

Σ -X Series Replacement Guide

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About this Manual

This document provides the information needed for replacing the old product with the new one, assuming the following cases.

- Preventative maintenance of SERVOPACKs and servomotors
- Corrective maintenance of SERVOPACK or servomotor (failure)

This document consists of two parts.

- Part 1: Replacement of the Σ -7-series products (hereinafter called Σ -7 series) with the Σ -X-series products (hereinafter called Σ -X series).
- Part 2: Replacement of the Σ -V-series products (hereinafter called Σ -V series) with the Σ -X series.

Depending on the operating conditions and specific application of the equipment, it may be necessary to consider items not contained in this document, and so address other items by referring to the user's manual or catalog for the product that is being used.



Important

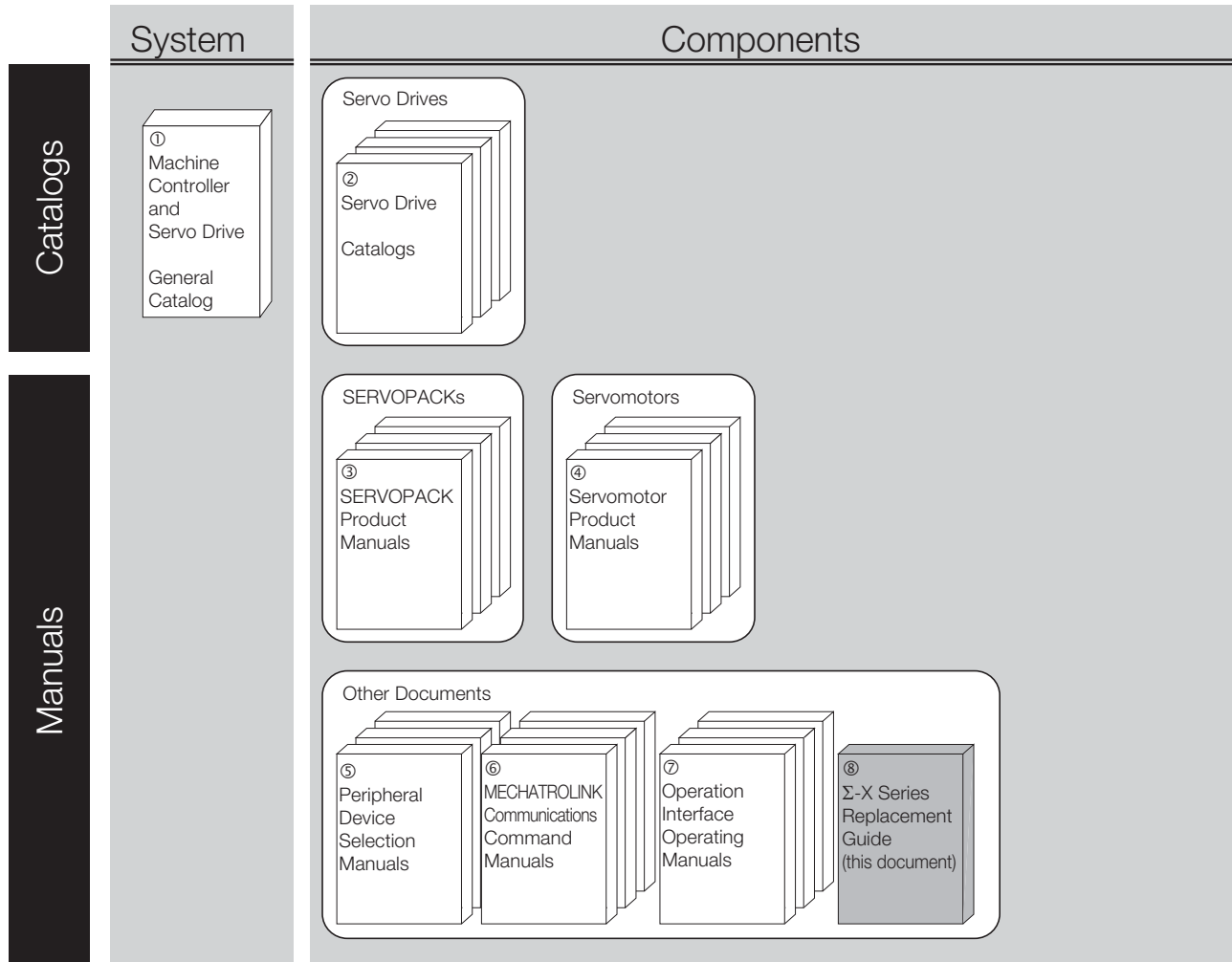
The following replacements are not described in this manual.

- Using the old rotary servomotors and replacing only with the Σ -X-series SERVOPACKs.
- Replacing with the Σ -X-series rotary servomotor with reduction gear.

For more information, contact your Yaskawa representative.

Related Documents

The relationships between the documents that are related to the servo drives are shown in the following figure. The numbers in the figure correspond to the numbers in the table on the following pages. Refer to these documents as required.



Classification	Document Name	Document No.	Description
① General Catalog	Machine Controller and AC Servo Drive Solutions Catalog	KAEP S800001 22	Describes the features and application examples for combinations of MP3000-series machine controllers and Σ -7-series AC servo drives.
② Servo Drive Catalogs	AC SERVO DRIVES Σ -X SERIES	KAEP C710812 03	Provides detailed information on Σ -X-series AC servo drives, including features and specifications.
	AC SERVO DRIVES Σ -7 SERIES	KAEP S800001 23	Provides detailed information on Σ -7-series AC servo drives, including features and specifications.
	AC SERVO DRIVES Σ -V SERIES PRODUCT CATALOG	KAEP S800000 42	Provides detailed information on Σ -V-series AC servo drives, including features and specifications.
③ SERVOPACK Product Manuals	Σ -X-Series AC Servo Drive Σ -XS SERVOPACK with MECHATROLINK-4/III Communications References Product Manual	SIEP C710812 01	Provide detailed information on selecting Σ -X-series Σ -XS SERVOPACKs or Σ -XW SERVOPACKs and information on installing, connecting, setting, performing trial operation for, tuning, monitoring, and maintaining the servo drives.
	Σ -X-Series AC Servo Drive Σ -XS SERVOPACK with Analog Voltage/Pulse Train References Product Manual	SIEP C710812 03	
	Σ -X-Series AC Servo Drive Σ -XW SERVOPACK with MECHATROLINK-4/III Communications References Product Manual	SIEP C710812 04	
	Σ -7-Series AC Servo Drive Σ -7S SERVOPACK with MECHATROLINK-4 Communications References Product Manual	SIEP S800002 31	Provide detailed information on selecting Σ -7-series Σ -7S SERVOPACKs or Σ -7W SERVOPACKs and information on installing, connecting, setting, performing trial operation for, tuning, monitoring, and maintaining the servo drives.
	Σ -7-Series AC Servo Drive Σ -7S SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 28	
	Σ -7-Series AC Servo Drive Σ -7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual	SIEP S800001 26	
	Σ -7-Series AC Servo Drive Σ -7W SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 29	

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Classification	Document Name	Document No.	Description
③ SERVOPACK Product Manuals	AC Servo Drives Σ -V Series USER'S MANUAL Design and Maintenance Rotational Motor MECHATROLINK-III Communications Reference	SIEP S800000 64	Provide detailed information on selecting Σ -V-series SERVOPACKs and information on installing, connecting, setting, performing trial operation for, tuning, monitoring, and maintaining the servo drives.
	AC Servo Drives Σ -V Series USER'S MANUAL Design and Maintenance Linear Motor MECHATROLINK-III Communications Reference	SIEP S800000 65	
	AC Servo Drives Σ -V Series USER'S MANUAL Design and Maintenance Rotational Motor Analog Voltage and Pulse Train Reference	SIEP S800000 45	
	AC Servo Drives Σ -V Series USER'S MANUAL Design and Maintenance Linear Motor Analog Voltage and Pulse Train Reference	SIEP S800000 47	
	AC Servo Drives Σ -V Series USER'S MANUAL Setup Rotational Motor	SIEP S800000 43	
	AC Servo Drives Σ -V Series USER'S MANUAL Setup Linear Motor	SIEP S800000 44	
④ Servomotor Product Manuals	Σ -X-Series AC Servo Drive Rotary Servomotor Product Manual	SIEP C230210 00	Provides detailed information on selecting, installing, and connecting the Σ -X-series servomotors.
	Σ -7-Series AC Servo Drive Rotary Servomotor Product Manual	SIEP S800001 36	Provides detailed information on selecting, installing, and connecting the Σ -7-series servomotors.
⑤ Peripheral Device Selection Manuals	Σ -X-Series AC Servo Drive Peripheral Device Selection Manual	SIEP C710812 12	Provides the following information in detail for Σ -X-series servo systems. • Cables: Models, dimensions, wiring materials, connector models, and connection specifications • Peripheral devices: Models, specifications, diagrams, and selection (calculation) methods
	Σ -7-Series AC Servo Drive Peripheral Device Selection Manual	SIEP S800001 32	Provides the following information in detail for Σ -7-series servo systems. • Cables: Models, dimensions, wiring materials, connector models, and connection specifications • Peripheral devices: Models, specifications, diagrams, and selection (calculation) methods

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Classification	Document Name	Document No.	Description
⑥ MECHATROLINK Communications Command Manuals	Σ -7-Series AC Servo Drive MECHATROLINK-4 Communications Standard Servo Profile Command Manual	SIEP S800002 32	Provides detailed information on the MECHATROLINK-4 communications standard servo profile commands that are used for a Σ -7/ Σ -X-series servo system.
	Σ -7-Series AC Servo Drive MECHATROLINK-III Communications Standard Servo Profile Command Manual	SIEP S800001 31	Provides detailed information on the MECHATROLINK-III communications standard servo profile commands that are used for a Σ -7/ Σ -X-series servo system.
	AC Servo Drives Σ -V Series /DC Power Input Σ -V Series / Σ -V Series for Large-Capacity Models USER'S MANUAL MECHATROLINK-III Standard Servo Profile Commands	SIEP S800000 63	Provides detailed information on the MECHATROLINK-III communications standard servo profile commands that are used for a Σ -V-series servo sys- tem.
⑦ Operation Interface Operating Manuals	Σ -7-Series AC Servo Drive Digital Operator Operating Manual	SIEP S800001 33	Describes the operating procedures for a digital operator for a Σ -7/ Σ -X- series servo system.
	AC Servo Drive Engineering Tool SigmaWin+ Operation Manual	SIET S800001 34	Provides detailed operating proce- dures for the SigmaWin+ engineering tool for a Σ -V/ Σ -7/ Σ -X-series servo system.
	AC Servo Drives Σ -V Series USER'S MANUAL Operation of Digital Operator	SIEP S800000 55	Describes the operating procedures for a digital operator for a Σ -V-series servo system.
⑧ Σ -X-Series Replacement Guide	Σ -X-Series Replacement Guide	SIEP C710812 11 (this document!)	Provides detailed information needed for replacing your Σ -7 series or Σ -V series with the Σ -X series.

Using This Manual

◆ Trademarks

- MECHATROLINK is a trademark of the MECHATROLINK Members Association.
- Σ -LINK is a trademark of the MECHATROLINK Members Association.
- Other product names and company names are the trademarks or registered trademarks of the respective company. "TM" and the ® mark do not appear with product or company names in this manual.

◆ Visual Aids

The following aids are used to indicate certain types of information for easier reference.



Important

Indicates precautions or restrictions that must be observed.
Also indicates alarm displays and other precautions that will not result in machine damage.



Term

Indicates definitions of difficult terms or terms that have not been previously explained in this manual.

Information

Indicates supplemental information to deepen understanding or useful information.

Safety Precautions

◆ Safety Information

To prevent personal injury and equipment damage in advance, the following signal words are used to indicate safety precautions in this document. The signal words are used to classify the hazards and the degree of damage or injury that may occur if a product is used incorrectly. Information marked as shown below is important for safety. Always read this information and heed the precautions that are provided.



DANGER

- Indicates precautions that, if not heeded, are likely to result in loss of life, serious injury, or fire.

◆ Safety Precautions That Must Always Be Observed

■ General Precautions



DANGER

- Read and understand this manual to ensure the safe usage of the product.
- To ensure the safe usage of the product, be sure to read and follow the instructions in the manual and accompanying materials for the product that is being used.

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Revision History

Part 1: Σ -7 Series $\rightarrow$ Σ -X Series

Introduction

1

This chapter describes the flow of operations for replacing a system that uses the Σ -7 series with the Σ -X series and the eligible models for replacement.

1.1 Table of Servomotor and SERVOPACK Replacements ..1-2

1.2 Flow of Replacement Operations 1-4

1.1

Table of Servomotor and SERVOPACK Replacements

The following table shows the combinations of Σ -7-series servomotors and SERVOPACKs and their replacement combinations in the Σ -X series. Combinations that do not have any replacement in the Σ -X series are not listed.

To verify the detailed compatibility, refer to the following sections.

 Chapter 2 Specifications of Servomotor

 Chapter 3 Specifications of SERVOPACK

Your Model			Replacement Model		
Servomotor	SERVOPACK		Servomotor	SERVOPACK	
SGM7J-	A5A	SGD7S-R70A SGD7W-1R6A* ¹ , 2R8A* ¹	SGMXJ-	A5A	SGDXS-R70A SGDXW-1R6A* ¹ , 2R8A* ¹
	01A	SGD7S-R90A SGD7W-1R6A* ¹ , 2R8A* ¹		01A	SGDXS-R90A SGDXW-1R6A* ¹ , 2R8A* ¹
	C2A	SGD7S-1R6A SGD7W-1R6A, 2R8A* ¹		C2A	SGDXS-1R6A SGDXW-1R6A, 2R8A* ¹
	02A	SGD7S-1R6A SGD7W-1R6A, 2R8A* ¹		02A	SGDXS-1R6A SGDXW-1R6A, 2R8A* ¹
	04A	SGD7S-2R8A SGD7W-2R8A, -5R5A* ¹ , -7R6A* ¹		04A	SGDXS-2R8A SGDXW-2R8A, -5R5A* ¹ , -7R6A* ¹
	06A	SGD7S-5R5A SGD7W-5R5A, -7R6A		06A	SGDXS-5R5A SGDXW-5R5A, -7R6A
	08A	SGD7S-5R5A SGD7W-5R5A, -7R6A		08A	SGDXS-5R5A SGDXW-5R5A, -7R6A
SGM7A-	A5A	SGD7S-R70A SGD7W-1R6A* ¹ , 2R8A* ¹	SGMXA-	A5A	SGDXS-R70A SGDXW-1R6A* ¹ , 2R8A* ¹
	01A	SGD7S-R90A SGD7W-1R6A* ¹ , 2R8A* ¹		01A	SGDXS-R90A SGDXW-1R6A* ¹ , 2R8A* ¹
	C2A	SGD7S-1R6A SGD7W-1R6A, 2R8A* ¹		C2A	SGDXS-1R6A SGDXW-1R6A, 2R8A* ¹
	02A	SGD7S-1R6A SGD7W-1R6A, 2R8A* ¹		02A	SGDXS-1R6A SGDXW-1R6A, 2R8A* ¹
	04A	SGD7S-2R8A SGD7W-2R8A, -5R5A* ¹ , -7R6A* ¹		04A	SGDXS-2R8A SGDXW-2R8A, -5R5A* ¹ , -7R6A* ¹
	06A	SGD7S-5R5A SGD7W-5R5A, -7R6A		06A	SGDXS-5R5A SGDXW-5R5A, -7R6A
	08A	SGD7S-5R5A SGD7W-5R5A, -7R6A		08A	SGDXS-5R5A SGDXW-5R5A, -7R6A
	10A	SGD7S-120A		10A	SGDXS-120A
	15A	SGD7S-120A		15A	SGDXS-120A
	20A	SGD7S-180A		20A	SGDXS-180A
	25A	SGD7S-200A		25A	SGDXS-200A
	30A	SGD7S-200A		30A	SGDXS-200A
	40A	SGD7S-330A		40A	SGDXS-330A
	50A	SGD7S-330A		50A	SGDXS-330A
	70A	SGD7S-550A		70A	SGDXS-550A

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Your Model			Replacement Model		
Servomotor	SERVOPACK		Servomotor	SERVOPACK	
SGM7P-	01A	SGD7S-R90A SGD7W-1R6A* ¹ , 2R8A* ¹	SGMXP-	01A	SGDXS-R90A SGDXW-1R6A* ¹ , 2R8A* ¹
	02A	SGD7S-2R8A SGD7W-2R8A, -5R5A* ¹ , -7R6A* ¹		02A	SGDXS-2R8A SGDXW-2R8A, -5R5A* ¹ , -7R6A* ¹
	04A	SGD7S-2R8A SGD7W-2R8A, -5R5A* ¹ , -7R6A* ¹		04A	SGDXS-2R8A SGDXW-2R8A, -5R5A* ¹ , -7R6A* ¹
	08A	SGD7S-5R5A SGD7W-5R5A, -7R6A		08A	SGDXS-5R5A SGDXW-5R5A, -7R6A
	15A	SGD7S-120A		15A	SGDXS-120A
SGM7G-	03A	SGD7S-3R8A SGD7W-5R5A* ¹ , -7R6A* ¹	SGMXG-* ²	03A	SGDXS-3R8A SGDXW-5R5A* ¹ , -7R6A* ¹
	05A	SGD7S-3R8A SGD7W-5R5A* ¹ , -7R6A* ¹		05A	SGDXS-3R8A SGDXW-5R5A, -7R6A* ¹
	09A	SGD7S-7R6A		09A	SGDXS-7R6A (SGDXS-120A)
	13A	SGD7S-120A		13A	SGDXS-120A (SGDXS-180A)
	20A	SGD7S-180A		20A	SGDXS-180A (SGDXS-200A)
	30A	SGD7S-330A		30A	SGDXS-330A (SGDXS-470A)
	44A	SGD7S-330A		44A	SGDXS-330A (SGDXS-550A)
	55A	SGD7S-470A		55A	SGDXS-470A (SGDXS-780A)
	75A	SGD7S-550A		75A	SGDXS-550A
	1AA	SGD7S-590A		1AA	SGDXS-590A
	1EA	SGD7S-780A		1EA	SGDXS-780A

*1. If you use this combination, performance may not be as good, e.g., the servo gain may not increase, in comparison with using a Σ -XS SERVOPACK.

*2. To increase the instantaneous maximum torque, use the SERVOPACK model indicated in parentheses.

1.2 Flow of Replacement Operations

This document describes how to replace servomotors, SERVOPACKs, cables, and peripheral devices from the Σ -7 series with those in the Σ -X series.

The operation flow for replacing the Σ -7 series with the Σ -X series is as follows.

Step	Item	Description
1	Selecting the replacement model	 1.1 Table of Servomotor and SERVOPACK Replacements on page 1-2
2	Checking the system before replacement	To replace the servomotor and the SERVOPACK, check the following points. • How is the servomotor mounted in the machine? • How is it wired (e.g., racks, pits, piping)? • Information on devices in the control panel (e.g., check the capacity of circuit breakers, etc.) Refer to the following chapters for details on the check points.  7.1 Checksheet for Replacing the Σ-7 series with the Σ-X series on page 7-2
3	Checking the specifications of the servomotor	 Chapter 2 Specifications of Servomotor
4	Checking the specifications of the SERVOPACK	 Chapter 3 Specifications of SERVOPACK
5	Checking the specifications of the peripheral devices	 Chapter 4 Specifications of Peripheral Devices
6	Making settings for replacement	 Chapter 5 Making Settings for Replacement
7	Replacing the peripheral devices	—
8	Replacing the servomotor	For details on the installation procedure for the servomotor, refer to the product manual for the replacement (new) servomotor.
9	Replacing the SERVOPACK	For details on the installation procedure for the SERVOPACK, refer to the product manual for the replacement (new) SERVOPACK.
10	Operation check after replacement	 Chapter 6 Operation Check After Replacement

Specifications of Servomotor

2

This chapter describes model numbers, characteristics, external dimensions, and installation dimensions of servomotors.

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2.1 Servomotor Model Comparison Charts

This section provides the model numbers of Σ -7-series and Σ -X-series.

2.1.1 SGM7J and SGMXJ

SGM7J -

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(1) (2) (3) (4) (5) (6)

SGMXJ -

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(1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ -7 SGM7J-	Σ -X SGMXJ-
(1)	Rated output	50 W	A5	
		100 W	01	
		150 W	C2	
		200 W	02	
		400 W	04	
		600 W	06	
		750 W	08	
(2)	Power supply voltage	200 VAC	A	
(3)	Serial encoder	24-bit batteryless absolute	6	–
		24-bit absolute	7	–
		24-bit incremental	F	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design revision order		A	
(5)	Shaft end	Straight without key	2	
		Straight with key and tap	6	
		With two flat seats	B	
(6)	Option	Without options	1	
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specifications	–	1
		Σ -7 compatible specifications	–	2

2.1.2 SGM7A and SGMXA

SGM7A - □□ □ □ □ □ □
(1) (2) (3) (4) (5) (6)

SGMXA - □□ □ □ □ □ □ □ □
(1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ-7 SGM7A-	Σ-X SGMXA-
(1)	Rated output	50 W	A5	
		100 W	01	
		150 W	C2	
		200 W	02	
		400 W	04	
		600 W	06	
		750 W	08	
		1.0 kW	10	
		1.5 kW	15	
		2.0 kW	20	
		2.5 kW	25	
		3.0 kW	30	
		4.0 kW	40	
		5.0 kW	50	
		7.0 kW	70	
(2)	Power supply voltage	200 VAC	A	
(3)	Serial encoder	24-bit batteryless absolute	6	–
		24-bit absolute	7	–
		24-bit incremental	F	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design revision order	Standard	A	
(5)	Shaft end	Straight without key	2	
		Straight with key and tap	6	
		With two flat seats	B* ¹	
(6)	Option* ²	Without options	1	
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specifications	–	1
		Σ-7 compatible specifications	–	2

*1. Code B indicates a 1.5-kW or higher model is not supported.

