Yaskawa Electric Co.
Motion Control Division
Solution & Support center
Marketing section

Procedure for Replacing ∑I with ∑V

Applicable Model

Motor : ∑ (SGM , SGMP , SGMG)

Servo Amplifier : ∑ (SGDA-□□□S , SGDA-□□□P ,
SGD-□□□N , SGD-□□□H , SGDB-□□AD□)

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1．Notes on Application

Check Item	Notes	
	Usage condition in ∑	Usage of ∑-V
Using SGD/SGDA/SGDB Type Servo Amplifier	Using S-phase output of absolute encoder	S-phase output is not available in SGDV. There are no alternatives.
	Using auto tuning function	The same auto-tuning function as Σ is not provided in SGDV. The tuneless function is the alternative function. Please use the advanced auto-tuning function or moment of inertia identification function of SigmaWin+ when you need to know the moment of inertia ratio.
	Using speed bias function	The speed bias function is not provided in SGDV. The positioning time can be shortened by using "Positioning setting (model following control)" of the advanced auto tuning function.
	The main circuit power supply input terminal and control power supply input terminal are common in the SGD/SGDA series	The main circuit power supply input terminal and control power supply input terminal are separated. Please confirm the method of power activation.
	Using SGD(A)-□□□S (speed・torque control type)	There is no distinction between the speed torque control type and positional control type in SGDV. It is possible to use either control type.
	Using SGD(A)-□□□P (position control type)	There is no distinction between the speed torque control type and positional control type in SGDV. It is possible to use either control type.

	Using SGD-□□□N or SGDB-□□AN (MECHATROLINK communication support type)	Please use MECHATROLINK-II communication reference servo amplifier (SGDV-□□□□1□ type). SGDV-□□□□1□ type servo amplifier corresponds to MECHATROLINK-II communication (4Mbps). Changing software of the host controller may become necessary when using the SGDV-□□□□1□ type to replace SGD-□□□N type, SGDB-□□AN type, because the corresponding MECHATROLINK command is different.
	Using SGD-□□□H (RS-422 communication support type) or SGDB-□□AM (for multi-function position control)	There is no option module with the interface that can replace these. Please consider the replacement with MECHATROLINK-II communication reference servo amplifier (SGDV-□□□□1□ type).
	Using SGDB-□□□□□-P (duct ventilation type)	Please inquire to the factory. Although there is a model that corresponds to the duct ventilation type but the capacity is limited and the installation size is different.

The following functions and performances were improved by replacing ∑ with ∑- V.

・Added the small capacity medium inertia series (SGMJV type) to the motor lineup.

・Increased the peak speed of the motor from 4500rpm to 6000 rpm. (SGMJV type and SGMAV type)

・Improved the speed frequency response characteristic for performance.

SGDA / SGDB 250Hz ⇒ SGDV 1.6kHz (Load inertia＝Rotor inertia of motor)

・Supports pulse train command input frequency of 4Mpps.

SIGN+PULSE and CW/CCW are 4Mpps. The A/B-phase 2-phase pulse train becomes 4Mpps at 1x2, 2Mpps at 2x2, and 1Mpps at 4x2.

However, it is 200kpps when connecting with open collector output.

・RoHS compliant as standard product.

・Safety standard (Safety Stop-0) embedded in standard products.

・PC connection changed from RS-232C communication to USB.

1 - 1 . Check List when replacing ∑ with ∑ - V

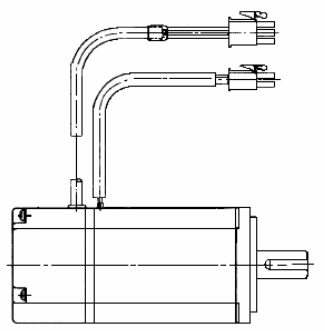
Category	Item	Where to check	Checked
Motor	Main Body	<Confirmation of main body installation dimension/position> ・Please confirm installation dimensions of the motor in-use and machine in-use. Inside low diameter Mounting hole pitch Mounting hole diameter Axis diameter Axis shape (straight, key, center tap, and taper)	
		< Confirmation of special specification > ・Please confirm whether the motor you are using now is a special type. Please confirm the specification with the delivery specifications if you are using a special type.	
	Voltage	＜Correspondence of AC100V specification＞ ・Selected the both servo motor and servo amplifier which were for 100V when using the AC100V power supply in ∑-I. However, only AC200V motor is available in the ∑－V. Select the proper servo amplifier when using AC100V power supply.	
	Cable	＜Confirmation of wiring direction＞ ・Please confirm how to wire, and also confirm that the machine has no interference.	
Servo Amplifier Hardware	Main Body	< Confirmation of main body mounting position > ・Please confirm the size (W・H・D) and the mounting hole position of the servo amplifier in-use.	
		< Confirmation of special specification > ・Please confirm whether the servo amplifier in-use does not have your own NP, and product shape, and also confirm that any special processes etc. are not done by referring the delivery specification.	
	Main Circuit	< Confirmation of wiring > ・Changed to the connector connection from the terminal block for models of 1.5kW or less. The main circuit connector, terminal block position, terminal marking and order are different between the servo amplifier in-use and the replacement servo amplifier. Please consider the substitution of extension of wiring when there is not enough room in wiring.	

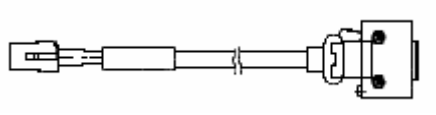
		<Regenerative process> ・Regenerative processing unit (JUSP-RG08/JUSP-RG08C) is used when regeneration processing is necessary in SGD/SGDA. In the SGDV, the regeneration processing is possible by connecting the regenerative resistor between the terminal B1 and B2.	
		＜AC100V specification＞ ・Corresponds with the voltage specification "F" (Input 100V, Output 200V) servo amplifier. The servo motors are AC200V.	
		＜Single phase AC200V specification＞ ・Three-phase circuit AC200V is standard in the ∑-V series servo amplifier. Change the parameter "Function selection switch B" when using single-phase power supply. (Pn00B.2=1) Connect to terminal L1 and L2 when using the single-phase power supply. Please note that the torque-speed characteristic is different from the three-phase circuit power supply specifications. Also please note that the size of the1.5kW single-phase AC200V servo amplifier (SGDV-120A□□A008000) is the same as the 3kW three-phase AC200V amplifier (SGDV-200A□□A).	
		＜DC power supply input＞ ・Change the parameter "Function selection switch 1" when using DC power supply input. (Pn001.2=1) Note) Connect the main circuit DC power supply only after changing the parameter.	
	Control circuit	＜Confirmation of wiring＞ ・The control circuit power supply input terminal is separated in the SGDV type when it is replaced from the SGD type and SGDA type.	
Servo amplifier software	Software	＜Confirmation of special software existence＞ ・Confirm whether the software of the servo amplifier in-use is standard software from the version number. Contact Yaskawa with the version number if you are not sure the software is standard or not.	
	Constant	＜Confirmation of user constant＞ ・Confirm the user constant of the servo amplifier in-use. SigmaWin + has a function to convert from the user constant of ∑ into the parameter of ∑- V.	
	Peripherals	＜Confirmation of the digital operator＞ ・The digital operators for ∑ and ∑-V are different. Please purchase a new digital operator if needed.	

		＜Confirmation of PC connection cable＞ ・The PC connection cables for ∑ and ∑-V are different. Please purchase a new cable when using SigmaWin+.	
	Others	In the Σ series, the stopping method is DB stop or free-run stop when an alarm is detected. On the other hand, factory setting for G2 is 0 speed stop in Σ-V series. It is possible to change to the DB stop or free-run stop when the parameter Pn00B.1=0 is set to 1 . The user constant conversion function of SigmaWin + is not able to convert this.	

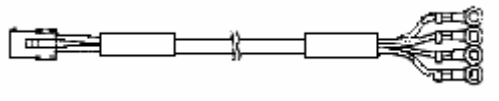
1 - 2 . Concept of Replacement

When replacing ∑ series servo motor/servo amplifier with ∑-V series, the following methods are available.





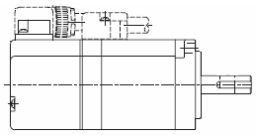
Encoder Cable



Motor Cable

●Case 1

Replacing all the motors, servo amplifier, and cables with ∑-V series.

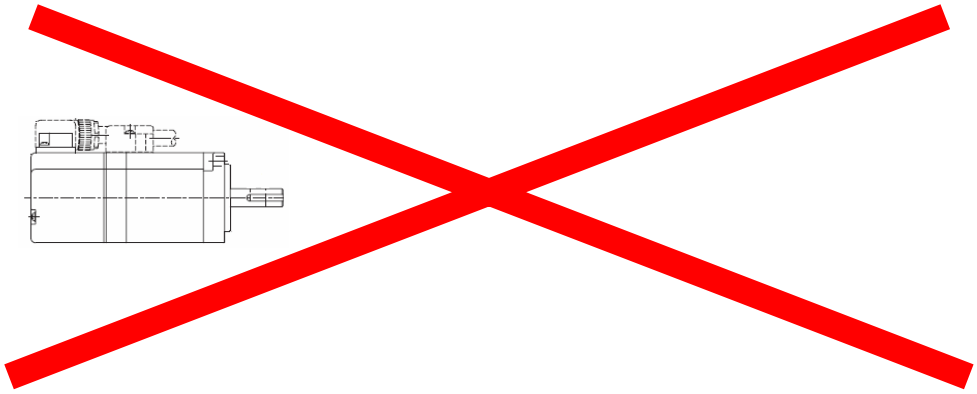


Encoder Cable

Motor Cable

●Case 2

Only the motor or amplifier cannot be replaced by itself and the existing cable of ∑ series cannot be used as is.



1-3. Replacement List

Replacing SGM with SGMJV

Type in-use of ∑ series		Replacing type ∑-V series		Replacing Method		Note
Servo Amplifier	Servo Motor	Servo Amplifier	Servo Motor	Case 1	Case 2	
SGDA-A3AS SGDA-A3AP	SGM-A3A	SGDV-R70A01A	SGMJV-A5A	Applicable	N/A	30W version is not available. Use 50W . Axis diameter changes to ϕ8 from ϕ6
SGD-A3AN		SGDV-R70A11A				
SGDA-A3BS SGDA-A3BP	SGM-A3B	SGDV-R70F01A				
SGD-A3BN		SGDV- R70F11A				
SGDA-A5AS SGDA-A5AP	SGM-A5A	SGDV-R70A01A	SGMJV-A5A	Applicable	N/A	Axis diameter changes to ϕ8 from ϕ6
SGD-A5AN		SGDV-R70A11A				
SGDA-A5BS SGDA-A5BP	SGM-A5B	SGDV-R70F01A				
SGD-A5BN		SGDV- R70F11A				
SGDA-01AS SGDA-01AP	SGM-01A	SGDV-R90A01A	SGMJV-01A	Applicable	N/A	-
SGD-01AN		SGDV-R90A11A				
SGDA-01BS SGDA-01BP	SGM-01B	SGDV-R90F01A				
SGD-01BN		SGDV- R90F11A				
SGDA-02AS SGDA-02AP	SGM-02A	SGDV-1R6A01A	SGMJV-02A	Applicable	N/A	-
SGD-02AN SGDB-02AM		SGDV-1R6A11A				
SGDA-02BS SGDA-02BP	SGM-02B	SGDV-2R1F01A				
SGD-02BN		SGDV-2R1F11A				
SGDA-03BS SGDA-03BP	SGM-03B	SGDV-2R8F01A	SGMJV-04A	Applicable	N/A	300W version is not available. Use 400W .
SGD-03BN		SGDV-2R8F11A				
SGDA-04AS SGDA-04AP	SGM-04A	SGDV-2R8A01A	SGMJV-04A	Applicable	N/A	-
SGD-04AN SGDB-05AM		SGDV-2R8A11A				
SGDA-08AS SGDA-08AP	SGM-08A	SGDV-5R5A01A	SG0MJV-08	Applicable	N/A	Axis diameter changes to ϕ19 from ϕ16
SGD-08AN SGDB-10AM		SGDV-5R5A11A				

Replacing SGM with SGMAV

Type in-use of ∑ series		Replacing type ∑-V series		Replacing Method		Note
Servo Amplifier	Servo Motor	Servo Amplifier	Servo Motor	Case 1	Case 2	
SGDA-A3AS SGDA-A3AP	SGM-A3A	SGDV-R70A01A	SGMAV-A5A	Applicable	N/A	30W version is not available. Use 50W . Axis diameter changes to ϕ8 from ϕ6
SGD-A3AN		SGDV-R70A11A				
SGDA-A3BS SGDA-A3BP	SGM-A3B	SGDV-R70F01A				
SGD-A3BN		SGDV- R70F11A				
SGDA-A5AS SGDA-A5AP	SGM-A5A	SGDV-R70A01A	SGMAV-A5A	Applicable	N/A	Axis diameter changes to ϕ8 from ϕ6
SGD-A5AN		SGDV-R70A11A				
SGDA-A5BS SGDA-A5BP	SGM-A5B	SGDV-R70F01A				
SGD-A5BN		SGDV- R70F11A				
SGDA-01AS SGDA-01AP	SGM-01A	SGDV-R90A01A	SGMAV-01A	Applicable	N/A	-
SGD-01AN		SGDV-R90A11A				
SGDA-01BS SGDA-01BP	SGM-01B	SGDV-R90F01A				
SGD-01BN		SGDV- R90F11A				
SGDA-02AS SGDA-02AP	SGM-02A	SGDV-1R6A01A	SGMAV-02A	Applicable	N/A	-
SGD-02AN SGDB-02AM		SGDV-1R6A11A				
SGDA-02BS SGDA-02BP	SGM-02B	SGDV-2R1F01A				
SGD-02BN		SGDV-2R1F11A				
SGDA-03BS SGDA-03BP	SGM-03B	SGDV-2R8F01A	SGMAV-04A	Applicable	N/A	300W version is not available. Use 400W .
SGD-03BN		SGDV-2R8F11A				
SGDA-04AS SGDA-04AP	SGM-04A	SGDV-2R8A01A	SGMAV-04A	Applicable	N/A	-
SGD-04AN SGDB-05AM		SGDV-2R8A11A				
SGDA-08AS SGDA-08AP	SGM-08A	SGDV-5R5A01A	SGMAV-08A	Applicable	N/A	Axis diameter changes to ϕ19 from ϕ16
SGD-08AN SGDB-10AM		SGDV-5R5A11A				

