOPACK	Servo Motor	Pattern 1	Pattern 2	
SGDM-20ADA	SGMGH-20A□B	-	-	-	-	※ Model with more than 3.0kW capacity is not yet released. Scheduled to be released in sequence.
SGDH-20AE alone		-				
SGDH-20AE						
+JUSP-NS1**						
SGDM-30ADA	SGMGH-30A□B	-	-	-	-	
SGDH-30AE alone		-				
SGDH-30AE						
+JUSP-NS1**						
SGDM-50ADA	SGMGH-40A□B	-	-	-	-	
SGDH-50AE alone		-				
SGDH-50AE						
+JUSP-NS1**						
SGDM-60ADA	SGMGH-55A□B	-	-	-	-	
SGDH-60AE alone		-				
SGDH-60AE						
+JUSP-NS1**						

2. Motor

2.1. Model compatibility table

1 Without speed reducer

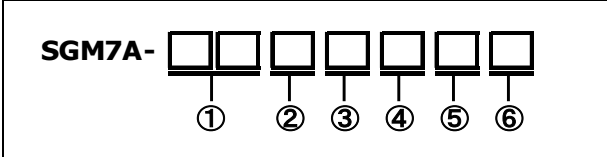
Table for comparison of SGM7J and SGM7J (Without speed reducer)



Series / model name		Σ-II	Σ-7	Supplement
		SGMAH-	SGM7J-	
Motor specifications (By type)				
Capacity ①	30W	A3	-	There is no setting for 30W in Σ-7. Use 50W.
	50W	A5	A5	
	100W	01	01	
	150W	-	C2	
	200W	02	02	
	400W	04	04	
	600W	-	06	
	650W	07	-	Replace with 600W or 750W according to usage status (load factor, torque, etc.)
750W	08	08		
Power specifications ②	AC200V	A	A	
Serial encoder ③	13bit incremental	A	-	Use 24bit incremental type.
	16bit absolute value	1	-	Use 24bit absolute value.
	16bit absolute value (with supercomputer)	4	-	Use 24bit absolute value. There is no model with super computer. Therefore, use the cable with battery.
	16bit incremental	B	-	Use 24bit incremental type.
	24bit absolute value	-	7	
	24bit incremental	-	F	
Design rank ④	Standard	A	A	
Shaft end specifications ⑤	Straight, without key	2	2	
	Straight, with key	4	-	Use the model which is straight, and has key and tap.
	Straight, with key, with tap	6	6	
	Straight, with tap	8	-	Use the model which is straight, and has key and tap.
	With 2-face flat seat	-	B	

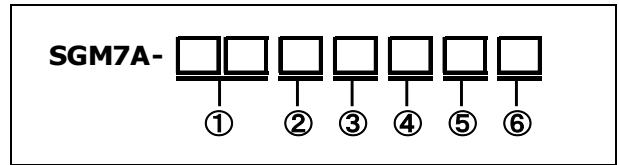
Option ⑥	No option	1	1	If there is no option, set as "1". Do not leave blank.
	With holding brake (DC90V)	B	-	There is no 90V brake. Use 24V brake.
	With holding brake (DC24V)	C	C	
	With oil seal, With holding brake (DC90V)	D	-	There is no 90V brake. Use 24V brake.
	With oil seal, With holding brake (DC24V)	E	E	
	With oil seal	S	S	

Comparison of **SGMAH & SGM7A** (Without speed reducer)



Series / model name		Σ-II		Σ-7	Supplement
		SGMAH-	SGM7A-	SGM7A-	
Motor specifications (By type)					
① Capacity	30W	A3	-	-	There is no setting for 30W. Use 50W.
	50W	A5	-	A5	
	100W	01	-	01	
	150W	-		C2	
	200W	02	-	02	
	400W	04	-	04	
	600W	-		06	
	650W	07	-	-	Replace with 600W or 750W according to usage status (load factor, torque, etc.)
	750W	08	-	08	
	1.0kW	-	10	10	
	1.5kW	-	15	15	
	2.0kW	-	20	20	
	2.5kW	-	-	25	
	3.0kW	-	30	30	
4.0kW	-	40	-	Capacity above 3.0kW will be supported later.	
5.0kW	-	50	-		
② Power specifications	AC200V	A		A	
③ Serial encoder	13bit incremental	A	-	-	Use 24bit incremental type.
	16bit absolute value	1	-	-	Use 24bit absolute value.
	16bit absolute value (with supercomputer)	4	-	-	Use 24bit absolute value. There is no model with super computer. Use the cable with battery.
	16bit incremental	B	-	-	Use 24bit incremental type.
	17bit absolute value	-	2	-	Use 24bit absolute value.
	17bit incremental	-	C	-	Use 24bit incremental type.
	24bit absolute value	-		7	
	24bit incremental	-		F	
④ Design rank	Standard	A		A	
⑤ Shaft end specifications	Straight, without key	2		2	
	Taper1/10, with parallel key	-	3	-	There is no setting for taper type. Use the straight type.
	Straight, with key	4	-	-	Use the model which is straight, and has key and tap
	Straight, with key, with tap	6		6	
	Straight, with tap	8	-	-	Use the model which is straight, and has key and tap
	With 2-face flat seat	-		B	Model with a capacity of 1.5kW or above is not supported

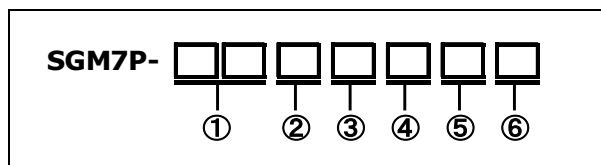
Table for comparison between SGMAH & SGMSH with SGM7A (Without speed reducer) (Continued)



Series / model name		Σ-II		Σ-7	Supplement
		SGMAH-	SGMSH-	SGM7A-	
Motor specifications (By type)					
Option	No option	1		1	If there is no option, set as "1". Do not leave blank.
⑥	With holding brake (DC90V)	B		-	There is no 90V brake. Use 24V brake.
	With holding brake (DC24V)	C		C	
	With oil seal, With holding brake (DC90V)	D		-	There is no 90V brake. Use 24V brake.
	With oil seal, With holding brake (DC24V)	E		E	
	With oil seal	S		S	

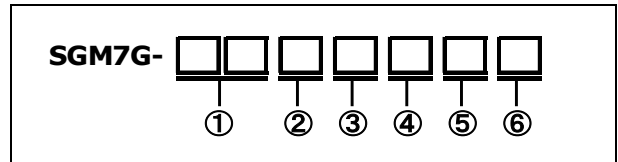
Table for comparison between **SGMPH** and **SGM7P** (Without speed reducer)

SGM7P-type is not yet released. Planned release in 2014.



Series / model name		Σ-II	Σ-7	Supplement
		SGMPH-	SGM7P-	
Motor specifications (By type)				
Capacity ①	100W	01	01	
	200W	02	02	
	400W	04	04	
	750W	08	08	
	1.5kW	15	15	
Power specifications ②	AC200V	A	A	
Serial encoder ③	13bit incremental	A	-	Use 24bit incremental type.
	16bit absolute value	1	-	Use 24bit absolute value.
	16bit absolute value (with supercomputer)	4	-	Use 24bit absolute value. There is no model with super computer. Therefore, use the cable with battery.
	16bit incremental	B	-	Use 24bit incremental type.
	24bit absolute value	-	7	
	24bit incremental	-	F	
Design rank ④	Standard	A	A	
	Water-proofing specifications	E	-	Σ-7 motor adopts IP67 specifications as a standard (excluding the shaft penetration part). Use without change.
Shaft end specifications ⑤	Straight, without key	2	2	
	Straight, with key	4	-	Use the model which is straight, and has key and tap.
	Straight, with key, with tap	6	6	
	Straight, with tap	8	-	Use the model which is straight, and has key and tap.
Option ⑥	No option	1	1	If there is no option, set as "1". Do not leave blank.
	With holding brake (DC90V)	B	-	There is no 90V brake. Use 24V brake.
	With holding brake (DC24V)	C	C	
	With oil seal, With holding brake (DC90V)	D	-	There is no 90V brake. Use 24V brake.
	With oil seal, With holding brake (DC24V)	E	E	
	With oil seal	S	S	

Table for comparison between **SGMGH** and **SGM7G** (Without speed reducer)

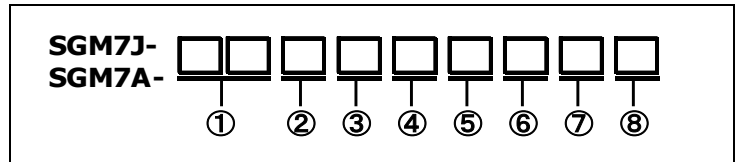


Series / model name		Σ-II		Σ-7	Supplement
		SGMGH- (1500min ⁻¹)	SGMSH- 1000min ⁻¹)	SGM7A-	
Capacity	300W	-	03	03	<p>If SGMGH with a rated speed of 1000min⁻¹ is being used, use the 1500min⁻¹ model as there is no model with rated speed 1000min⁻¹ in SGM7G.</p> <p>Please note that the specifications such as rated torque will be different in this case.</p> <p>2.0kW or more capacity will be supported later.</p>
①	450W	05	-	05	
	600W	-	06	-	
	850W	09	-	09	
	1.2kW	-	12	-	
	1.3kW	13	-	13	
	1.8kW	18	-	20	
	2.0kW	-	20	-	
	2.9kW	30	-	-	
	3.0kW	-	30	-	
	4.0kW	-	40	-	
	4.4kW	44	-	-	
	5.5kW	55		-	
	7.5kW	75	-	-	
		1A	-	-	
5.0kW	1E	-	-		
Power specifications	AC200V	A		A	
Serial encoder	17bit absolute value	1		-	Use 24bit absolute value.
	17bit incremental	C		-	Use 24bit incremental type.
	24bit absolute value	-		7	
	24bit incremental	-		F	
Design rank	Standard	A	B	A	If SGMGH with a rated speed of 1000min ⁻¹ is being used, use the 1500min ⁻¹ model as there is no model with rated speed 1000min ⁻¹ in SGM7G.
	For high-precision machinery	C	D	-	There is no setting for high-precision machinery in SGM7G. Use the standard specifications.
Shaft end specifications	Straight, without key	2		2	There is no setting for taper type. Use the straight type.
	Taper1/10, with parallel key	3		-	
	Taper1/10, woodruff key	5		-	
	Straight, with key, with tap	6		6	

Option	No option	1	1	If there is no option, set as "1". Do not leave blank.
⑥	With holding brake (DC90V)	B	-	There is no 90V brake. Use 24V brake.
	With holding brake (DC24V)	C	C	
	With oil seal, With holding brake (DC90V)	D	-	There is no 90V brake. Use 24V brake.
	With oil seal, With holding brake (DC24V)	E	E	
	With oil seal	S	S	

2 With speed reducer

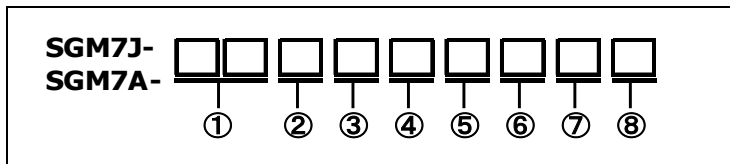
Table for comparison between **SGMAH & SGMSH** with **SGM7J & SGM7A** (with speed reducer)



Series / model name		Σ-II		Σ-7		Supplement
		SGMAH-	SGMSH-	SGM7J-	SGM7A-	
Motor specifications (By type)						
① Capacity	30W	A3	-	-	-	There is no setting for 30W. Use 50W.
	50W	A5	-	A5	A5	
	100W	01	-	01	01	
	150W	-	-	C2	C2	
	200W	02	-	02	02	
	400W	04	-	04	04	
	600W	-	-	06	06	
	650W	07	-	-	-	
	750W	08	-	08	08	
	1.0kW	-	10	-	10	
	1.5kW	-	15	-	-	SGM7A with speed reducer having a capacity of 1.5kW or more will be estimated.
	2.0kW	-	20	-	-	
	3.0kW	-	30	-	-	
4.0kW	-	40	-	-		
5.0kW	-	50	-	-	-	
② Power specifications	AC200V	A		A		
③ Serial encoder	13bit incremental	A	-	-	-	Use 24bit incremental type.
	16bit absolute value	1	-	-	-	Use 24bit absolute value.
	16bit absolute value (with supercomputer)	4	-	-	-	Use 24bit absolute value. There is no model with super computer. Therefore, use the cable with battery.
	16bit incremental	B	-	-	-	Use 24bit incremental type.
	17bit absolute value	-	2	-	-	Use 24bit absolute value.
	17bit incremental	-	C	-	-	Use 24bit incremental type.
	24bit absolute value	-	-	-	7	
	24bit incremental	-	-	-	F	
④ Design rank	Standard	A		A		
⑤ Speed reducer specifications	Precision speed reducer	G	-	H		
	Precision speed reducer	H	-			
	General speed reducer	J	-	-		There is no general speed reducer. Please use precision speed reducer.
	Precision speed reducer IMT planetary (flange mounting type)	-	L	-		Please use a precision speed reducer which is straight, and has key and tap.