*2. There are no models with a holding brake for the 7.0 kW.

2.1.3 SGM7P and SGMXP

SGM7P - □□ □ □ □ □ □
 (1) (2) (3) (4) (5) (6)

SGMXP - □□ □ □ □ □ □ □ □
 (1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ-7 SGM7P-	Σ-X SGMXP-
(1)	Rated output	100 W	01	
		200 W	02	
		400 W	04	
		750 W	08	
		1.5 kW	15	
(2)	Power supply voltage	200 VAC	A	
(3)	Serial encoder	24-bit batteryless absolute	6	–
		24-bit absolute	7	–
		24-bit incremental	F	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design revision order	IP65	A	–
		IP67	E	–
		Standard*	–	A
(5)	Shaft end	Straight without key	2	
		Straight with key and tap	6	
(6)	Option	Without options	1	
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specifications	–	1
		Σ-7 compatible specifications	–	2

* The standard specification is IP67.

2.1.4 SGM7G and SGMXG

SGM7G- □□ □ □ □ □ □
(1) (2) (3) (4) (5) (6)

SGMXG- □□ □ □ □ □ □ □ □
(1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ-7 SGM7G-	Σ-X SGMXG-
(1)	Rated output	300 W	03	
		450 W	05	
		850 W	09	
		1.3 kW	13	
		1.8 kW	20	
		2.9 kW	30* ¹	
		4.4 kW	44	
		5.5 kW	55	
		7.5 kW	75	
		11 kW	1A	
		15 kW	1E	
(2)	Power supply voltage	200 VAC	A	
(3)	Serial encoder	24-bit batteryless absolute	6	–
		24-bit absolute	7	–
		24-bit incremental	F	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design Revision Order	Standard	A	
(5)	Shaft end	Straight without key* ²	2	
		Straight with key and tap	6	
		Straight without key and with tap* ³	–	8
(6)	Option	Without options	1	
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specifications	–	1
		Σ-7 compatible specifications	–	2

*1. The rated output is 2.4 kW if you combine the SGM□G-30A servomotor with the SGD□S-200A SERVOPACK.

*2. In the Σ-X series, only SGMXG-03 to -20 servomotors are available with this shaft end.

*3. Only SGMXG-30 to -1E servomotors are available with this shaft end.

2.2 Comparison of Servomotor Characteristics

The following table compares the characteristics of the Σ -7-series servomotor and the Σ -X-series servomotor.

2.2.1 SGM7J and SGMXJ

Ratings

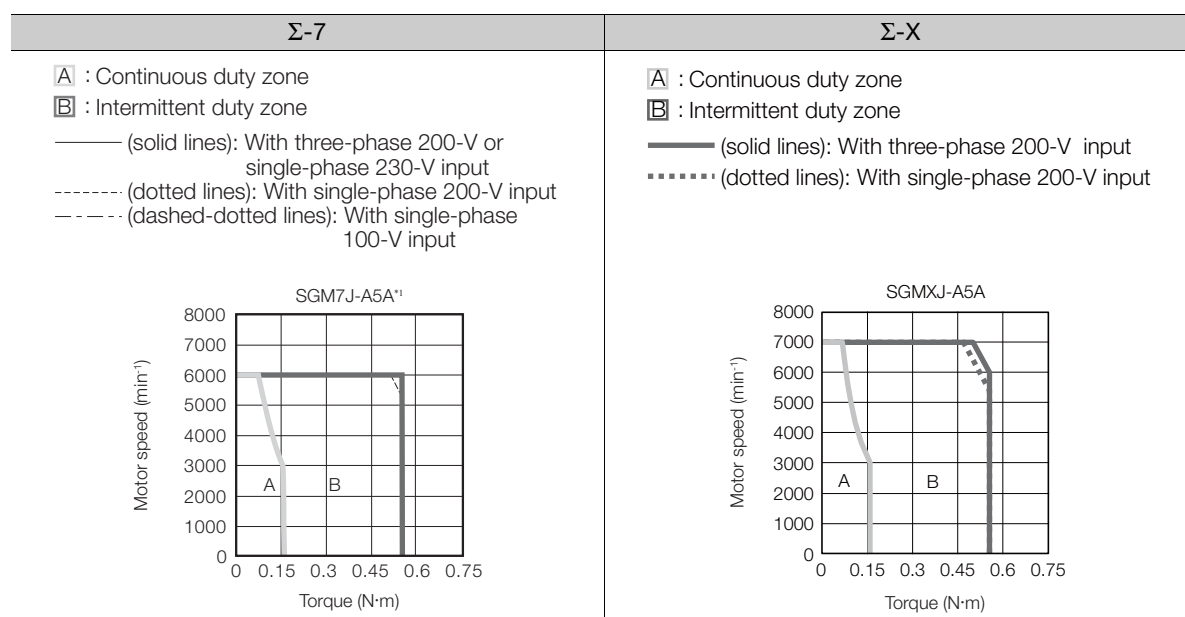
Model Σ -7: SGM7J- Σ -X: SGMXJ-	Servomotor Capacity	Rated Torque ^{*1,*2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia ($\times 10^{-4}$ kg·m ²)			
		Σ -7	Σ -X	Σ -7	Σ -X	Standard		With a Batteryless Absolute Encoder	
						Σ -7	Σ -X	Σ -7	Σ -X
A5	50 W	0.159		0.557		0.0395 (0.0475)	0.0421 (0.0501)	0.0410 (0.0490)	0.0458 (0.0538)
01	100 W	0.318		1.11		0.0659 (0.0739)	0.0669 (0.0749)	0.0674 (0.0754)	0.0706 (0.0786)
C2	150 W	0.477		1.67		0.0915 (0.0995)	0.0946 (0.103)	0.0930 (0.1010)	0.0983 (0.107)
02	200 W	0.637		2.23		0.263 (0.333)	0.263 (0.323)	0.264 (0.334)	0.267 (0.327)
04	400 W	1.27		4.46		0.486 (0.556)	0.486 (0.546)	0.487 (0.557)	0.490 (0.550)
06	600 W	1.91		6.69		0.800 (0.870)	0.800 (0.860)	0.801 (0.871)	0.804 (0.864)
08	750 W	2.39		8.36		1.59 (1.77)	1.59 (1.76)	1.59 (1.77)	1.59 (1.76)

*1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for other items are at 20°C. These are typical values.

*2. The rated torques are the continuous allowable torque values at an ambient operating temperature of 40°C with an aluminum heat sink of the following dimensions.
Capacity 50 W, 100 W: 200 mm $\times$ 200 mm $\times$ 6 mm, capacity 150 W to 750 W: 250 mm $\times$ 250 mm $\times$ 6 mm

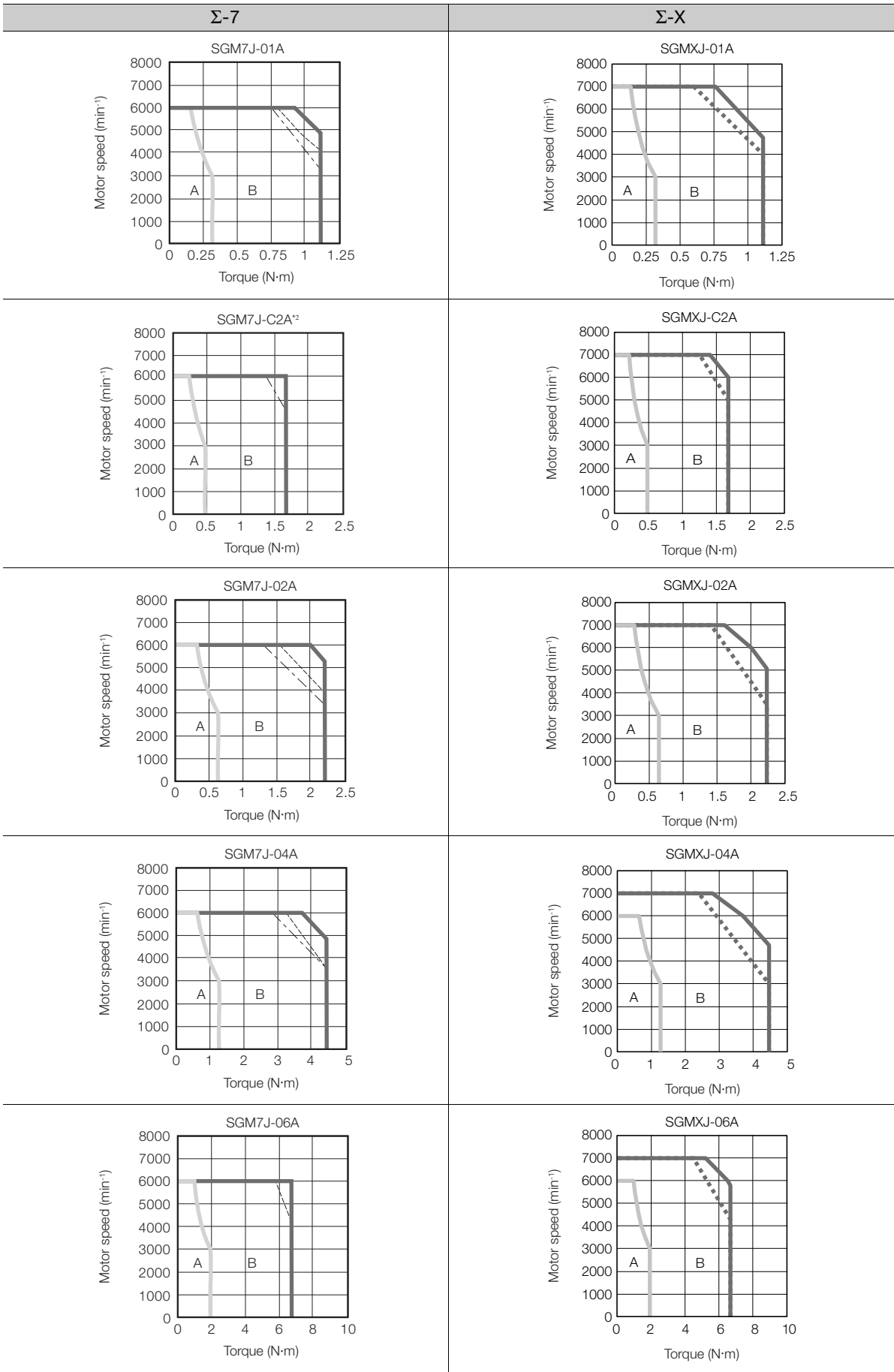
Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics



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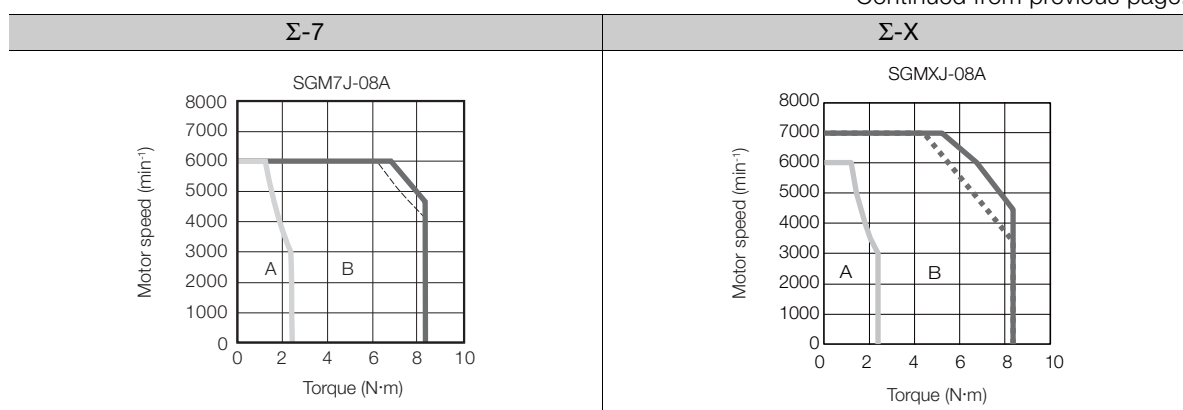


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2.2 Comparison of Servomotor Characteristics

2.2.2 SGM7A and SGMXA

Continued from previous page.



*1. The characteristics are the same for a single-phase 200-V and single-phase 100-V input.

*2. The characteristics are the same for three-phase 200-V and single-phase 200-V input.

Note: 1. These values (typical values) are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C.

2. The characteristics in the intermittent duty zone depend on the power supply voltage.

3. If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.

4. If you use a servomotor main circuit cable that exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

2.2.2 SGM7A and SGMXA

Ratings

Model Σ -7: SGM7A- Σ -X: SGMXA-	Servomotor Capacity	Rated Torque ^{*1,*2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia ($\times 10^{-4}$ kg·m ²)			
		Σ -7	Σ -X	Σ -7	Σ -X	Standard		With a Batteryless Absolute Encoder	
						Σ -7	Σ -X	Σ -7	Σ -X
A5	50 W	0.159		0.557		0.0217 (0.0297)	0.0220 (0.0300)	0.0232 (0.0312)	0.0257 (0.0337)
01	100 W	0.318		1.11		0.0337 (0.0417)	0.0340 (0.0420)	0.0352 (0.0432)	0.0377 (0.0457)
C2	150 W	0.477		1.67		0.0458 (0.0538)	0.0461 (0.0541)	0.0473 (0.0553)	0.0498 (0.0578)
02	200 W	0.637		2.23		0.139 (0.209)	0.139 (0.199)	0.140 (0.210)	0.143 (0.203)
04	400 W	1.27		4.46		0.216 (0.286)	0.216 (0.276)	0.217 (0.287)	0.220 (0.280)
06	600 W	1.91		6.69		0.315 (0.385)	0.315 (0.375)	0.316 (0.386)	0.319 (0.379)
08	750 W	2.39		8.36		0.775 (0.955)	0.773 (0.943)	0.776 (0.956)	0.777 (0.947)
10	1.0 kW	3.18		11.1		0.971 (1.15)	0.969 (1.14)	0.972 (1.15)	0.973 (1.14)
15	1.5 kW	4.90		14.7		2.00 (2.25)			
20	2.0 kW	6.36		19.1		2.47 (2.72)			
25	2.5 kW	7.96		23.9		3.19 (3.44)			
30	3.0 kW	9.80		29.4		7.00 (9.20)			

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Model Σ-7: SGM7A- Σ-X: SGMXA-	Servomotor Capacity	Rated Torque ^{*1,*2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia (×10 ⁻⁴ kg·m ²)			
						Standard		With a Batteryless Absolute Encoder	
		Σ-7	Σ-X	Σ-7	Σ-X	Σ-7	Σ-X	Σ-7	Σ-X
40	4.0 kW	12.6		37.8		9.60 (11.8)			
50	5.0 kW	15.8		47.6		12.3 (14.5)			
70	7.0 kW	22.3		54.0		12.3 (-)			

*1. SGM□A-A5 to -10: These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for other items are at 20°C. These are typical values.

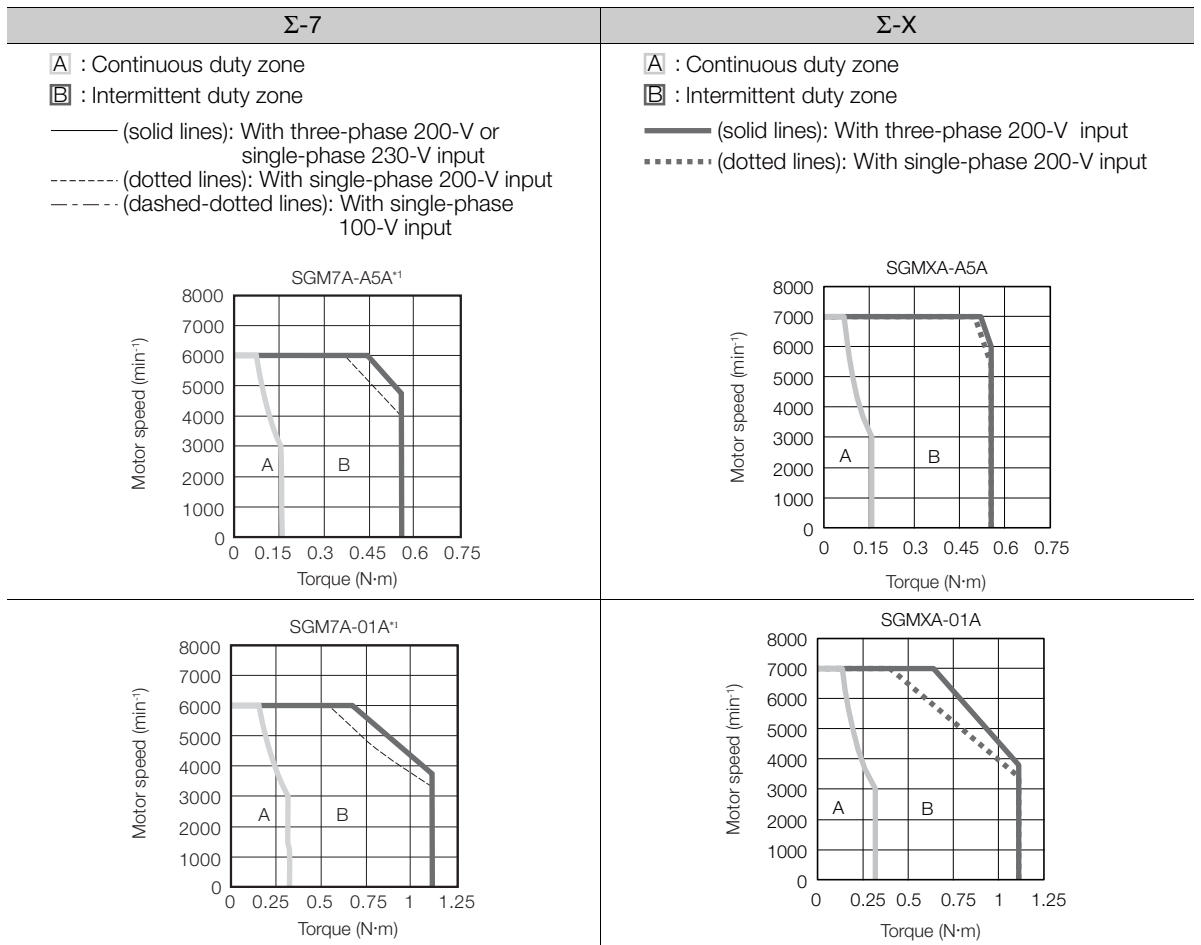
SGM□A-15 to -70: These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C. These are typical values.

*2. The rated torques are the continuous allowable torque values at an ambient operating temperature of 40°C with an aluminum heat sink of the following dimensions.