Replacing SGMP with SGMJV or SGMPS

Type in-use of ∑ series		Replacing type ∑-V series		Replacing Method		Note
Servo Amplifier	Servo Motor	Servo Amplifier	Servo Motor	Case 1	Case 2	
SGDA-01AS	SGMP-01A	SGDV-R90A01A	SGMJV-01A or SGMPS-01A	Available	N/A	Flange angle changes to 40° from 60° when replacing with SGMJV. SGMJV encoder is either the incremental encoder 20bit, incremental encoder 13bit or absolute encoder 20bit. Flange angle is 60° (no change) when replacing with SGMPS. SGMPS encoder is either the incremental encoder 17bit or absolute encoder 17bit.
SGDA-01AP						
SGD-01AN		SGDV-R90A11A				
SGDA-01BS	SGMP-01B	SGDV-R90F01A				
SGDA-01BP						
SGD-01BN		SGDV- R90F11A				
SGDA-02AS	SGMP-02A	SGDV-1R6A01A	SGMJV-02A or SGMPS-02A	Available	N/A	Flange angle changes to 60° from 80° when replacing with SGMJV. SGMJV encoder is either the incremental encoder 20bit, incremental encoder 13bit or absolute encoder 20bit. Flange angle is 80° (no change) when replacing with SGMPS. SGMPS encoder is either the incremental encoder 17bit or absolute encoder 17bit.
SGDA-02AP						
SGD-02AN		SGDV-1R6A11A				
SGDB-02AM						
SGDA-02BS	SGMP-02B	SGDV-2R1F01A				
SGDA-02BP						
SGD-02BN		SGDV-2R1F11A				
SGDA-03BS	SGMP-03B	SGDV-2R8F01A	SGMJV-04A or SGMPS-04A	Available	N/A	300W version is not available. Use 400W. Flange angle changes to 60° from 80° when replacing with SGMJV. SGMJV encoder is either the incremental encoder 20bit, incremental encoder 13bit or absolute encoder 20bit. Flange angle is 80° (no change) when replacing with SGMPS. SGMPS encoder is either the incremental encoder 17bit or absolute encoder 17bit.
SGDA-03BP						
SGD-03BN		SGDV-2R8F11A				
SGDA-04AS	SGMP-04A	SGDV-2R8A01A	SGMJV-04A or SGMPS-04A	Available	N/A	Flange angle changes to 60° from 80° when replacing with SGMJV. SGMJV encoder is either the incremental encoder 20bit, incremental encoder 13bit or absolute encoder 20bit. Flange angle is 80° (no change) when replacing with SGMPS. SGMPS encoder is either the incremental encoder 17bit or absolute encoder 17bit.
SGDA-04AP						
SGDB-05ADP						
SGD-04AN		SGDV-2R8A11A				
SGDB-05AN						
SGDB-05AM						
SGDA-08AS	SGMP-08A	SGDV-5R5A01A	SGMJV-08A or SGMPS-08A	Available	N/A	Flange angle changes to 80° from 120° and shaft diameter changes to ∅19 from ∅16 when replacing with SGMJV. SGMJV encoder is either the incremental encoder 20bit, incremental encoder 13bit or absolute encoder 20bit. Flange angle is 80° (no change) and shaft diameter is ∅16 (no change) when replacing with SGMPS.
SGDA-08AP						
SGDB10ADP						
SGD-08AN		SGDV-5R5A11A				
SGDB-10AN						
SGDB-10AM						
SGDB-15ADP	SGMP-15A	SGDV-120A01A	SGMPS-15A	Available	N/A	SGMPS encoder is either the incremental encoder 17bit or absolute encoder 17bit.
SGDB-15AN		SGDV-120A11A				
SGDB-15AM						

Replacing SGMG (1500min-1) with SGMGV

Type in-use of ∑ series		Replacing type ∑-V series		Replacing Method		Note
Servo Amplifier	Servo Motor	Servo Amplifier	Servo Motor	Case 1	Case 2	
-	-	SGDV-3R8A01A SGDV-3R8A11A	SGMGV-03A	N/A	N/A	Flange angle: 90mm Shaft diameter: ∅14mm
SGDB-05ADG SGDB-05AN	SGMG-05A□A	SGDV-3R8A01A SGDV-3R8A11A	SGMGV-05A	Available	N/A	Flange angle: 130 ⇒ 90(mm) Shaft diameter: ∅19⇒ ∅16(mm) Rotar inertia moment: 7.24⇒ 3.33(x10-
SGDB-10ADG SGDB-10AN	SGMG-09A□A	SGDV-7R6A01A SGDV-7R6A11A	SGMGV-09A	Available	N/A	-
SGDB-15ADG SGDB-15AN	SGMG-13A□A	SGDV-120A01A SGDV-120A11A	SGMGV-13A	Available	N/A	Rotar inertia moment: 20.5⇒ 19.9(x10-4kg·m2)
SGDB-20ADG SGDB-20AN	SGMG-20A□A	SGDV-180A01A SGDV-180A11A	SGMGV-20A	Available	N/A	Flange angle: 180⇒ 130(mm) Shaft diameter: ∅35⇒ ∅24(mm) Rotar inertia moment: 31.7⇒ 26.0(x10-4kg·m2)
SGDB-30ADG SGDB-30AN	SGMG-30A□A	SGDV-330A01A SGDV-330A11A	SGMGV-30A	Available	N/A	-
SGDB-44ADG SGDB-44AN	SGMG-44A□A	SGDV-330A01A SGDV-330A11A	SGMGV-44A	Available	N/A	-

Replacing SGMG (1000min-1) with SGMGV

Capacity of the servo motor SGMGV and servo amplifier go up

Type in-use of ∑ series		Replacing type ∑-V series		Replacing		Note
Servo Amplifier	Servo Motor	Servo Amplifier	Servo Motor	Case 1	Case 2	
SGDB-03ADM SGDB-05AN	SGMG-03A□B	SGDV-3R8A01A SGDV-3R8A11A	SGMGV-05A	Available	N/A	Flange angle: 130 ⇒ 90(mm) Shaft diameter: ∅19⇒ ∅16(mm) Rotar inertia moment: 7.24⇒ 3.33(x10-
SGDB-07ADM SGDB-10AN	SGMG-06A□B	SGDV-7R6A01A SGDV-7R6A11A	SGMGV-09A	Available	N/A	Rated torque: 5.68⇒ 5.39(N·m) Peak torque: 14.1⇒ 13.8(N·m)
SGDB-10ADM SGDB-10AN	SGMG-09A□B	SGDV-120A01A SGDV-120A11A	SGMGV-13A	Available	N/A	Rotar inertial moment: 20.5⇒ 19.9(x10-4kg·m2) Rated torque: 8.62⇒ 8.34(N·m)
SGDB-15ADM SGDB-15AN	SGMG-12A□B	SGDV-180A01A SGDV-180A11A	SGMGV-20A	Available	N/A	Flange angle: 180⇒ 130(mm) Shaft diameter: ∅35⇒ ∅24(mm) Rotar inertia moment: 31.7⇒ 26.0(x10-
SGDB-20ADM SGDB-20AN	SGMG-20A□B	SGDV-330A01A SGDV-330A11A	SGMGV-30A	Available	N/A	Rated torque: 19.1⇒ 18.6(N·m)
SGDB-30ADM SGDB-30AN	SGMG-30A□B	SGDV-330A01A SGDV-330A11A	SGMGV-44A	Available	N/A	-
SGDB-44ADM SGDB-44AN	SGMG-44A□B	-	-	-	-	

2. Motor

2-1. Type Comparison Table

・Comparison Table of SGM, SGMP and SGMAV, SGMJV (w/o reduction gears)

SGMJV− □□ □ □ □ □ □
Type Name ① ② ③ ④ ⑤ ⑥

Series Name			Σ		Σ−V		Supplement
Servo Motor Type			SGM−	SGMP−	SGMAV−	SGMJV−	
Capacity ①	30	W	A3	−	−	−	50W setting (30W setting is not available)
	50		A5	−	A5	A5	−
	100		01	01	01	01	−
	200		02	02	02	02	−
	300		03	03	−	−	400W setting (300W setting is not available)
	400		04	04	04	04	−
	750		08	08	08	08	−
Voltabe Spec. ②	100V	Standard	B		−		Corresponds by combining the Servo amplifier 100V power supply spec. "F" and motor for 200V
		UL certified	L				
		CE certified	W				
	200V	Standard	A		A		−
		UL certified	U				
		CE certified	V				
Detector ③	2048p/r incremental encoder		3		−		0bit serial incremental encoder (13bit is selectable for SGMJV
	8192p/r incremental encoder		2		−		20bit serial incremental encoder
	13bit serial incremental encode		−		−	A	−
	20bit serial incremental encode		−		D		−
	12bit absolute encoder		W		−		20bit serial absolute encoder
	15bit absolute encoder		S		−		20bit serial absolute encoder
	20bit serial absolute encoder		−		3		−
Design Order ④	Standard		1		A		SGMJV Standard: Fully-closed, Self-cooling IP65 (excluding shaft penetrated part) SGMAV Standard: Fully-closed, Self-cooling IP55 (excluding shaft penetrated part)
Shaft-end Spec. ⑤	w/o straight key		2		2		−
	w/ straight key		4		−		Handle with straight key tap
	w/ straight key tap		6		6		−
	w/o straight key w/tap		8		8		−
Option ⑥	No option		−		1		Set to "1" for no option instead of leaving as a blank
	90V brake		B		−		24V brake (90V brake setting is not available)
	24V brake		C		C		−
	Oil seal		S		S		−
	90V brake, Oil seal		D		−		24V brake (90V brake setting is not available)
	24V brake, Oil seal		E		E		−

※ 100V input type only for 300W of SGM and SGMP

・Comparison Table of SGMG and SGMGV (w/o reduction gears)

SGMGV－ □□ □ □ □ □ □ □
Type Name ① ② ③ ④ ⑤ ⑥

Series Name			Σ	Σ－V	Supplement
Servo Motor Type			SGMG-	SGMGV-	Rating 1000min-1model is not provided in SGMGV. If you are using SGMG rating 1000min-1 model (SGMG-□□□□B) please use the rating 1500min-1 model though the rated torque and externals are different.
Capacity ①	0.3	kW	03	03	
	0.45		05	05	
	0.6		06	-	
	0.85/0.9		09	09	
	1.2		12	-	
	1.3		13	13	
	1.8/2.0		20	20	
	2.9/3.0		30	30	
	4.4		44	44	
Voltabe Spec. ②	200V		A	A	
Detector ③	4096p/r incremental encoder		6	-	20bit serial incremental encoder
	8192p/r incremental encoder		2	-	20bit serial incremental encoder
	13bit serial incremental encoc		-	-	-
	20bit serial incremental encoc		-	D	-
	12bit absolute encoder		W	-	20bit serial absolute encoder
	15bit absolute encoder		S	-	20bit serial absolute encoder
	20bit serial absolute encoder		-	3	-
Design Order ④	1500min-1		A	A	Standard: Fully-closed, Self-cooling IP67 (excluding shaft penetrated part)
	1000min-1		B	-	Rating 1000min-1model is not provided please use the rating 1500min-1 model.
Shaft-end Spec.	w/o straight key		A	2	-
	w/ straight key tap		B	6	-
	1/10 taper w/ key		C,D	-	No taper is available. Use straight key.
Option ⑥	No option		-	1	Set to "1" for no option instead of leaving as a
	DC90V brake		B	B	Use 24V Brake version
	DC24V brake		C	C	-
	DC90V brake, Oil seal		F	D	Use 24V Brake version
	DC24V brake, Oil seal		G	E	-
	Oil seal		S	S	-

・Comparison Table of SGM, SGMP and SGMAV, SGMJV (w/ reduction gears)