Speed reducing ratio ⑥	1/5	1		1	
	1/9	2		2	Only 50W is supported.
	3/31	3	-	-	Only general speed reducer.
	1/11	B	-	B	50W is not supported.
	1/20	-	5	-	
	1/21	C	-	C	
	1/29	-	7	-	
	1/33	7	-	7	
	1/45	-	8	-	

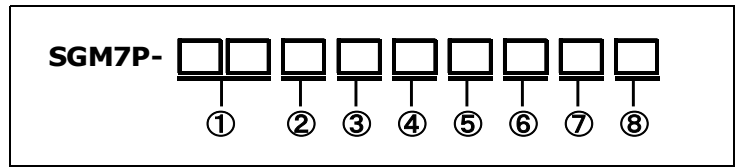
Table of comparison between **SGMAH & SGMSH** and **SGM7J & SGM7A** (with speed reducer) (Continued)



Series / model name		Σ-II		Σ-7		Supplement
		SGMAH-	SGMSH-	SGM7J-	SGM7A-	
Motor specifications (By type)						
Shaft end specifications ⑦	Flange output	0		0		
	Straight, without key	2		2		
	Straight, with key	4		-		
	Straight, with key, with tap	6		6		
	Straight, with tap	8		-		
Option ⑧	No option	1		1		If there is no option, set as "1". Do not leave blank.
	With holding brake (DC90V)	B		-		There is no 90V brake. Use 24V brake.
	With holding brake (DC24V)	C		C		

Table for comparison between **SGMPH** and **SGM7P** (with speed reducer)

SGM7P-type is not yet released. Planned release in 2014.



Series / model name		Σ-II	Σ-7	Supplement
		SGMPH-	SGM7P-	
Motor specifications (By type)				
Capacity ①	100W	01	01	
	200W	02	02	
	400W	04	04	
	750W	08	08	
	1.5kW	15	15	
Power specifications ②	AC200V	A	A	
Serial encoder ③	13bit incremental	A	-	Use 24bit incremental type.
	16bit absolute value	1	-	Use 24bit absolute value.
	16bit absolute value (with supercomputer)	4	-	Use 24bit absolute value. There is no model with super computer. Therefore, use the cable with battery.
	16bit incremental	B	-	Use 24bit incremental type.
	24bit absolute value	-	7	
	24bit incremental	-	F	
Design rank ④	Standard	A	A	
	Water-proofing specifications	E	-	Σ-7 motor adopts IP67 specifications as a standard. Use without change.
Speed reducer specifications ⑤	Precision speed reducer	G	H	
	Precision speed reducer	H		
	General speed reducer	J	-	There is no general speed reducer. Please use precision speed reducer.
Speed reducing ratio ⑥	1/5	1	1	
	3/31	3	-	Setting for only general speed reducer is available.
	1/11	B	B	
	1/21	C	C	
Shaft end specifications ⑦	Without shaft (flange output)	0	0	
	Straight, without key	2	2	
	Straight, with key	4	-	Use the model which is straight, and has key and tap.
	Straight, with key, with tap	6	6	
	Straight , with tap	8	-	Use the model which is straight, and has key and tap.
Option ⑧	No option	1	1	If there is no option, set as "1". Do not leave blank.
	With holding brake (DC90V)	B	-	There is no 90V brake. Use 24V brake.
	With holding brake (DC24V)	C	C	

Table for comparison between **SGMGH** and **SGM7G** (with speed reducer)

Values for **SGM7G** model with speed reducer will be estimated.

2.2. Characteristics table

(1) Without speed reducer

Comparison between **SGMAH** and **SGM7J** (Hatching is shown for the parts which differ from Σ -II)

Motor capacity	Model Σ -II : SGMAH- Σ -7: SGM7J-	Motor characteristics					
		Rated torque		Max. momentary torque		Rotor inertia moment	
		[N·m]		[N·m]		[$\times 10^{-4}$ kg·m ²]	
		Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7
30W	A3A	0.0955	-	0.286	-	0.0166 (0.0251)	-
50W	A5A	0.159	0.159	0.477	0.557	0.0220 (0.0305)	0.0395 (0.0475)
100W	01A	0.318	0.318	0.955	1.11	0.0364 (0.0449)	0.0659 (0.0739)
150W	C2A	-	0.477	-	1.67	-	0.0915 (0.0995)
200W	02A	0.637	0.637	1.91	2.23	0.106 (0.164)	0.263 (0.333)
400W	04A	1.27	1.27	3.82	4.46	0.173 (0.231)	0.486 (0.556)
600W	06A	-	1.91	-	6.69	-	0.8 (0.87)
750W	08A	2.39	2.39	7.16	8.36	0.672 (0.812)	1.59 (1.77)

Numerical value within parentheses pertains to Servo Motor with holding brake.

Comparison between **SGMAH** and **SGM7A** (Hatching is shown for the parts which differ from Σ -II)

Motor capacity	Model Σ -II : SGMAH- Σ -7: SGM7A-	Motor characteristics					
		Rated torque		Max. momentary torque		Rotor inertia moment	
		[N·m]		[N·m]		[$\times 10^{-4}$ kg·m ²]	
		Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7
30W	A3A	0.0955	-	0.286	-	0.0166 (0.0251)	-
50W	A5A	0.159	0.159	0.477	0.557	0.0220 (0.0305)	0.0217 (0.0297)
100W	01A	0.318	0.318	0.955	1.11	0.0364	0.0337

						(0.0449)	(0.0417)
150W	C2A	-	0.477	-	1.67	-	0.0458
							(0.0538)
200W	02A	0.637	0.637	1.91	2.23	0.106	0.139
						(0.164)	(0.209)
400W	04A	1.27	1.27	3.82	4.46	0.173	0.216
						(0.231)	(0.286)
600W	06A	-	1.91	-	6.69	-	0.315
							(0.385)
750W	08A	2.39	2.39	7.16	8.36	0.672	0.775
						(0.812)	(1.15)

Numerical value within parentheses pertains to Servo Motor with holding brake.

Comparison between **SGMSH** and **SGM7A** (Hatching is shown for the parts which differ from Σ -II)

Motor capacity	Model Σ -II : SGMSH- Σ -7: SGM7A-	Motor characteristics					
		Rated torque		Max. momentary torque		Rotor inertia moment	
		[N·m]		[N·m]		[$\times 10^{-4}$ kg·m ²]	
		Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7
1.0kW	10A	3.18	3.18	9.54	11.1	1.74 (2.065)	0.971 (1.15)
1.5kW	15A	4.90	4.90	14.7	14.7	2.47 (2.795)	2.00 (2.25)
2.0kW	20A	6.36	6.36	19.1	19.1	3.19 (3.515)	2.47 (2.72)
2.5kW	25A	-	7.96	-	23.9	-	3.19 (3.44)
3.0kW	30A	9.80	9.80	29.4	29.4	7.00 (9.10)	7.00 (9.20)

Numerical value within parentheses pertains to Servo Motor with holding brake.

Comparison between **SGMPH** and **SGM7P** (Hatching is shown for the parts which differ from Σ -II)

Motor capacity	Model Σ -II : SGMPH- Σ -7: SGM7P-	Motor characteristics					
		Rated torque		Max. momentary torque		Rotor inertia moment	
		[N·m]		[N·m]		[$\times 10^{-4}$ kg·m ²]	
		Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7
100W	01A	0.318	0.318	0.955	0.955	0.0491 (0.0781)	0.0592 (0.0892)
200W	02A	0.637	0.637	1.91	1.91	0.193 (0.302)	0.263 (0.415)
400W	04A	1.27	1.27	3.82	3.82	0.331 (0.440)	0.409 (0.561)
750W	08A	2.39	2.39	7.16	7.16	2.10 (2.98)	2.10 (2.98)
1.5kW	15A	4.77	4.77	14.3	14.3	4.02 (4.90)	4.02 (4.90)

Numerical value within parentheses pertains to Servo Motor with holding brake.

Comparison between **SGMGH (1500min⁻¹)** and **SGM7G** (Hatching is shown for the parts which differ from Σ -II)

Motor capacity	Model Σ -II : SGMGH- Σ -7: SGM7G-	Motor characteristics					
		Rated torque		Max. momentary torque		Rotor inertia moment	
		[N·m]		[N·m]		[$\times 10^{-4}$ kg·m ²]	
		Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7
450W	05A	2.84	2.86	8.92	8.92	7.24 (9.34)	3.33 (3.58)
850W	02A	5.39	5.39	13.8	14.2	13.9 (16.0)	13.9 (16.0)
1.3kW	04A	8.34	8.34	23.3	23.3	20.5 (22.6)	19.9 (22.0)
1.8kW	15A	11.5	11.5	28.7	28.7	31.7 (40.2)	26.0 (28.1)

Numerical value within parentheses pertains to Servo Motor with holding brake.

Comparison between **SGMGH (1000min⁻¹)** and **SGM7G** (Hatching is shown for the parts which differ from Σ -II)

Please note that capacity will increase due to difference in rated torque.

Motor capacity	Model		Motor characteristics					
	Σ -II :	Σ -7:	Rated torque		Max. momentary torque		Rotor inertia moment	
	SGMGH	SGM7G	[N·m]		[N·m]		[$\times 10^{-4}$ kg·m ²]	
			Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7
300W	03A□B	05A	2.84	2.86	7.17	8.92	7.24 (9.34)	3.33 (3.58)
600W	06A□B	09A	5.68	5.39	14.1	14.2	13.9 (16.0)	13.9 (16.0)
900W	09A□B	13A	8.62	8.34	19.3	23.3	20.5 (22.6)	19.9 (22.0)
1.2kW	12A□B	20A	11.5	11.5	28.0	28.7	31.7 (40.2)	26.0 (28.1)

Numerical value within parentheses pertains to Servo Motor with holding brake.