Capacity 50 W, 100 W: 200 mm × 200 mm × 6 mm, capacity 150 W to 400 W, 750 W: 250 mm × 250 mm × 6 mm, capacity 600 W, 1.0 kW to 2.5 kW: 300 mm × 300 mm × 12 mm, capacity 3.0 kW to 7.0 kW: 400 mm × 400 mm × 20 mm

Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics

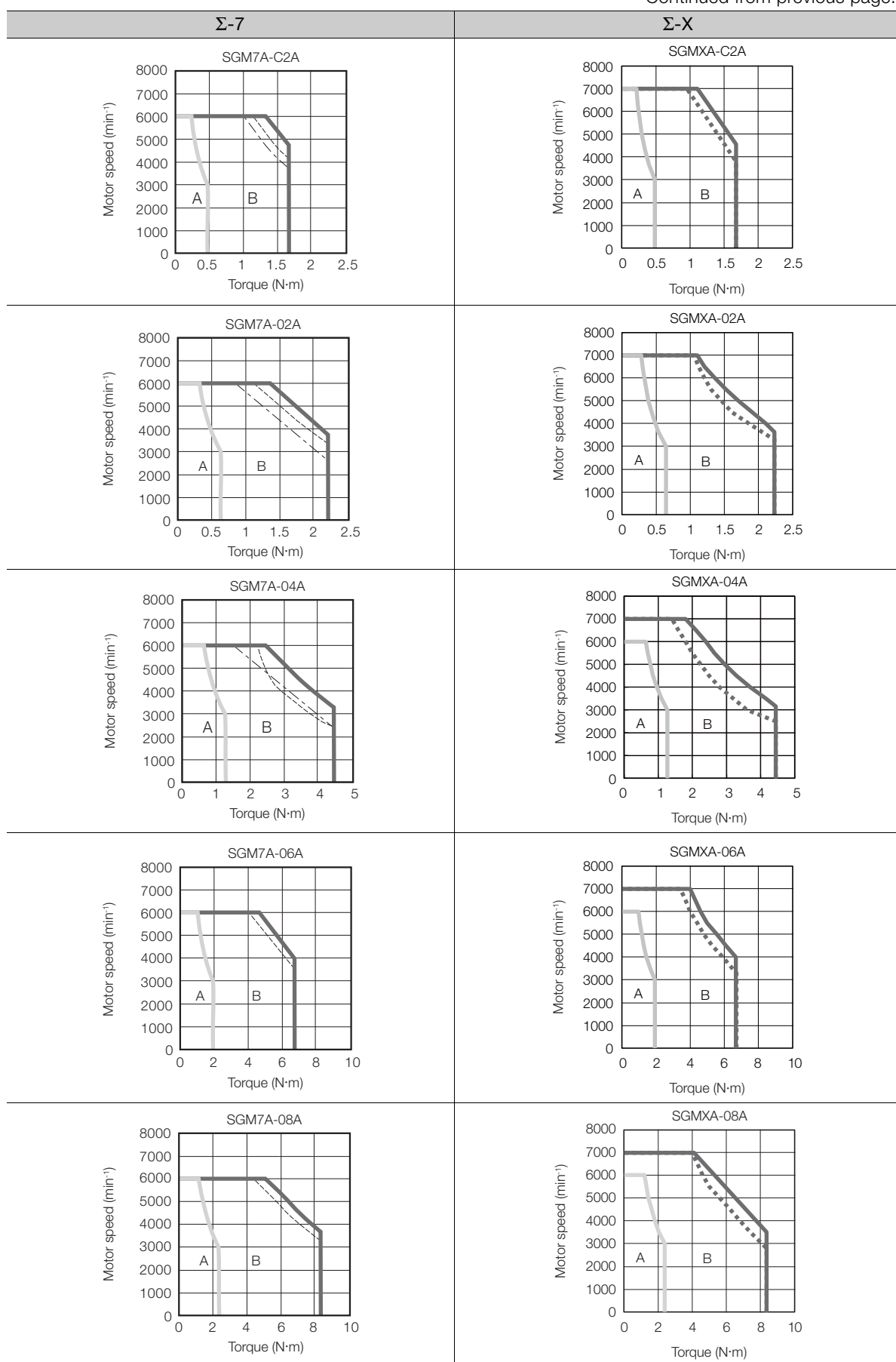


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2.2 Comparison of Servomotor Characteristics

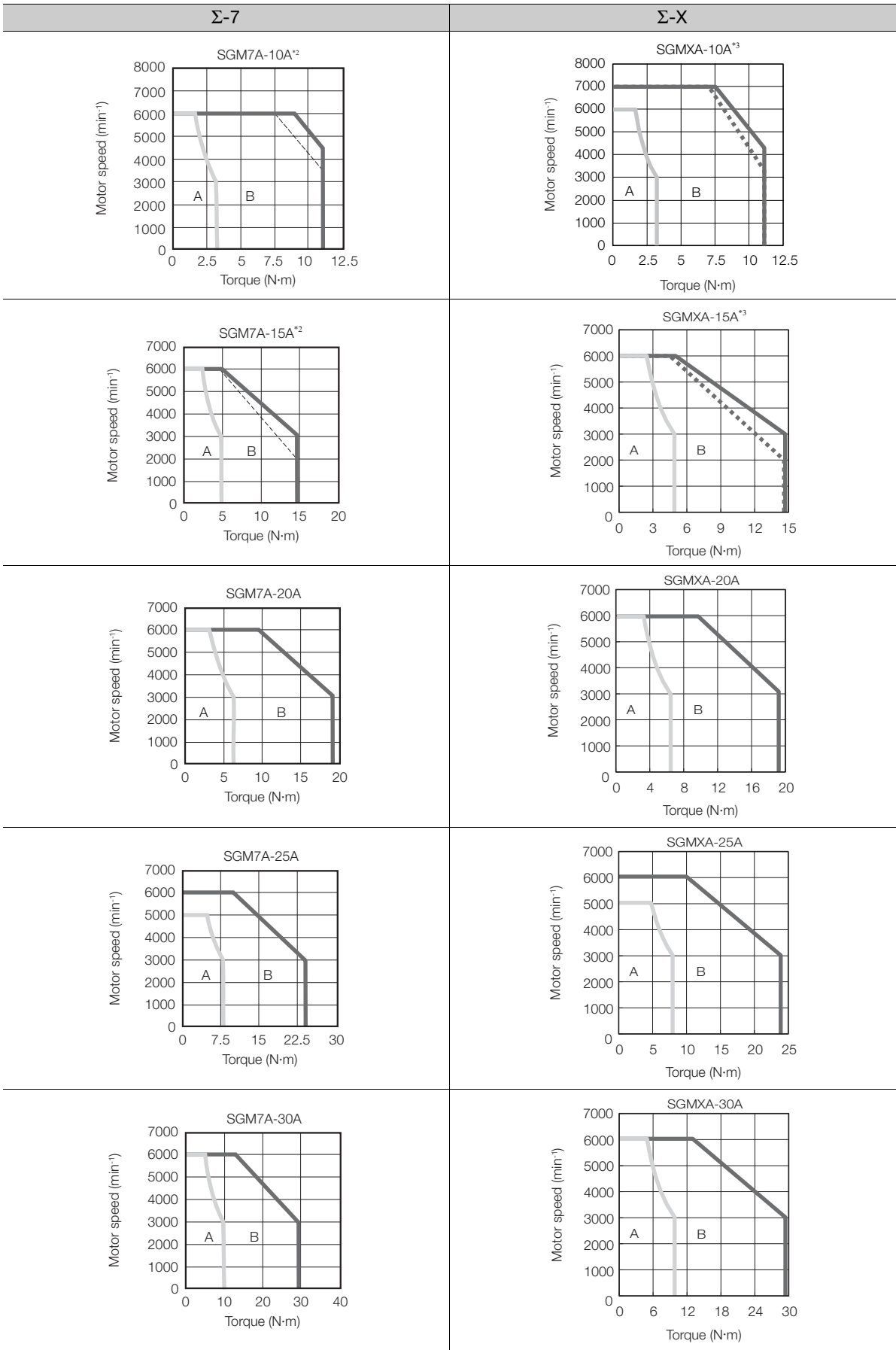
2.2.2 SGM7A and SGMXA

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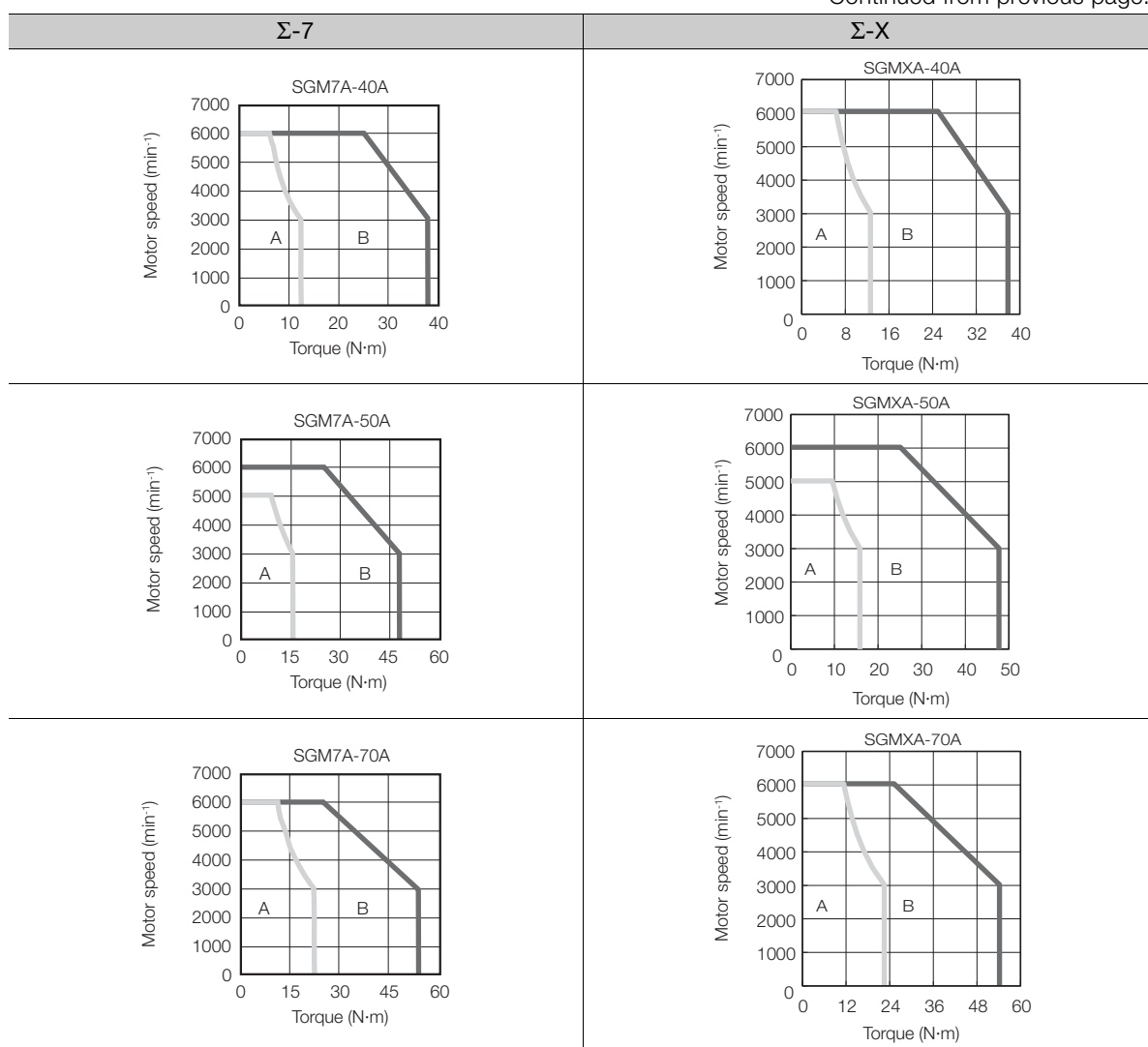


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2.2 Comparison of Servomotor Characteristics

2.2.2 SGM7A and SGMXA

Continued from previous page.



*1. The characteristics are the same for a single-phase 200-V and single-phase 100-V input.

*2. The SGM7A-10A and -15A can use a single-phase power input in combination with the SGD7S-120A□□A008.

*3. The SGMXA-10A and -15A can use a single-phase power input in combination with the SGDXS-120A□□A008.

Note: 1. SGM□A-A5 to -10: These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for other items are at 20°C. These are typical values.
SGM□A-15 to -70: These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C.

2. The characteristics in the intermittent duty zone depend on the power supply voltage.

3. If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.

4. If you use a servomotor main circuit cable that exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

2.2.3 SGM7P and SGMXP

Ratings

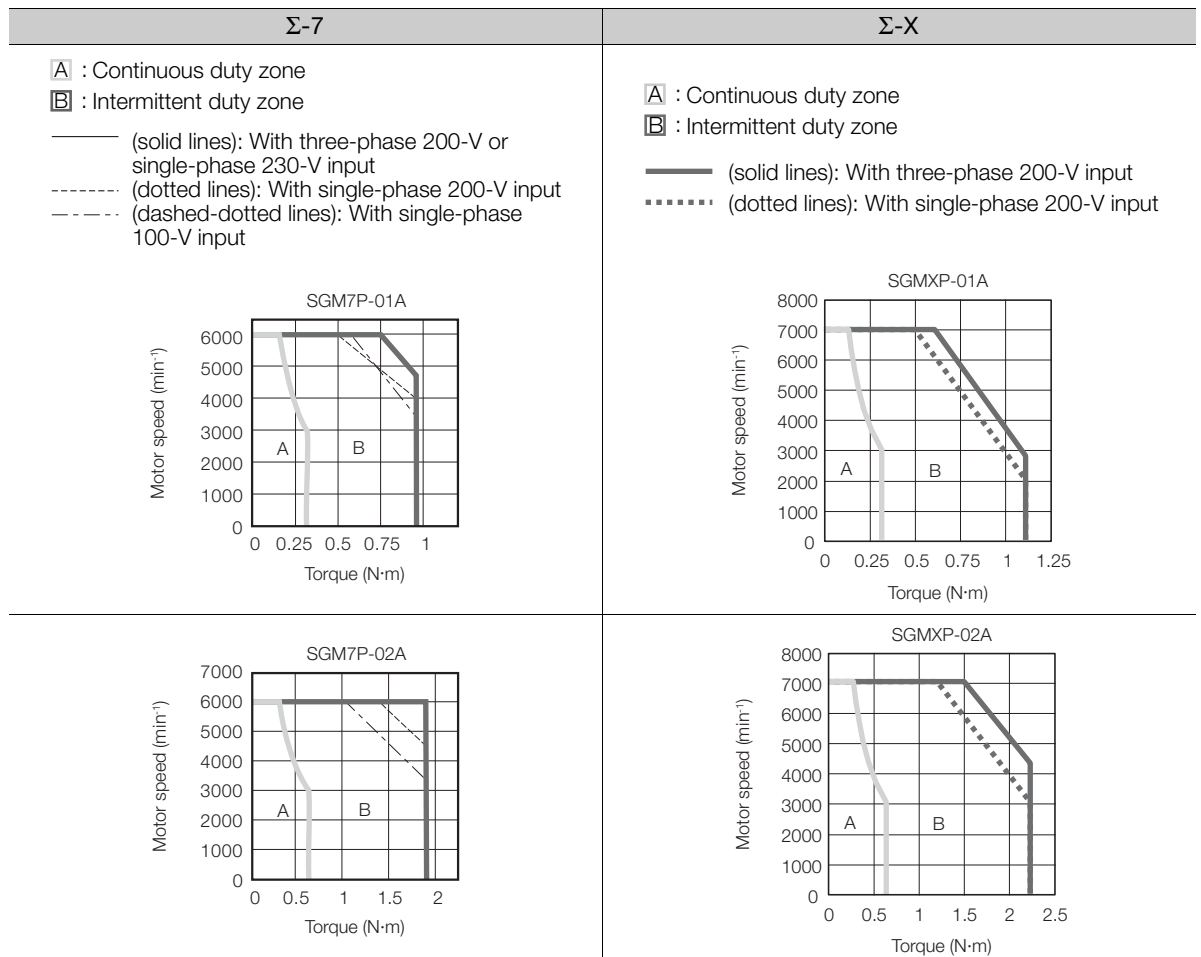
Model Σ-7: SGM7P- Σ-X: SGMXP-	Servomotor Capacity	Rated Torque ^{*1,*2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia (×10 ⁻⁴ kg·m ²)			
		Σ-7	Σ-X	Σ-7	Σ-X	Standard		With a Batteryless Absolute Encoder	
01	100 W	0.318		1.11		0.0592 (0.0892)	0.0594 (0.0922)	0.0607 (0.0907)	0.0631 (0.0959)
02	200 W	0.637		2.23		0.263 (0.415)	0.263 (0.423)	0.264 (0.416)	0.267 (0.427)
04	400 W	1.27		4.46		0.409 (0.561)	0.409 (0.569)	0.410 (0.562)	0.413 (0.573)
08	750 W	2.39		7.16		2.10 (3.31)	2.10 (2.98)	2.10 (3.31)	2.10 (2.98)
15	1.5 kW	4.77		14.3		4.02 (5.28)	4.02 (4.90)	4.02 (5.28)	4.02 (4.90)

*1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for other items are at 20°C. These are typical values.

*2. The rated torques are the continuous allowable torque values at an ambient operating temperature of 40°C with an aluminum heat sink of the following dimensions.
Capacity 100 W to 400 W: 250 mm × 250 mm × 6 mm, capacity 750 W, 1.5 kW: 300 mm × 300 mm × 12 mm

Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics

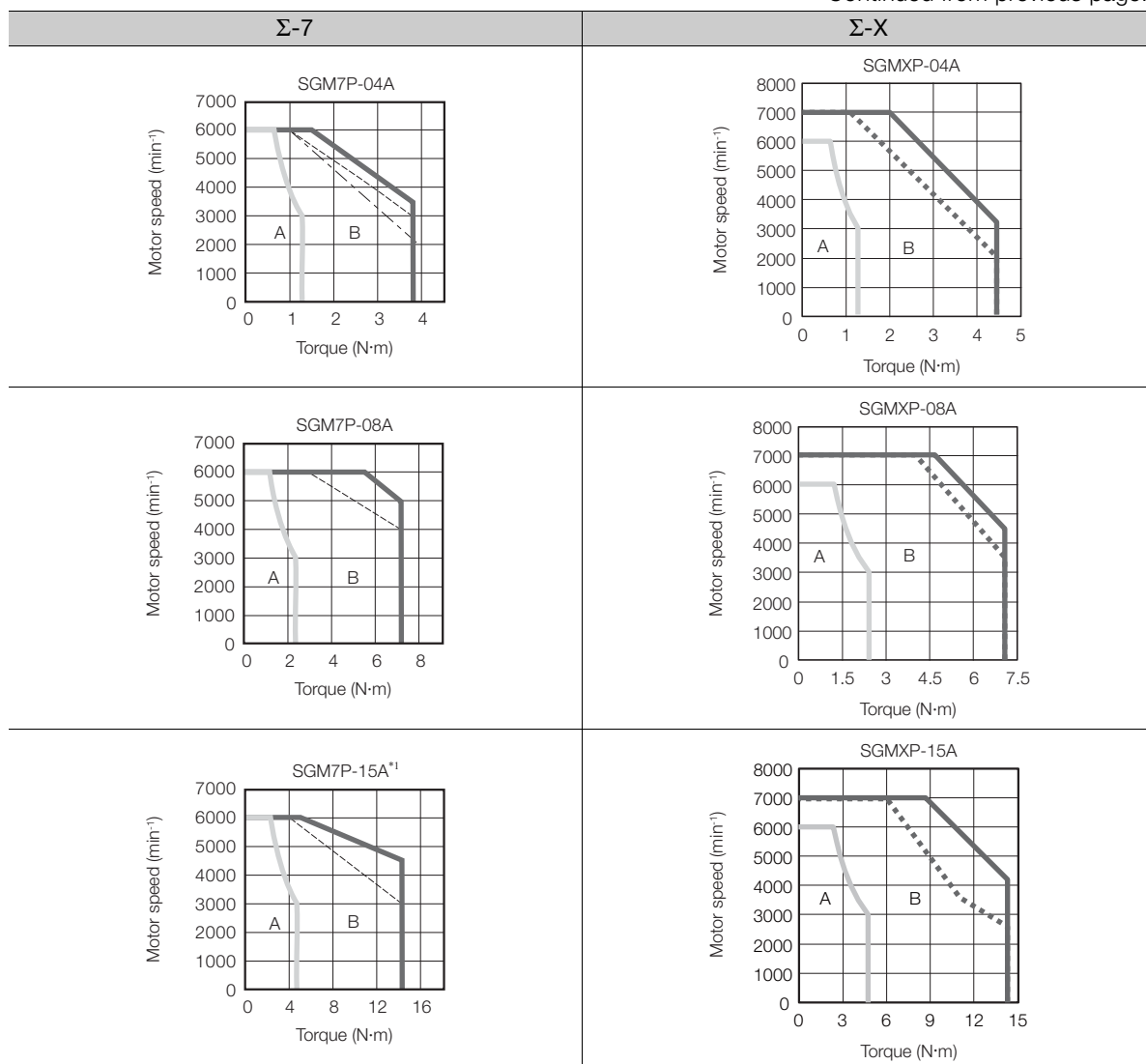


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2.2 Comparison of Servomotor Characteristics

2.2.3 SGM7P and SGMXP

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*1. The SGM7P-15A can use a single-phase power input in combination with the SGD7S-120A□□A008.

*2. The SGMXP-15A can use a single-phase power input in combination with the SGDXS-120A□□A0008.

Note: 1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C.

2. The characteristics in the intermittent duty zone depend on the power supply voltage.

3. If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.

4. If you use a servomotor main circuit cable that exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

2.2.4 SGM7G and SGMXG

Ratings

Model Σ-7: SGM7G- Σ-X: SGMXG-	Servomotor Capacity	Rated Torque ^{*1, *2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia (×10 ⁻⁴ kg·m ²)			
						Standard		With a Batteryless Absolute Encoder	
		Σ-7	Σ-X	Σ-7	Σ-X	Σ-7	Σ-X	Σ-7	Σ-X
03	300 W	1.96		5.88		2.48 (2.73)			
05	450 W	2.86		8.92		3.33 (3.58)			
09	850 W	5.39		14.2	14.2 20.0 ^{*3}	13.9 (16.0)			
13	1.3 kW	8.34		23.3	23.3 30.0 ^{*4}	19.9 (22.0)			
20	1.8 kW	11.5		28.7	28.7 35.4 ^{*5}	26.0 (28.1)			
30	2.9 kW 2.4 kW ^{*6}	18.6 15.1 ^{*6}		54.0 45.1 ^{*6}	54.0 45.1 ^{*6} 66.8 ^{*7}	46.0 (53.9)			
44	4.4 kW	28.4		71.6	71.6 95.6 ^{*8}	67.5 (75.4)			
55	5.5 kW	35.0		102	102 134 ^{*9}	89.0 (96.9)			
75	7.5 kW	48.0		119	119	125 (133)			
1A	11 kW	70.0		175		242 (261)			
1E	15 kW	95.4		224		303 (341)			

*1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C. These are typical values.