SGMJV－ □□ □ □ □ □ □ □ □
Type Name ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Series Name			Σ		Σ－V		Supplement
Servo Motor Type			SGM-	SGMP-	SGMAV-	SGMJV-	
Capacity ①	30	W	A3	－	－	－	50W setting (30W setting is not available)
	50		A5	－	A5	A5	－
	100		01	01	01	01	－
	200		02	02	02	02	－
	300		03	03	－	－	400W setting (300W setting is not available)
	400		04	04	04	04	－
	750		08	08	08	08	－
Voltage Spec. ②	100V	Standard	B		－		Combining the Servo amplifier 100V power supply spec. "F" and motor for 200V
		UL certified	L				
		CE certified	W				
	200V	Standard	A		A		－
		UL certified	U				
		CE certified	V				
Detector ③	2048p/r incremental encoder		3		－		20bit serial incremental encoder (13bis is selectable for SGMJV
	8192p/r incremental encoder		2		－		20bit serial incremental encoder
	13bit serial incremental encoder		－		－	A	－
	20bit serial incremental encoder		－		D		－
	12bit absolute encoder		W		－		20bit serial absolute encoder
	15bit absolute encoder		S		－		20bit serial absolute encoder
	20bit serial absolute encoder		－		3		－
Design Order ④	Standard		1		A		SGMJV Standard: Fully-closed, Self-cooling IP55 (excluding shaft penetrated part) SGMAV Standard: Fully-closed, Self-cooling IP55 (excluding shaft penetrated part)
Reduction Gears Spec. ⑤	Precision reduction gears		H		H		－
	General-purpose reduction gears		J		－		Use the precision reduction gears (general-purpose reduction gears are not available)
Reduction Ratio ⑥	1/5		1		1		－
	1/9		2 ※		2 ※		Corresponding to 50W
	3/31		2 ※		－		Correspond by 1/9 (only 50W) or 1/11
	1/11		2 ※		B ※		Not corresponding to 50W
	1/21		3		C		－
	1/33		4		7		－
Shaft-end Spec. ⑦	Flange mounting		0		0		－
	w/o straight key		2		2		－
	w/ straight key		4		－		Handle with straight key tap
	w/ straight key tap		6		6		－
	w/ straight tap		8		8		－
Option ⑧	No Option		－		1		Set to "1" for no option instead of leaving as a blank
	90V brake		B		－		24V brake (90V brake setting is not available)
	24V brake		C		C		－

●Σ series
SGM :Precision 1/5、1/9(50、100W)、1/11(except 50、100W)、1/21、1/33
General-Purpose 1/5、3/31、1/21、1/33
SGMP:Precision 1/5、1/11、1/21、1/33
General-Purpose 1/5、3/31、1/21、1/33

・Comparison Table of SGMG and SGMGV (w/ reduction gears)

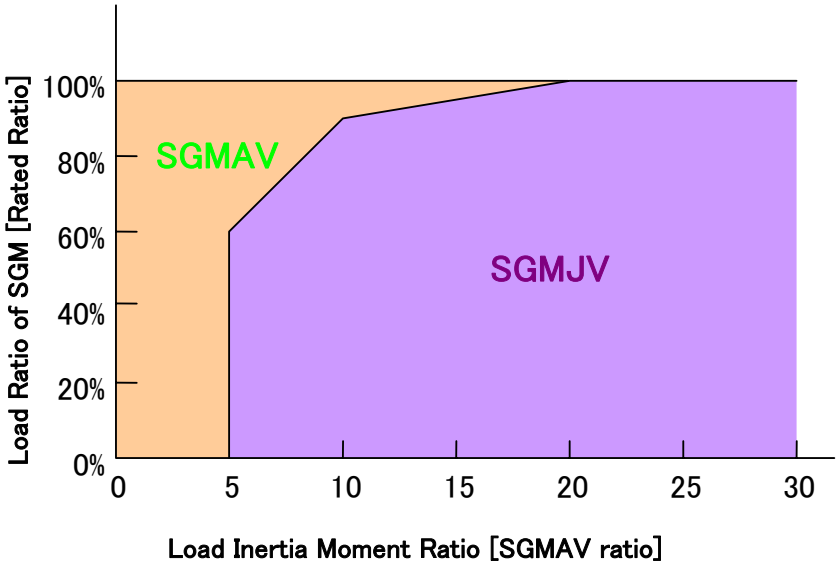
SGMGV－ □□ □ □ □ □ □ □ □ □
Type Name ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Series Name			Σ	Σ－V
Servo Motor Type			SGMG-	SGMGV-
Capacity ①	0.3	kW	03	Quotes in each case
	0.45		05	
	0.6		06	
	0.85/0.9		09	
	1.2		12	
	1.3		13	
	1.8/2.0		20	
	2.9/3.0		30	
	4.4		44	
Voltabe Spec. ②	200V		A	
Detector ③	4096p/r incremental encoder		6	
	8192p/r incremental encoder		2	
	20bit serial incremental encode		-	
	12bit absolute encoder		W	
	15bit absolute encoder		S	
	20bit serial absolute encoder		-	
Design Order ④	1500min-1		A	
	1000min-1		B	
Reduction Gears Spec. ⑤	Precision reduction gears		L	
	General-purpose reduction gea		S,T	
Reduction Ratio ⑥	1/5		1	
	1/6		A	
	1/9		2	
	1/11		B	
	1/20		5	
	1/21		C	
	1/29		7	
	1/45		8	
Shaft-end Spec. ⑦	Flange mounting (w/o shaft)		-	
	w/o straight key		-	
	w/ straight key		K	
	w/ straight key tap		R	
	w/ straight tap		-	
Option ⑧	No option		-	
	DC90V brake		B	
	DC24V brake		C	

2-2. Characteristic

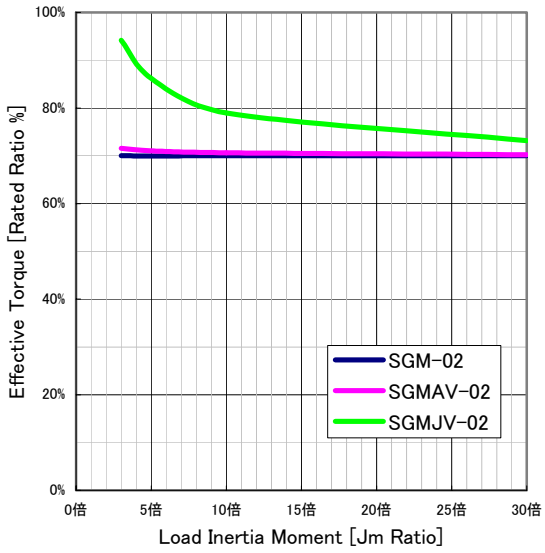
(Comparison between SGM, SGMP and SGMJV, SGMAV)

Σ	Σ − V	Motor Characteristic					
		Rotar Inertia Moment (x10^{-4}kg・m^2)		Rated Torque (N・m)		Peak Torque (N・m)	
Servo Motor	Servo Motor	Σ	Σ − V	Σ	Σ − V	Σ	Σ − V
SGM-A3A	SGMJV-A5A	0.021	0.0414	0.095	0.159	0.29	0.557
SGM-A5A	SGMJV-A5A	0.026	0.0414	0.159	0.159	0.48	0.557
SGM-01A	SGMJV-01A	0.040	0.0665	0.318	0.318	0.96	1.11
SGM-02A	SGMJV-02A	0.123	0.259	0.637	0.637	1.91	2.23
SGM-04A	SGMJV-04A	0.191	0.442	1.27	1.27	3.82	4.46
SGM-08A	SGMJV-08A	0.671	1.57	2.39	2.39	7.1	8.36
SGM-A3A	SGMAV-A5A	0.021	0.0242	0.095	0.159	0.29	0.477
SGM-A5A	SGMAV-A5A	0.026	0.0242	0.159	0.159	0.48	0.477
SGM-01A	SGMAV-01A	0.040	0.038	0.318	0.318	0.96	0.955
SGM-02A	SGMAV-02A	0.123	0.116	0.637	0.637	1.91	1.91
SGM-04A	SGMAV-04A	0.191	0.19	1.27	1.27	3.82	3.82
SGM-08A	SGMAV-08A	0.671	0.769	2.39	2.39	7.1	7.16
SGMP-01A	SGMJV-01A	0.065	0.0665	0.318	0.318	0.96	1.11
SGMP-02A	SGMJV-02A	0.209	0.259	0.637	0.637	1.91	2.23
SGMP-04A	SGMJV-04A	0.347	0.442	1.27	1.27	3.82	4.46
SGMP-08A	SGMJV-08A	2.11	1.57	2.39	2.39	7.1	8.36



Please refer to the graph on the left to replace the SGM type with the types of SGMJV or SGMAV.

Replace with the SGMAV type when the ratio of load inertia moment and rotor inertia moment is five times or less, or the load ratio is 60% or more. Replace with the SGMJV type as for the rest of that.



【 Reference 】

The graph on the left shows the load ratio when replacing the SGM type which is used by 70% with the types of SGMJV and SGMAV.

The load ratio increases though the control is steady because the rotor inertia moment of SGMJV type is large.

(Comparison between SGMG and SGMGV)

Σ ((Rating 1500min-1))	Σ－V	Motor Characteristic					
		Rotor Inertia Moment (x10^{-4}kg・m^2)		Rated Torque (N・m)		Peak Torque (N・m)	
Servo Motor	Servo Motor	Σ	Σ－V	Σ	Σ－V	Σ	Σ－V
SGMG-05A□A	SGMGV-05A	7.24	3.33	2.84	2.86	8.92	8.92
SGMG-09A□A	SGMGV-09A	13.9	13.9	5.39	5.39	13.8	13.8
SGMG-13A□A	SGMGV-13A	20.5	19.9	8.34	8.34	23.3	23.3
SGMG-20A□A	SGMGV-20A	31.7	26.0	11.5	11.5	28.7	28.7
SGMG-30A□A	SGMGV-30A	46.0	46.0	18.6	18.6	45.1	45.1
SGMG-44A□A	SGMGV-44A	67.5	67.5	28.4	28.4	71.1	71.1

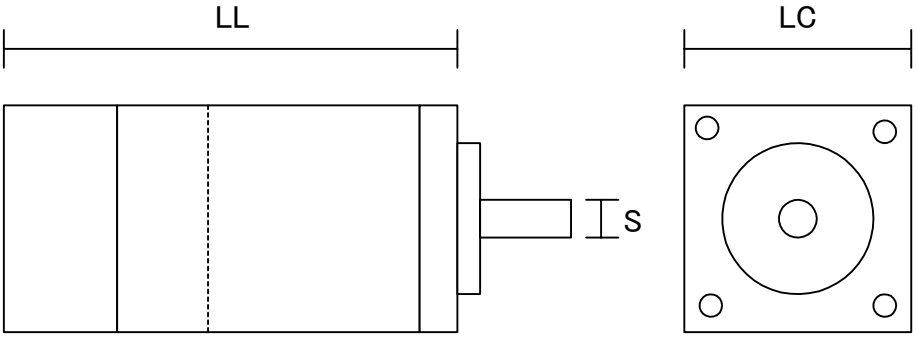
The capacity of the servo motor SGMGV and servo amplifier SGDV goes up because of the rated torque differences when replacing SGMG (Rating 1000min-1) with SGMGV.

Σ ((Rating 1000min-1))	Σ－V	Motor Characteristic					
		Rotor Inertia Moment (x10^{-4}kg・m^2)		Rated Torque (N・m)		Peak Torque (N・m)	
Servo Motor	Servo Motor	Σ	Σ－V	Σ	Σ－V	Σ	Σ－V
SGMG-03A□B	SGMGV-03A	7.24	2.48	2.84	1.96	7.17	5.88
	SGMGV-05A		3.33		2.86		8.92
SGMG-06A□B	SGMGV-05A	13.9	3.33	5.68	2.86	14.1	8.92
	SGMGV-09A		13.9		5.39		13.8
SGMG-09A□B	SGMGV-09A	20.5	13.9	8.62	5.39	19.3	13.8
	SGMGV-13A		19.9		8.34		23.3
SGMG-12A□B	SGMGV-13A	31.7	19.9	11.5	8.34	28.0	23.3
	SGMGV-20A		26.0		11.5		28.7
SGMG-20A□B	SGMGV-20A	46.0	26.0	19.1	11.5	44.0	28.7
	SGMGV-30A		46.0		18.6		45.1
SGMG-30A□B	SGMGV-30A	67.5	46.0	28.4	18.6	63.7	45.1
	SGMGV-44A		67.5		28.4		71.1
SGMG-44A□B	SGMGV-44A	89.0	67.5	41.9	28.4	107.0	71.1

2-3. Mounting Dimensions

(1) Without Reduction Gears (Standard)

Hatching-displayed the part where size is different between the ∑ motor and ∑-V motor.



Reduction Gears	Motor Capacity [W]	Brake	Σ series SGM			Σ－V series SGMAV			Σ－V series SGMJV		
			LC	LL	S	LC	LL	S	LC	LL	S
No Redution Gears	30	N/A	40	69.5	6						
		Available		101							
	50	N/A	40	77	6	40	70.5	8	40	69	8
		Available		108.5			115.5			114	
	100	N/A	40	94.5	8	40	82.5	8	40	82.5	8
		Available		135			127.5			127.5	
	200	N/A	60	96.5	14	60	80	14	60	80	14
		Available		136			120			120	
	400	N/A	60	124.5	14	60	98.5	14	60	98.5	14
		Available		164			138.5			138.5	
	750	N/A	80	145	16	80	115	19	80	115	19
		Available		189.5			160			160	

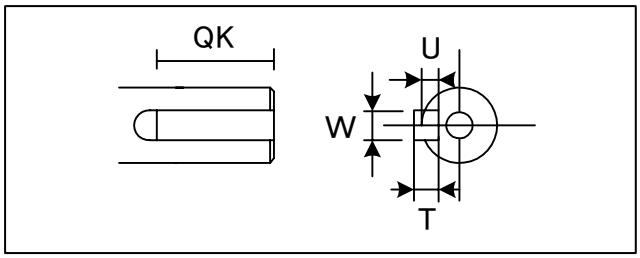
Reduction Gears	Motor Capacity [W]	Brake	Σ series SGMP			Σ－V series SGMJV		
			LC	LL	S	LC	LL	S
No Reduction Gears	100	N/A	60	57	8	40	82.5	8
		Available		86			127.5	
	200	N/A	80	62	14	60	80	14
		Available		93.5			120	
	400	N/A	80	82	14	60	98.5	14
		Available		113.5			138.5	
	750	N/A	120	81.5	16	80	115	19
		Available		115			160	

Reduction Gears	Motor Capacity [kW]	Brake	Σ Series SGMG(1500r/min) LC	Σ Series SGMG(1500r/min) LL	Σ Series SGMG(1500r/min) S	Σ-V Series SGMGV LC	Σ-V Series SGMGV LL	Σ-V Series SGMGV S
No Reduction Gears	0.45	N/A	130	138	19	130	139	16
		Available		176			172	
	0.85	N/A	130	161	19	130	137	19
		Available		199			173	
	1.3	N/A	130	185	22	130	153	22
		Available		223			189	
	1.8	N/A	180	166	35	180	171	24
		Available		217			207	
	2.9	N/A	180	192	35	180	160	35
		Available		243			208	
	4.4	N/A	180	226	35	180	184	35
		Available		277			232	

Reduction Gears	Motor Capacity [kW]	Brake	Σ Series SGMG(1000r/min) LC	Σ Series SGMG(1000r/min) LL	Σ Series SGMG(1000r/min) S	Σ-V Series SGMGV LC	Σ-V Series SGMGV LL	Σ-V Series SGMGV S
No Reduction Gears	0.3	N/A	130	138	19	130	126	14
		Available		176			159	
	0.6	N/A	130	161	19	130	139	16
		Available		199			172	
	0.9	N/A	130	185	22	130	137	19
		Available		223			173	
	1.2	N/A	180	166	35	180	153	22
		Available		217			189	
	2.0	N/A	180	192	35	180	171	24
		Available		243			207	
	3.0	N/A	180	226	35	180	160	35
		Available		277			208	
	4.4	N/A	180	260	42	180	184	35
		Available		311			232	

●Shaft Key Size

Shaded area displayed the part where size is different between the ∑ motor and ∑-V motor.