2 With speed reducer

Comparison between **SGMAH (precision speed reducer)** and **SGM7J** (Hatching is shown for the parts which differ from Σ -II)

Motor capacity	Model	Speed reducing ratio	Motor characteristics					
			Rated torque / efficiency		Max. momentary torque		Motor + speed reducer inertia moment [$\times 10^{-4}$ kg·m ²]	
			[N·m / %]		[N·m]			
			Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7
30W	A3A	1/5	0.238 / 50	-	1.16	-	0.053	-
		1/9	0.599 / 70	-	2.35	-	0.029	-
		1/21	1.60 / 80	-	5.48	-	0.025	-
		1/33	2.51 / 80	-	8.61	-	0.023	-
50W	A5A	1/5	0.557 / 70	0.433 / 64	1.92	2.37	0.058	0.0455
		1/9	1.00 / 70	1.12 / 78	3.89	3.78	0.055	0.0425
		1/21	2.67 / 80	2.84 / 85	9.12	10.6	0.040	0.0435
		1/33	4.20 / 80	3.68 / 70	14.3	15.8	0.035	0.0845
100W	01A	1/5	1.27 / 80	1.06 / 78	4.34	4.96	0.114	0.0719
		1/11	2.80 / 80	2.52 / 72	9.55	10.7	0.084	0.126
		1/21	5.34 / 80	5.35 / 80	18.2	20.8	0.079	0.116
		1/33	8.40 / 80	7.35 / 70	28.7	32.7	0.069	0.131
150W	C2A	1/5	-	1.68 / 83	-	7.80	-	0.0975
		1/11	-	3.53 / 79	-	16.9	-	0.152
		1/21	-	6.30 / 70	-	31.0	-	0.202
		1/33	-	11.2 / 79	-	49.7	-	0.157
200W	02A	1/5	2.55 / 80	2.39 / 75	8.40	9.80	0.441	0.470
		1/11	5.96 / 85	5.74 / 82	19.3	22.1	0.191	0.456
		1/21	11.4 / 85	10.2 / 76	37.3	42.1	0.216	0.753
		1/33	17.9 / 85	17.0 / 81	58.6	67.6	0.171	0.713
400W	04A	1/5	5.40 / 85	5.35 / 84	17.6	20.1	0.508	0.693
		1/11	11.9 / 85	11.5 / 82	39.1	45.1	0.368	1.06
		1/21	22.7 / 85	23.0 / 86	72.2	87.0	0.368	0.976
		1/33	33.5 / 85	34.0 / 81	93.0	135	0.346	1.11
600W	06A	1/5	-	7.54 / 79	-	30.5	-	1.50
		1/11	-	18.1 / 86	-	68.6	-	1.37
		1/21	-	32.1 / 80	-	129	-	1.64
		1/33	-	53.6 / 85	-	206	-	1.42
750W	08A	1/5	10.2 / 85	10.0 / 84	33.3	38.4	1.25	2.25
		1/11	22.3 / 85	23.1 / 88	71.0	86.4	1.20	2.18
		1/21	42.7 / 85	42.1 / 84	140	163	1.26	4.59
		1/33	67.0 / 85	69.3 / 88	206	259	0.935	4.39

Comparison between **SGMAH** (general speed reducer) and **SGM7J** (Hatching is shown for the parts which differ from

Σ-II)

Motor capacity	Model	Speed reducing ratio	Motor characteristics					
			Rated torque / efficiency		Max. momentary torque		Motor + speed reducer inertia moment	
			[N·m / %]		[N·m]		[×10 ⁻⁴ kg·m ²]	
		Σ-II	Σ-7	Σ-II	Σ-7	Σ-II	Σ-7	
30W	A3A	1/5	0.238 / 50	-	1.16	-	0.044	-
		3/31	0.687 / 70	-	2.37	-	0.033	-
		1/21	1.60 / 80	-	5.48	-	0.023	-
		1/33	2.51 / 80	-	8.61	-	0.021	-
50W	A5A	1/5	0.557 / 70	0.433 / 64	1.92	2.37	0.050	0.0455
		1/9	-	1.12 / 78	-	3.78	-	0.0425
		3/31	1.15 / 70	-	3.95	-	0.040	-
		1/21	2.67 / 80	2.84 / 85	9.07	10.6	0.036	0.0435
		1/33	4.20 / 80	3.68 / 70	14.3	15.8	0.032	0.0845
100W	01A	1/5	1.27 / 80	1.06 / 78	4.32	4.96	0.099	0.0719
		3/31	2.63 / 80	-	8.88	-	0.054	-
		1/11	-	2.52 / 72	-	10.7	-	0.126
		1/21	5.34 / 80	5.35 / 80	18.1	20.8	0.071	0.116
		1/33	8.40 / 80	7.35 / 70	28.4	32.7	0.057	0.131
150W	C2A	1/5	-	1.68 / 83	-	7.80	-	0.0975
		1/11	-	3.53 / 79	-	16.9	-	0.152
		1/21	-	6.30 / 70	-	31.0	-	0.202
		1/33	-	11.2 / 79	-	49.7	-	0.157
200W	02A	1/5	2.55 / 80	2.39 / 75	8.60	9.80	0.299	0.470
		3/31	5.27 / 80	-	17.8	-	0.196	-
		1/11	-	5.74 / 82	-	22.1	-	0.456
		1/21	10.7 / 80	10.2 / 76	36.1	42.1	0.211	0.753
		1/33	16.8 / 80	17.0 / 81	56.7	67.6	0.181	0.713
400W	04A	1/5	5.08 / 80	5.35 / 84	17.2	20.1	0.366	0.693
		3/31	10.5 / 80	-	35.5	-	0.353	-
		1/11	-	11.5 / 82	-	45.1	-	1.06
		1/21	21.3 / 80	23.0 / 86	72.2	87.0	0.403	0.976
		1/33	33.5 / 80	34.0 / 81	113	135	0.338	1.11
600W	06A	1/5	-	7.54 / 79	-	30.5	-	1.50
		1/11	-	18.1 / 86	-	68.6	-	1.37
		1/21	-	32.1 / 80	-	129	-	1.64
		1/33	-	53.6 / 85	-	206	-	1.42
750W	08A	1/5	9.56 / 80	10.0 / 84	32.0	38.4	1.12	2.25
		3/31	19.8 / 80	-	66.6	-	1.10	-
		1/11	-	23.1 / 88	-	86.4	-	2.18
		1/21	40.2 / 80	42.1 / 84	134	163	1.15	4.59
		1/33	63.1 / 80	69.3 / 88	212	259	0.972	4.39

Comparison between **SGMAH (precision speed reducer)** and **SGM7A** (Hatching is shown for the parts which differ from Σ -II)

Motor capacity	Model	Speed reducing ratio	Motor characteristics					
			Rated torque / efficiency		Max. momentary torque		Motor + speed reducer inertia moment	
			[N·m / %]		[N·m]		[$\times 10^{-4}$ kg·m ²]	
		Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7	
30W	A3A	1/5	0.238 / 50	-	1.16	-	0.053	-
		1/9	0.599 / 70	-	2.35	-	0.029	-
		1/21	1.60 / 80	-	5.48	-	0.025	-
		1/33	2.51 / 80	-	8.61	-	0.023	-
50W	A5A	1/5	0.557 / 70	0.433 / 64	1.92	2.37	0.058	0.0277
		1/9	1.00 / 70	1.12 / 78	3.89	3.78	0.055	0.0247
		1/21	2.67 / 80	2.84 / 85	9.12	10.6	0.040	0.0257
		1/33	4.20 / 80	3.68 / 70	14.3	15.8	0.035	0.0667
100W	01A	1/5	1.27 / 80	1.06 / 78	4.34	4.96	0.114	0.0397
		1/11	2.80 / 80	2.52 / 72	9.55	10.7	0.084	0.0937
		1/21	5.34 / 80	5.35 / 80	18.2	20.8	0.079	0.0837
		1/33	8.40 / 80	7.35 / 70	28.7	32.7	0.069	0.0987
150W	C2A	1/5		1.68 / 83		7.80		0.0518
		1/11		3.53 / 79		16.9		0.106
		1/21		6.30 / 70		31.0		0.156
		1/33		11.2 / 79		49.7		0.111
200W	02A	1/5	2.55 / 80	2.39 / 75	8.40	9.80	0.441	0.346
		1/11	5.96 / 85	5.74 / 82	19.3	22.1	0.191	0.332
		1/21	11.4 / 85	10.2 / 76	37.3	42.1	0.216	0.629
		1/33	17.9 / 85	17.0 / 81	58.6	67.6	0.171	0.589
400W	04A	1/5	5.40 / 85	5.35 / 84	17.6	20.1	0.508	0.423
		1/11	11.9 / 85	11.5 / 82	39.1	45.1	0.368	0.786
		1/21	22.7 / 85	23.0 / 86	72.2	87.0	0.368	0.706
		1/33	33.5 / 85	34.0 / 81	93.0	135	0.346	0.836
600W	06A	1/5		7.54 / 79		30.5		1.02
		1/11		18.1 / 86		68.6		0.885
		1/21		32.1 / 80		129		1.16
		1/33		53.6 / 85		206		0.935
750W	08A	1/5	10.2 / 85	10.0 / 84	33.3	38.4	1.25	1.48
		1/11	22.3 / 85	23.1 / 88	71.0	86.4	1.20	1.38
		1/21	42.7 / 85	42.1 / 84	140	163	1.26	3.78
		1/33	67.0 / 85	69.3 / 88	206	259	0.935	3.58

Comparison between **SGMAH (general speed reducer)** and **SGM7A** (Hatching is shown for the parts which differ from

Σ-II)

Motor capacity	Model	Speed reducing ratio	Motor characteristics					
			Rated torque / efficiency		Max. momentary torque		Motor + speed reducer inertia moment	
			[N·m / %]		[N·m]		[×10 ⁻⁴ kg·m ²]	
			Σ-II	Σ-7	Σ-II	Σ-7	Σ-II	Σ-7
30W	A3A	1/5	0.238 / 50	-	1.16	-	0.044	-
		3/31	0.687 / 70	-	2.37	-	0.033	-
		1/21	1.60 / 80	-	5.48	-	0.023	-
		1/33	2.51 / 80	-	8.61	-	0.021	-
50W	A5A	1/5	0.557 / 70	0.433 / 64	1.92	2.37	0.050	0.0277
		1/9	-	1.12 / 78	-	3.78	-	0.0247
		3/31	1.15 / 70	-	3.95	-	0.040	-
		1/21	2.67 / 80	2.84 / 85	9.07	10.6	0.036	0.0257
		1/33	4.20 / 80	3.68 / 70	14.3	15.8	0.032	0.0667
100W	01A	1/5	1.27 / 80	1.06 / 78	4.32	4.96	0.099	0.0397
		3/31	2.63 / 80	-	8.88	-	0.054	-
		1/11	-	2.52 / 72	-	10.7	-	0.0937
		1/21	5.34 / 80	5.35 / 80	18.1	20.8	0.071	0.0837
		1/33	8.40 / 80	7.35 / 70	28.4	32.7	0.057	0.0987
150W	C2A	1/5	-	1.68 / 83	-	7.80	-	0.0518
		1/11	-	3.53 / 79	-	16.9	-	0.106
		1/21	-	6.30 / 70	-	31.0	-	0.156
		1/33	-	11.2 / 79	-	49.7	-	0.111
200W	02A	1/5	2.55 / 80	2.39 / 75	8.60	9.80	0.299	0.346
		3/31	5.27 / 80	-	17.8	-	0.196	-
		1/11	-	5.74 / 82	-	22.1	-	0.332
		1/21	10.7 / 80	10.2 / 76	36.1	42.1	0.211	0.629
		1/33	16.8 / 80	17.0 / 81	56.7	67.6	0.181	0.589
400W	04A	1/5	5.08 / 80	5.35 / 84	17.2	20.1	0.366	0.423
		3/31	10.5 / 80	-	35.5	-	0.353	-
		1/11	-	11.5 / 82	-	45.1	-	0.786
		1/21	21.3 / 80	23.0 / 86	72.2	87.0	0.403	0.706
		1/33	33.5 / 80	34.0 / 81	113	135	0.338	0.836
600W	06A	1/5	-	7.54 / 79	-	30.5	-	1.02
		1/11	-	18.1 / 86	-	68.6	-	0.885
		1/21	-	32.1 / 80	-	129	-	1.16
		1/33	-	53.6 / 85	-	206	-	0.935
750W	08A	1/5	9.56 / 80	10.0 / 84	32.0	38.4	1.12	1.48
		3/31	19.8 / 80	-	66.6	-	1.10	-
		1/11	-	23.1 / 88	-	86.4	-	1.38
		1/21	40.2 / 80	42.1 / 84	134	163	1.15	3.78
		1/33	63.1 / 80	69.3 / 88	212	259	0.972	3.58