*2. The rated torques are the continuous allowable torque values with an aluminum or steel heat sink of the following dimensions.
Capacity 300 W, 450 W: 250 mm × 250 mm × 6 mm (aluminum), capacity 850 W to 1.8 kW: 400 mm × 400 mm × 20 mm (iron), capacity 2.9 kW (2.4 kW) to 7.5 kW: 550 mm × 550 mm × 30 mm (iron), capacity 11 kW to 15 kW: 650 mm × 650 mm × 35 mm (iron)

*3. This is the value when combined with the SERVOPACK SGDXS-120A.

*4. This is the value when combined with the SERVOPACK SGDXS-180A.

*5. This is the value when combined with the SERVOPACK SGDXS-200A.

*6. This is the value when combined with the SERVOPACK SGD□S-200A.
Servomotor output is limited by the rated current and maximum current of the used SERVOPACK.
The load ratio is calculated based on the servomotor's rated current of 24.5 Arms.
Use the servomotor at a load ratio of 80% or less.

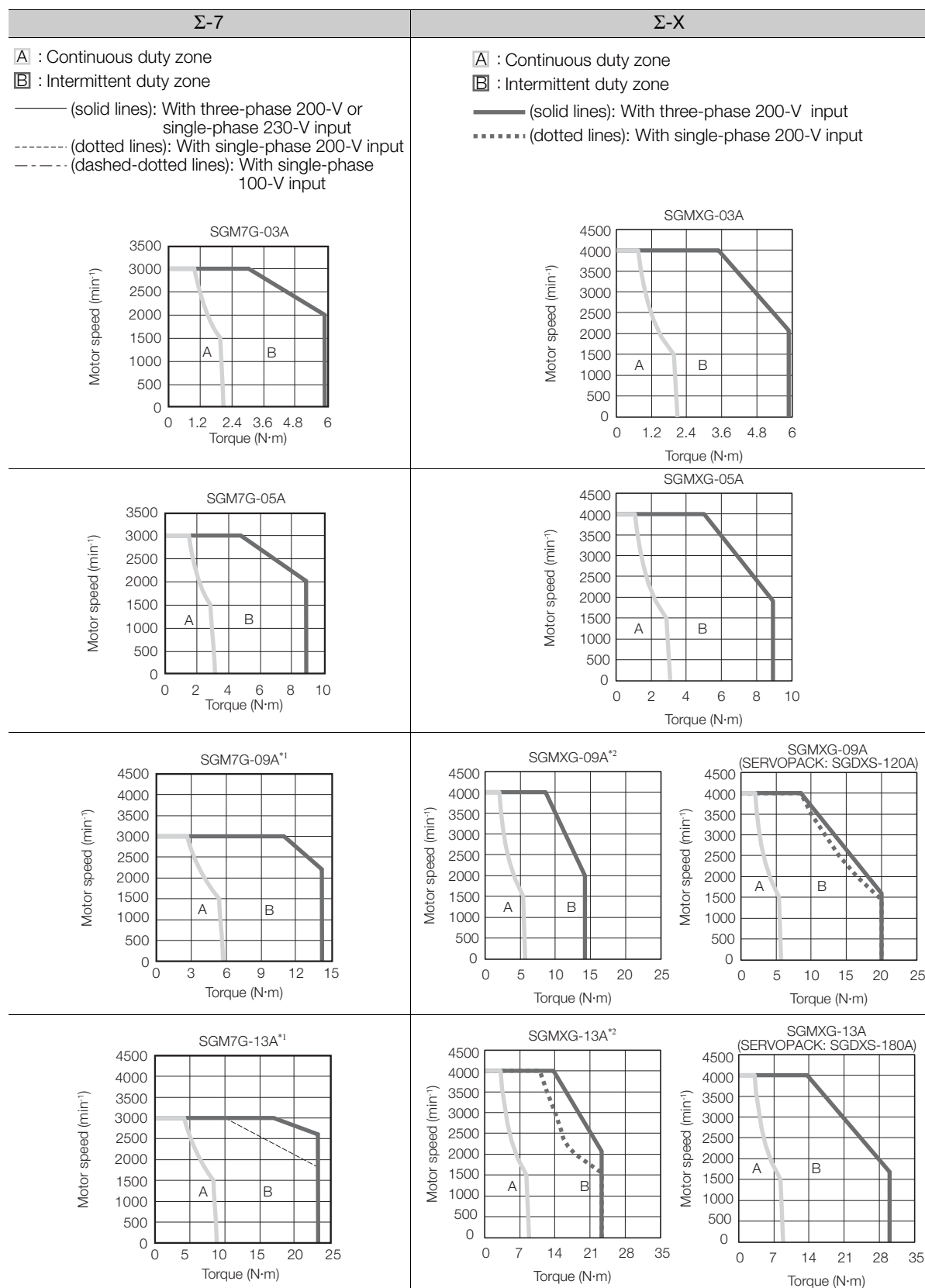
*7. This is the value when combined with the SERVOPACK SGDXS-470A.

*8. This is the value when combined with the SERVOPACK SGDXS-550A.

*9. This is the value when combined with the SERVOPACK SGDXS-780A.

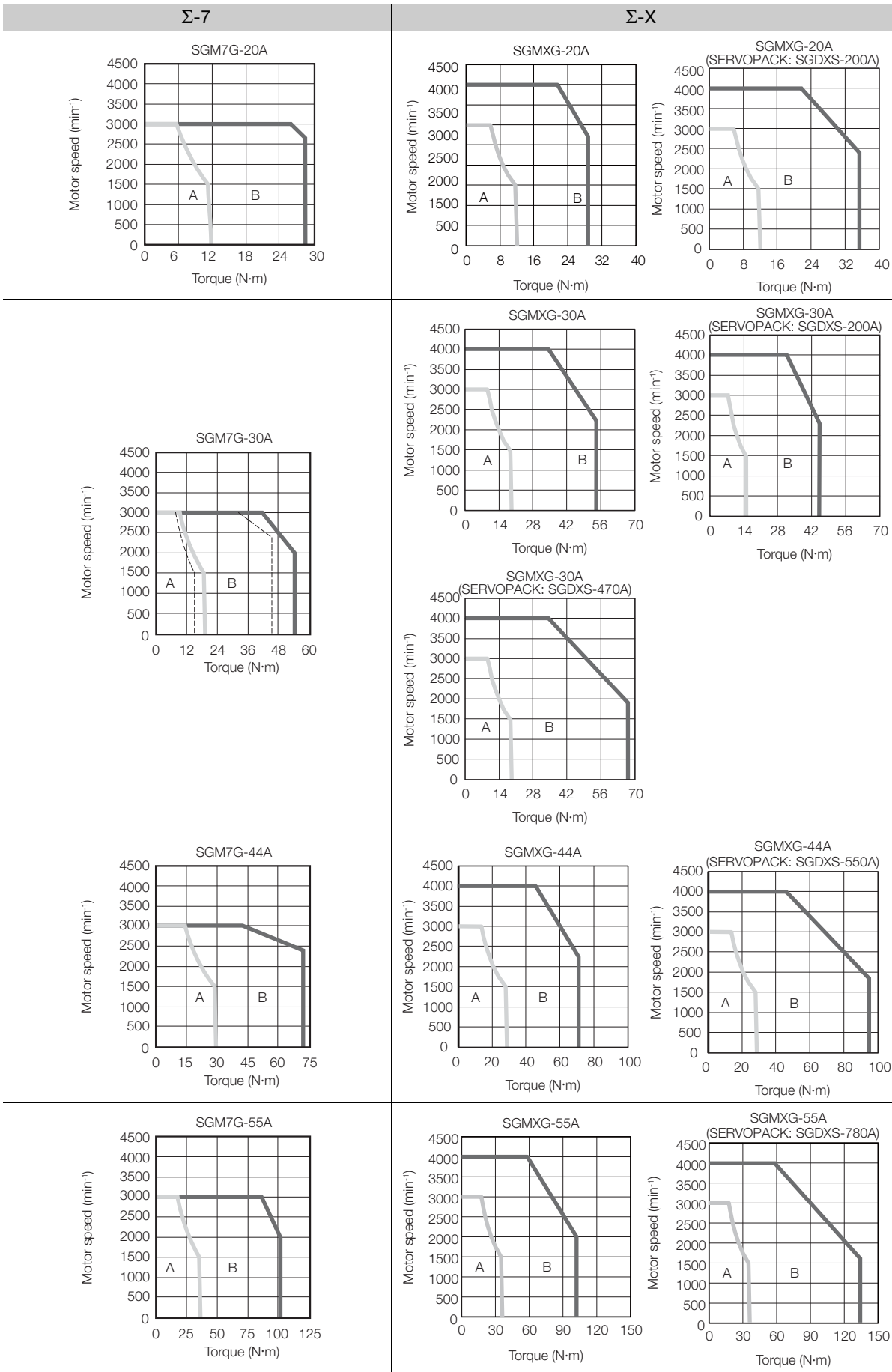
Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics



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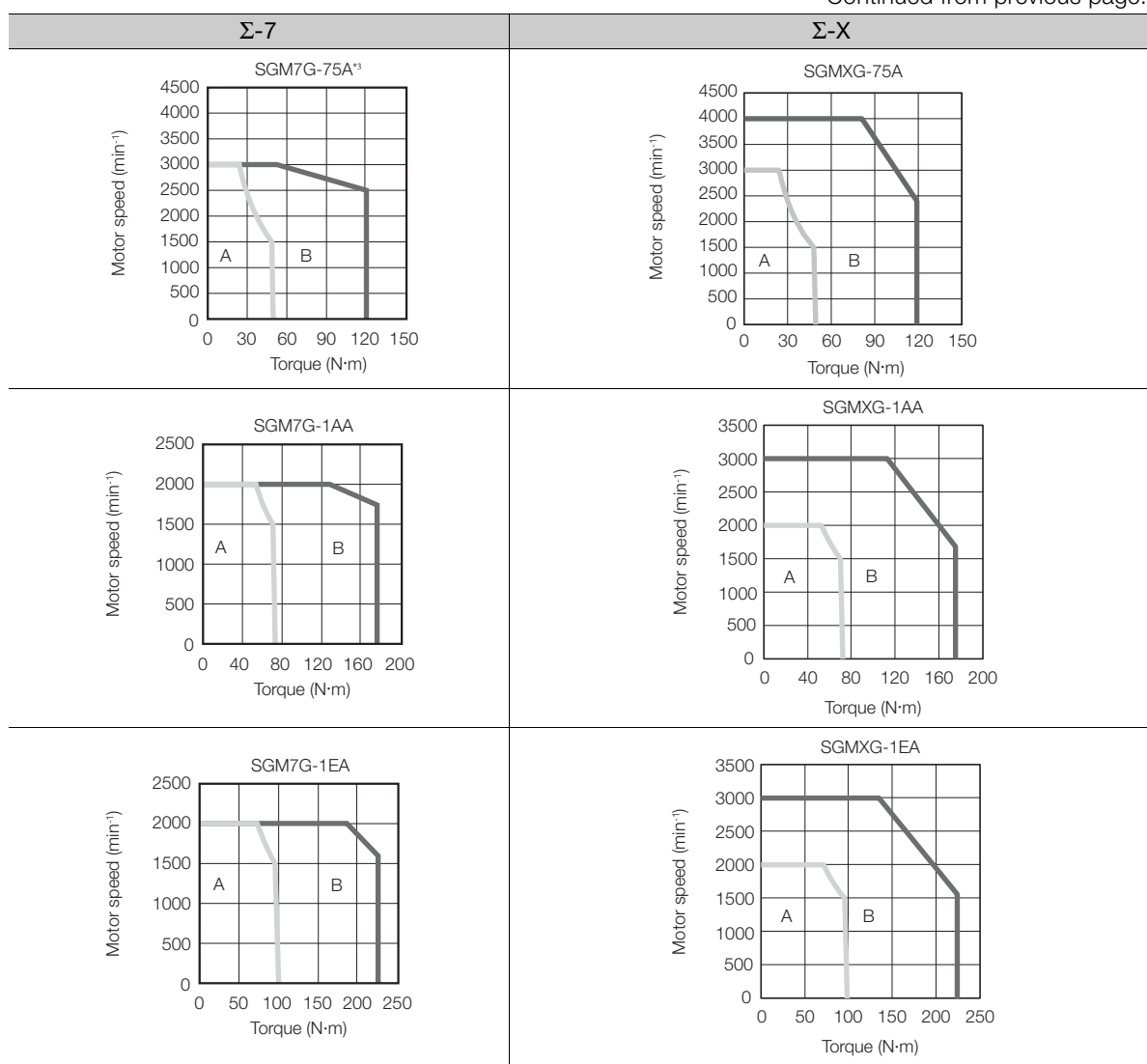


Continued on next page.

2.2 Comparison of Servomotor Characteristics

2.2.4 SGM7G and SGMXG

Continued from previous page.



*1. The SGM7G-09A and -13A can use a single-phase power input in combination with the SGD7S-120A□□A008.

*2. The SGMXG-09A and -13A can use a single-phase power input in combination with the SGDXS-120A□□A0008.

*3. If you operate the SGM7G-75A Servomotor (with holding brake) continuously at the maximum motor speed of 3000 min⁻¹, use an output torque of 14.4 N•m (30% of rated torque) or less.

Note: 1. These values (typical values) are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C.

2. The characteristics in the intermittent duty zone depend on the power supply voltage.

3. If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.

4. If you use a servomotor main circuit cable that exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

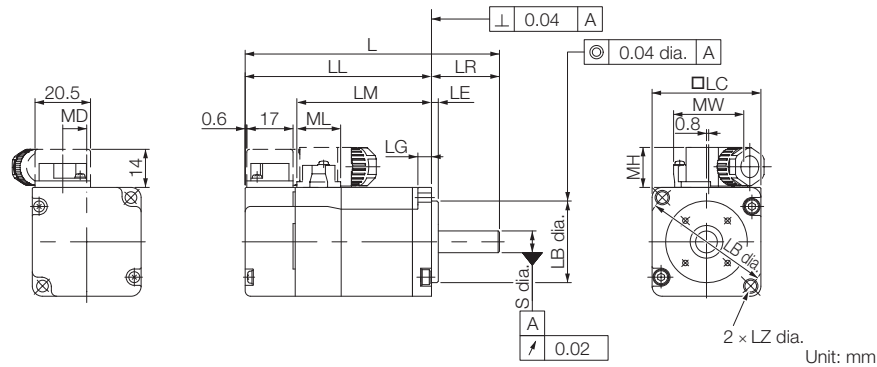
2.3

Servomotor External Dimensions and Installation Dimensions

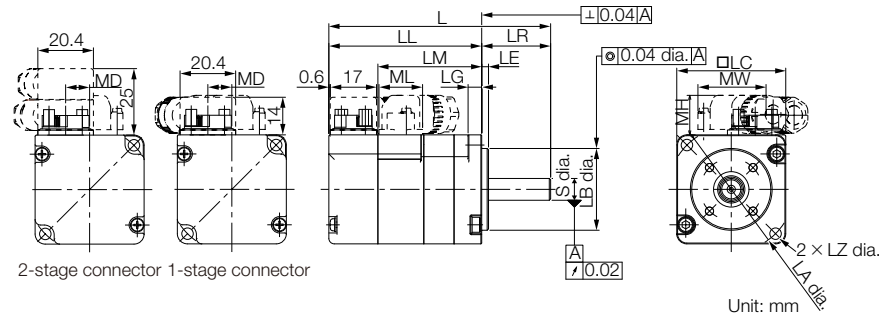
2.3.1

SGM7J-A5 to -C2 and SGMXJ-A5 to -C2

- SGM7J, SGMXJ-□□□□□□□2 (Σ-7 compatible specifications)



- SGMXJ-□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
50 W	SGM7J-A5A□A2□	81.5 (122.0)	56.5 (97.0)	37.9	25	2.5	5	40	46	30 ⁰ _{-0.021}	4.3	8 ⁰ _{-0.009}	8.8	25.8	14.7	16.1	0.3 (0.6)
	SGMXJ-A5A□A2□A2	80.5 (121.0)	55.5 (96.0)	37.5									8.4	25	14.5	16	
	SGMXJ-A5A□A2□A1																
100 W	SGM7J-01A□A2□	93.5 (134.0)	68.5 (109.0)	49.9									8.8	25.8	14.7	16.1	0.4 (0.7)
	SGMXJ-01A□A2□A2	92.5 (133.0)	67.5 (108.0)	49.5									8.4	25	14.5	16	
	SGMXJ-01A□A2□A1																
150 W	SGM7J-C2A□A2□	105.5 (153.5)	80.5 (128.5)	61.9									8.8	25.8	14.7	16.1	0.5 (0.8)
	SGMXJ-C2A□A2□A2	104.5 (153.0)	79.5 (128.0)	61.5									8.4	25	14.5	16	
	SGMXJ-C2A□A2□A1																

* In models that have a batteryless absolute encoder, the Σ-7 series has L and LL that are +8 mm, and the Σ-X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following section for the values for individual models.

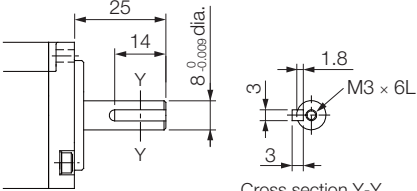
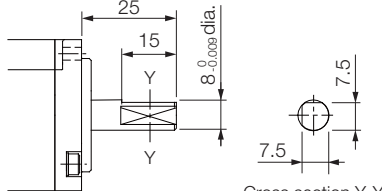
2.3 Servomotor External Dimensions and Installation Dimensions

2.3.1 SGM7J-A5 to -C2 and SGMXJ-A5 to -C2

Model	L	LL	Approx. Mass [kg]
SGM7J-A5A6A2□	89.5 (130.0)	64.5 (105.0)	0.3 (0.6)
SGMXJ-A5AWA2□A□	88.0 (128.5)	63.0 (103.5)	0.4 (0.7)
SGM7J-01A6A2□	101.5 (142.0)	76.5 (117.0)	0.4 (0.7)
SGMXJ-01AWA2□A□	100.0 (140.5)	75.0 (115.5)	0.5 (0.8)
SGM7J-C2A6A2□	113.5 (161.5)	88.5 (136.5)	0.5 (0.8)
SGMXJ-C2AWA2□A□	112.0 (160.5)	87.0 (135.5)	0.6 (0.9)

Shaft End Specifications

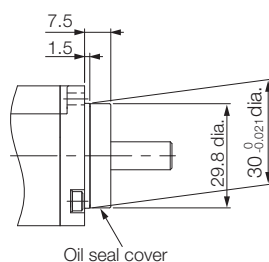
The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

The specifications of the options for the Σ -7 series and Σ -X series are identical.

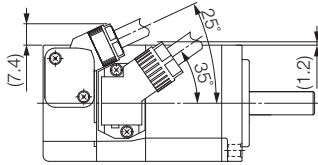
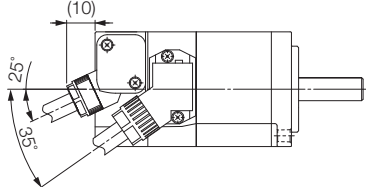
• With Oil Seal



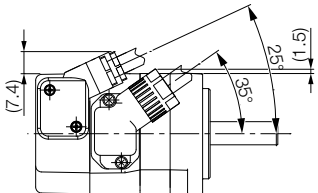
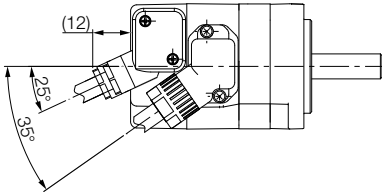
Connector Mounting Dimensions

- Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The connector mounting dimensions for the Σ -7 series and Σ -X series (Σ -7 compatible specifications) are identical.