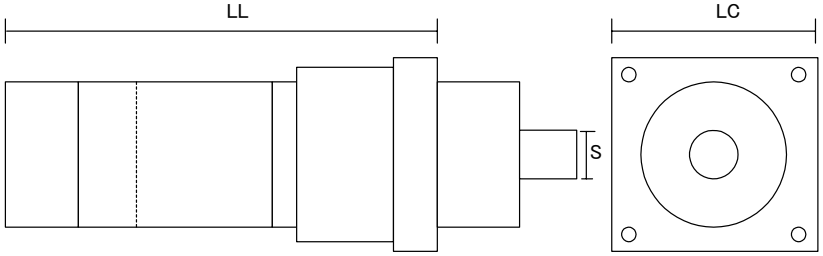


Reduction Gears	Motor Capacity [W]	Oil Seal	Σ Series SGM				Σ－V Series SGMAV				Σ－V Series SGMJV			
			QK	U	W	T	QK	U	W	T	QK	U	W	T
No Reduction Gears	30	N/A	14	1.2	2	2								
		Available												
	50	N/A	14	1.2	2	2	14	1.8	3	3	14	1.8	3	3
		Available												
	100	N/A	14	1.8	3	3	14	1.8	3	3	14	1.8	3	3
		Available												
	200	N/A	20	3	5	5	14	3	5	5	14	3	5	5
		Available	14											
	400	N/A	20	3	5	5	14	3	5	5	14	3	5	5
		Available	14											
	750	N/A	30	3	5	5	22	3.5	6	6	22	3.5	6	6
		Available	25											

Reduction Gears	Motor Capacity [W]	Brake	Σ Series SGMP				Σ－V Series SGMJV			
			QK	U	W	T	QK	U	W	T
No Reduction Gears	100	N/A	14	1.8	3	3	14	1.8	3	3
		Available								
	200	N/A	16	3	5	5	14	3	5	5
		Available								
	400	N/A	16	3	5	5	14	3	5	5
		Available								
	750	N/A	22	3	5	5	22	3.5	6	6
		Available								

(2) With General-Purpose Reduction Gears

The customers need to prepare the general-purpose reduction gears by themselves or it might be necessary for them to consider replacing with a precise decelerator because there is no general-purpose reduction gears in the in the ∑-V .



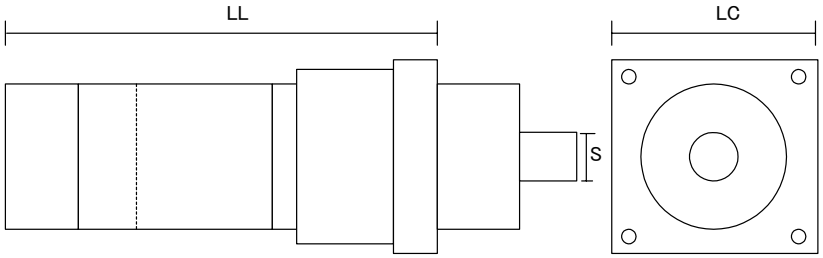
Reduction Gears	Motor Capacity [W]	Reduction Gear Ratio	Brake	Σ Series SGM			Σ－Ⅴ Series (precision reduction gears) SGMAV			SGMJV		
				LC	LL	S	LC	LL	S	LC	LL	S
General-Purpose	30	1/5	N/A	60	101.5	14						
			Available		133.5							
		1/10.3	N/A	60	101.5	14						
			Available		133.5							
		1/21	N/A	60	116.5	14						
			Available		148.5							
		1/33	N/A	60	116.5	14						
			Available		148.5							
	50	1/5	N/A	60	109	14	40	110	10	40	108.5	10
			Available		141			155			153.5	
		1/10.3	N/A	70	114	16	40	110	10	40	108.5	10
			Available		146			155			153.5	
		1/21	N/A	70	131	16	40	119	10	40	117.5	10
			Available		163			164			162.5	
		1/33	N/A	70	131	16	60	134.5	16	60	133	16
			Available		163			179.5			178	
	100	1/5	N/A	70	131.5	16	40	122	10	40	122	10
			Available		173			167			167	
		1/10.3	N/A	70	131.5	16	60	146.5	16	60	146.5	16
			Available		173			191.5			191.5	
		1/21	N/A	90	153	20	60	146.5	16	60	146.5	16
			Available		194			191.5			191.5	
		1/33	N/A	90	153	20	90	149	25	90	149	25
			Available		194			194			194	
	200	1/5	N/A	90	138	20	60	144	16	60	144	16
			Available		178.5			184			184	
		1/10.3	N/A	90	138	20	60	144	16	60	144	16
			Available		178.5			184			184	
		1/21	N/A	105	165.5	25	90	151	25	90	151	25
			Available		206			191			191	
		1/33	N/A	105	165.5	25	90	151	25	90	151	25
			Available		206			191			191	
	400	1/5	N/A	90	166	20	60	162.5	16	60	162.5	16
			Available		206.5			202.5			202.5	
		1/10.3	N/A	105	172.5	25	90	169.5	25	90	169.5	25
			Available		213			209.5			209.5	
		1/21	N/A	120	200.5	32	90	169.5	25	90	169.5	25
			Available		241			209.5			209.5	
		1/33	N/A	120	200.5	32	120	202.5	40	120	202.5	40
			Available		241			242.5			242.5	
	750	1/5	N/A	105	193	25	90	193	25	90	193	25
			Available		238.5			238			238	
		1/10.3	N/A	120	196	32	90	193	25	90	193	25
			Available		241.5			238			238	
		1/21	N/A	145	223	40	120	219	40	120	219	40
			Available		268.5			264			264	
		1/33	N/A	145	223	40	120	219	40	120	219	40
			Available		268.5			264			264	

Reduction Gears	Motor Capacity [W]	Reduction Gear Ratio	Brake	Σ Series SGMP			Σ－V Series (precision reduction gears) SGMAV			SGMJV		
				LC	LL	S	LC	LL	S	LC	LL	S
General-Purpose	100	1/5	N/A	70	112	16	40	122	10	40	122	10
			Available		141			167			167	
		1/10.3	N/A	70	112	16	60	146.5	16	60	146.5	16
			Available		141			191.5			191.5	
		1/21	N/A	90	116.5	20	60	146.5	16	60	146.5	16
			Available		145.5			191.5			191.5	
		1/33	N/A	90	116.5	20	90	149	25	90	149	25
			Available		145.5			194			194	
	200	1/5	N/A	90	121.5	20	60	144	16	60	144	16
			Available		153			184			184	
		1/10.3	N/A	90	121.5	20	60	144	16	60	144	16
			Available		153			184			184	
		1/21	N/A	105	132	25	90	151	25	90	151	25
			Available		163.5			191			191	
		1/33	N/A	105	132	25	90	151	25	90	151	25
			Available		163.5			191			191	
	400	1/5	N/A	90	141.5	20	60	162.5	16	60	162.5	16
			Available		173			202.5			202.5	
		1/10.3	N/A	105	152	25	90	169.5	25	90	169.5	25
			Available		183.5			209.5			209.5	
		1/21	N/A	120	159	32	90	169.5	25	90	169.5	25
			Available		190.5			209.5			209.5	
		1/33	N/A	120	159	32	120	202.5	40	120	202.5	40
			Available		190.5			242.5			242.5	
	750	1/5	N/A	105	151.5	25	90	193	25	90	193	25
			Available		188			238			238	
		1/10.3	N/A	120	158.5	32	90	193	25	90	193	25
			Available		195.5			238			238	
		1/21	N/A	145	169.5	40	120	219	40	120	219	40
			Available		206			264			264	
		1/33	N/A	145	169.5	40	120	219	40	120	219	40
			Available		206			264			264	

Reduction Gears	Motor Capacity	Reduction Gear Ratio	Brake	Σ Series SGMG(1500r/min)			Σ－V Series (precision reduction gears) SGMGV		
	[kW]			LC	LL	S	LC	LL	S
General-Purpose	0.45	1/6	N/A	160	138	φ28h6	Quotes in Each Case		
			Available		190				
		1/11	N/A	160	138	φ28h6			
			Available		190				
		1/21	N/A	160	138	φ28h6			
			Available		190				
		1/29	N/A	160	138	φ38h6			
			Available		190				
	0.85	1/6	N/A	160	161	φ28h6			
			Available		213				
		1/11	N/A	160	161	φ28h6			
			Available		213				
		1/21	N/A	210	161	φ38h6			
			Available		213				
		1/29	N/A	210	161	φ38h6			
			Available		213				
	1.3	1/6	N/A	160	185	φ28h6			
			Available		237				
		1/11	N/A	210	185	φ38h6			
			Available		237				
		1/21	N/A	210	185	φ38h6			
			Available		237				
		1/29	N/A	260	185	φ58h6			
			Available		237				
	1.8	1/6	N/A	210	166	φ38h6			
			Available		231				
		1/11	N/A	210	166	φ38h6			
			Available		231				
		1/21	N/A	260	166	φ58h6			
			Available		231				
		1/29	N/A	260	166	φ58h6			
			Available		231				
	2.9	1/6	N/A	210	192	φ38h6			
			Available		257				
		1/11	N/A	210	192	φ38h6			
			Available		257				
		1/21	N/A	260	192	φ58h6			
			Available		257				
		1/29	N/A	340	192	φ68h6			
			Available		257				
	4.4	1/6	N/A	260	226	φ58h6			
			Available		291				
		1/11	N/A	260	226	φ58h6			
			Available		291				
		1/21	N/A	340	226	φ68h6			
			Available		291				
		1/29	N/A	400	226	φ78h6			
			Available		291				

Reduction Gears	Motor Capacity	Reduction Gear Ratio	Brake	Σ Series SGMG(1000r/min)			Σ－V Series (precision reduction gears) SGMGV		
	[kW]			LC	LL	S	LC	LL	S
General-Purpose	0.3	1/6	N/A	160	138	φ28h6	Quotes in each time		
			Available		190				
		1/11	N/A	160	138	φ28h6			
			Available		190				
		1/21	N/A	160	138	φ28h6			
			Available		190				
		1/29	N/A	160	138	φ28h6			
			Available		190				
	0.6	1/6	N/A	160	161	φ28h6			
			Available		213				
		1/11	N/A	160	161	φ28h6			
			Available		213				
		1/21	N/A	210	161	φ38h6			
			Available		213				
		1/29	N/A	210	161	φ38h6			
			Available		213				
	0.9	1/6	N/A	160	185	φ28h6			
			Available		237				
		1/11	N/A	160	185	φ28h6			
			Available		237				
		1/21	N/A	210	185	φ38h6			
			Available		237				
		1/29	N/A	210	185	φ38h6			
			Available		237				
	1.2	1/6	N/A	210	166	φ38h6			
			Available		231				
		1/11	N/A	210	166	φ38h6			
			Available		231				
		1/21	N/A	260	166	φ58h6			
			Available		231				
		1/29	N/A	260	166	φ58h6			
			Available		231				
	2.0	1/6	N/A	210	192	φ38h6			
			Available		257				
		1/11	N/A	210	192	φ38h6			
			Available		257				
		1/21	N/A	260	192	φ58h6			
			Available		257				
		1/29	N/A	340	192	φ60h6			
			Available		257				
	3.0	1/6	N/A	260	226	φ50h6			
			Available		291				
		1/11	N/A	260	226	φ50h6			
			Available		291				
		1/21	N/A	340	226	φ60h6			
			Available		291				
		1/29	N/A	400	226	φ70h6			
			Available		291				
	4.4	1/6	N/A	260	260	φ50h6			
			Available		325				
		1/11	N/A	260	260	φ50h6			
			Available		325				
		1/21	N/A	400	260	φ70h6			
			Available		325				
		1/29	N/A	400	260	φ70h6			
			Available		325				