Comparison between **SGMSH (precision speed reducer)** and **SGM7A** (Hatching is shown for the parts which differ from Σ -II)

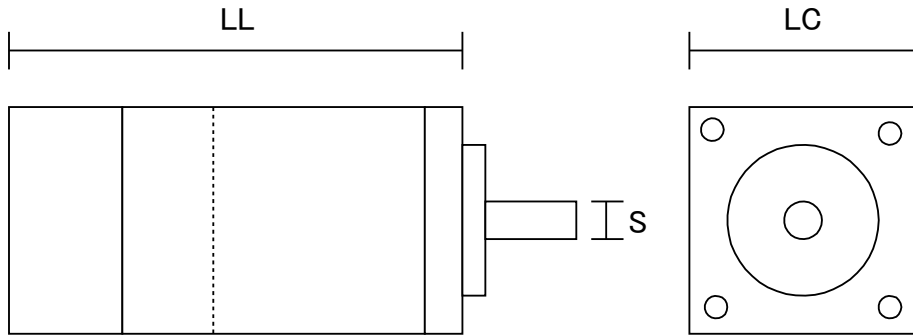
Motor capacity	Model	Speed reducing ratio	Motor characteristics					
			Rated torque / efficiency [N·m / %]		Max. momentary torque [N·m]		Motor + speed reducer inertia moment [$\times 10^{-4}$ kg·m ²]	
			Σ -II	Σ -7	Σ -II	Σ -7	Σ -II	Σ -7
1.0kW	10A	1/5	12.7 / 80	13.7 / 86	38.2	52.5	5.18	1.67
		1/9	22.9 / 80	-	68.7	-	4.85	-
		1/11	-	29.1 / 83	-	111	-	4.37
		1/20	50.9 / 80	-	153	-	8.53	-
		1/21	-	58.2 / 87	-	215	-	3.97
		1/29	73.8 / 80	-	221	-	6.62	-
		1/33	-	94.5 / 90	-	296	-	3.77
		1/45	114 / 80	-	343	-	5.66	-

Models with speed reducer having a capacity of 1.5kW or more will be estimated.

2.3. Mounting dimension

(1) Without speed reducer (standard)

Hatching is shown for the parts whose dimensions in Σ -II motor and Σ -7 motor are different.



Speed reducer	Motor capacity [W]	Brake	Σ -II series			Σ 7 series					
			SGMAH			SGM7A			SGM7J		
			LC	LL	S	LC	LL	S	LC	LL	S
Not available	30	Not available	40	69.5	6						
		Available		101							
	50	Not available	40	77	6	40	56.5	8	40	56.5	8
		Available		108.5			97			97	
	100	Not available	40	94.5	8	40	68.5	8	40	68.5	8
		Available		135			109			109	
	150	Not available	—	—	—	40	80.5	8	40	80.5	8
		Available		—			128.5			128.5	
	200	Not available	60	96.5	14	60	69.5	14	60	69.5	14
		Available		136			110			110	
	400	Not available	60	124.5	14	60	85.5	14	60	85.5	14
		Available		164			126			126	
	750	Not available	80	145	16	80	97	19	80	97	19
		Available		189.5			144			144	

Speed reducer	Motor capacity [W]	Brake	Σ -II series			Σ 7 series		
			SGMPH			SGM7J		
			LC	LL	S	LC	LL	S
Not available	100	Not available	60	62	8	40	68.5	8
		Available		91			109	
	200	Not available	80	67	14	60	69.5	14
		Available		98.5			110	
	400	Not available	80	87	14	60	85.5	14
		Available		118.5			126	
	750	Not available	120	86.5	16	80	97	19
		Available		120			144	

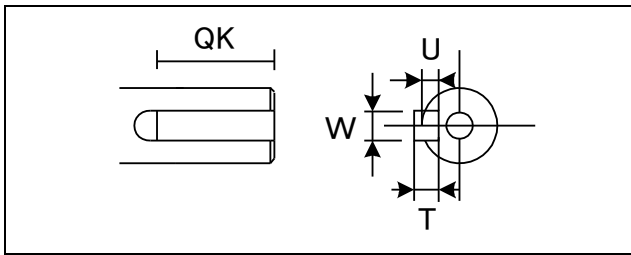
Speed reducer	Motor capacity [kW]	Brake	Σ- II series			Σ-7 series		
			SGMGH(1500min ⁻¹)			SGM7G		
			LC	LL	S	LC	LL	S
Not available	0.45	Not available	130	138	19	90	139	16
		Available		176			172	
	0.85	Not available	130	161	19	130	137	24
		Available		199			173	
	1.3	Not available	130	185	22	130	153	24
		Available		223			189	
	1.8	Not available	180	166	35	130	171	24
		Available		217			207	
	2.9	Not available	180	192	35			
		Available		243				
	4.4	Not available	180	226	35			
		Available		277				
	5.5	Not available	180	260	42			
		Available		311				
	7.5	Not available	180	334	42			
		Available		385				
	11	Not available	220	338	42			
		Available		383				
15	Not available	220	457	55				
	Available		519					

Speed reducer	Motor capacity [kW]		Brake		Σ- II series			Σ-7 series		
	Σ- II	Σ-7	Σ- II	Σ-7	SGMGH(1000min ⁻¹)			SGM7G		
					LC	LL	S	LC	LL	S
Not available	0.3	0.3	Not available	Not available	130	138	19	90	126	16
			Available	Available					159	
	0.6	0.45	Not available	Not available	130	161	19	90	139	16
			Available	Available					172	
	0.9	0.85	Not available	Not available	130	185	22	130	137	24
			Available	Available					173	
	1.2	1.3	Not available	Not available	180	166	35	130	153	24
			Available	Available					189	
	1.2	1.8	Not available	Not available	180	217	35	130	171	24
			Available	Available					207	
	2.0		Not available	Not available	180	192	35			
			Available	Available						
	3.0		Not available	Not available	180	226	35			
			Available	Available						
	4.4		Not available	Not available	180	260	42			
			Available	Available						
	5.5		Not available	Not available	180	334	42			
			Available	Available						

Motor capacity [kW]	Brake	Σ- II series			Σ-7 series					
		SGMSH			SGM7A					
		LC	LL	S	LC	LL	S			
1.0	Not available	100	149	24	80	122	19			
	Available		193			169				
1.5	Not available	100	175	24	100	157	24			
	Available		219			198				
2.0	Not available	100	198	24	100	173	24			
	Available		242			214				
3.0	Not available	130	199	28	130	194	28			
	Available		237			232				
4.0	Not available	130	236	28	/					
	Available		274							
5.0	Not available	130	276	28				/		
	Available		314							

• Shaft key dimension

Hatching is shown for the parts whose dimensions in Σ -II motor and Σ -7 motor are different.



Speed reducer	Motor capacity [W]	Oil seal	Σ -II series				Σ -7 series							
			SGMAH				SGM7A				SGM7J			
			QK	U	W	T	QK	U	W	T	QK	U	W	T
Not available	30	Not available Available	14	1.2	2	2								
	50	Not available Available	14	1.2	2	2								
	100	Not available Available	14	1.2	3	3	14	1.8	3	3	14	1.8	3	3
	200	Not available	20	3	5	5	14	3	5	5	14	3	5	5
		Available	14											
	400	Not available	20	3	5	5	14	3	5	5	14	3	5	5
Available		14												
750	Not available	30	3	5	5	22	3.5	6	6	22	3.5	6	6	
	Available	25												

Speed reducer	Motor capacity [W]	Oil seal	Σ -II series				Σ -7 series			
			SGMPH				SGM7J			
			QK	U	W	T	QK	U	W	T
Not available	100	Not available Available	14	1.8	3	3	14	1.8	3	3
	200	Not available	16	3	5	5	14	3	5	5
		Available								
	400	Not available Available	16	3	5	5	14	3	5	5
750	Not available Available	22	3	5	5	22	3.5	6	6	

Speed reducer	Motor capacity [kW]		Oil seal		Σ -II series				Σ -7 series				
	Σ -II	Σ -7	Σ -II	Σ -7	SGMGH (1500min ⁻¹)				SGM7G				
	QK	U	W	T	QK	U	W	T					
Not available	0.45	0.45	Not available		25	3	5	5	20	3	5	5	
			Available										
	0.85	0.85	Not available		25	3	5	5	25	4	8	8	
			Available										
	1.3	1.3	Not available		25	3.5	6	6	25	4	8	7	
			Available										
	1.8	1.8	Not available		60	5	10	8	25	4	8	7	
			Available										
		2.9		Not available		60	5	10	8				
				Available									
		4.4		Not available		60	5	10	8				
				Available									
5.5			Not available		90	5	12	8					
			Available										
7.5			Not available		90	5	12	8					
			Available										
11		Not available		90	5	12	8						
		Available											
15		Not available		90	6	16	10						
		Available											

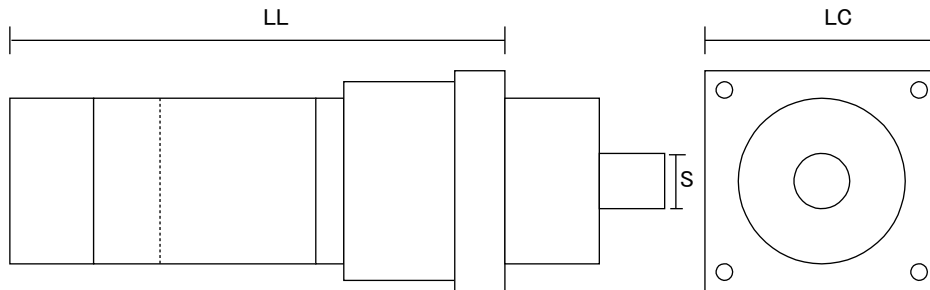
Speed reducer	Motor capacity [kW]		Oil seal		Σ- II series				Σ-7 series			
	Σ- II	Σ-7	Σ- II	Σ-7	SGMGH(1500min ⁻¹)				SGM7G			
					QK	U	W	T	QK	U	W	T
Not available	0.3	0.3	Not available	Not available	25	3	5	5	20	3	5	5
		0.45	Available	Not available	25	3	5	5	20	3	5	5
	0.6	0.45	Not available	Not available	25	3.5	6	6	20	3	5	5
		0.85	Available	Not available	60	5	10	8	25	4	8	8
	0.9	0.85	Not available	Not available	60	5	10	8	25	4	8	8
		1.3	Available	Not available	60	5	10	8	25	4	8	7
	1.2	1.3	Not available	Not available	90	5	12	8	25	4	8	7
		1.8	Available	Not available	90	5	12	8	25	4	8	7
	2.0	1.8	Not available	Not available	90	5	12	8	25	4	8	7
		3.0	Available	Not available	25	3	5	5				
	Not available		Not available	25	3.5	6	6					
	Available		Not available	60	5	10	8					
	Not available		Not available	60	5	10	8					
	Available		Not available	60	5	10	8					
	Not available		Not available	90	5	12	8					
	Available		Not available	90	5	12	8					

Speed reducer	Motor capacity [kW]	Oil seal	Σ- II series				Σ-7 series			
			SGMSH				SGM7A			
			QK	U	W	T	QK	U	W	T
Not available	1.0	Not available	32	4	8	7	22	3.5	6	6
		Available								
	1.5	Not available	32	4	8	7	32	4	8	7
		Available								
	2.0	Not available	32	4	8	7	32	4	8	7
		Available								
3.0	Not available	50	4	8	7	50	4	8	7	
	Available									
4.0	Not available	50	4	8	7					
	Available									
5.0	Not available	50	4	8	7					
	Available									

(2) With general speed reducer

There is no model in Σ -7 having general speed reducer. Therefore, see if the customer arranges it or it is replaced with the precision speed reducer type. For detailed dimensions, please check the catalog.

All values for SGM7G and SGM7A (1.5kW and above) motor with speed reducer are estimated.