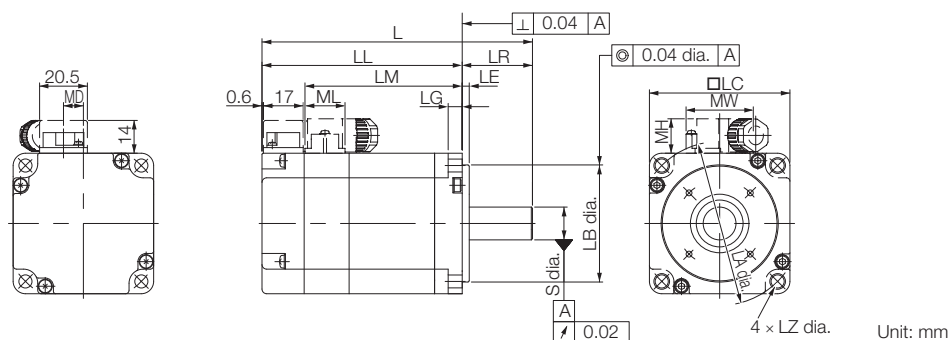
Cable Installed on Load Side	Cable Installed on Non-load Side
	

- Σ -X Series (standard specifications)

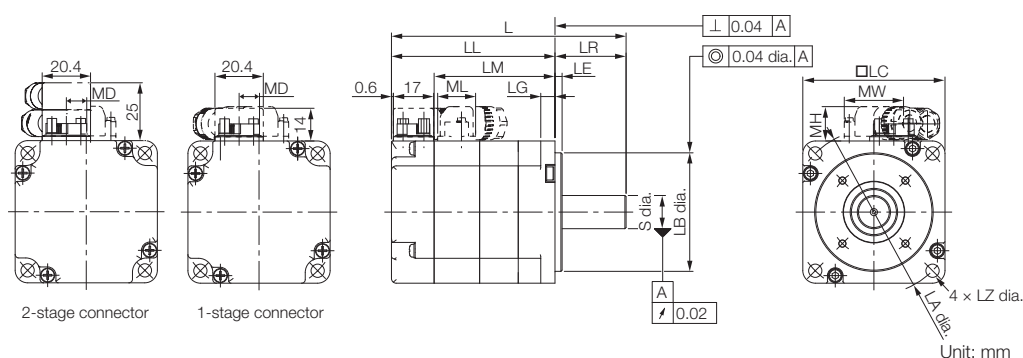
Cable Installed on Load Side	Cable Installed on Non-load Side
	

2.3.2 SGM7J-02 to -06 and SGMXJ-02 to -06

- SGM7J, SGMXJ-□□□□□□□2 (Σ-7 compatible specifications)



- SGMXJ-□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

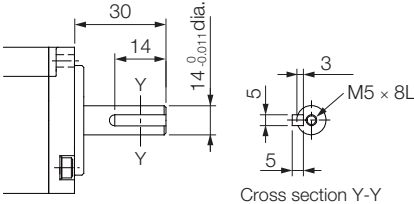
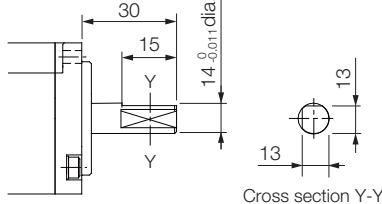
Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
200 W	SGM7J-02A□A2□	99.5 (140.0)	69.5 (110.0)	51.2													0.8 (1.4)
	SGMXJ-02A□A2□A2	98.5 (139.0)	68.5 (109.0)	50.5									8.5	28.7	14.7	17.1	
	SGMXJ-02A□A2□A1												8.4	25	14.5	16	
400 W	SGM7J-04A□A2□	115.5 (156.0)	85.5 (126.0)	67.2													1.1 (1.7)
	SGMXJ-04A□A2□A2	115.0 (155.5)	85.0 (125.5)	67.0	30	3	6	60	70	50 ⁰ _{-0.025}	5.5	14 ⁰ _{-0.011}	8.5	28.7	14.7	17.1	
	SGMXJ-04A□A2□A1												8.4	25	14.5	16	
600 W	SGM7J-06A□A2□	137.5 (191.5)	107.5 (161.5)	89.2													1.6 (2.2)
	SGMXJ-06A□A2□A2	137.0 (191.0)	107.0 (161.0)	89.0									8.5	28.7	14.7	17.1	
	SGMXJ-06A□A2□A1												8.4	25	14.5	16	

* In models that have a batteryless absolute encoder, the Σ -7 series has L and LL that are +8 mm, and the Σ -X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following section for the values for individual models.

Model	L	LL	Approx. Mass [kg]
SGM7J-02A6A2□	107.5 (148.0)	77.5 (118.0)	0.8 (1.4)
SGMXJ-02AWA2□A□	106.0 (146.5)	76.0 (116.5)	0.9 (1.5)
SGM7J-04A6A2□	123.5 (164.0)	93.5 (134.0)	1.1 (1.7)
SGMXJ-04AWA2□A□	122.5 (163.0)	92.5 (133.0)	1.2 (1.8)
SGM7J-06A6A2□	145.5 (199.5)	115.5 (169.5)	1.6 (2.2)
SGMXJ-06AWA2□A□	144.5 (198.5)	114.5 (168.5)	1.7 (2.3)

Shaft End Specifications

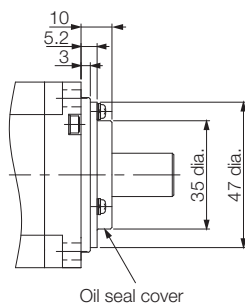
The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

The specifications of the options for the Σ -7 series and Σ -X series are identical.

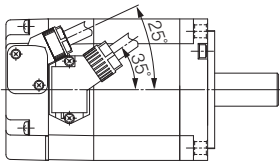
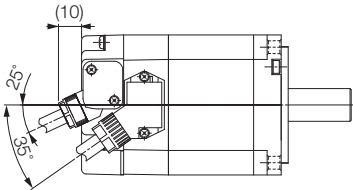
• With Oil Seal



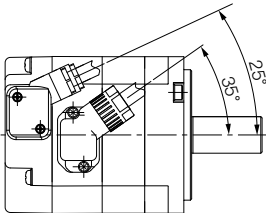
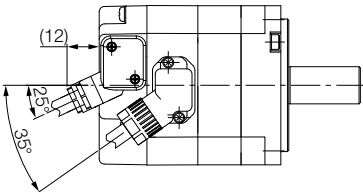
Connector Mounting Dimensions

- Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The connector mounting dimensions for the Σ -7 series and Σ -X series (Σ -7 compatible specifications) are identical.

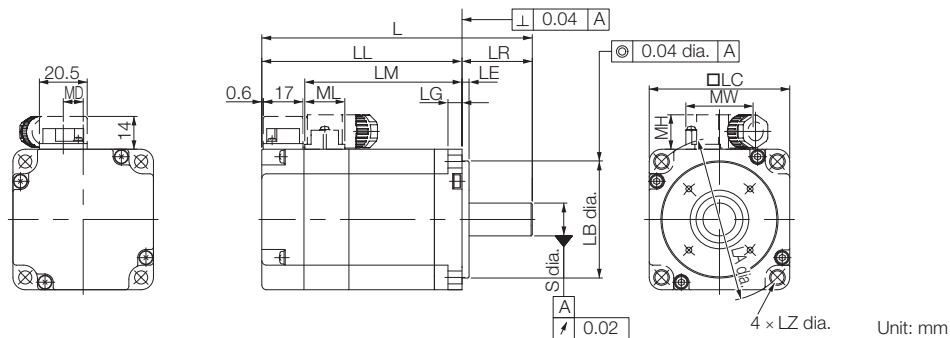
Cable Installed on Load Side	Cable Installed on Non-load Side
	

- Σ -X Series (standard specifications)

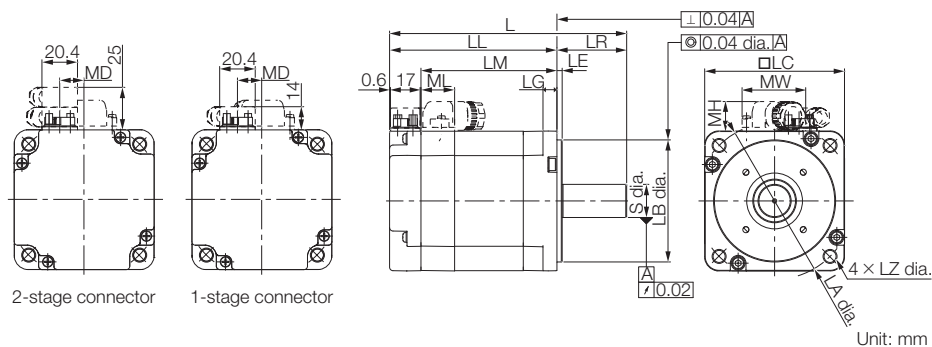
Cable Installed on Load Side	Cable Installed on Non-load Side
	

2.3.3 SGM7J-08 and SGMXJ-08

- SGM7J, SGMXJ-□□□□□□□2 (Σ-7 compatible specifications)



- SGMXJ-□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.
2. The values for a straight, without key specification are given.

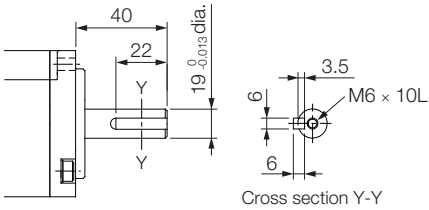
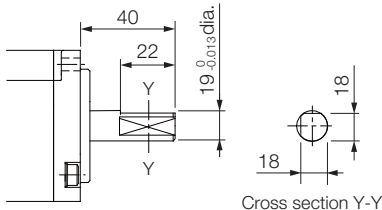
Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
750 W	SGM7J-08A□A2□	137.0 (184.0)	97.0 (144.0)	78.5	40	3	8	80	90	70 ⁰ _{-0.030}	7	19 ⁰ _{-0.013}	13.6	38	17	19.3	2.2 (2.8)
	SGMXJ-08A□A2□A2	136.0 (183.0)	96.0 (143.0)	78.0									14				
	SGMXJ-08A□A2□A1																

* In models that have a batteryless absolute encoder, the Σ-7 series has L and LL that are +8 mm and an approximate mass that is +0.1 kg, and the Σ-X series has L and LL that are +6.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following section for the values for individual models.

Model	L	LL	Approx. Mass [kg]
SGM7J-08A6A2□	145.0 (192.0)	105.0 (152.0)	2.3 (2.9)
SGMXJ-08AWA2□A□	142.5 (189.5)	102.5 (149.5)	2.3 (2.9)

Shaft End Specifications

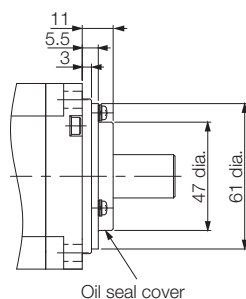
The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

The specifications of the options for the Σ -7 series and Σ -X series are identical.

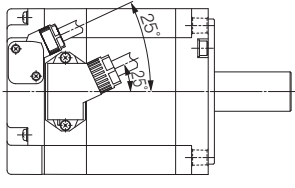
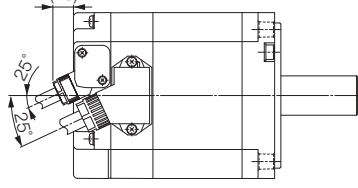
- With Oil Seal



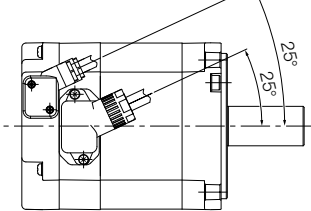
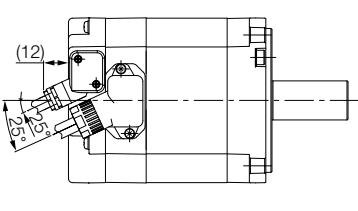
Connector Mounting Dimensions

- Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The connector mounting dimensions for the Σ -7 series and Σ -X series (Σ -7 compatible specifications) are identical.

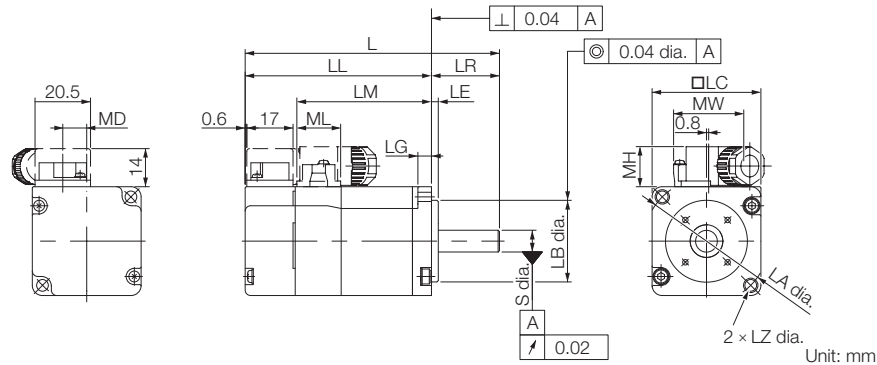
Cable Installed on Load Side	Cable Installed on Non-load Side
	

- Σ -X Series (standard specifications)

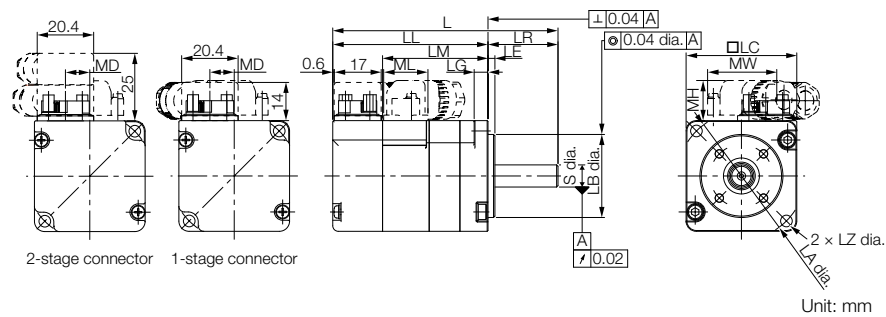
Cable Installed on Load Side	Cable Installed on Non-load Side
	

2.3.4 SGM7A-A5 to -C2 and SGMXA-A5 to -C2

- SGM7A, SGMXA-□□□□□□□□2 (Σ-7 compatible specifications)



- SGMXA-□□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
50 W	SGM7A-A5A□A2□	81.5 (122.0)	56.5 (97.0)	37.9									8.8	25.8	14.7	16.1	0.3 (0.6)
	SGMXA-A5A□A2□A2	80.5 (121.0)	55.5 (96.0)	37.5									8.4	25	14.5	16	
	SGMXA-A5A□A2□A1																
100 W	SGM7A-01A□A2□	93.5 (134.0)	68.5 (109.0)	49.9									8.8	25.8	14.7	16.1	0.4 (0.7)
	SGMXA-01A□A2□A2	92.5 (133.0)	67.5 (108.0)	49.5	25	2.5	5	40	46	30 ⁰ _{-0.021}	4.3	8 ⁰ _{-0.009}	8.4	25	14.5	16	
	SGMXA-01A□A2□A1																
150 W	SGM7A-C2A□A2□	105.5 (153.5)	80.5 (128.5)	61.9									8.8	25.8	14.7	16.1	0.5 (0.8)
	SGMXA-C2A□A2□A2	104.5 (153.0)	79.5 (128.0)	61.5									8.4	25	14.5	16	
	SGMXA-C2A□A2□A1																

2.3 Servomotor External Dimensions and Installation Dimensions

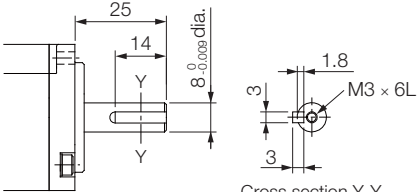
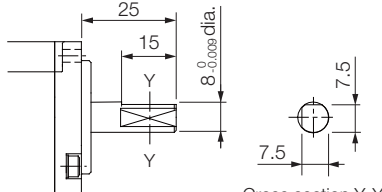
2.3.4 SGM7A-A5 to -C2 and SGMXA-A5 to -C2

* In models that have a batteryless absolute encoder, the Σ -7 series has L and LL that are +8 mm, and the Σ -X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following section for the values for individual models.

Model	L	LL	Approx. Mass [kg]
SGM7A-A5A6A2□	89.5 (130.0)	64.5 (105.0)	0.3 (0.6)
SGMXA-A5AWA2□A□	88.0 (128.5)	63.0 (103.5)	0.4 (0.7)
SGM7A-01A6A2□	101.5 (142.0)	76.5 (117.0)	0.4 (0.7)
SGMXA-01AWA2□A□	100.0 (140.5)	75.0 (115.5)	0.5 (0.8)
SGM7A-C2A6A2□	113.5 (161.5)	88.5 (136.5)	0.5 (0.8)
SGMXA-C2AWA2□A□	112.0 (160.5)	87.0 (135.5)	0.6 (0.9)

Shaft End Specifications

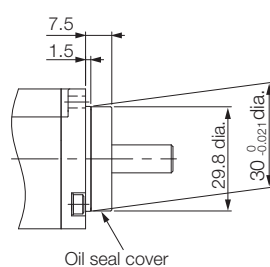
The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

The specifications of the options for the Σ -7 series and Σ -X series are identical.

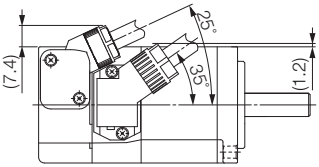
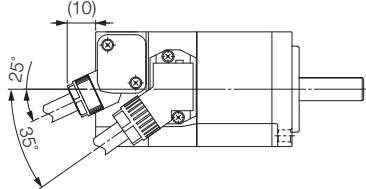
• With Oil Seal



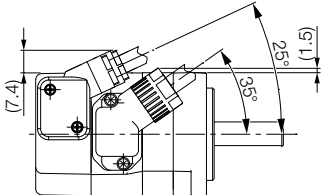
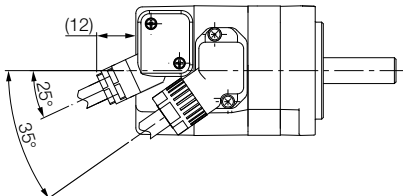
Connector Mounting Dimensions

- Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The connector mounting dimensions for the Σ -7 series and Σ -X series (Σ -7 compatible specifications) are identical.

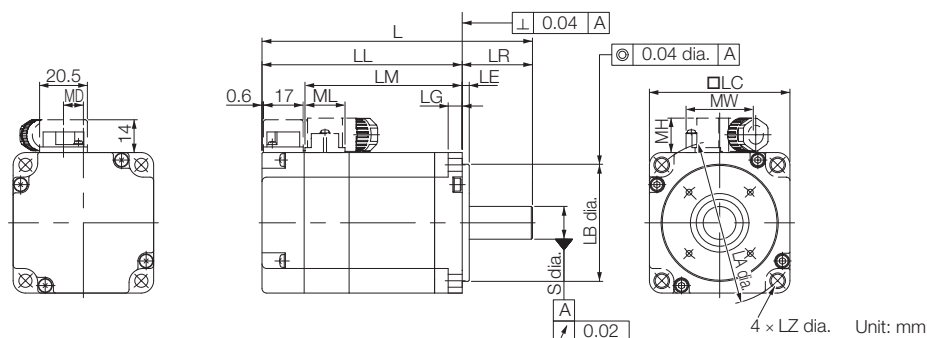
Cable Installed on Load Side	Cable Installed on Non-load Side
	

- Σ -X Series (standard specifications)

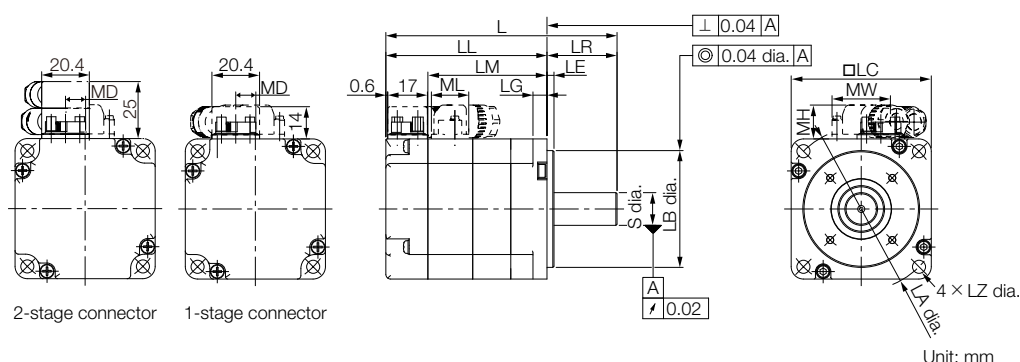
Cable Installed on Load Side	Cable Installed on Non-load Side
	

2.3.5 SGM7A-02 to -06 and SGMXA-02 to -06

- SGM7A, SGMXA-□□□□□□□□2 (Σ-7 compatible specifications)



- SGMXA-□□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

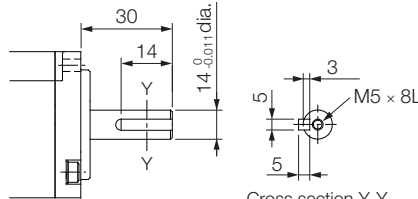
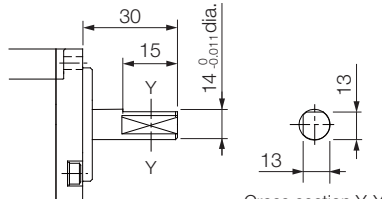
Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*																
					LR	LE	LG	LC	LA	LB	LZ																						
200 W	SGM7A-02A□A2□	99.5 (140.0)	69.5 (110.0)	51.2	30	3	6	60	70	50 ⁰ _{-0.025}	5.5	14 ⁰ _{-0.011}	8.5	28.7	14.7	17.1	0.8 (1.4)																
	SGMXA-02A□A2□A2	98.5 (139.0)	68.5 (109.0)	50.5									8.4	25	14.5	16																	
	SGMXA-02A□A2□A1												8.4	25	14.5	16																	
400 W	SGM7A-04A□A2□	115.5 (156.0)	85.5 (126.0)	67.2									30	3	6	60	70	50 ⁰ _{-0.025}	5.5	14 ⁰ _{-0.011}	8.5	28.7	14.7	17.1	1.2 (1.8)								
	SGMXA-04A□A2□A2	115.0 (155.5)	85.0 (125.5)	67.0																	8.4	25	14.5	16									
	SGMXA-04A□A2□A1																				8.4	25	14.5	16									
600 W	SGM7A-06A□A2□	137.5 (191.5)	107.5 (161.5)	89.2																	30	3	6	60	70	50 ⁰ _{-0.025}	5.5	14 ⁰ _{-0.011}	8.5	28.7	14.7	17.1	1.6 (2.2)
	SGMXA-06A□A2□A2	137.0 (191.0)	107.0 (161.0)	89.0																									8.4	25	14.5	16	
	SGMXA-06A□A2□A1																												8.4	25	14.5	16	

* In models that have a batteryless absolute encoder, the Σ -7 series has L and LL that are +8 mm, and the Σ -X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
200 W	SGM7A-02A6A2□	107.5 (148.0)	77.5 (118.0)	0.8 (1.4)
	SGMXA-02AWA2□A□	106.0 (146.5)	76.0 (116.5)	0.9 (1.5)
400 W	SGM7A-04A6A2□	123.5 (164.0)	93.5 (134.0)	1.2 (1.8)
	SGMXA-04AWA2□A□	122.5 (163.0)	92.5 (133.0)	1.3 (1.9)
600 W	SGM7A-06A6A2□	145.5 (199.5)	115.5 (169.5)	1.6 (2.2)
	SGMXA-06AWA2□A□	144.5 (198.5)	114.5 (168.5)	1.7 (2.3)

Shaft End Specifications

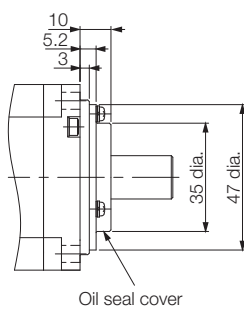
The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

The specifications of the options for the Σ -7 series and Σ -X series are identical.