（3）With Precision Reduction Gears



Reduction Gears	Motor Capacity [W]	Reduction Gear Ratio	Brake	Σ Series SGM			Σ－Ⅴ Sereis					
							SGMAV			SGMJV		
				LC	LL	S	LC	LL	S	LC	LL	S
Precision Reduction Gears	30	1/5	N/A	60	97.5	14						
			Available		129.5							
		1/9	N/A	60	97.5	14						
			Available		129.5							
		1/21	N/A	60	112.5	14						
			Available		144.5							
		1/33	N/A	60	112.5	14						
			Available		144.5							
	50	1/5	N/A	60	105	14	40	110	10	40	108.5	10
			Available		137			155			153.5	
		1/9	N/A	70	106	16	40	110	10	40	108.5	10
			Available		138			155			153.5	
		1/21	N/A	70	123	16	40	119	10	40	117.5	10
			Available		155			164			162.5	
		1/33	N/A	70	123	16	60	134.5	16	60	133	16
			Available		155			179.5			178	
	100	1/5	N/A	70	123.5	16	40	122	10	40	122	10
			Available		164.5			167			167	
		1/11	N/A	70	140.5	16	60	146.5	16	60	146.5	16
			Available		181.5			191.5			191.5	
		1/21	N/A	90	149.5	20	60	146.5	16	60	146.5	16
			Available		190.5			191.5			191.5	
		1/33	N/A	90	149.5	20	90	149	25	90	149	25
			Available		190.5			194			194	
	200	1/5	N/A	90	134.5	20	60	144	16	60	144	16
			Available		175			184			184	
		1/11	N/A	90	151.5	20	60	144	16	60	144	16
			Available		192			184			184	
		1/21	N/A	105	159.5	25	90	151	25	90	151	25
			Available		200			191			191	
		1/33	N/A	105	159.5	25	90	151	25	90	151	25
			Available		200			191			191	
	400	1/5	N/A	90	162.5	20	60	162.5	16	60	162.5	16
			Available		203			202.5			202.5	
		1/11	N/A	105	187.5	25	90	169.5	25	90	169.5	25
			Available		228			209.5			209.5	
		1/21	N/A	120	195.5	32	90	169.5	25	90	169.5	25
			Available		236			209.5			209.5	
		1/33	N/A	120	195.5	32	120	202.5	40	120	202.5	40
			Available		236			242.5			242.5	
	750	1/5	N/A	105	187	25	90	193	25	90	193	25
			Available		232.5			238			238	
		1/11	N/A	120	216	32	90	193	25	90	193	25
			Available		261.5			238			238	
		1/21	N/A	145	223	40	120	219	40	120	219	40
			Available		268.5			264			264	
		1/33	N/A	145	223	40	120	219	40	120	219	40
			Available		268.5			264			264	

Reduction Gears	Motor Capacity [W]	Reduction Gear Ratio	Brake	Σ Series SGMP			Σ－V Series SGMAV			Σ－V Series SGMJV		
				LC	LL	S	LC	LL	S	LC	LL	S
Precision Reduction Gears	100	1/5	N/A	70	104	16	40	122	10	40	122	10
			Available		133			167			167	
		1/11	N/A	70	104	16	60	146.5	16	60	146.5	16
			Available		133			191.5			191.5	
		1/21	N/A	90	113	20	60	146.5	16	60	146.5	16
			Available		142			191.5			191.5	
		1/33	N/A	90	113	20	90	149	25	90	149	25
			Available		142			194			194	
	200	1/5	N/A	90	118	20	60	144	16	60	144	16
			Available		149.5			184			184	
		1/11	N/A	90	118	20	60	144	16	60	144	16
			Available		149.5			184			184	
		1/21	N/A	105	126	25	90	151	25	90	151	25
			Available		157.5			191			191	
		1/33	N/A	105	126	25	90	151	25	90	151	25
			Available		157.5			191			191	
	400	1/5	N/A	90	138	20	60	162.5	16	60	162.5	16
			Available		169.5			202.5			202.5	
		1/11	N/A	105	146	25	90	169.5	25	90	169.5	25
			Available		177.5			209.5			209.5	
		1/21	N/A	120	154	32	90	169.5	25	90	169.5	25
			Available		185.5			209.5			209.5	
		1/33	N/A	120	154	32	120	202.5	40	120	202.5	40
			Available		185.5			242.5			242.5	
	750	1/5	N/A	105	145.5	25	90	193	25	90	193	25
			Available		182			238			238	
		1/11	N/A	120	153.5	32	90	193	25	90	193	25
			Available		187			238			238	
		1/21	N/A	145	169.5	40	120	219	40	120	219	40
			Available		203			264			264	
		1/33	N/A	145	169.5	40	120	219	40	120	219	40
			Available		203			264			264	

Reduction Gears	Motor Capacity [W]	Reduction Gear Ratio	Brake	Σ Series SGMG(1500r/min)			Σ－Ⅴ Series SGMGV		
				LC	LL	S	LC	LL	S
Precision Reduction Gears	0.45	1/5	N/A	140	138	φ35h6	Quotes each time		
			Available		190				
		1/9	N/A	140	138	φ35h6			
			Available		190				
		1/20	N/A	245	138	φ50h6			
			Available		190				
		1/29	N/A	245	138	φ50h6			
			Available		190				
		1/45	N/A	245	138	φ50h6			
			Available		190				
	0.85	1/5	N/A	140	161	φ35h6			
			Available		213				
		1/9	N/A	140	161	φ35h6			
			Available		213				
		1/20	N/A	245	161	φ50h6			
			Available		213				
		1/29	N/A	245	161	φ50h6			
			Available		213				
		1/45	N/A	310	161	φ60h6			
			Available		213				
	1.3	1/5	N/A	245	185	φ50h6			
			Available		237				
		1/9	N/A	245	185	φ50h6			
			Available		237				
		1/20	N/A	245	185	φ50h6			
			Available		237				
		1/29	N/A	310	185	φ60h6			
			Available		237				
		1/45	N/A	310	185	φ60h6			
			Available		237				
	1.8	1/5	N/A	245	166	φ50h6			
			Available		231				
		1/9	N/A	245	166	φ50h6			
			Available		231				
		1/20	N/A	310	166	φ60h6			
			Available		231				
		1/29	N/A	310	166	φ60h6			
			Available		231				
	2.9	1/5	N/A	310	192	φ60h6			
			Available		257				
		1/9	N/A	310	192	φ60h6			
			Available		257				
		1/20	N/A	310	192	φ60h6			
			Available		257				
	4.4	1/5	N/A	310	226	φ60h6			
			Available		291				
		1/9	N/A	310	226	φ60h6			
			Available		291				

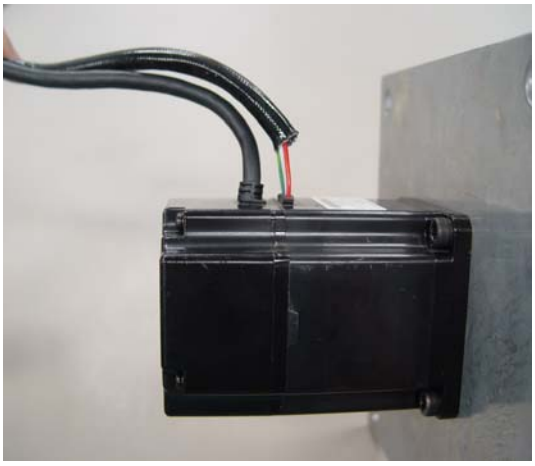
Reduction Gears	Motor Capacity [W]	Reduction Gear Ratio	Brake	Σ Sereies SGMG(1000r/min)			Σ－Ⅴ Series SGMGV		
				LC	LL	S	LC	LL	S
Precision Reduction Gears	0.45	1/5	N/A	140	138	φ35h6	Quotes each time		
			Available		190				
		1/9	N/A	140	138	φ35h6			
			Available		190				
		1/20	N/A	245	138	φ50h6			
			Available		190				
		1/29	N/A	245	138	φ50h6			
			Available		190				
		1/45	N/A	245	138	φ50h6			
			Available		190				
	0.85	1/5	N/A	140	161	φ35h6			
			Available		213				
		1/9	N/A	140	161	φ35h6			
			Available		213				
		1/20	N/A	245	161	φ50h6			
			Available		213				
		1/29	N/A	245	161	φ50h6			
			Available		213				
		1/45	N/A	310	161	φ60h6			
			Available		213				
	1.3	1/5	N/A	245	185	φ50h6			
			Available		237				
		1/9	N/A	245	185	φ50h6			
			Available		237				
		1/20	N/A	245	185	φ50h6			
			Available		237				
		1/29	N/A	310	185	φ60h6			
			Available		237				
		1/45	N/A	310	185	φ60h6			
			Available		237				
	1.8	1/5	N/A	245	166	φ50h6			
			Available		231				
		1/9	N/A	245	166	φ50h6			
			Available		231				
		1/20	N/A	310	166	φ60h6			
			Available		231				
		1/29	N/A	310	166	φ60h6			
			Available		231				
	2.9	1/5	N/A	310	192	φ60h6			
			Available		257				
		1/9	N/A	310	192	φ60h6			
			Available		257				
		1/20	N/A	310	192	φ60h6			
			Available		257				
	4.4	1/5	N/A	310	226	φ60h6			
			Available		291				
		1/9	N/A	310	226	φ60h6			
			Available		291				

2-4. Notes at Machine Installation

Please cautious about the cable wiring as well as the size of the flange, spigot, and shaft at machine installation. The pictures shown below are the part of the motor cable wiring of □40 and □60.

□40

□60



3. Servo Amplifier

3-1. Type Comparison Table

1-3. Please refer to the replacement list

The servo amplifier type has been changed from the capacity value to output current value.

3-2. Terminal Table

(1) Main circuit terminal

Σ		Σ－V	
SGDA type	SGDB type	SGDV type	
Terminal marking	Terminal marking	Terminal marking	Function
R	R	L1	Main circuit power supply input terminal
T	S	L2	
	T	L3	
U	U	U	Servomotor connection terminal
V	V	V	
W	W	W	
R	r	L1C	Control power supply input terminal (100V/200V type)
T	t	L2C	
	P,P1,B	B1/(+)	External regenerative resistor connection terminal The connection method is different in Σ－V
		B2	
		B3	
		(+)1	DC reactor conncetion terminal for power line harmonics control
		(+)2	
		(−)1	
		(−)2	
P	P	B1/(+)	Main circuit forward side terminal
N	N	(−)	Main circuit reverse side terminal
		(−)2	

・Single-phase power supply AC200V:

It is possible to change to single phase power supply AC200V by the parameter (Factory setting is “3-phase power supply”) however, the torque - rotational speed characteristic is different from the three-phase power supply specification.

(2) Control Circuit Terminal

Σ-V Notes

1. Do not use the reserved terminal of "—"

2. Connect the shield line of the cable for I/O with the connector shell. It should be connected with frame ground (FG) at the servo amplifier side connector.

3. The following input signals can change the parameter allocation

/DEC,P-OT,N-OT, EXT1, EXT2 ,EXT3

4. The signals of /COIN, /V-CMP, /TGON, /S-RDY, /CLT, /VLT, /BK, /WARN, /NEAR are able to allocate to /SO1, /SO2, /SO3

Please refer to the Σ－V manual for details.

Comparison between SGDA－□□□S type [Analog voltage reference type] (speed & torque control type) and SGDV type

Terminal No.		Terminal Marking	Function
SGDA type	SGDV type		
36pin	50pin		
1	9	T-REF	Torque reference input
3	5	V-REF	Speed reference input
2,4,6,10	1,2,6,10	GND	Ground
5	4	SEN	SEN signal input
7	—	/BK+	Brake interlock output (*3)
8	25	/V-CMP+(./COIN+)	Speed match detection output (*2)
9	27	/TGON+	Rotation detection output (*2)
11	45	/P-CL	Forward side external torque control input (*2)
12	46	/N-CL	Reverse side external torque control input (*2)
13	47	+24VIN	External power supply input
14	40	/S-ON	Servo ON input (*2)
15	41	/P-CON	P operation input (*2)
16	42	P-OT	Forward drive prohibited input (*2)
17	43	N-OT	Reverse drive prohibited input (*2)
18	44	/ALM-RST	Alarm reset inupt (*2)
19	—	SG-PG	Single ground for PG signal output
20	33	PAO	PG frequence dividing output A-phase
21	34	/PAO	
22	35	PBO	PG frequence dividing output B-phase
23	36	/PBO	
24	19	PCO	PG frequence dividing output C-phase
25	20	/PCO	
26	—	PSO	S-phse signal output
27	—	/PSO	
28	21	BAT(+)	Battery(+)
29	22	BAT(-)	Battery(-)
30	37	ALO1	Alarm code output
31	38	ALO2	
32	39	ALO3	
33	—	SG-AL	Signal ground for alarm code output
34	31	ALM+	Servo alarm output
35	32	ALM-	
36	Shell	FG	Frame Ground

(*2): The sequence I/O is factory setting
The allocation change is possible by using the user parameter in Σ-V, but not in Σ series

(*3): Change the setting of one of three factory setting output signals by user parameter if needed

The number of CN1 input signal connector pins of ∑ series SGDA type and ∑-V series SGDV type are different.

The CN2 encoder connector is not compatible.

The CN5 analogue monitor connector is compatible.