Speed reducer	Motor capacity [W]	Speed reducing ratio	Brake	Σ-II series			Σ-7 series (precision speed reducer)					
				SGMAH			SGM7A			SGM7J		
				LC	LL	S	LC	LL	S	LC	LL	S
General	30	1/5	Not available	60	101.5	14						
			Available		133							
		1/10.3	Not available	60	101.5	14						
			Available		133							
	1/21	Not available	60	116.5	14							
		Available		148								
	1/33	Not available	60	116.5	14							
		Available		148								
	50	1/5	Not available	60	109	14	40	96	10	40	96	10
			Available		140.5							
		※1/10.3	Not available	70	114	16	40	96	10	40	96	10
			Available		145.5							
		1/21	Not available	70	131	16	40	105	10	40	105	10
			Available		162.5							
		1/33	Not available	70	131	16	60	120.5	16	60	120.5	16
			Available		162.5							
	1/5	Not available	70	131.5	16	40	108	10	40	108	10	
		Available		172								
	※2/10.3	Not available	70	131.5	16	60	132.5	16	60	132.5	16	
		Available		172								
	1/21	Not available	90	153	20	60	132.5	16	60	132.5	16	
		Available		194								
	1/33	Not available	90	153	20	90	135	25	90	135	25	
		Available		194								
	200	1/5	Not available	90	138	20	60	133.5	16	60	133.5	16
			Available		177.5							
		※2/10.3	Not available	90	138	20	60	133.5	16	60	133.5	16
			Available		177.5							
		1/21	Not available	105	165.5	25	90	140.5	25	90	140.5	25
			Available		205							
1/33		Not available	105	165.5	25	90	140.5	25	90	140.5	25	
		Available		205								
400	1/5	Not available	90	166	20	60	149.5	16	60	149.5	16	
		Available		223.5								
	※2/10.3	Not available	105	172.5	25	90	156.5	25	90	156.5	25	
		Available		212								
	1/21	Not available	120	200.5	32	90	156.5	25	90	156.5	25	
		Available		240								
	1/33	Not available	120	200.5	32	120	189.5	40	120	189.5	40	
		Available		240								
750	1/5	Not available	105	193	25	90	175	25	90	175	25	
		Available		237.5								
	※2/10.3	Not available	120	196	32	90	175	25	90	175	25	
		Available		240.5								
	1/21	Not available	145	223	40	120	201	40	120	201	40	
		Available		267.5								
	1/33	Not available	145	223	40	120	201	40	120	201	40	
		Available		267.5								

※1 If Σ-7 series precision speed reducer is to be used, speed reducing ratio is changed from 1/10.3 to 1/9

※2 If Σ7 series precision speed reducer is to be used, speed reducing ratio is changed from 1/10.3 to 1/11

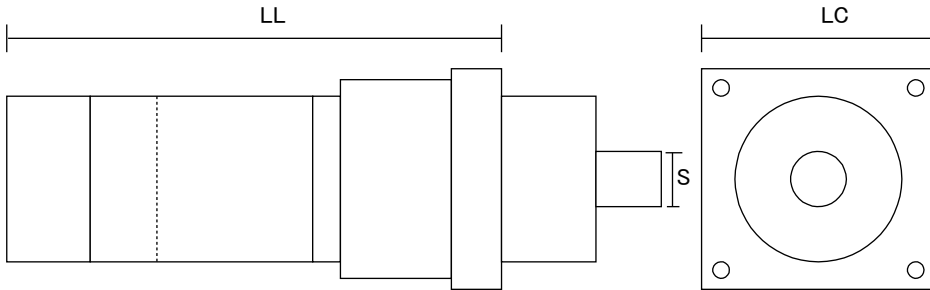
Speed reducer	Motor capacity	Speed reducing ratio	Brake	Σ-II series			Σ-7 series (precision speed reducer)						
				SGMPH			SGM7A			SGM7J			
	[W]	LC	LL	S	LC	LL	S	LC	LL	S			
	100	1/5	Not available	70	117	25	40	108	10	40	108	10	
			Available		146			148.5			148.5		
		※3 1/10.3	Not available	70	117	25	60	132.5	16	60	132.5	16	
			Available		146			173			173		
		1/21	Not available	90	122	20	60	132.5	16	60	132.5	16	
			Available		150.5			173			173		
		1/33	Not available	90	122	20	90	135	25	90	135	25	
			Available		150.5			175.5			175.5		
		200	1/5	Not available	90	126.5	20	60	133.5	16	60	133.5	16
				Available		158			174			174	
			※3 1/10.3	Not available	90	158	20	60	133.5	16	60	133.5	16
				Available		137			174			174	
	1/21		Not available	105	137	25	90	140.5	25	90	140.5	25	
			Available		168.5			181			181		
	1/33		Not available	105	137	25	90	140.5	25	90	140.5	25	
			Available		168.5			181			181		
	400		1/5	Not available	105	157	25	60	149.5	16	60	149.5	16
				Available		188.5			190			190	
			※3 1/10.3	Not available	105	157	25	90	156.5	25	90	156.5	25
				Available		188.5			197			197	
		1/21	Not available	120	164	32	90	156.5	25	90	156.5	25	
			Available		195.5			197			197		
		1/33	Not available	120	164	32	120	189.5	40	120	189.5	40	
			Available		195.5			230			230		
750		1/5	Not available	105	156.5	25	90	175	25	90	175	25	
			Available		189.5			222			222		
		※3 1/10.3	Not available	120	163.5	32	90	175	25	90	175	25	
			Available		196.5			222			222		
	1/21	Not available	145	174.5	40	120	201	40	120	201	40		
		Available		207.5			248			248			
	1/33	Not available	145	174.5	40	120	201	40	120	201	40		
		Available		207.5			248			248			

※3 If Σ7 series precision speed reducer is to be used, speed reducing ratio is changed from 1/10.3 to 1/11

3 With precision speed reducer

For detailed dimensions, please check the catalog.

All values for SGM7G and SGM7A (1.5kW and above) motor with speed reducer are estimated.



Speed reducer	Motor capacity [W]	Speed reducing ratio	Brake	Σ-II series			Σ-7 series					
				SGMAH			SGM7A			SGM7J		
				LC	LL	S	LC	LL	S	LC	LL	S
Precision	30	1/5	Not available	60	97.5	14						
			Available		129							
		1/10.3	Not available	60	97.5	14						
			Available		129							
	1/21	Not available	60	112.5	14							
		Available		144								
	1/33	Not available	60	112.5	14							
		Available		144								
	50	1/5	Not available	60	105	14	40	96	10	40	96	10
			Available		136.5							
		※1 1/10.3	Not available	70	106	16	40	96	10	40	96	10
			Available		137.5							
		1/21	Not available	70	123	16	40	105	10	40	105	10
			Available		154.5							
		1/33	Not available	70	123	16	60	120.5	16	60	120.5	16
			Available		154.5							
	100	1/5	Not available	70	123.5	16	40	108	10	40	108	10
			Available		164							
		※2 1/10.3	Not available	70	140.5	16	60	132.5	16	60	132.5	16
			Available		181							
		1/21	Not available	90	149.5	20	60	132.5	16	60	132.5	16
			Available		190							
		1/33	Not available	90	149.5	20	90	135	25	90	135	25
			Available		190							
	200	1/5	Not available	90	134.5	20	60	133.5	16	60	133.5	16
			Available		174							
		※2 1/10.3	Not available	90	151.5	20	60	133.5	16	60	133.5	16
			Available		191							
		1/21	Not available	105	159.5	25	90	140.5	25	90	140.5	25
			Available		199							
1/33		Not available	105	159.5	25	90	140.5	25	90	140.5	25	
		Available		199								
400	1/5	Not available	90	162.5	20	60	149.5	16	60	149.5	16	
		Available		202								
	※2 1/10.3	Not available	105	187.5	25	90	156.5	25	90	156.5	25	
		Available		227								
	1/21	Not available	120	195.5	32	90	156.5	25	90	156.5	25	
		Available		235								
	1/33	Not available	120	199.5	32	120	189.5	40	120	189.5	40	
		Available		235								
750	1/5	Not available	105	187	25	90	175	25	90	175	25	
		Available		231.5								
	※2 1/10.3	Not available	120	216	32	90	175	25	90	175	25	
		Available		260.5								
	1/21	Not available	145	223	40	120	201	40	120	201	40	
		Available		267.5								
	1/33	Not available	145	223	40	120	201	40	120	201	40	
		Available		267.5								

Speed reducer	Motor capacity [W]	Speed reducing ratio	Brake	Σ- II series			Σ-7 series (precision speed reducer)					
				SGMPH			SGM7A			SGM7J		
				LC	LL	S	LC	LL	S	LC	LL	S
	100	1/5	Not available	70	109	16	40	108	10	40	108	10
			Available		138			148.5			148.5	
		※ ³ 1/10.3	Not available	70	109	16	60	132.5	16	60	132.5	16
			Available		138			173			173	
		1/21	Not available	90	118	20	60	132.5	16	60	132.5	16
			Available		147			173			173	
		1/33	Not available	90	118	20	90	135	25	90	135	25
			Available		147			175.5			1755.5	
	200	1/5	Not available	90	123	20	60	133.5	16	60	133.5	16
			Available		154.5			174			174	
		※ ³ 1/10.3	Not available	90	123	20	60	133.5	16	60	133.5	16
			Available		154.5			174			174	
		1/21	Not available	105	131	25	90	140.5	25	90	140.5	25
			Available		162.5			181			181	
		1/33	Not available	105	131	25	90	140.5	25	90	140.5	25
			Available		162.5			181			181	
	400	1/5	Not available	90	143	20	60	149.5	16	60	149.5	16
			Available		174.5			190			190	
		※ ³ 1/10.3	Not available	105	151	25	90	156.5	25	90	156.5	25
			Available		182.5			197			197	
1/21		Not available	120	159	32	90	156.5	25	90	156.5	25	
		Available		190.5			197			197		
1/33		Not available	120	159	32	120	189.5	40	120	189.5	40	
		Available		190.5			230			230		
750	1/5	Not available	105	150.5	25	90	175	25	90	175	25	
		Available		183.5			222			222		
	※ ³ 1/10.3	Not available	120	158.5	32	90	175	25	90	175	25	
		Available		191.5			222			222		
	1/21	Not available	145	174.5	40	120	201	40	120	201	40	
		Available		207.5			248			248		
	1/33	Not available	145	174.5	40	120	201	40	120	201	40	
		Available		207.5			248			248		

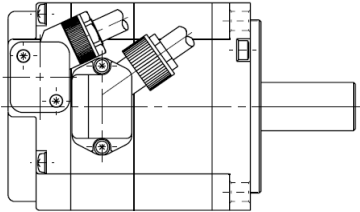
2-4. Precautions to be taken when mounting on machine

When mounting to a machine, pay attention to cable laying in the same way as with flange, spigot joint and shaft dimension. Mounting in Σ -7 (Pattern 1, Pattern 2) will be as shown below.

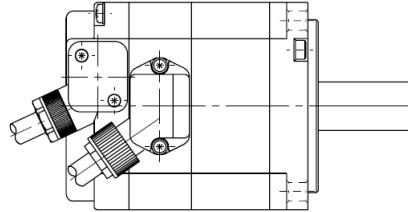
●Pattern 1

In case of using the existing parts

- IP67 support
- Support in load and anti-load sides in connector type-1



Lead in load side



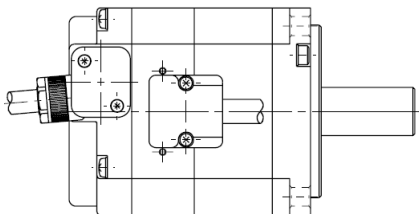
Lead in anti-load side

Temporary drawing (Design is currently under inquiry)

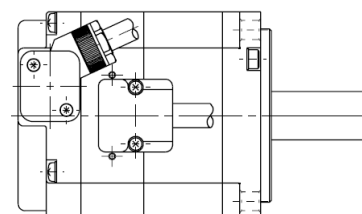
●Pattern 2

In case of using the existing parts

- IP65 support
- The burden of replacement is reduced by providing optional parts for current connector



Current connector only



New encoder cable +
Current motor cable

3. SERVOPACK

3.1. Models comparison table

Please see “1-3. List of replacements”.