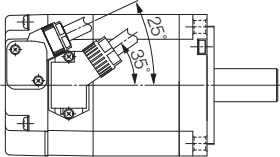
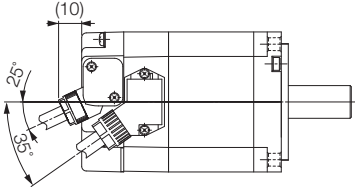
- With Oil Seal



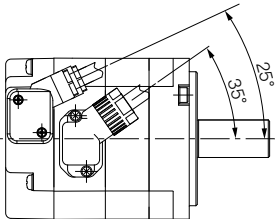
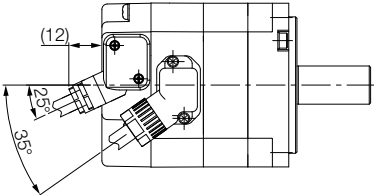
Connector Mounting Dimensions

- Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The connector mounting dimensions for the Σ -7 series and Σ -X series (Σ -7 compatible specifications) are identical.

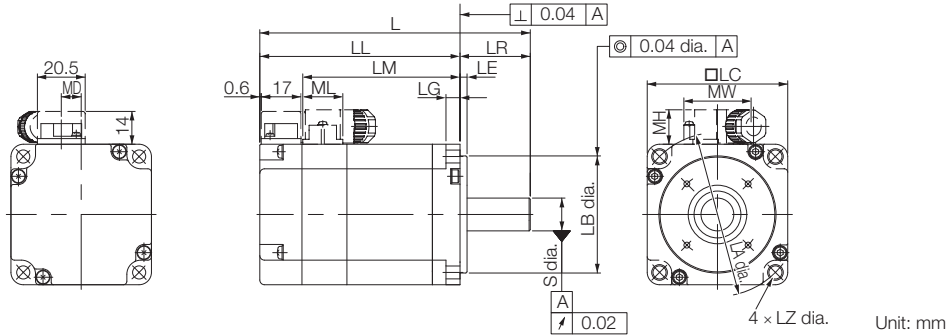
Cable Installed on Load Side	Cable Installed on Non-load Side
	

- Σ -X Series (standard specifications)

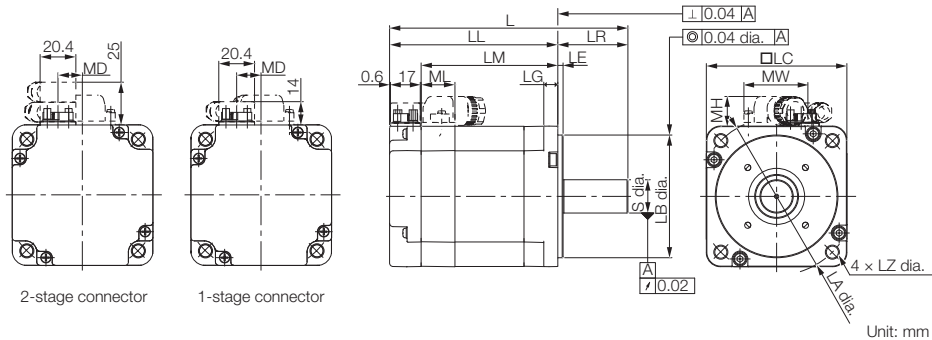
Cable Installed on Load Side	Cable Installed on Non-load Side
	

2.3.6 SGM7A-08, -10 and SGMXA-08, -10

- SGM7A, SGMXA-□□□□□□□□2 (Σ-7 compatible specifications)



- SGMXA-□□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

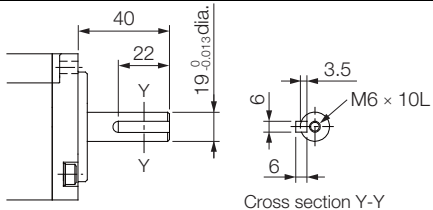
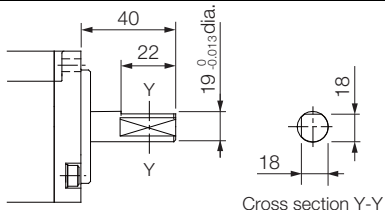
Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*										
					LR	LE	LG	LC	LA	LB	LZ																
750 W	SGM7A-08A□A2□	137.0 (184.0)	97.0 (144.0)	78.5	40	3	8	80	90	70 ⁰ _{-0.030}	7	19 ⁰ _{-0.013}	13.6	17	19.3	2.3 (2.9)											
	SGMXA-08A□A2□A2	136.0 (183.0)	96.0 (143.0)	78.0									38														
	SGMXA-08A□A2□A1												14				37										
1.0 kW	SGM7A-10A□A2□	162.0 (209.0)	122.0 (169.0)	103.5									40				3	8	80	90	70 ⁰ _{-0.030}	7	19 ⁰ _{-0.013}	13.6	17	19.3	3.1 (3.7)
	SGMXA-10A□A2□A2	161.0 (208.0)	121.0 (168.0)	103.0																				38			
	SGMXA-10A□A2□A1																							14			

* In models that have a batteryless absolute encoder, the Σ-7 series has L and LL that are +8 mm, and the Σ-X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
750 W	SGM7A-08A6A2□	145.0 (192.0)	105.0 (152.0)	2.3 (2.9)
	SGMXA-08AWA2□A□	143.5 (190.5)	103.5 (150.5)	2.4 (3.0)
1.0 kW	SGM7A-10A6A2□	170.0 (217.0)	130.0 (177.0)	3.1 (3.7)
	SGMXA-10AWA2□A□	167.5 (214.5)	92.5 (133.0)	3.2 (3.8)

Shaft End Specifications

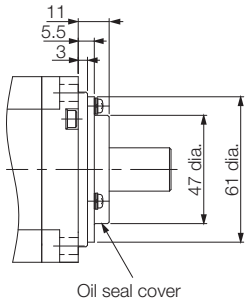
The specifications of the shaft ends for the Σ-7 series and Σ-X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

The specifications of the options for the Σ-7 series and Σ-X series are identical.

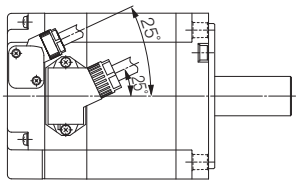
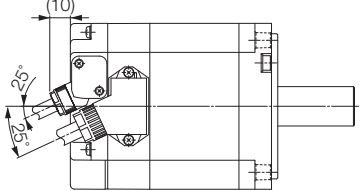
- With Oil Seal



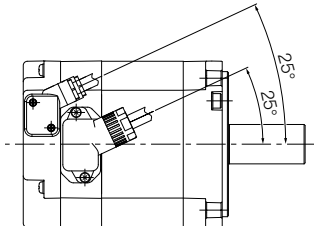
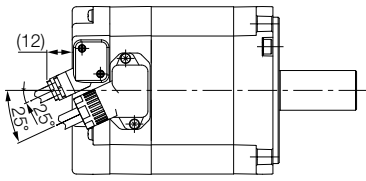
Connector Mounting Dimensions

- Σ-7 Series and Σ-X Series (Σ-7 compatible specifications)

The connector mounting dimensions for the Σ-7 series and Σ-X series (Σ-7 compatible specifications) are identical.

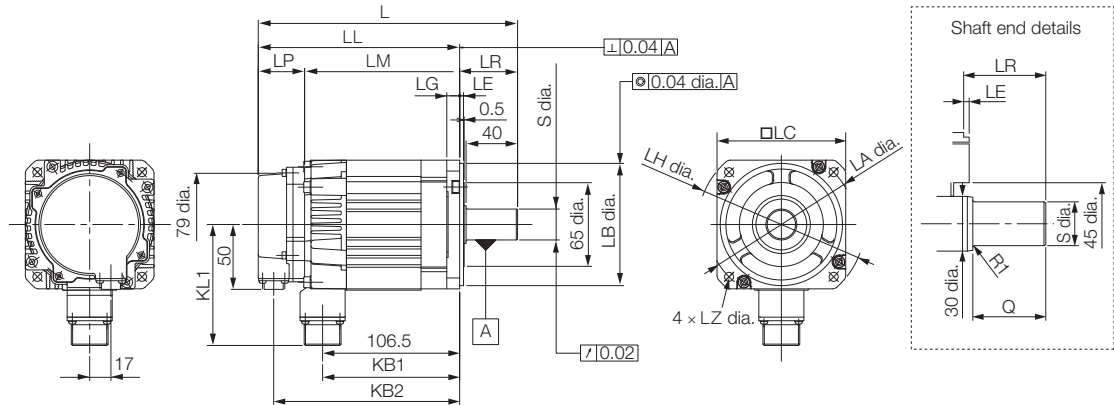
Cable Installed on Load Side	Cable Installed on Non-load Side
	

- Σ-X Series (standard specifications)

Cable Installed on Load Side	Cable Installed on Non-load Side
	

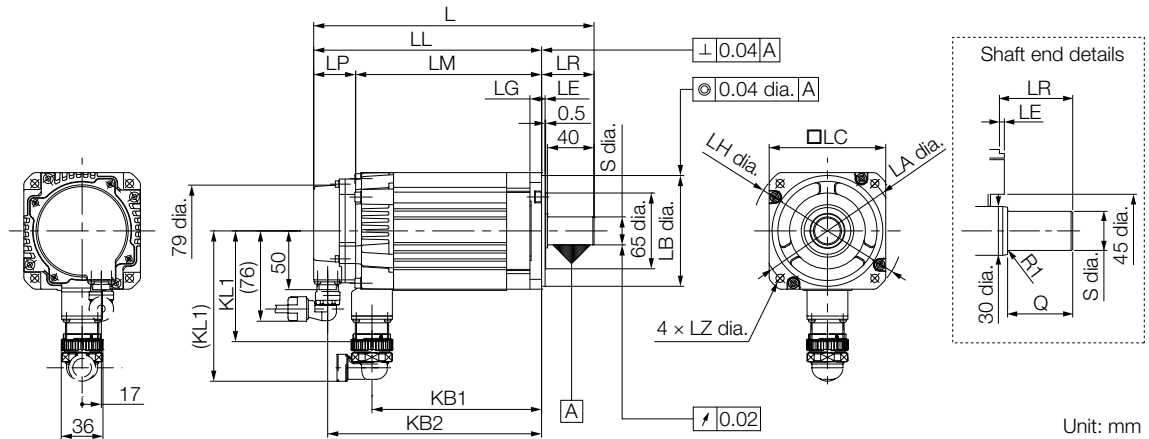
2.3.7 SGM7A-15 to -25 and SGMXA-15 to -25

- Without Holding Brakes
<SGM7A>



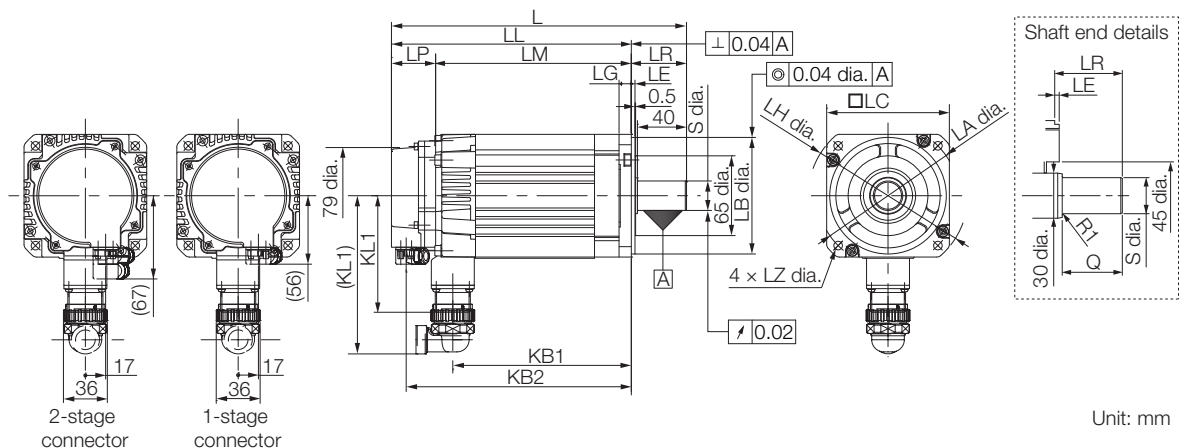
Unit: mm

- <SGMXA-□□□□□□1□2 (Σ-7 compatible specifications)>



Unit: mm

- <SGMXA-□□□□□□1□1 (standard specifications)>



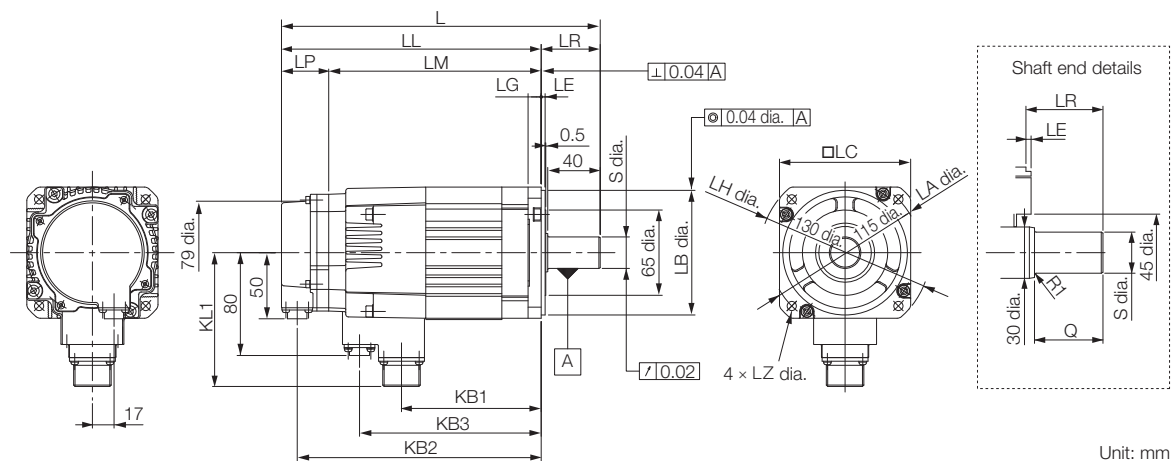
Unit: mm

2.3 Servomotor External Dimensions and Installation Dimensions

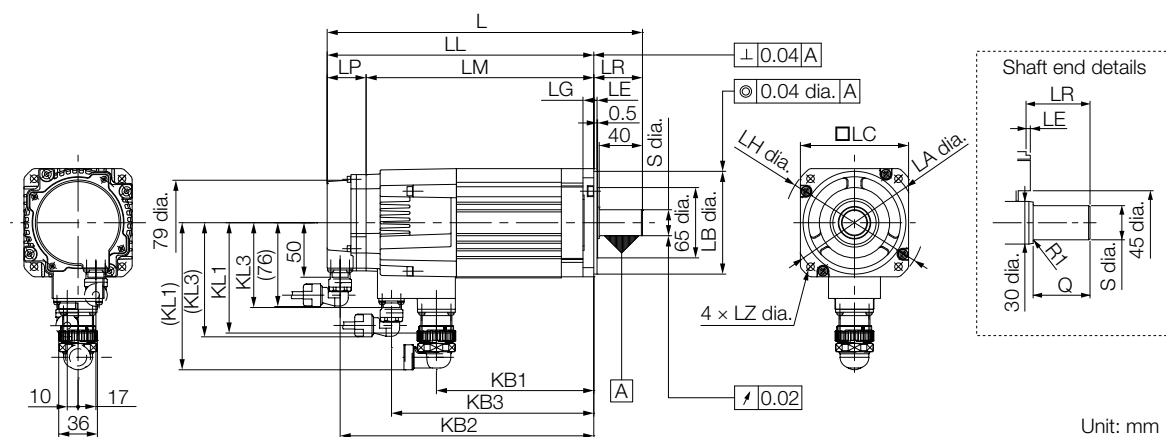
2.3.7 SGM7A-15 to -25 and SGMXA-15 to -25

• With Holding Brakes

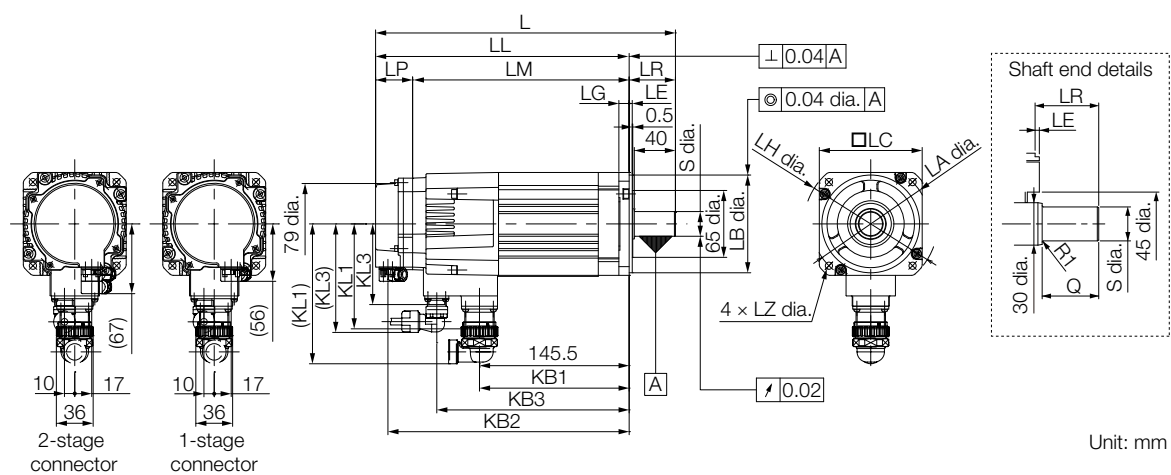
<SGM7A>



<SGMXA-□□□□□□C□2 (Σ-7 compatible specifications)>



<SGMXA-□□□□□□C□1 (standard specifications)>



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L * ¹	LL * ¹	LM	LP* ¹	LR	KB1	KB2* ¹	KB3	KL1	(KL1) * ₂	KL3	(KL3) * ₂	Approx. Mass [kg]	
1.5 kW	SGM7A-15A□A2□	202 (243)	157 (198)	121 (162)	36	45	107 (107)	145 (186)	— (139)	95 (102)	—	—	—	4.6 (6.0)	
	SGMXA-15A□A2□A□	200 (241)	155 (196)		34			143 (184)			129 (136)	— (80)	— (105)		
2.0 kW	SGM7A-20A□A2□	218 (259)	173 (214)	137 (178)	36		123 (123)	161 (202)	— (155)		—	—	—	—	5.4 (6.8)
	SGMXA-20A□A2□A□	216 (257)	171 (212)		34			159 (200)							
2.5 kW	SGM7A-25A□A2□	241 (292)	196 (247)	160 (211)	36		146 (156)	184 (235)	— (188)		—	—	—	—	6.8 (8.7)
	SGMXA-25A□A2□A□	239 (290)	194 (245)		34			182 (233)							

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
1.5 kW	SGM7A-15A□A2□	115	95 ⁰ _{-0.035}	100	3	10	130	7	24 ⁰ _{-0.013}	40
	SGMXA-15A□A2□A□									
2.0 kW	SGM7A-20A□A2□									
	SGMXA-20A□A2□A□									
2.5 kW	SGM7A-25A□A2□									
	SGMXA-25A□A2□A□									

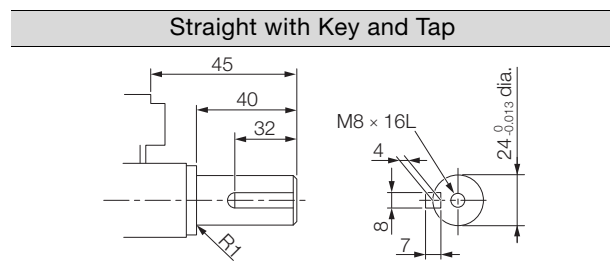
*1. For models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	LP	KB2
1.5 kW	SGM7A-15A6A2□	210 (251)	165 (206)	44 (44)	153 (194)
	SGMXA-15AWA2□A□	208 (249)	163 (204)	42 (42)	151 (192)
2.0 kW	SGM7A-20A6A2□	226 (267)	181 (222)	44 (44)	169 (210)
	SGMXA-20AWA2□A□	224 (265)	179 (220)	42 (42)	167 (208)
2.5 kW	SGM7A-25A6A2□	249 (300)	204 (255)	44 (44)	192 (243)
	SGMXA-25AWA2□A□	247 (298)	202 (253)	42 (42)	190 (241)

*2. These values are for the case where a flexible connector is connected with the SGMXA-.