Comparison between SGDA－□□□P type [pulse train reference type] (position control type) and SGDV type

SGDA type 36pin	SGDV type 50pin	Terminal Marking	Function
1	7	PULS	Reference pule input
2	8	/PULS	
3	11	SIGN	Reference symbol input
4	12	/SIGN	
5	15	CLR	Clear input
6	14	/CLR	
7	—	/BK+	Brake interlock output (*3)
8	25	/V-CMP+(./COIN+)	Speed match detection output (*2)
9	27	/TGON+	Rotation detection output (*2)
10	1,2,6,10	GND	Ground
11	45	/P-CL	Forward side external torque control input (*2)
12	46	/N-CL	Reverse side external control input (*2)
13	47	+24VIN	External power supply input
14	40	/S-ON	Servo ON input (*2)
15	41	/P-CON	P operation input (*2)
16	42	P-OT	Forward drove prohibited input (*2)
17	43	N-OT	Reverse drive prohibited input (*2)
18	44	/ALM-RST	Alarm reset input (*2)
19	—	SG-PG	Single ground for PG signal output
20	33	PAO	PG frequency dividing output A-phase
21	34	/PAO	
22	35	PBO	PG frequency dividing output B-phase
23	36	/PBO	
24	19	PCO	PG frequency dividing output C-phase
25	20	/PCO	
26	—	PSO	S-phase signal output
27	—	/PSO	
28	21	BAT(+)	Battery(+)
29	22	BAT(-)	Battery(-)
30	37	ALO1	Alarm code output
31	38	ALO2	
32	39	ALO3	
33	—	SG-AL	Signal ground for alarm code output
34	31	ALM+	Servo alarm output
35	32	ALM-	
36	Shell	FG	Frame ground

(*2): The sequence I/O is factory setting
The allocation change is possible by using the user parameter in Σ-V, but not in Σ series

(*3): Change the setting of one of three factory setting output signals by user parameter if needed

The number of CN1 input signal connector pins of ∑ series SGDA type and ∑-V series SGDV type are different.

The CN2 encoder connector is not compatible.

The CN5 analogue monitor connector is compatible.

Comparison between SGDB－□□□D type and SGDV type

Terminal No.			
SGDB type	SGDV type	Terminal Marking	Function
50pin	50pin		
1	1	SG	Signal Ground
2	2	SG	Signal Ground
3	3	PL1	Battery for open collector reference
4	4	SEN	SEN signal input
5	5	V-REF	Speed reference input
6	6	SG	Signal Ground
7	7	PULS	Reference pulse input
8	8	/PULS	Reference pulse input
9	9	T-REF	Tordque reference input
10	10	SG	Signal Ground
11	11	SIGN	Reference code input
12	12	/SIGN	Reference code input
13	13	PL2	Battery for open collector reference
14	14	/CLR	Clear input
15	15	CLR	Clear input
16	－	TRQ-M	Torque monitor
17	－	VTG-M	Speed monitor
18	18	PL3	Battery for open collector reference
19	19	PCO	PG frequency dividing output C-phase
20	20	/PCO	PG frequency dividing output C-phase
21	21	BAT /BAT(+)	Battery (+)
22	22	BAT0 / BAT(－)	Battery (－)
23	－	+12V	Battery for analog refernce
24	－	-12V	Battery for analog refernce
25	25	/V-CMP／/COIN	Speed match detection output
26	26	/V-CMP／/COIN	Speed match detection output
27	27	/TGON+	Rotating detection output
28	28	/TGON-	Rotating detection output
29	29	/S-RDY+	Servo-ready output
30	30	/S-RDY-	Servo-ready output
31	31	ALM+	Servo alarm output
32	32	ALM-	Servo alarm output
33	33	PAO	PG frequency dividing output A-phase
34	34	/PAO	PG frequency dividing output A-phase
35	35	PBO	PG frequency dividing output B-phase
36	36	/PBO	PG frequency dividing output B-phase
37	37	ALO1	Alarm code output
38	38	ALO2	Alarm code output
39	39	ALO3	Alarm code output
40	40	/S-ON	Servo ON inuput (*2)
41	41	/P-CON	P operation input (*2)
42	42	P-OT	Forward drive prohibit input (*2)
43	43	N-OT	Reverse drive prohibit input (*2)
44	44	/ALMRST	Alarm reset input
45	45	/P-CL	Forward side external torque limit input
46	46	/N-CL	Reverse side external torque limit input
47	47	+24 VIN	External power supply input
48	－	PSO	S-phase signal output
49	－	/PSO	S-phase signal output
50	－	FG	Frame Ground

(*2): The sequence I/O is factory setting
The allocation change is possible by using the user parameter in Σ-V, but not in Σ series

(*3): Change the setting of one of three factory setting output signals by user parameter if needed

Comparison between SGDA－□□□N type [MECHATROLINK communication reference type] and SGDV type

Σ		Σ－V		Function	Remarks
SGDA-□□□N		SGDV-□□□□1□□			
Terminal No. 26pin	Terminal Marking	Terminal No. 26pin	Terminal Marking		
1	/BK	1	/BK(+) (/SO1+)	Brake interlock output	
2	BK-SG	2	/BK(−) (/SO1−)	Brake interlock output	Function is the same though the terminal marking is different
3	ALM	3	ALM+	Servo alarm outptu	
4	ALM-SG	4	ALM−	Servo alarm outptu	Function is the same though the terminal marking is different
5	—	5	—	—	Reserved terminal
6	+24VIN	6	+24VIN	External power supply input	
7	P-OT	7	P-OT (/SI1)	Forward drive prohibit input	
8	N-OT	8	N-OT (/SI2)	Reverse drive prohibit input	
9	/DEC	9	/DEC (/SI3)	Homing deceleration LS input	
10	/EXT	10	/EXT1 (/SI4)	External latch signal 1 input	There is just one external latch signal in Σ
—	—	11	/EXT2 (/SI5)	External latch signal 2 input	
—	—	12	/EXT3 (/SI6)	External latch signal 3 input	
—	—	13	/SI0	General purpose inut	
14	BAT(+)	14	BAT(+)	Battery(+)	When using absolute encoder
15	BAT(−)	15	BAT(−)	Battery(−)	When using absolute encoder
—	—	16	SG	Signal ground	
—	—	17	PAO	PG frequency dividing output A-phase	
—	—	18	/PAO		
—	—	19	PBO	PG frequency dividing output B-phase	
—	—	20	/PBO		
—	—	21	PCO	PG frequency dividing output C-phase	
—	—	22	/PCO		
—	—	23	/SO2+	General purpose output	
—	—	24	/SO2−	General purpose output	
—	—	25	/SO3+	General purpose output	
—	—	26	/SO3−	General purpose output	
26	FG	—	—	Frame Ground	

The connector is different though the number of CN1 I/O signal pins of the Σ series and Σ-V series are the same.

Comparison between SGDB－□□□N type [MECHATROLINK communication reference type] and SGDV type

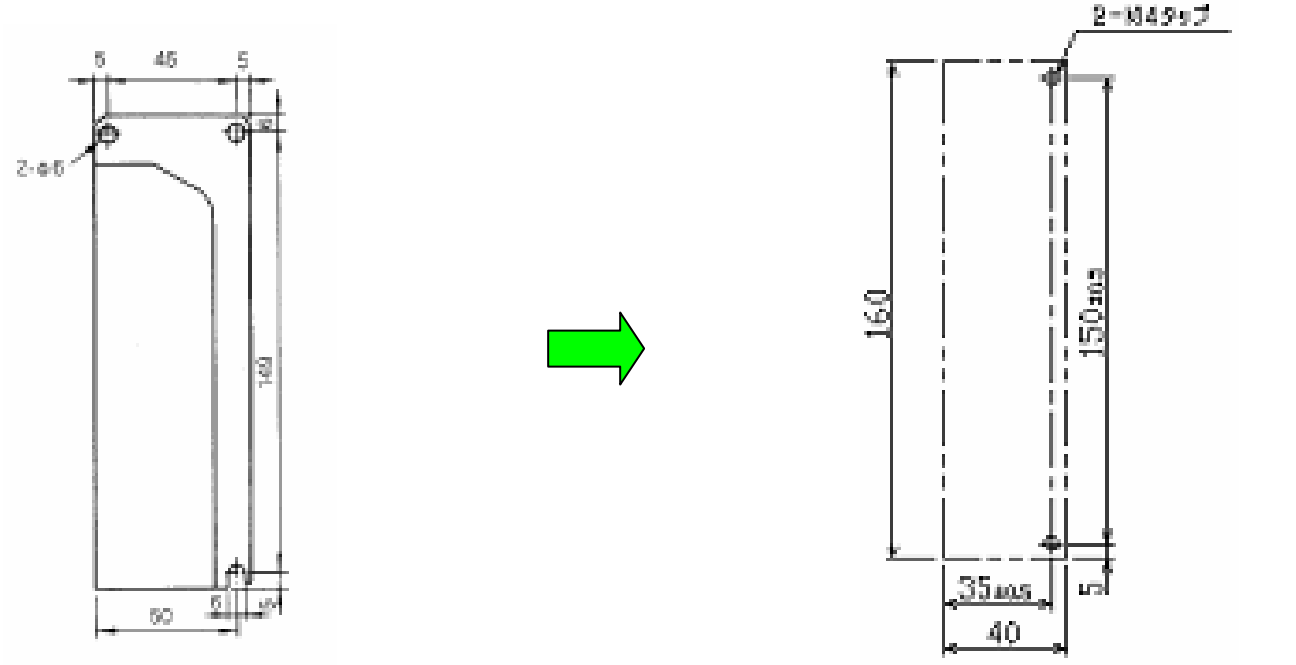
Σ		Σ－V		Function	Remarks
SGDB-□□□N		SGDV-□□□□1□□			
Terminal No. 26pin	Terminal Marking	Terminal No. 26pin	Terminal Marking		
1	/BK	1	/BK(+) (/SO1+)	Brake interlock output	
2	BK-SG	2	/BK(−) (/SO1−)	Brake interlock output	Funciton is the same though the terminal marking is different
3	ALM	3	ALM+	Servo alarm output	
4	ALM-SG	4	ALM−	Servo alarm output	Funciton is the same though the terminal marking is different
5	—	5	—	—	Reserved terminal
6	+24VIN	6	+24VIN	External power supply output	
7	P-OT	7	P-OT (/SI1)	Forward drive prohibit input	
8	N-OT	8	N-OT (/SI2)	Reverse drive prohibit input	
9	/DEC	9	/DEC (/SI3)	Homing deceleration LS input	
10	/EXT	10	/EXT1 (/SI4)	External latch signal 1 input	There is just one external latch signal in Σ
—	—	11	/EXT2 (/SI5)	External latch signal 2 input	
—	—	12	/EXT3 (/SI6)	External latch signal 3 input	
—	—	13	/SI0	General input	
—	—	14	BAT(+)	Battery(+)	When using absolute encoder
—	—	15	BAT(−)	Battery(−)	When using absolute encoder
—	—	16	SG	Signal Ground	
—	—	17	PAO	PG frequency dividing A-phase	
—	—	18	/PAO		
—	—	19	PBO	PG frequency dividing B-phase	
—	—	20	/PBO		
—	—	21	PCO	PG frequency dividing C-phase	
—	—	22	/PCO		
—	—	23	/SO2+	General purpose output	
—	—	24	/SO2−	General purpose output	
—	—	25	/SO3+	General purpose output	
—	—	26	/SO3−	General purpose output	
26	FG	—	—	Frame Ground	

The connector is different thought the number of CN1 I/O signal pins of the Σ series and Σ－V series are the same

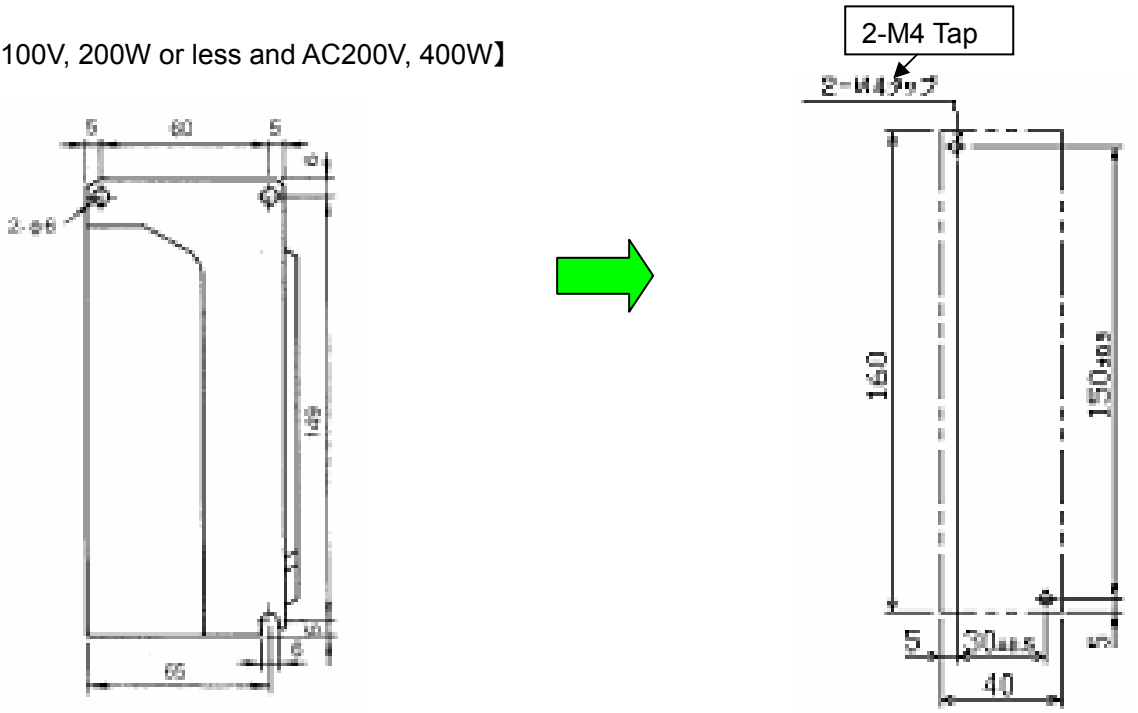
3-3. Installation Size

Σ-V series servo amplifier is not compatible with Σ series servo amplifier in the dimension and mounting dimension. The position of the screw for the installation is different.