The system of SERVOPACK has been changed from capacity value display to current value display.

3.2. Terminal compatibility table

(1) Main circuit terminal

All the main circuit inputs of Σ -7 series are 3-phase inputs.

Terminal code	Function
L1	Main circuit power input terminal
L2	
L3	
U	Servo Motor connection terminal
V	
W	
L1C	Control power input terminal (100V/200V type)
L2C	
B1/(+)	External regenerative resistance connection terminal
B2	
B3	
(+1)	Connection terminal for DC reactor for suppressing power supply harmonics
(+2)	
(-1)	
(-2)	
B1/(+)	Main circuit positive side terminal
P	
(-)	Main circuit negative side terminal
(-2)	
N	

- AC200V specifications main circuit terminal input layout

AC200V specifications: Main circuit terminal input layout

Σ-II SGDM,SGDH		Σ-II SGDJ	Σ-7
50~400W	750W ~1.5kW	30~400W	50~750W
L1	L1	L1	L1
L2	L2	L2	L2
(+)1	L3	FG/G	L3
(+)2	(+)1		L1C
(-)	(+)2		L2C
	(-)		B1/(+)
L1C	L1C		B2
L2C	L2C		B3
B1	B1		(-)1
B2	B2		(-)2
	B3		
U	U	U	U
V	V	V	V
W	W	W	W
		FG/G	

• Single-phase power AC200V

Although settings can be changed to support single-phase power AC200V in user parameter (set as “3-phase power” at the time of shipping), please note that the torque-rotational speed characteristics are different from 3-phase power specifications.

2 Control circuit terminal

[Analog voltage/pulse string command type]

Terminal number			Σ-7	Terminal code	Function
Σ-II		50pin			
SGDM, SGDH	SGDJ				
Torque/speed control	Position control				
50pin	26pin	50pin			
1,2,6,10	2,4,13	13	1,2,6,10	GND	Ground
3			3	PL1	Power for open corrector command
4			4	SEN	SEN signal input
5	3		5	V-REF	Speed command input
7		1	7	PULS	Command pulse input
8		2	8	/PULS	
9	1		9	T-REF	Torque command input
11		3	11	SIGN	Command code input
12		4	12	/SIGN	
13			13	PL2	Power for open corrector command
14		5	14	/CLR	Clear input
15		6	15	CLR	
18			18	PL3	Power for open corrector command
19	18	18	19	PCO	PG divided output C-phase
20	19	19	20	/PCO	
21			21	BAT(+)	Battery (+)
22			22	BAT(-)	Battery (-)
25	20	20	25	/V-CMP+(/COIN+)	Speed match detection output (*1)
26			26	/V-CMP-(/COIN-)	
27	24	24	27	/TGON+	Rotation detection output (*1)
28			28	/TGON-	
-	21	21	-	SG-COM	/V-CMP- and /TGON-
29			29	/S-RDY+	Servo ready output (*1)
30			30	/S-RDY-	
31	22	22	31	ALM+	Servo alarm output (*1)
32	23	23	32	ALM-	
33	14	14	33	PAO	PG divided output A-phase
34	15	15	34	/PAO	
35	16	16	35	PBO	PG divided output B-phase
36	17	17	36	/PBO	
37			37	AOL1	Alarm code output
38			38	AOL2	
39			39	AOL3	
40	8	8	40	/S-ON	Servo ON input (*1)
41	7	7	41	/P-CON	P-operation input (*1)
42	9	9	42	P-OT	Forward drive inhibition input (*1)
43	11	11	43	N-OT	Reverse drive inhibition input (*1)
44	10	10	44	/ALM-RST	Alarm reset (*1)
45			45	/P-CL	Forward external torque limit input (*1)
46			46	/N-CL	Reverse external torque limit input (*1)
47	12	12	47	+24VIN	External power input
48			48	PSO	S-phase signal output
49			49	/PSO	
			50	TH	Linear servo motor overheating protection
Shell			Shell	FG	Frame ground

(*1): Sequencer input/output is set at the time of shipping.
Assignment can be changed through user parameter.

CN1 input/output signal connector covers are different. In the case of using in SERVOPACK (SGD7S-R70A/R90A/1R6A/2R1F/2R8A) of 40mm width, it will interfere with the connector for power terminal. Please use the input/output signal cable (connector) for Σ-7 to avoid non-conformities such as contact defect.

Connectors of CN2 encoder and CN5 analog monitor are compatible.

[MECHATROLINK-II communication command-type]

Terminal number		Terminal code	Function
Σ -11 50pin	Σ -7 50pin		
1,2,6,10	16	GND	Ground
21	14	BAT(+)	Battery (+)
22	15	BAT(-)	Battery (-)
25		/COIN +	Position determination completion output
26		/COIN -	
27	1	/BK +	Brake interlock output
28	2	/BK -	
29		/S-RDY +	Servo ready output (*1)
30		/S-RDY -	
31	3	ALM +	Servo alarm output (*1)
32	4	ALM -	
37		AOL1	Alarm code output
38		AOL2	
39		AOL3	
41	9	/DEC	Origin return speed reduction
42	7	P-OT	Forward drive inhibition input (*1)
43	8	N-OT	Reverse drive inhibition input (*1)
44	10	/EXT1	External latch signal 1 input
45	11	/EXT2	External latch signal 2 input
46	12	/EXT3	External latch signal 3 input
47	6	+24VIN	External power input
-	13	/SIO	
-	17	PAO	
-	18	/PAO	
-	19	PBO	
-	20	/PBO	
-	21	PCO	
-	22	/PCO	
-	23	/SO2 +	
-	24	/SO2 -	
-	25	/SO3 +	
-	26	/SO3 -	
-	5	TH	Linear servo motor overheating
Shell	Shell	FG	Frame ground

(*1): Sequencer input/output is set at shipping.

Assignment can be changed through user parameter.

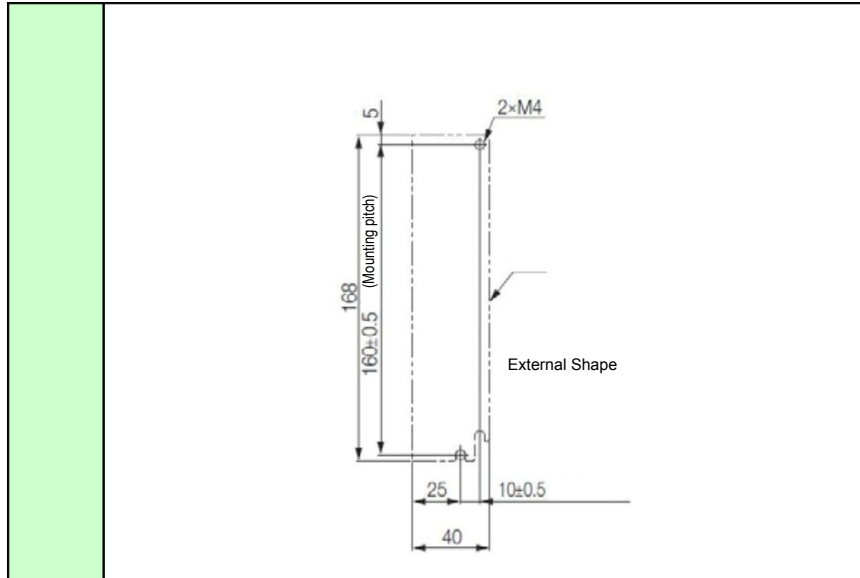
CN1input/output signal connector covers are different. In the case of using in SERVOPACK (SGD7S-R70A/R90A/1R6A/2R1F/2R8A) of 40mm width, it will interfere with the connector for power terminal. Please use the input/output signal cable (connector) for Σ -7 to avoid non-conformities such as contact defect.

Connectors of CN2 encoder and CN5 analog monitor are compatible

3.3. Mounting dimension

Please note that the external dimensions and mounting dimensions of Σ -II Series SERVOPACK and Σ -7 Series SERVOPACK are not compatible. The positions of the mounting screw are different.

Σ -II	<p>Single-phase AC200V, 30~200W SGDM-A3ADA~02ADA SGDH-A3AE~02AE</p> <p>Single-phase AC100V, 30~100W SGDM-A3BDA~01BDA SGDH-A3BE~01BE</p>	<p>Single-phase AC200V, 30~200W SGDJ-A3A~02A</p> <p>Single-phase AC100V, 30~100W SGDJ-A3B~01B</p>
Σ -7	<p>3-phase AC200V, 50W~200W SGD7S-R70A / R90A / 1R6A</p>	



(Mounting pitch)

Σ-II	<p>Single-phase AC200V, 400W SGDM-04ADA SGDH-04AE</p> <p>Single-phase AC100V, 200W SGDM-02BDA SGDH-02BE</p>	<p>Single-phase AC200V, 400W SGDJ-04A</p> <p>Single-phase AC100V, 200W SGDJ-02B</p>	<p>3-phase AC200V, 0.5~1.0kW SGDM-05ADA~10ADA SGDH-05AE~10AE</p>

Σ-7	<p>3-phase AC200V, 400W SGD7S-2R8A</p>	<p>3-phase AC200V, 0.5~1.0kW SGD7S-3R8A / 5R5A / 7R6A</p>

(Mounting pitch)

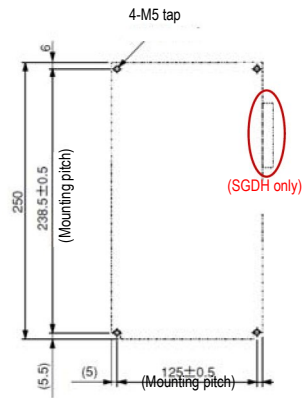
Σ-II	<p><u>3-phase AC200V, 1.5kW</u> SGDM-15ADA SGDH-15AE</p>	<p><u>3-phase AC200V, 2.0/3.0kW</u> SGDM-20ADA / 30ADA SGDH-20AE / 30AE</p>
	<p><u>3-phase AC400V, 0.5~1.5kW</u> SGDH-05DE~15DE</p>	<p><u>3-phase AC400V, 2.0/3.0kW</u> SGDH-20DE / 30DE</p>
		<p>[Terminal block]</p>
	<p>Terminal code: L1, L2, L3, L1C, L2C, B1, B2, B3, +1, +2, -, U, V, W Screw thread size : M4 Quantity : 14 Permissible crimped terminal size: φ10 or less</p>	

Σ-7	<p><u>3-phase AC200V, 1.5kW</u> SGD7S-120A</p>	<p><u>3-phase AC200V, 2.0/3.0kW</u> SGD7S-180A/200A</p>
	<p><u>3-phase AC200V, 1.5kW</u> SGD7S-120A</p>	<p><u>3-phase AC200V, 2.0/3.0kW</u> SGD7S-180A/200A</p>
		<p>[Terminal block]</p>
	<p>Terminal code: L1, L2, L3, L1C, L2C, B1/+, B2, B3, -1, -2, -, U, V, W Screw thread size : M4 (Mounting pitch) Quantity : 14 (Mounting pitch) Terminal Permissible crimped terminal size: φ7.7 or less</p>	

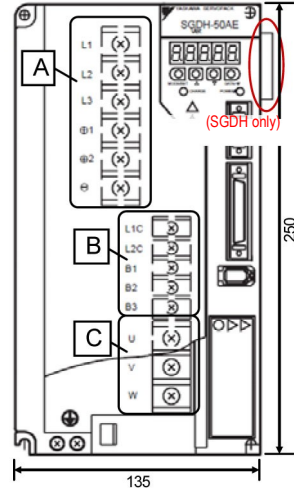
Σ-II

3-phase AC200V, 5.0kW SGDM-50ADA, SGDH-50AE

3-phase AC400V, 5.0kW SGDH-50DE



[Terminal block]