Shaft End Specifications

The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

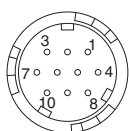


Connector Mounting Dimensions

◆ For Encoders

• Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -7 series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -7 series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

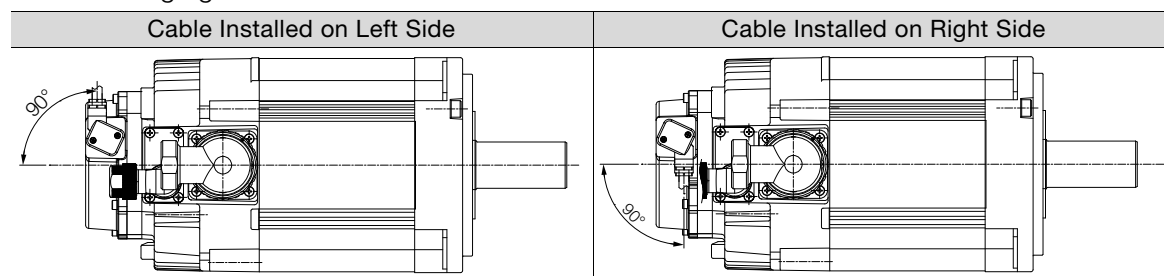
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug,
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

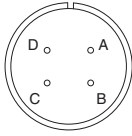
• Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

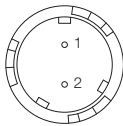
<Manufacturers>

Σ -7 series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -7 series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

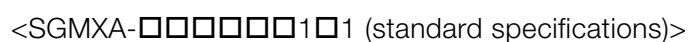
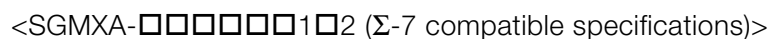
Receptacle: CMV1-R2P-D

Applicable plug: Not provided by Yaskawa.

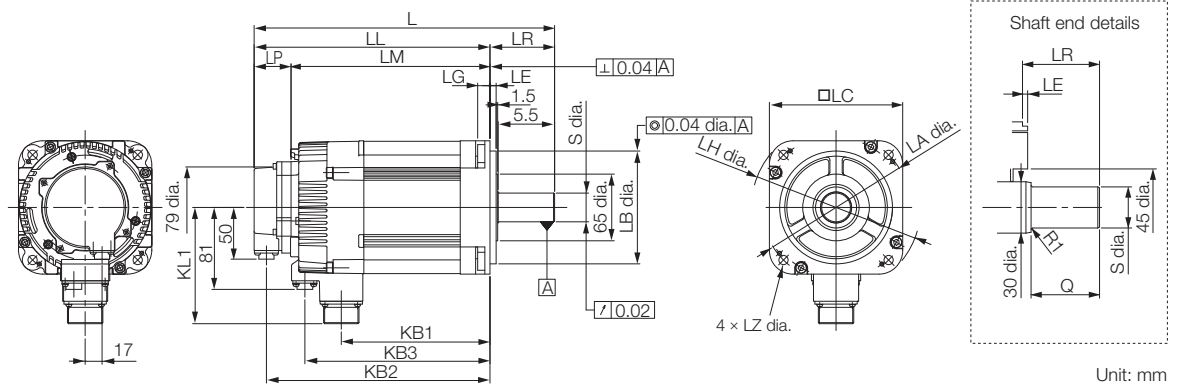
Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right-angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

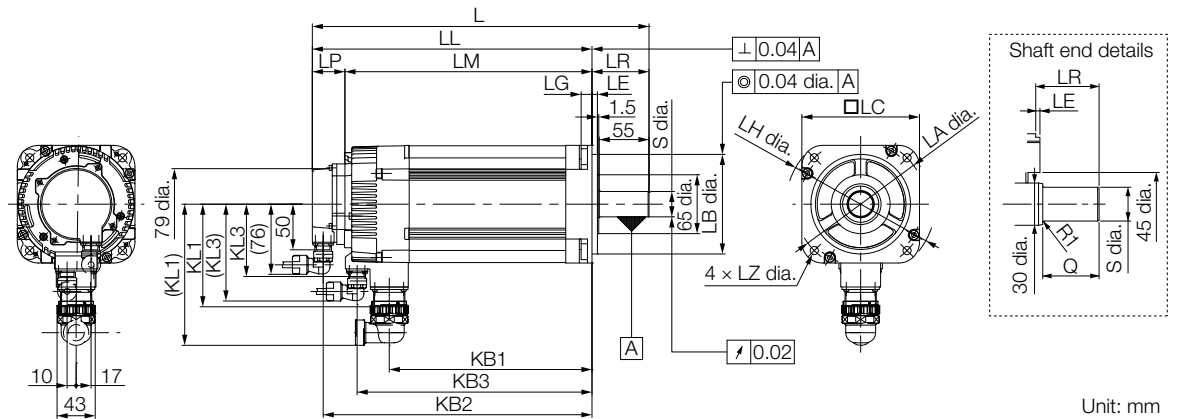
- Without Holding Brakes
<SGM7A>



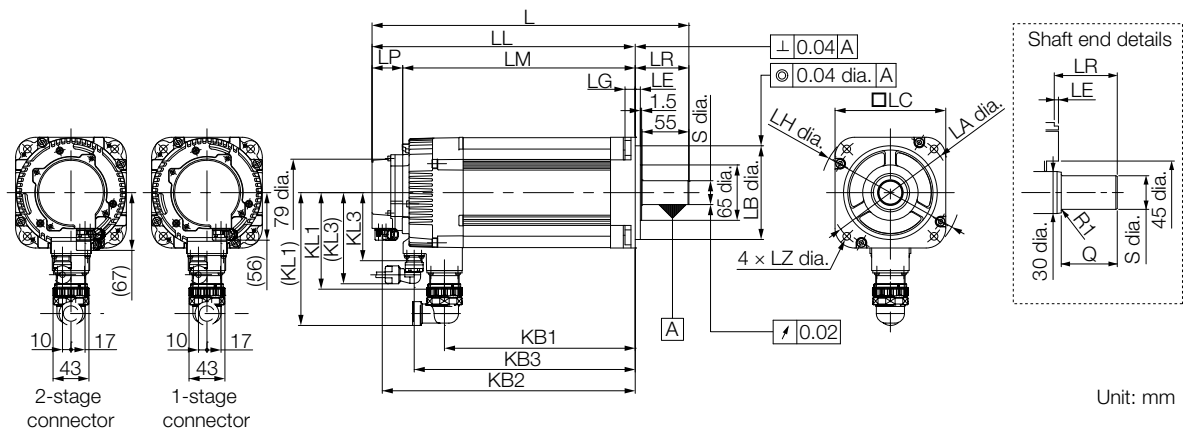
- With Holding Brakes
- <SGM7A>



<SGMXA-□□□□□□□□2 (Σ-7 compatible specifications)>



<SGMXA-□□□□□□□□1 (standard specifications)>



2-stage connector
1-stage connector

2.3 Servomotor External Dimensions and Installation Dimensions

2.3.8 SGM7A-30 to -50 and SGMXA-30 to -50

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L ^{*1}	LL ^{*1}	LM	LP ^{*1}	LR	KB1	KB2 ^{*1}	KB3	KL1	(KL1) ^{*2}	KL3	(KL3) ^{*2}	Approx. Mass [kg]
3.0 kW	SGM7A-30A□A2□	257 (293)	194 (232)	158 (194)	36	63	145	182 (220)	— (181)	114 (119)	—	—	—	10.5 (13)
	SGMXA-30A□A2□A□	255 (291)	192 (228)		34			180 (216)		114 (114)	157	— (81)	— (106)	
4.0 kW	SGM7A-40A□A2□	296 (332)	233 (269)	197 (233)	36		184	221 (257)	— (220)	114 (119)	—	—	—	13.5 (16)
	SGMXA-40A□A2□A□	294 (330)	231 (267)		34			219 (255)		114 (114)	157	— (81)	— (106)	
5.0 kW	SGM7A-50A□A2□	336 (372)	273 (309)	237 (273)	36		224	261 (297)	— (260)	114 (119)	—	—	—	16.5 (19)
	SGMXA-50A□A2□A□	334 (370)	271 (307)		34			259 (295)		114 (114)	157	— (81)	— (106)	

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
3.0 kW	SGM7A-30A□A2□	145	110 ⁰ _{-0.035}	130	6	12	165	9	28 ⁰ _{-0.013}	55
	SGMXA-30A□A2□A□									
4.0 kW	SGM7A-40A□A2□									
	SGMXA-40A□A2□A□									
5.0 kW	SGM7A-50A□A2□									
	SGMXA-50A□A2□A□									

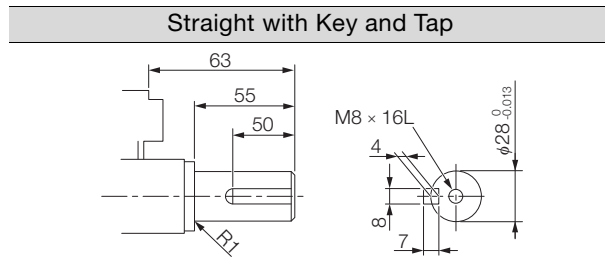
*1. For models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	LP	KB2
3.0 kW	SGM7A-30A6A2□	265 (301)	202 (240)	44	190 (228)
	SGMXA-30AWA2□A□	263 (299)	200 (238)	42	188 (226)
4.0 kW	SGM7A-40A6A2□	304 (340)	241 (277)	44	229 (265)
	SGMXA-40AWA2□A□	302 (338)	239 (275)	42	227 (263)
5.0 kW	SGM7A-50A6A2□	344 (380)	281 (317)	44	269 (305)
	SGMXA-50AWA2□A□	342 (378)	279 (315)	42	267 (303)

*2. These values are for the case where a flexible connector is connected with the SGMXA-.

Shaft End Specifications

The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

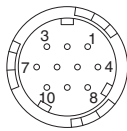


Connector Mounting Dimensions

◆ For Encoders

• Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -7 series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -7 series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug

(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,

CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,

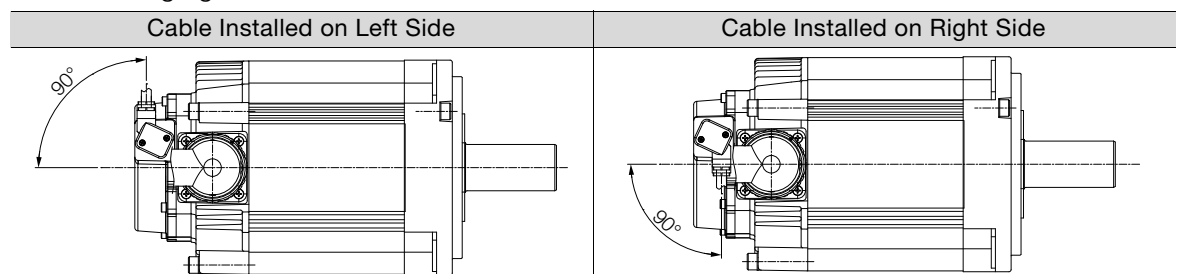
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug

(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

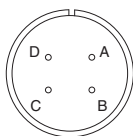
• Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

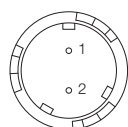
<Manufacturers>

Σ -7 series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -7 series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right-angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

- SGM7A



- Unit: mm

- Unit: mm

Specifications of Servomotor

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The dimensions are same for models with oil seals.

2. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L	LL	LM	LR	KB1	KB2*	KL1	(KL1)	Approx. Mass [kg]
7.0 kW	SGM7A-70A□A2□	397	334	291	63	224	261	114	—	18.5
	SGMXA-70A□A2□A□						259		157	

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
7.0 kW	SGM7A-70A□A2□	145	110 ⁰ _{-0.035}	130	6	12	165	9	28 ⁰ _{-0.013}	55
	SGMXA-70A□A2□A□									

* For models that have a batteryless absolute encoder, KB2 is 8 mm greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	KB2
7.0 kW	SGM7A-70A6A2□	269
	SGMXA-70AWA2□A□	267

Cooling Fan Specifications

The cooling fan specifications for the Σ -7 series and Σ -X series are identical.

- Single-phase, 220 V
- 50 Hz/60 Hz
- 17 W/15 W
- 0.11 A/0.09 A

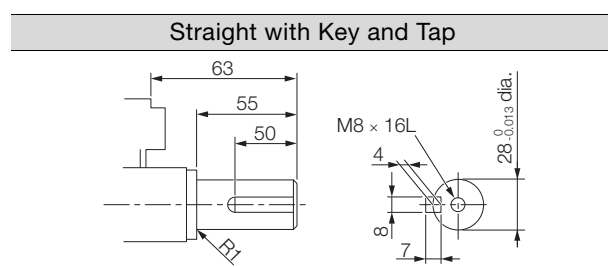
Specifications of Fan Operation Error Detector

Only the Σ -7 series features the fan operation error detector.

- Contact capacity maximum allowable voltage: 350 V (AC/DC)
Maximum allowable current: 120 mA (AC/ DC)
Maximum controllable power: 360 mW
- Alarm contacts ON for normal fan rotation.
OFF at $1680 \pm 100 \text{ min}^{-1}$ max.
OFF for 3 seconds at startup.

Shaft End Specifications

The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

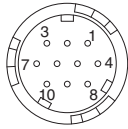


Connector Mounting Dimensions

◆ For Encoders

• Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -7 series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -7 series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

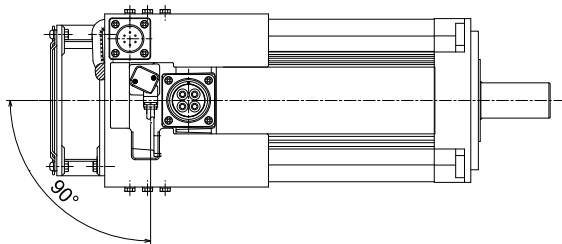
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug,
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

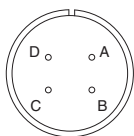
• Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

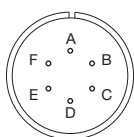
<Manufacturers>

Σ -7 series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

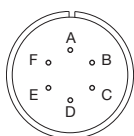
◆ For Fans

• Σ -7 Series



A	Fan motor	D	Alarm pin
B	Fan motor	E	Alarm pin
C	–	F	FG (frame ground)

• Σ -X Series



A	Fan motor	D	–
B	Fan motor	E	–
C	–	F	FG (frame ground)

Receptacle: MS3102A14S-6P

Applicable plug: Not provided by Yaskawa.

Plug: MS3108B14S-6S

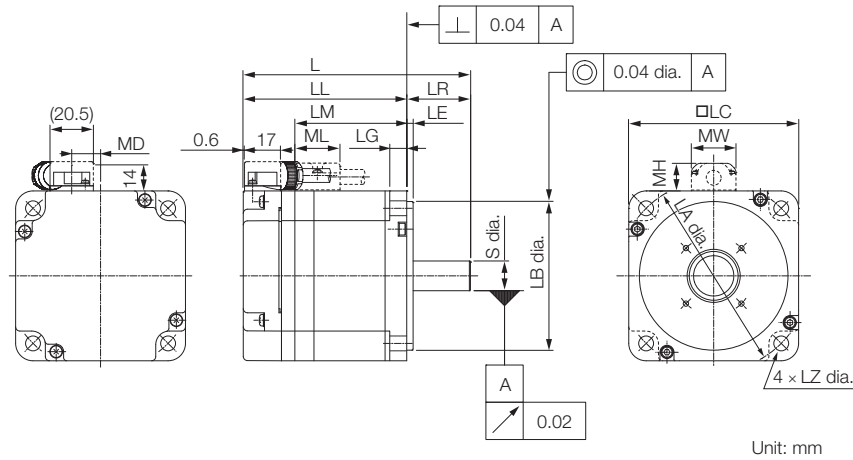
Cable Clamp: MS3057-6A

Manufacturer: Japan Aviation Electronics Industry, Ltd.

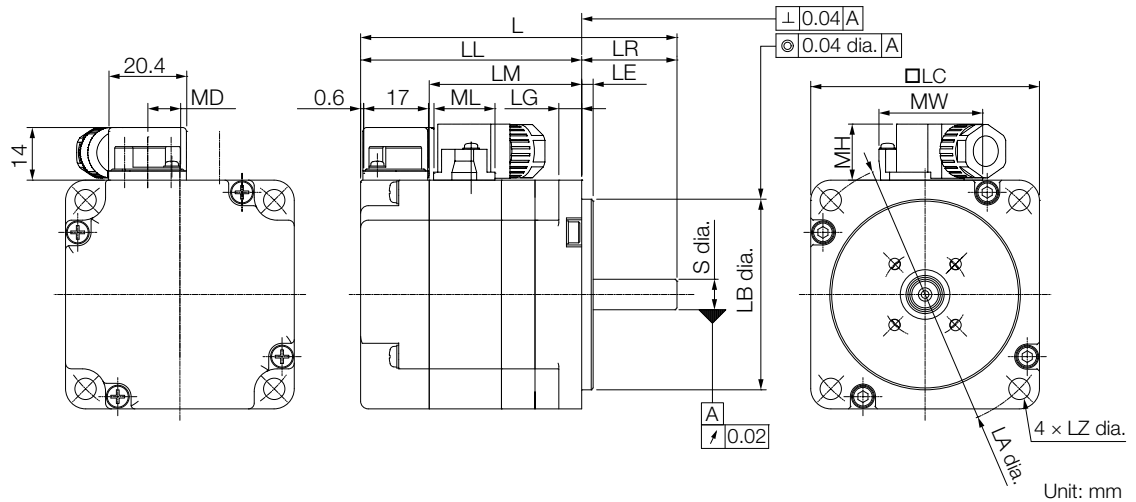
- Note: 1. The servomotor connector (receptacle) is RoHS compliant.
Contact the connector manufacturer for RoHS-compliant cable-side connectors (not provided by Yaskawa).
2. Only the Σ -7 series features the fan operation error detector.
For the Σ -X series, the D and E terminals are short-circuited on the servomotor.
When the fan is stopped, the servomotor is protected by the temperature sensor in the encoder.