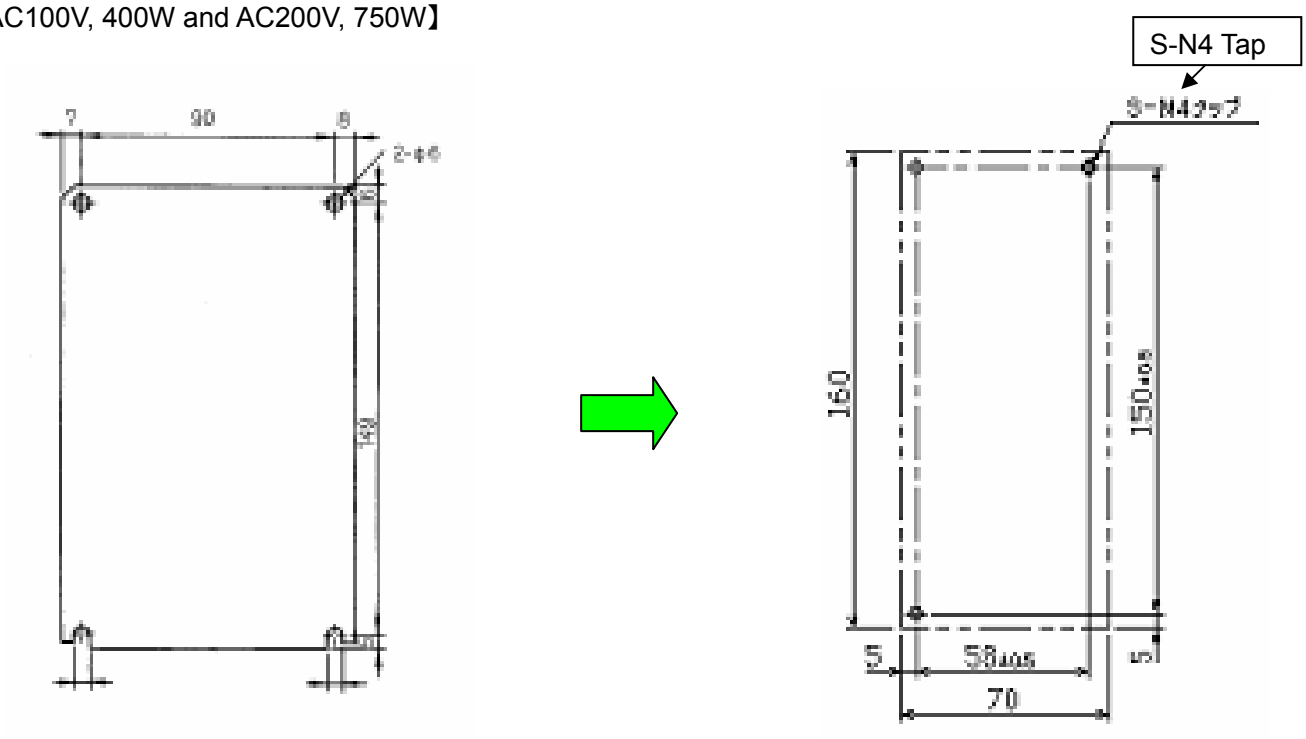
【AC200V, 200W or less】



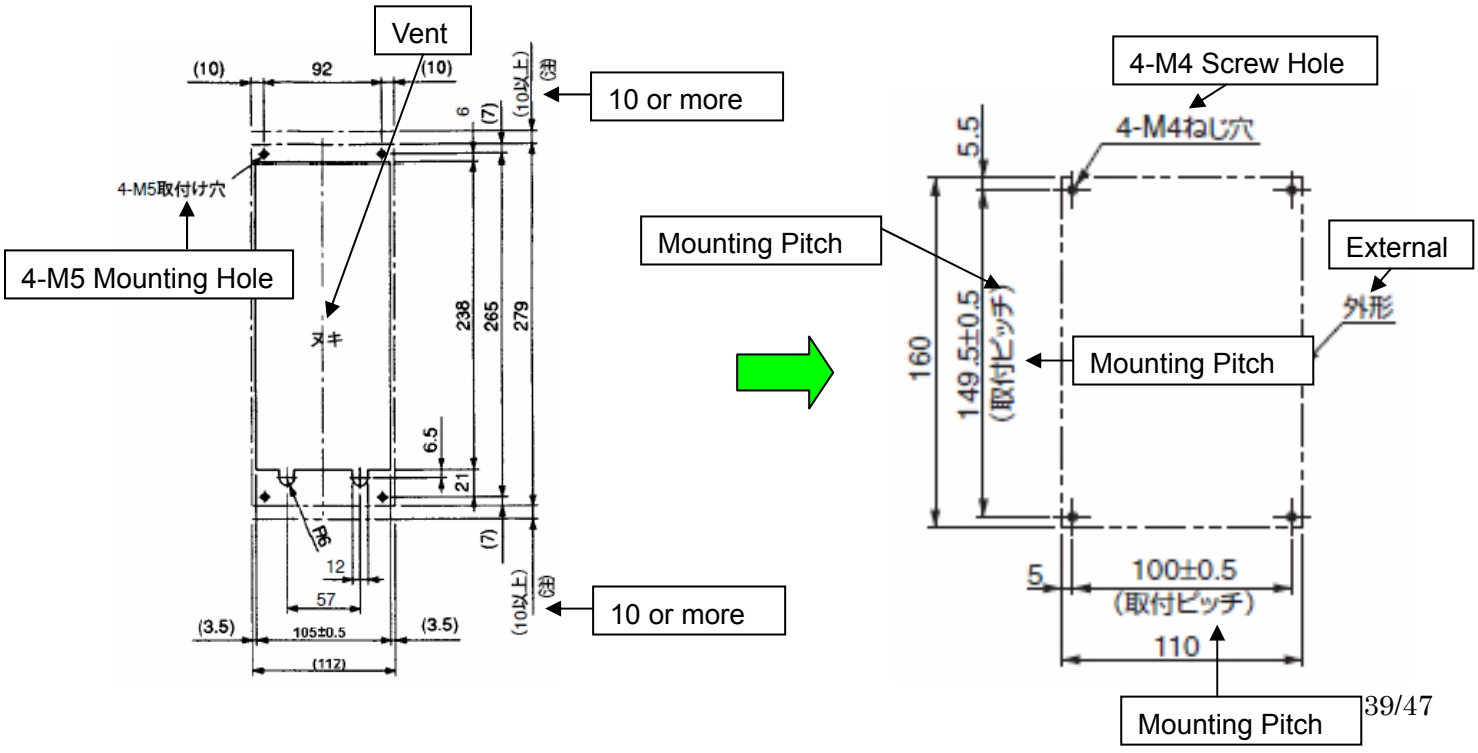
【AC100V, 200W or less and AC200V, 400W】



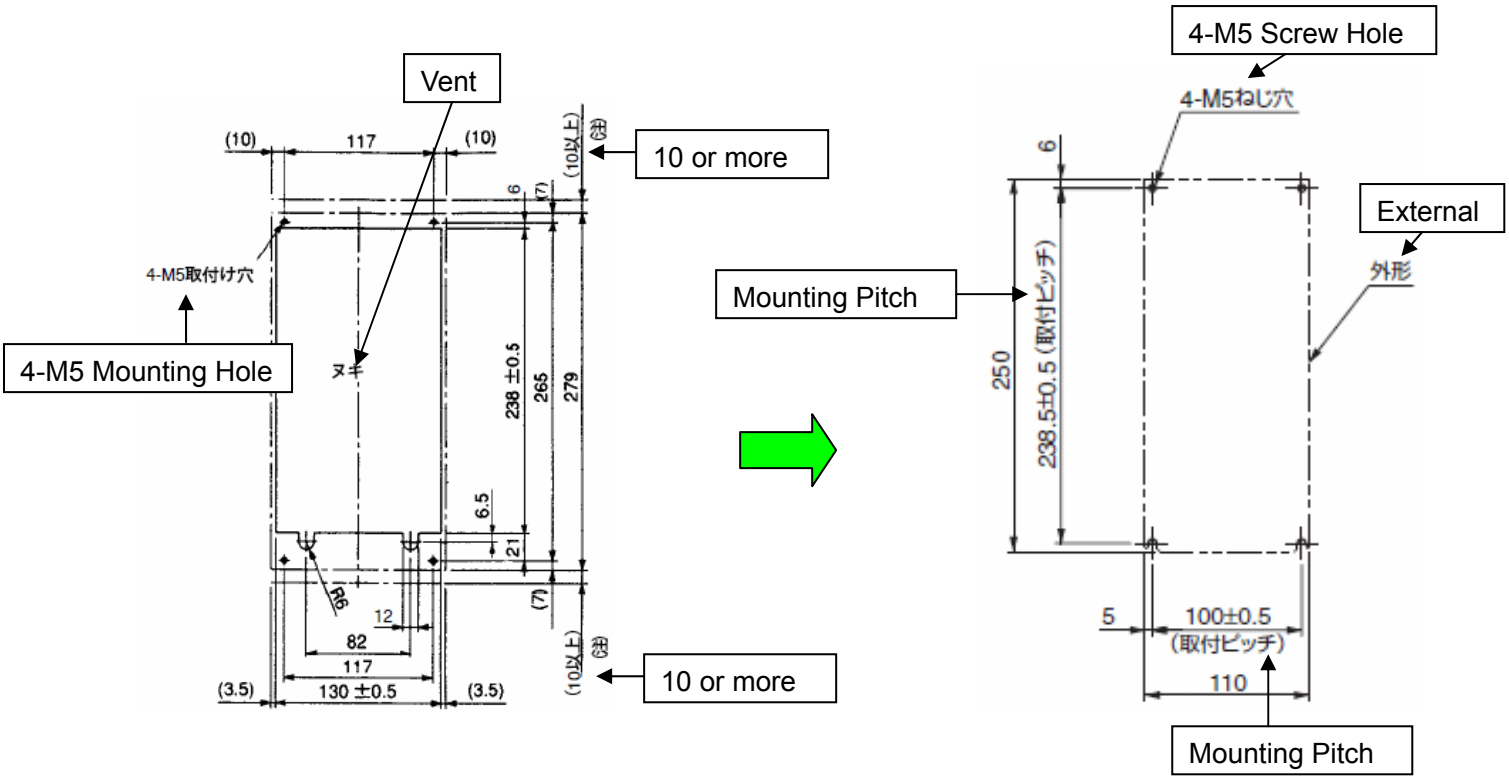
【AC100V, 400W and AC200V, 750W】



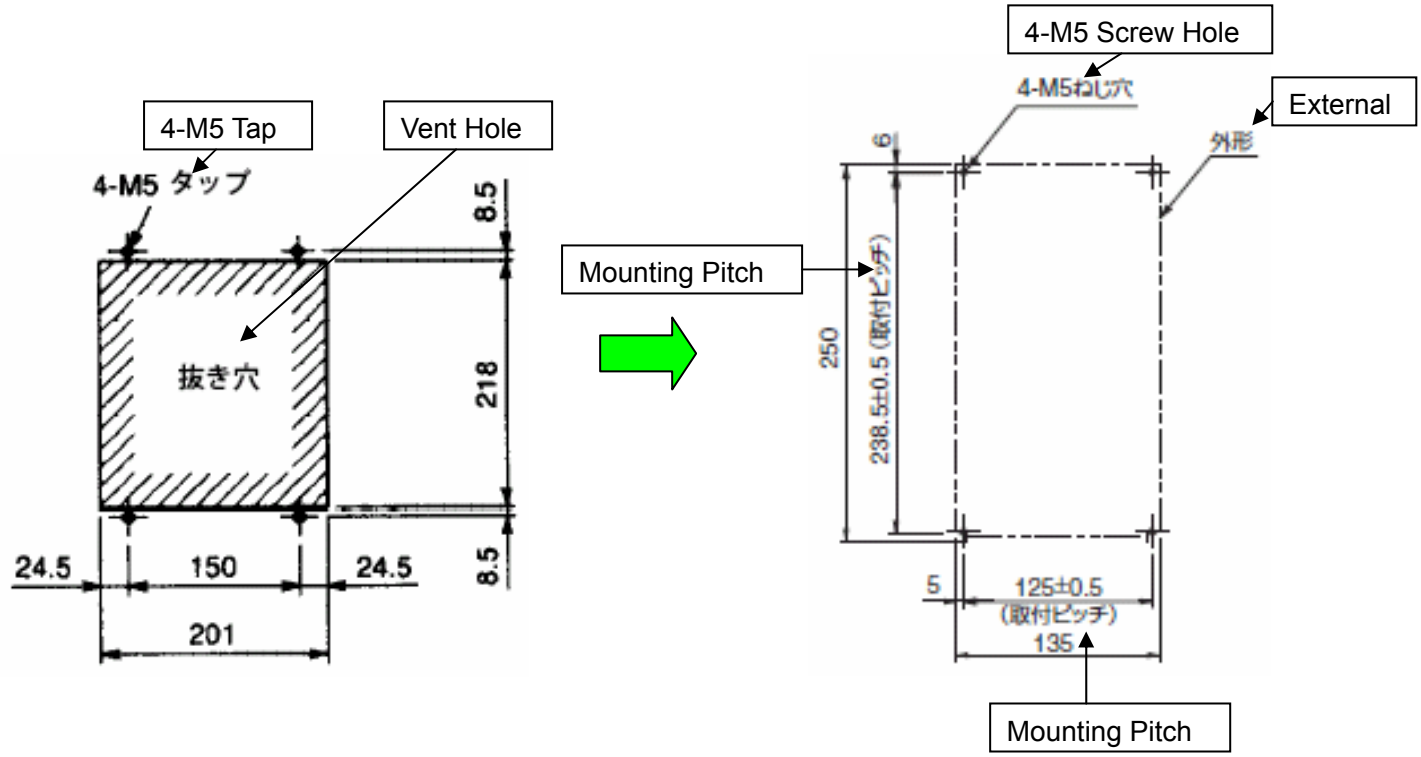
【0.5kW~1.5kW】



【2.0 kW, 3.0kW】

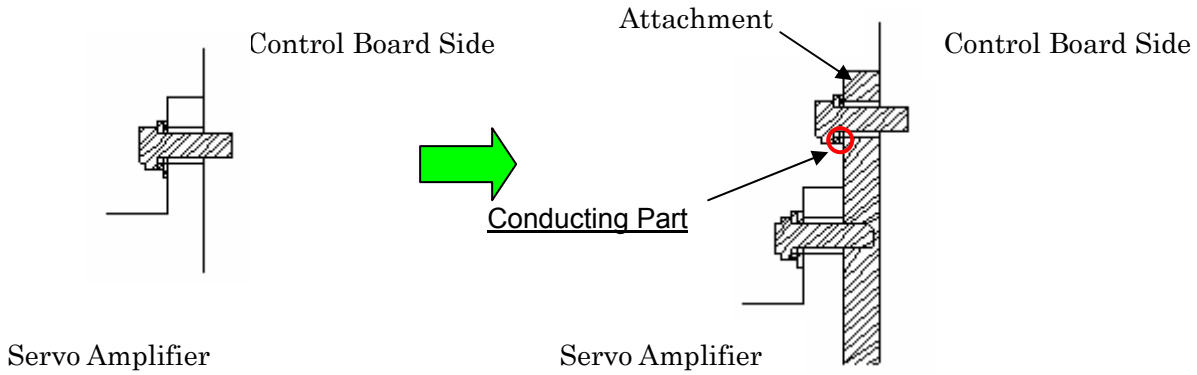


【5.0kW】



3-4. Notes when Installing Control Board

Please note the difference of the electrical conduction state of frame ground when producing the attachment to accommodate the difference of the installation hole size. An alarm may occur and the machine may operate improperly because the amount of noise changes when the electrical conduction state changes.



The frame ground of the control board and servo amplifier conduct through the installation screw.

When painting and/or surface treatment is given to the attachment for rust prevention, electrical conduction between the attachment and control board may be impossible.

4. Cable and Peripherals

All the cables and peripherals of ∑ series are not compatible with Σ-V series's so please confirm the applicable products by referring to the catalog and manual, etc.

Please refer to the following comparison table for the type of the applicable products.

■ Connector for I/O Signal

Analog・Pulse Train Reference Type

Name	Type		
	∑ (for SGDA type)	∑ (for SGDB type)	∑－Ⅴ (for SGDV type)
Connector Terminal Block Conversion Unit	JUSP-TA36P	JUSP-TA50P	JUSP-TA50PG-E
			JUSP-TA50PG-1-E
			JUSP-TA50PG-2-E
One-sided individual pull out cable	DE9404859	DE9406969-1	JZSP-CSI01-1-E
		DE9406969-2	JZSP-CSI01-2-E
		DE9406969-3	JZSP-CSI01-3-E
Connector Kit (for CN1)	DP9420007	DE9406970	JZSP-CSI9-1-E

■ MECHATROLINK Communication Reference Type

Name	Type		
	Σ(SGD-□□□N)	Σ(SGDB-□□□N)	Σ－Ⅴ(SGDV)
Connector Terminal Block Conversion Unit	JUSP-TA26P	JUSP-TA26P	—
Connector Kit (for CN1)	DE9411354	DE9411354	JZSP-CSI9-2-E

■ Analog Monitor

Name	Type		
	Σ(SGDA)	Σ(SGDB)	Σ－Ⅴ(SGDV)
Cable for Analog Monitor	DE94094559	DE94094559	JZSP-CA01-E

■ PC Connection Cable

Name	Type		
	Σ(SGDA)	Σ(SGDB)	Σ－Ⅴ(SGDV)
PC Connection Cable	DE9405258	DE9405258	JZSP-CVS06-02-E
	DE9408564	DE9408564	(USB connection)
	DE9408565	DE9408565	

■ MECHATROLINK Communication Cable

Name	Type		
	Σ(SGDA)	Σ(SGDB)	Σ－Ⅴ(SGDV)
Cable with both-ended Connector	—	—	JEPMC-W6002-A5-E
			JEPMC-W6002-01-E
			JEPMC-W6002-**-E
Terminator	—	—	JEPMC-W6022-E

■ Cable for Safety Feature

Name	Type		
	Σ(SGDA)	Σ(SGDB)	Σ－Ⅴ(SGDV)
Cable for Safety Feature	—	—	JZSP-CVH03-03-E

■ Digital Operator

Name	Type		
	Σ(SGDA)	Σ(SGDB)	Σ-Ⅴ (SGDV)
Digital Operator	JUSP-OP02A-1	JUSP-OP02A-1	JUSP-OP05A-1-E
	JUSP-OP03A	JUSP-OP03A	

■ Noise Filter

Name	Servo Capacity /Current Display	Type	
		Σ(SGDA)	Σ-Ⅴ (SGDV)
Noise Filter	50W/R70	LF205-A	FN2070-6/07
	100W/R90	LF-210	FN2070-6/07
	200W/1R6	LF-210	FN2070-10/07
	300W	LF-220	—
	400W/2R8	—	FN2070-16/07

■ AC200V

Name	Servo Capacity /Current Display	Type		
		Σ(SGDA)	Σ(SGDB)	Σ-Ⅴ (SGDV)
Noise Filter	50W/R70	LF-205A	—	FN2070-6/07
	100W/R90	LF-205A	—	FN2070-6/07
	200W/1R6	LF-205A	—	FN2070-6/07
	400W/2R8	LF-210	—	FN2070-10/07
	750W/5R5	LF-220	—	FN2070-16/07
	1.0kW/7R6	—	LF-315	FN258L-16/07
	1.5kW/120	—	LF-315	HF3020C-UQC
	2.0kW/180	—	LF-320	HF3020C-UQC
	3.0kW/200	—	LF-330	HF3030C-UQC
	5.0kW/330	—	LF-340	HF3050C-UQC

■ Battery

Name	Type		
	Σ(SGDA)	Σ(SGDB)	Σ-Ⅴ (SGDV)
Battery	Equivalent to ER6V C3	Equivalent to ER6V C3	JZSP-BA01 Equivalent to ER6V C3
Cable with both-ended connector (w/ battery unit)	—	—	JZSP-CSP□□-□□-E

■ Brake Power Supply

Name	Input Voltage	Type		
		Σ(SGDA)	Σ(SGDB)	Σ-Ⅴ (SGDV)
Brake Power Supply	AC100V	LPDE-1H01	LPDE-1H01	LPDE-1H01-E
	AC200V	LPSE-2H01	LPSE-2H01	LPSE-2H01-E
Brake Power Supply (for DC24V brake)		Customer Provides	Customer Provides	Customer Provides