Terminal code: [Part-A]L1, L2, L3, +1, +2, - [Part-B]L1C, L2C, B1, B2, B3 [Part-C]U, V, W

Screw thread size : [Part-A, Part-C]M5 [Part-B]M4

Screw thread pitch : [Part-A, Part-C]16mm [Part-B]11mm

Permissible crimped terminal size: [Part-A, Part-C]φ13 or less [Part-B]φ9 or less

Quantity : [Part-A]6 nos, [Part-C]3 nos [Part-B]5 nos

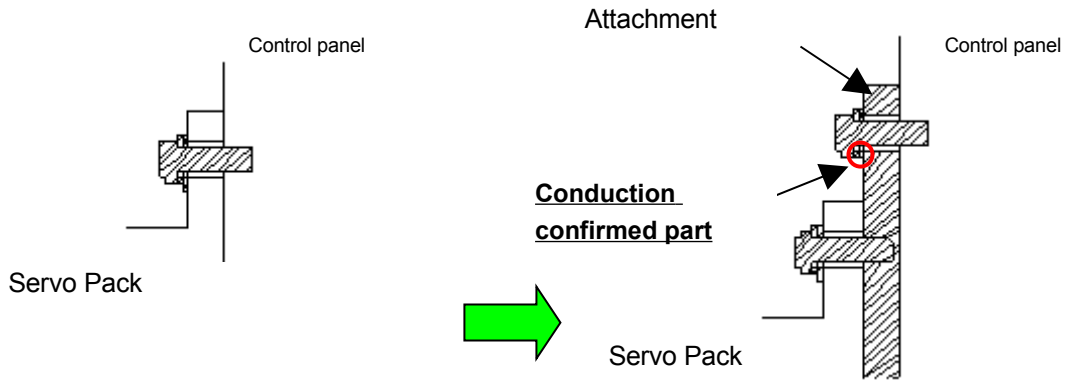


Σ-7

Σ-II	<p><u>3-phase AC200V, 6.0/7.5kW</u> SGDM-60ADA / 75ADA SGDH-60AE / 75AE</p> <p><u>3-phase AC400V, 6.0/7.5kW</u> SGDH-60DE / 75DE</p>	<p><u>3-phase AC200V, 11/15kW</u> SGDM-1AADA / 1EADA SGDH-1AAE / 1EAE</p> <p><u>3-phase AC400V, 11/15kW</u> SGDH-1ADE / 1EDE</p>
Σ-7		

3.4. Precautions at the time of mounting control panel

If manufacturing an attachment to correct a mistake in mounting hole dimension, please pay attention to the mistakes in electrical conduction state of the frame ground. If the electrical conduction state changes, noise tolerance will change due to which an alarm may sound and a malfunction may occur.



Frame ground of Servo Pack and control panel conduct by passing through mounting screw.

If painting and surface-treatment are carried out to prevent rust in the attachment, electrical conduction between attachment and control panel may not take place.

4. Cable and peripheral equipment

■ Connector for input-output signal

Analog pulse train command type

Name		Type		
		Σ-II		Σ-7
		SGDM,SGDH	SGDJ	
Connector terminal block conversion unit	0.5m	JUSP-TA50P	JUSP-TA26P	JUSP-TA50PG-E
Single side lead cable	1.0m	JZSP-CKI01-1	JZSP-VJI01-1	JZSP-CSI01-1-E
	2.0m	JZSP-CKI01-2	JZSP-VJI01-2	JZSP-CSI01-2-E
	3.0m	JZSP-CKI01-3	JZSP-VJI01-3	JZSP-CSI01-3-E
Connector kit (for CN1)		JZSP-CKI9	JZSP-VJI9-1	JZSP-CSI9-1-E

MECHATROLINK-II communication command type

Name		Type		
		Σ-II		Σ-7
		SGDM,SGDH	SGDJ	
Connector terminal block conversion unit	0.5m	JUSP-TA50P	-	JUSP-TA26P-E
Connector kit (for CN1)		JZSP-CKI9	-	JZSP-CSI9-2-E

■ Analog monitor

Name		Type		
		Σ-II		Σ-7
		SGDM,SGDH	SGDJ	
Cable for analog monitor		JZSP-CA01		JZSP-CA01-E

■ PC connection cable

Name		Type		
		Σ-II		Σ-7
		SGDM,SGDH	SGDJ	
PC connection cable	2.0m	JZSP-CMS01 (D-sub 25pin) JZSP-CMS02 (D-sub 9pin) JZSP-CMS03 (half pitch 14pin)		—
	2.5m	—		JZSP-CVS06-02-E

■ MECHATROLINK communication cable

Name		Type		
		Σ-II		Σ-7
		SGDM,SGDH	SGDJ	
Cable with connectors at both ends	0.5m	JEPMC-W6002-A5	-	JEPMC-W6002-A5-E
	1.0m	JEPMC-W6002-01	-	JEPMC-W6002-01-E
	3.0m	JEPMC-W6002-03	-	JEPMC-W6002-03-E
	With ferrite core	JEPMC-W6003-**	-	JEPMC-W6003-**-E
Terminator		JEPMC-W6022	-	JEPMC-W6022-E

■ Cable for safety function

Name		Type		
		Σ-II		Σ-7
		SGDM,SGDH	SGDJ	
Cable for safety function	1.0m	-	-	JZSP-CVH03-01-E
	3.0m	-	-	JZSP-CVH03-03-E
Cable kit for safety function		-	-	2013595-1

■ Digital operator

Name		Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Digital operator	1.0m	JUSP-OP02A-2-E		JUSP-OP05A-1-E

■ Battery

Name		Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Battery	JZSP-BA01	-	JZSP-BA01	
	JZSP-BA01-1	-	ER6VC3N equivalent part	
	ER6VC3 equivalent part	-	part	
Battery unit		-	JUSP-BA01-E	

■ Noise filter

AC100V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Noise filter	30W	FN2070-6/07	FN2070-6/07	/
	50W/R70F			
	100W/R90F		FN2070-10/07	
	200W/2R1F			
	400W/2R8F		-	

AC200V

Name	Servo capacity/current display	Type			
		Σ- II		Σ-7	
		SGDM,SGDH	SGDJ		
Noise filter	30W	FN2070-6/07	FN2070-6/07	-	
	50W/R70A			Single-phase : HF2010A-UPF 3-phase : HF3010C-SZC	
	100W/R90A			Single-phase : HF2010A-UPF 3-phase : HF3010C-SZC	
	200W/1R6A	FN2070-10/07	FN2070-10/07	Single-phase : HF2010A-UPF 3-phase : HF3010C-SZC	
	400W/2R8			Single-phase : HF2010A-UPF 3-phase : HF3010C-SZC	
	0.5kW/3R8A	FN258L-7/07	-	Single-phase : HF2020A-UPF 3-phase : HF3020C-SZC	
	750W/5R5A	FN258L-16/07		Single-phase : HF2030A-UPF 3-phase : HF3020C-UQC	
	1.0kW/7R6A			Single-phase : HF2030A-UPF 3-phase : HF3020C-UQC	
	1.5kW/120A			Single-phase : HF2030A-UPF 3-phase : HF3020C-UQC	
	2.0kW/180A	FN258L-30/07		Single-phase : HF2030A-UPF 3-phase : HF3020C-UQC	
	3.0kW/200A			Single-phase : HF2030A-UPF 3-phase : HF3020C-UQC	
	5.0kW/330A	FMAC-0934-5010		-	
	6.0kW/470A				
	7.5kW/550A				
	11kW/590A	FS5559-150-35		-	
15kW/780A					

AC400V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
	0.5kW/3R8A	FN258L-7/07	-	/
	1.0kW/7R6A			
	1.5kW/120A			
	2.0kW/180A	FN258L-16/07		
	3.0kW/200A			
	5.0kW/330A	FS5559-35-33		
	6.0kW/470A			
	7.5kW/550A			
	11kW/590A	FS5559-80-33		
15kW/780A				

■ Brake power

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Brake power (for DC90V brake)	AC100V	LPDE-1H01		—
	AC200V	LPSE-2H01		—
Brake power (for DC24V brake)		To be prepared by customer		To be prepared by customer

■ DC reactor for suppressing power supply harmonics

AC100V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
DC reactor for suppressing power supply harmonics	30W	—		/
	50W/R70F	—		
	100W/R90F	X5063	-	
	200W/2R1F	X5062	-	
	400W/2R8F	—		

AC200V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
DC reactor for suppressing power supply harmonics	30W	—		—
	50W/R70A	—		Single-phase : X5071 3-phase : X5061
	100W/R90A	X5071	-	Single-phase : X5071 3-phase : X5061
	200W/1R6A	X5070	-	Single-phase : X5070 3-phase : X5061
	400W/2R8	X5069	-	Single-phase : X5069 3-phase : X5061
	0.5kW/3R8A	X5061		X5061
	750W/5R5A			
	1.0kW/7R6A			
	1.5kW/120A	X5060		X5060
	2.0kW/180A			
	3.0kW/200A	X5059	-	X5059
	5.0kW/330A	X5068	-	
	6.0kW/470A	—	-	
	7.5kW/550A	—	-	
	11kW/590A	—	-	
15kW/780A	—	-		

AC400V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
DC reactor for suppressing power supply harmonics	0.5kW/3R8A	X5074	/	
	1.0kW/7R6A	X5075		
	1.5kW/120A			
	2.0kW/180A	X5076		
	3.0kW/200A			
	5.0kW/330A	X5077		
	6.0kW/470A	—		
	7.5kW/550A	—		
	11kW/590A	—		
	15kW/780A	—		

■ Surge absorber/surge protector/surge suppressor
AC100V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Surge absorber/surge protector/surge suppressor	30W	TU-25C120		/
	50W/R70F	TU-25C120		
	100W/R90F			
	200W/2R1F			
	400W/2R8F			

AC200V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Surge absorber/surge protector/surge suppressor	30W	TU-25C240		-
	50W/R70A	TU-25C240		LT-C32G801WS
	100W/R90A			
	200W/1R6A			
	400W/2R8			
	0.5kW/3R8A			
	750W/5R5A			
	1.0kW/7R6A			
	1.5kW/120A			
	2.0kW/180A			
	3.0kW/200A			
	5.0kW/330A			
	6.0kW/470A			
	7.5kW/550A			
	11kW/590A			
	15kW/780A			

AC400V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Surge absorber/surge protector/surge suppressor	0.5kW/3R8A	Built-in	-	/
	1.0kW/7R6A			
	1.5kW/120A			
	2.0kW/180A			
	3.0kW/200A			
	5.0kW/330A			
	6.0kW/470A			
	7.5kW/550A			
	11kW/590A			
15kW/780A				

■ Magnetic contactor
AC100V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Magnetic contactor	30W	HI-11J	HI-11J	/
	50W/R70F			
	100W/R90F			
	200W/2R1F			
	400W/2R8F	-	-	

AC200V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Magnetic contactor	30W	HI-11J	HI-11J	-
	50W/R70A			
	100W/R90A			
	200W/1R6A			
	400W/2R8			
	0.5kW/3R8A	HI-15J	-	SC-03
	750W/5R5A			
	1.0kW/7R6A	HI-20J	-	SC-4-1
	1.5kW/120A			
	2.0kW/180A			
	3.0kW/200A	HI-25J	-	/
	5.0kW/330A			
	6.0kW/470A			
	7.5kW/550A			
	11kW/590A			
15kW/780A	HI-65J			

AC400V

Name	Servo capacity/current display	Type		
		Σ- II		Σ-7
		SGDM,SGDH	SGDJ	
Magnetic contactor	0.5kW/3R8A	HI-15J	-	/
	1.0kW/7R6A			
	1.5kW/120A			
	2.0kW/180A	HI-20J		
	3.0kW/200A			
	5.0kW/330A	HI-25J		
	6.0kW/470A			
	7.5kW/550A			
	11kW/590A	HI-50J		
15kW/780A	HI-65J			

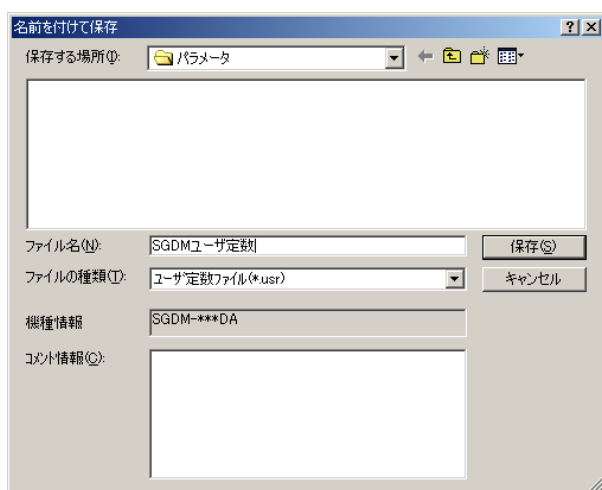
5. User constant conversion

5.1. Parameter convertor

The user constant of the Σ -II Series SERVOPACK (SGDM, SGDH) can be automatically converted to the parameters of the Σ -7 SERVOPACK by using the parameter convertor, available in the Sigma7 component of the engineering tool SigmaWin+ Ver.5.70, and later versions. The procedure is described below.