■ DC Reactor for Power Line Harmonics Control

AC100V

Servo Capacity /Current Display	Type	
	Σ(SGDA)	Σ-Ⅴ (SGDV)
50W/R70F	—	X5053
100W/R90F	—	
200W/2R1F	—	X5054
400W/2R8F	—	X5056

AC200V

Servo Capacity /Current Display	Type	
	Σ(SGDA、SGDB)	Σ-Ⅴ (SGDV)
50W/R70A	—	X5061
100W/R90A	—	
200W/1R6A	—	
400W/2R8A	—	
500W/3R8A	—	
750W/5R5A	—	
1.0kW/7R6A	—	
1.5kW/120A	—	X5060
2.0kW/180A	—	
3.0kW/200A	—	X5059
5.0kW/330A	—	X5068

■ Surge Absorber/Serge Protector/Surge Suppressor

AC100V

Name	Servo Capacity /Current Display	Type	
		Σ(SGDA)	Σ-Ⅴ
Surge Absorber/Surge Protector /Surge Suppressor	50W/R70F	CR50500BA	LT-C12G801WS
	100W/R90F		
	200W/2R1F		
	400W/2R8F		

AC200V

Name	Servo Capacity /Current Display	Type	
		Σ(SGDA,SGDB)	Σ-Ⅴ
Surge Absorber/Surge Protector /Surge Suppressor	50W/R70A	CR50500BA	LT-C12G801WS
	100W/R90A		
	200W/1R6A		
	400W/2R8A		
	750W/5R5A		
	1.0kW/7R6A		
	1.5kW/120A		
	2.0kW/180A		
	3.0kW/200A		
	5.0kW/330A		

■ Electromagnetic Contactor

AC100V

Name	Servo Capacity /Current Display	Type	
		Σ(SGDA)	Σ-Ⅴ
Electromagnetic Contactor	50W/R70	HI-15E5	SC-03
	100W/R90	HI-15E5	SC-03
	200W/2R1	HI-15E5	SC-03
	400W/2R8	HI-15E5	SC-4-1

AC200V

Name	Servo Capacity /Current Display	Type		
		Σ(SGDA)	Σ(SGDB)	Σ-Ⅴ(SGDV)
Electromagnetic Contactor	50W/R70	HI-15E5	—	SC-03
	100W/R90	HI-15E5	—	SC-03
	200W/1R6	HI-15E5	—	SC-03
	400W/2R8	HI-15E5	—	SC-03
	750W/5R5	HI-15E5	—	SC-4-1
	1.0kW/7R6	—	HI-15E5	SC-4-1
	1.5kW/120	—	HI-15E5	SC-4-1
	2.0kW/180	—	HI-18E	SC-5-1
	3.0kW/200	—	HI-18E	SC-5-1
	5.0kW/330	—	HI-18E	SC-N1

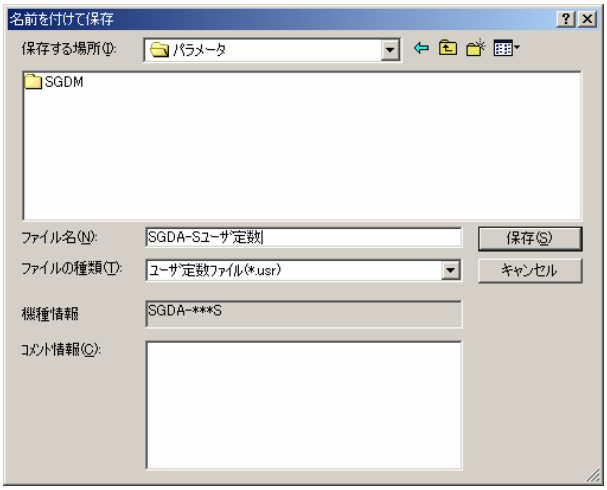
5.Parameter Converter

The user constant of the ∑ series servo amplifier is able to be converted automatically into the parameter of the ∑-V servo amplifier by using a parameter converter in the Sigma V engineering tool SigmaWin+ Ver.5.00 or later.

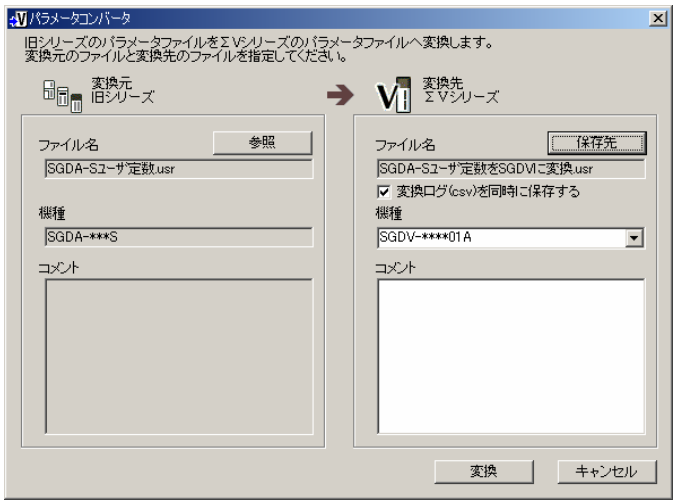
The procedure is shown below.

1. Open the Sigma Component of SigmaWin+ then confirm and save the user constant of the ∑ servo amplifier.
   If a user constant file taken from the servo amplifier is available use that file.

【Example of user constant save screen】



【Example of parameter converter screen】



2. Open Sigma V Component, and start the parameter converter.
3. Specify the user constant file of the ∑ servo amplifier which was saved in step 1 to the former conversion file name.
4. Specify where to save the converted file.
5. The user constant is converted to the parameter when the conversion button is pushed. The part where readjustment might be needed is highlighted in yellow.

6. Click "Write to the servo" button on the parameter edit screen to write the conversion result in the servo amplifier after connecting to the writing destination servo amplifier online.

Parameter Converter Directions

- The tune-less function is valid for the parameter converted (Pn170.0=1)
- The gain parameter readjustment is necessary because there is a possibility that the rotor inertia of the motor changes when disabling the tune-less function (Pn170.0=0).
- Change the reference of the host controller, or change the setting of an electronic gear because the resolution of the encoder changes when using positional control mode.

Revision History

Revision No.	Date	Changes
0	6/12/07	First edition.
1	7/5/07	Use "L1" and the "L2" terminals as a main circuit terminal when using SGDV in the single phase power supply.
2	7/9/07	Changed the shaft end specification with the reduction gears due to DPI-C-7015.
3	11/7/07	Newly added the following. Notes of replacement from MECHATROLINK and parameter converter. Stop methods of auto-tuning, velocity bias, at alarm occurrence. And control circuit terminal explanation of CN1 of SGD-□□□N.
4	12/25/07	Newly added 100V model, models up to 200V medium capacity 5kW and SGMPS support.
5	2/12/08	Peripherals type correction.