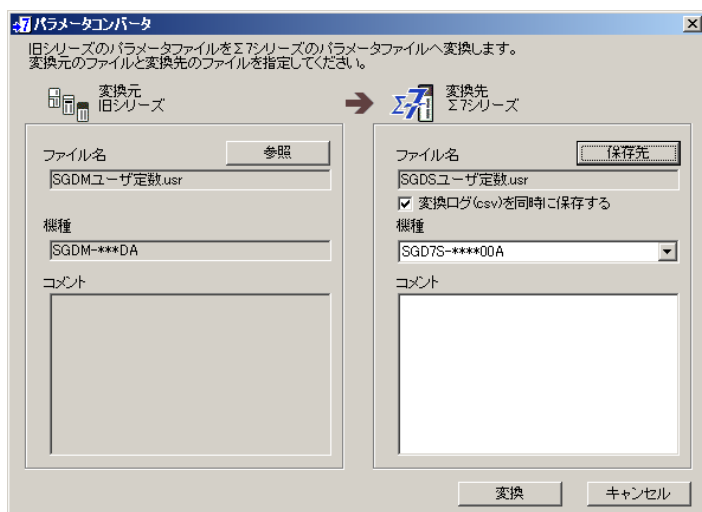
- 1 Open the Sigma II component of SigmaWin+ and verify & save the user constant of Σ -II SERVOPACK. If you have already taken the user constant file from the SERVOPACK, please use it without any change.

[Example of screen for saving user constant]



- ② Open the Sigma7 component and run the parameter convertor.

[Example of parameter convertor screen]

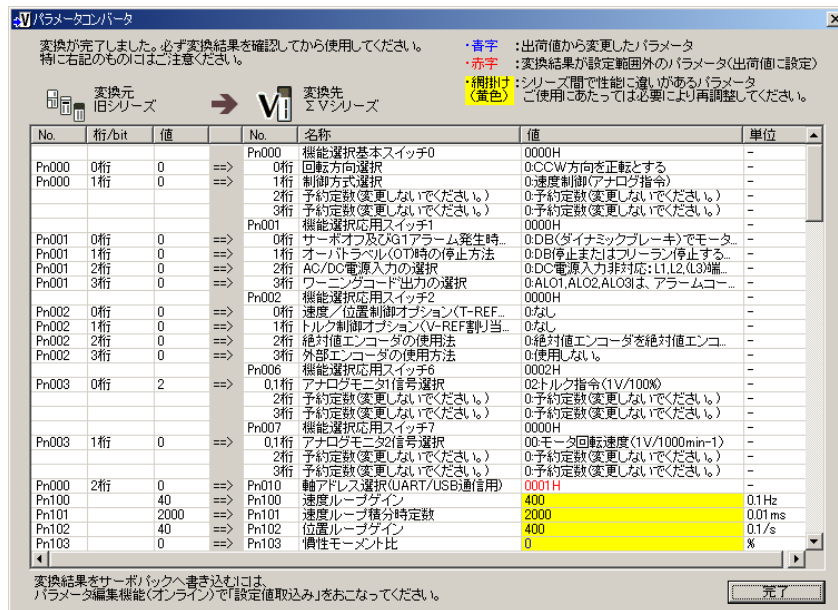


- ③ Specify the previously saved user constant file of Σ -II SERVOPACK in the names of file to be converted.
- ④ Specify the location for saving the converted file.

(Continued on next page)

⑤ Upon clicking the conversion button, the conversion process will start. The points to be noted are colored.

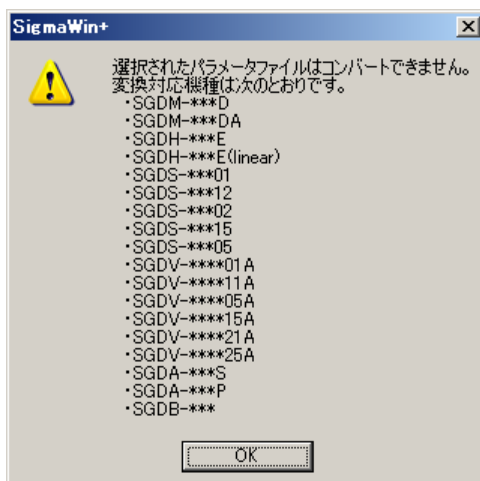
[Example of parameter convertor screen]



⑥ To write the conversion result in the SERVOPACK, connect online with the target SERVOPACK and press the “write on servo” button in the parameter edit screen.

<Precautions concerning use of parameter convertor>

- There is no function for directly converting the parameter from 2-shaft SGDM/SGDH to SGD7W.
Convert the parameters of each shaft once to SGD7S parameter, and import the parameter to SGD7W.
- SGDJ does not support parameter convertor. The models that support convertor are given below.



5.2. Setting of electronic gear ratio (when using in position control mode)

The encoder resolution of Σ -7 Series motor is 24 bit. If the command unit is to be used with a setting similar to Σ -II after changing to Σ -7 motor, change the electronic gear ratio from the existing setting to the following settings. However, if the electronic gear ratio is set above 64000, A.040 Alarm (parameter setting abnormality alarm) will sound. Therefore, command unit cannot be used with a setting similar to Σ -II. Please note that the command unit needs to be reviewed.

E.g. Existing setting of electronic gear ratio is 1: 1 (Pn20E/Pn210 = 1/1)

Replacement motor classification	Electronic gear ratio (Pn20E/Pn210) setting
Replacement of SGM□H-□□□1□□□ (16 bit absolute value) with SGM7□	256 times (256 /1)
Replacement of SGM□H-□□□2□□□ (17 bit absolute value) with SGM7□	128 times (128 /1)
Replacement of SGM□H-□□□4□□□ (16 bit absolute value) with SGM7□	256 times (256 /1)
Replacement of SGM□H-□□□A□□□ (13 bit incremental) with SGM7□	2048 times (2048 /1)
Replacement of SGM□H-□□□B□□□ (16 bit incremental) with SGM7□	256 times (256 /1)
Replacement of SGM□H-□□□C□□□ (17 bit incremental) with SGM7□	128 times (128 /1)

(Reference) New functions of Σ -7 Series

Outlines of new functions of Σ -7 Series are given in the table below.

Classification of function		Name of function	Details	Related parameter, monitor, auxiliary function, alarm etc.
Equipment setting function	1	Over-travel	Added a stop method in which deceleration time is specified, to the method for stopping motor when over-travel occurs.	Pn001.1 Pn30A
	2	Method to stop motor when Servo is ON or when alarm occurs	Added the following to the method to stop motor when Gr.2 alarm occurs. <ul style="list-style-type: none"> · Deceleration stop in which max. torque is specified. · Deceleration stop in which deceleration time is specified. 	Pn00A.0 Pn00B.1 Pn30A Pn406
	3	Operation at momentary power outage	Increased the max. set value of momentary stop hold time (Pn509) from 1000ms to 50000ms.	Pn509
	4	Connection of regenerative resistor	Added setting of external regenerative resistance value.	Pn603
	5	External attachment of DB resistance	※ DB option only Added setting of external DB resistance value.	Pn604
	6	Automatic determination of rotational or linear type	The type of Servo Motor (rotational or linear) is automatically determined by the connected encoder. If the Type \pm (rotational or linear) is different from the previously connected motor, Alarm (A.070) will sound. To cancel Alarm, Fn021 is executed.	Pn000.3 Fn021 A.070
	7	Speed ripple compensation	Added speed ripple compensation function	Pn423
	8	Force stop function	Added function to force stop by I/O signal (FSTP) input. Added DB stop, Free-run stop and deceleration stop methods.	Pn00A.1 Pn30A Pn406 Pn516.0
	9	Max. motor speed setting	Added max. rotational speed setting of rotational motor. Alarm (A.510) sounds if the motor speed exceeds the set value.	Pn316

Classification of function		Name of function	Details	Related parameter, monitor, auxiliary function, alarm etc.
Host device setting function	10	Assignment of input signal	※ Analog voltage / pulse string command types only Assignment of SEN signal in I/O input made possible.	Pn515.0
	11	Assignment of output signal	※ Analog voltage / pulse string command types only Assignment of Alarm code (AL01~3) in I/O output made possible.	Pn517
	12	Electronic gear	Expanded the scope of setting electronic gear ratio as follows. $0.001 \leq \text{electronic gear ratio (Pn20E/Pn210)} \leq 64000$	Pn20E, Pn210
	13	S-phase output	Added the function which outputs position data of absolute value encoder as a serial data.	
	14	Speed feed-forward filter	Added moving average filter in speed feed-forward. In the case of a communication command-type SERVOPACK, fluctuation due to communication cycle can be reduced.	Pn30C
	15	Torque feed-forward filter	Added moving average filter in speed feed-forward. In the case of a communication command-type SERVOPACK, fluctuation due to communication cycle can be reduced.	Pn426
	16	Online switch of rotational direction	※ Analog voltage / pulse string command types only Made changes to enable switch of rotational direction by I/O signal (/SPD-D) at the time of speed control by analog voltage command.	Pn50C
Control function	17	Speed feedback filter	Added primary delay filter in speed feedback. Vibration of motor can be reduced.	Pn308
	18	Notch filter	Added 3rd-5th stages notch filter.	Pn416~Pn41F
	19	A-type vibration suppression control function	Enabled vibration suppression of multiple vibration frequencies by functional extension.	Pn166
	20	Tuning-less function	Extended tuning level of tuning-less function from 4 to 7. Responsiveness at the time of using tuning-less function is to be improved.	Pn170.2

Classification of function		Name of function	Details	Related parameter, monitor, auxiliary function, alarm etc.
Maintenance / inspection function	21	Alarm trace	Automatically saves operation waveform when alarm sounds has been added. The cause can be determined in the early stage by checking the waveform.	Pn548
	22	Power consumption monitor	Added a function in which SERVOPACK and Servo Motor monitor consumed power and the amount of power.	Pn55A Pn824, Pn825 Un032~Un034
	23	Installation environment monitor	Added motor installation environment monitor in addition to the SERVOPACK installation environment monitor (equipped in Σ -V). Appropriateness of installation environment can be determined.	Pn824, Pn825 Un025~Un026
	24	Life prediction	Added a function that displays the remaining life of each part with limited life. It is the standard for replacement time of limited-life parts of SERVOPACK.	Pn00F.0 Pn514 Pn824, Pn825 Un027~Un02C A.9B0
	25	FAN warning	Added SERVOPACK built-in FAN stop warning (A.923). Even if the fan stops during Servo ON, operation can be continued until the machinery is safely stopped.	A.923

End