2.3.10 SGM7P-01 to -04 and SGMXP-01 to -04

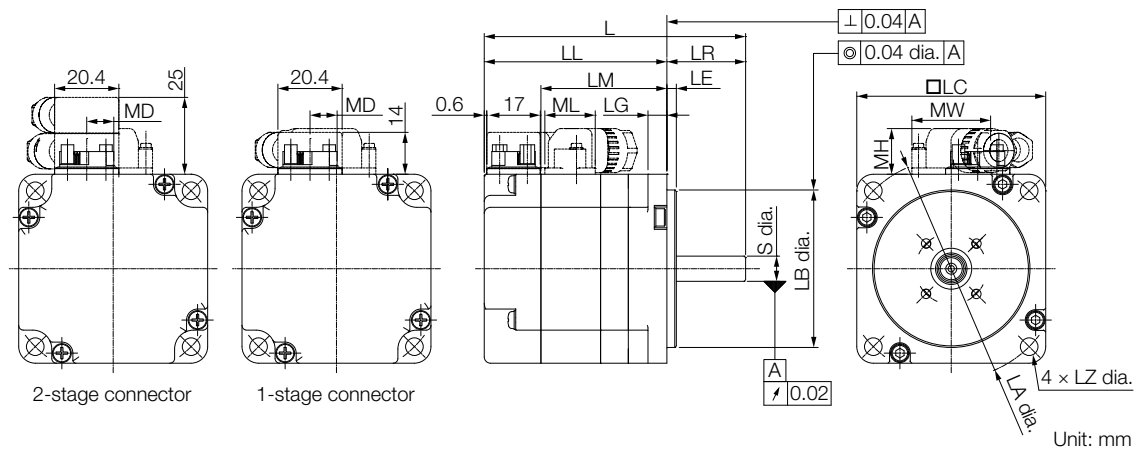
• SGM7P



• SGMXP-□□□□□□□2 (Σ-7 compatible specifications)



• SGMXP-□□□□□□□1 (standard specifications)



2.3 Servomotor External Dimensions and Installation Dimensions

2.3.10 SGM7P-01 to -04 and SGMXP-01 to -04

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

Servomotor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
100 W	SGM7P-01A□A2□	85 (115)	60 (90)	36	25		6	60	70	50 ⁰ _{-0.025}	5.5	8 ⁰ _{-0.009}	8.5	19	12	20	0.5 (0.9)
	SGMXP-01A□A2□A2	83 (113.0)	58 (88.0)	40										25.8	14.7	16.1	0.4 (0.7)
	SGMXP-01A□A2□A1													8.4	25	14.5	
200 W	SGM7P-02A□A2□	97 (128.5)	67 (98.5)	43	30	3	8	80	90	70 ⁰ _{-0.030}	7	14 ⁰ _{-0.011}	13.6	21	13	21	1.1 (1.9)
	SGMXP-02A□A2□A2	95 (113.0)	65 (96.5)	47									14	28.7	14.7	17.1	1.1 (1.8)
	SGMXP-02A□A2□A1													25	14.5	16	
400 W	SGM7P-04A□A2□	107 (138.5)	77 (108.5)	53	30		8	80	90	70 ⁰ _{-0.030}	7	14 ⁰ _{-0.011}	13.6	21	13	21	1.4 (2.2)
	SGMXP-04A□A2□A2	105 (136.5)	75 (106.5)	57									14	28.7	14.7	17.1	1.4 (2.1)
	SGMXP-04A□A2□A1													25	14.5	16	

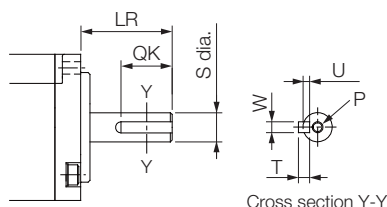
* For models that have a batteryless absolute encoder, the Σ-7 series has L and LL that are 8 mm greater and an approximate mass that is 0.1 kg greater, the SGMXP-01 has L and LL that are 7.5 mm greater, the SGMXP-02A and 04A have L and LL that are 6.5 mm greater, and the SGMXP-01A, 02A, and 04A have an approximate mass that is 0.1 kg greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
100 W	SGM7P-01A6A2□	93 (123)	68 (98)	0.5 (0.9)
	SGMXP-01AWA2□A□	90.5 (120.5)	65.5 (95.5)	0.5 (0.8)
200 W	SGM7P-02A6A2□	105 (136.5)	75 (106.5)	1.2 (2.0)
	SGMXP-02AWA2□A□	101.5 (133)	71.5 (103)	1.2 (1.9)
400 W	SGM7P-04A6A2□	115 (146.5)	85 (116.5)	1.5 (2.3)
	SGMXP-04AWA2□A□	111.5 (143)	81.5 (113)	1.5 (2.2)

Shaft End Specifications

The specifications of the shaft ends for the Σ-7 series and Σ-X series are identical.

- Straight with Key and Tap

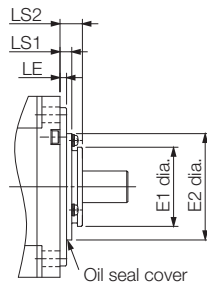


Model	LR	QK	S	W	T	U	P
SGM7P-01A□A61	25	14	8 ⁰ _{-0.009}	3	3	1.8	M3 × 6L
SGMXP-01A□A61□□							
SGM7P-02A□A61	30	14	14 ⁰ _{-0.011}	5	5	3	M5 × 8L
SGMXP-02A□A61□□							
SGM7P-04A□A61							
SGMXP-04A□A61□□							

Specifications of Options

The specifications of the options for the Σ -7 series and Σ -X series are identical.

- With Oil Seal



Model	E1	E2	LS1	LS2	LE
SGM7P-01A□A61	22	38	3.5	7	3
SGMXP-01A□A61□□					
SGM7P-02A□A61	35	47	5.2	10	
SGMXP-02A□A61□□					
SGM7P-04A□A61					
SGMXP-04A□A61□□					

Connector Mounting Dimensions

- Σ -7 Series

Cable Installed on Load Side	Cable Installed on Non-load Side

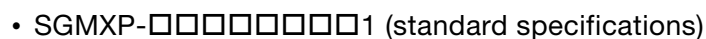
- Σ -X Series (Σ -7 compatible specifications)

Cable Installed on Load Side	Cable Installed on Non-load Side

- Σ -X Series (standard specifications)

Cable Installed on Load Side	Cable Installed on Non-load Side

- SGM7P, SGMXP-□□□□□□□□2 (Σ -7 compatible specifications)



2. The values for a straight, without key specification are given.

Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
750 W	SGM7P-08A□A2□	126.5 (160.0)	86.5 (120.0)	67.6	40	3.5	10	120	145	110 ⁰ _{-0.035}	10.2	19 ⁰ _{-0.013}	—	38	28	19 (25.5)	4.2 (5.9)
	SGMXP-08A□A2□A2												17				
	SGMXP-08A□A2□A1												17				
1.5 kW	SGM7P-15A□A2□	154.5 (187.5)	114.5 (147.5)	95.6	40	3.5	10	120	145	110 ⁰ _{-0.035}	10.2	19 ⁰ _{-0.013}	—	38	28	19 (25.5)	6.6 (8.2)
	SGMXP-15A□A2□A2	154.5 (188.0)	114.5 (148.0)										17				
	SGMXP-15A□A2□A1	154.5 (188.0)	114.5 (148.0)										17				

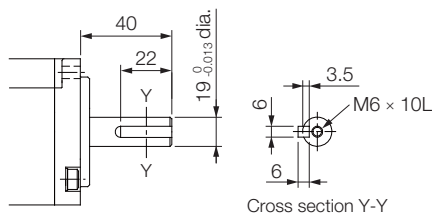
* For models that have a batteryless absolute encoder, L and LL are 8 mm greater and the approximate mass is 0.1 kg greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
750 W	SGM7P-08A6A2□	134.5 (168)	94.5 (128)	4.3 (6)
	SGMXP-08AWA2□A□			
1.5 kW	SGM7P-15A6A2□	162.5 (195.5)	122.5 (155.5)	6.7 (8.3)
	SGMXP-15AWA2□A□	162.5 (196)	122.5 (156)	

Shaft End Specifications

The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

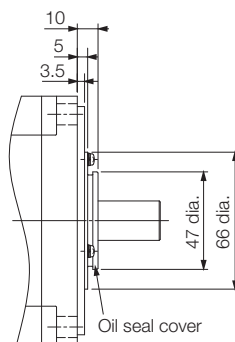
- Straight with Key and Tap



Specifications of Options

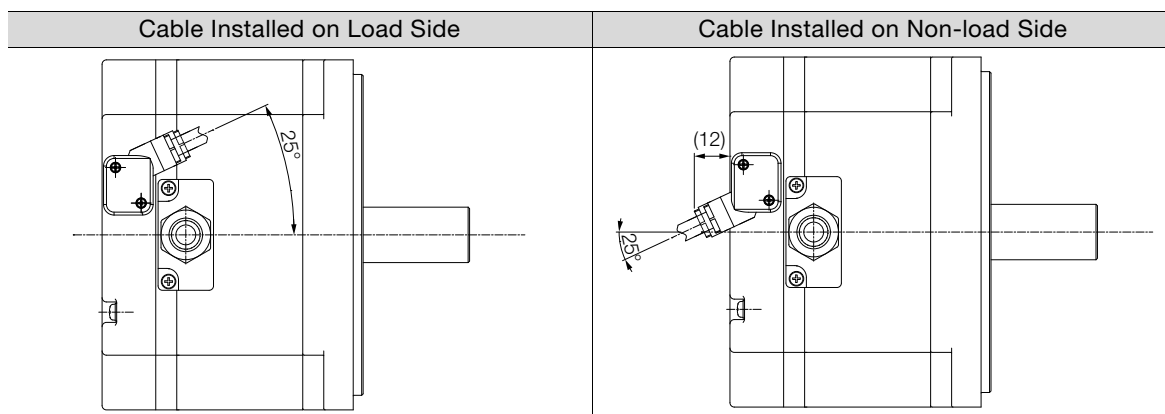
The specifications of the options for the Σ -7 series and Σ -X series are identical.

- With Oil Seal



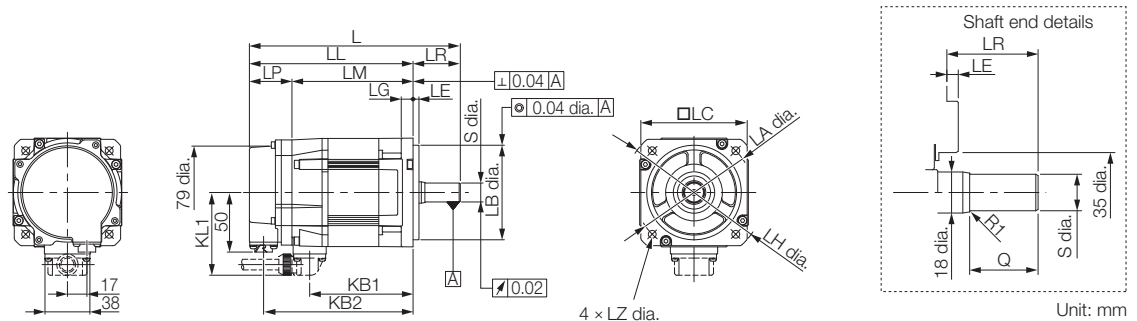
Connector Mounting Dimensions

- Σ -X Series (standard specifications)

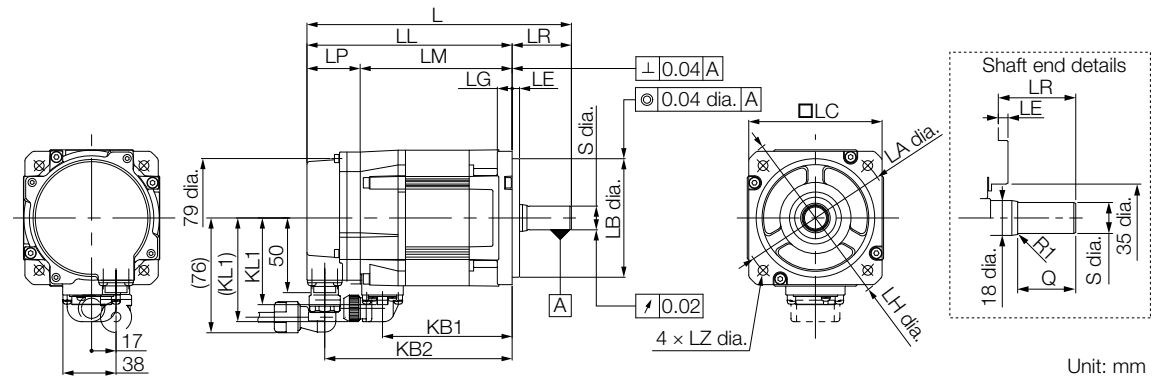


2.3.12 SGM7G-03, -05 and SGMXG-03, -05

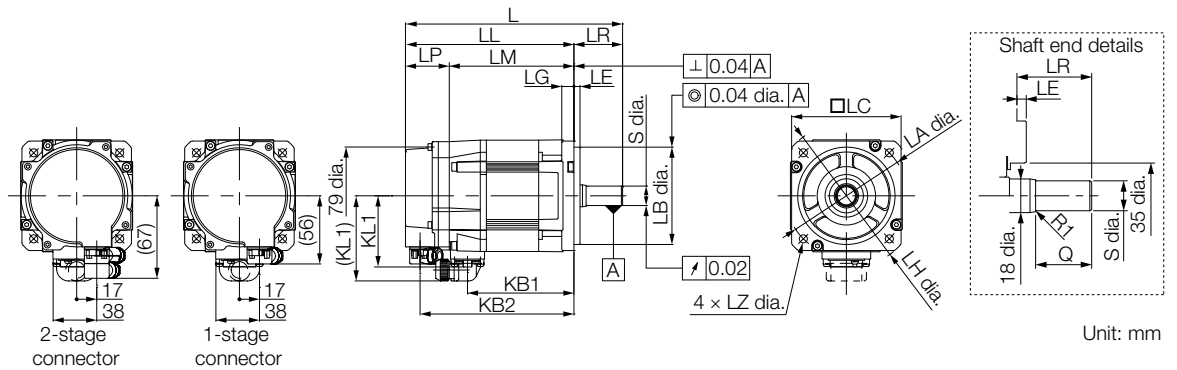
- Without Holding Brakes
<SGM7G>



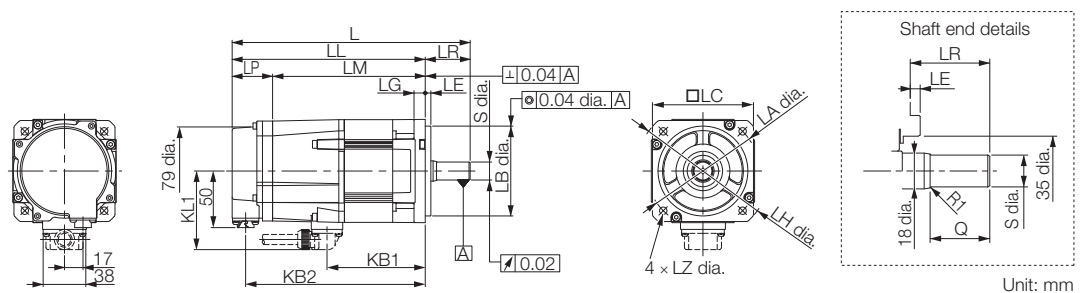
<SGMXG-□□□□□□1□2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□1□1 (standard specifications)>



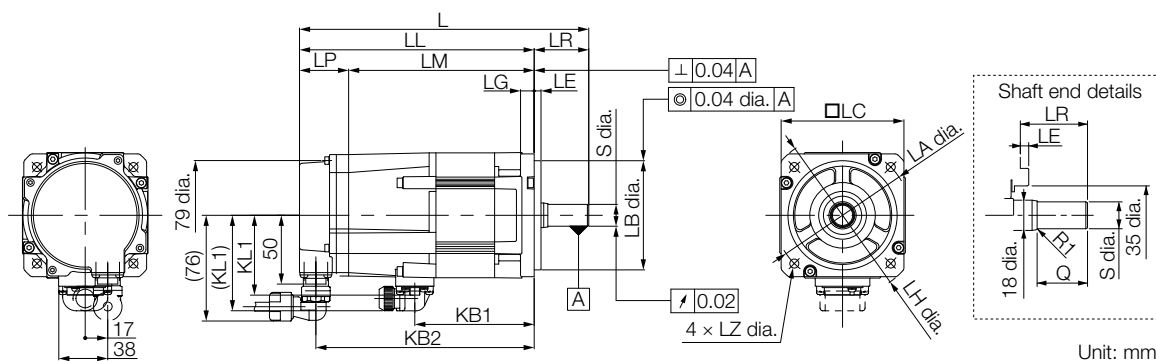
- With Holding Brakes
<SGM7G>



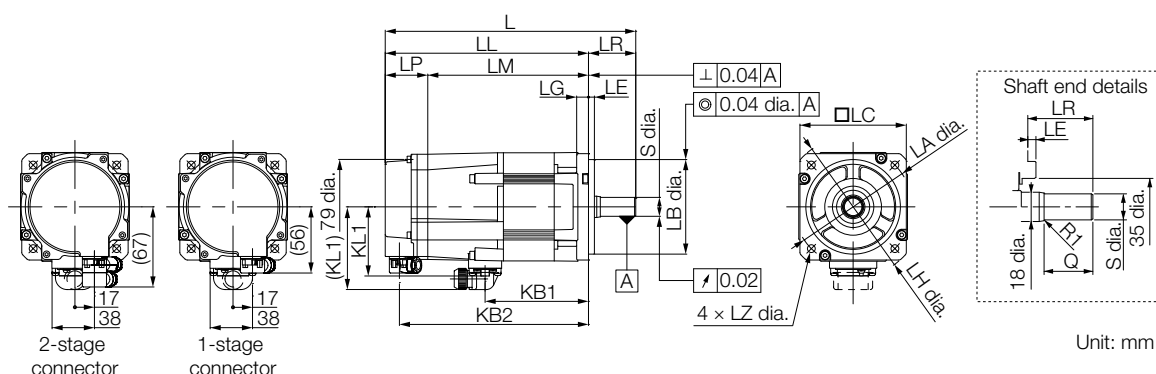
2.3 Servomotor External Dimensions and Installation Dimensions

2.3.12 SGM7G-03, -05 and SGMXG-03, -05

<SGMXG-□□□□□□C□2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□C□1 (standard specifications)>



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L*	LL*	LM	LP*	LR	KB1	KB2*	KL1	(KL1)	Approx. Mass [kg]
300 W	SGM7G-03A□A2□	166 (199)	126 (159)	90 (123)	36	40	75	114 (147)	70	—	2.6 (3.6)
	SGMXG-03A□A2□A□	164 (197)	124 (157)		34			112 (145)	59	70	
450 W	SGM7G-05A□A2□	179 (212)	139 (172)	103 (136)	36		88	127 (160)	70	—	3.2 (4.2)
	SGMXG-05A□A2□A□	177 (210)	137 (170)		34			125 (158)	59	70	

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
300 W	SGM7G-03A□A2□	100	80 ⁰ _{-0.030}	90	5	10	120	6.6	16 ⁰ _{-0.011}	30
	SGMXG-03A□A2□A□									
450 W	SGM7G-05A□A2□									
	SGMXG-05A□A2□A□									

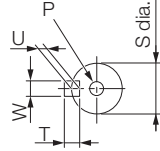
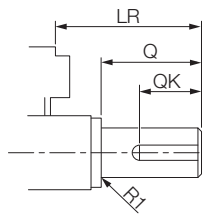
* For models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	LP	KB2
300 W	SGM7G-03A□A2□	174 (207)	134 (167)	44 (44)	122 (155)
	SGMXG-03A□A2□A□	172 (205)	132 (165)	42 (42)	120 (153)
450 W	SGM7G-05A□A2□	187 (220)	147 (180)	44 (44)	135 (168)
	SGMXG-05A□A2□A□	185 (218)	145 (178)	42 (42)	133 (166)

Shaft End Specifications

The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

- Straight with Key and Tap



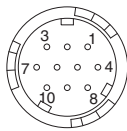
Model	LR	Q	QK	S	W	T	U	P
SGM7G-03A□A61	40	30	20	16 ⁰ _{-0.011}	5	5	3	M5 × 12L
SGMXG-03A□A61□□								
SGM7G-05A□A61								
SGMXG-05A□A61□□								

Connector Mounting Dimensions

◆ For Encoders

- Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -7 series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -7 series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

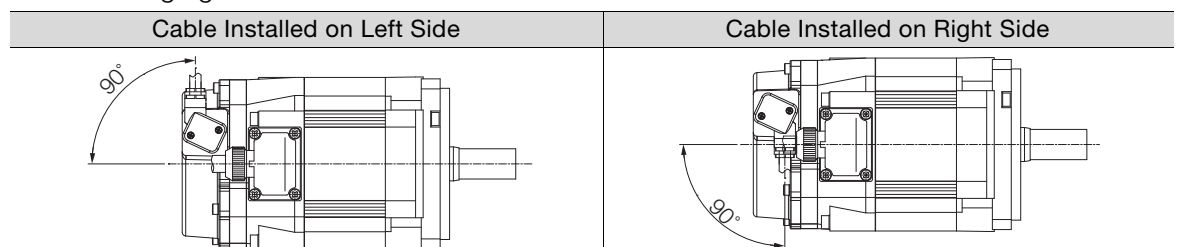
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

- Σ -X Series (standard specifications)

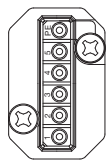
The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.

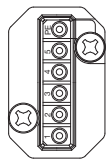
• Without Holding Brakes



PE	FG (frame ground)	3	Phase U
5	–	2	Phase V
4	–	1	Phase W

Manufacturer: Japan Aviation Electronics Industry, Ltd.

• With Holding Brakes

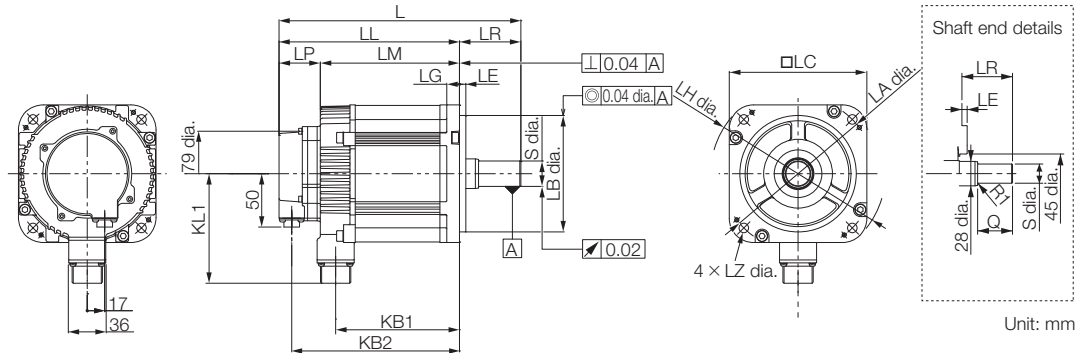


PE	FG (frame ground)	3	Phase U
5	Brake terminal	2	Phase V
4	Brake terminal	1	Phase W

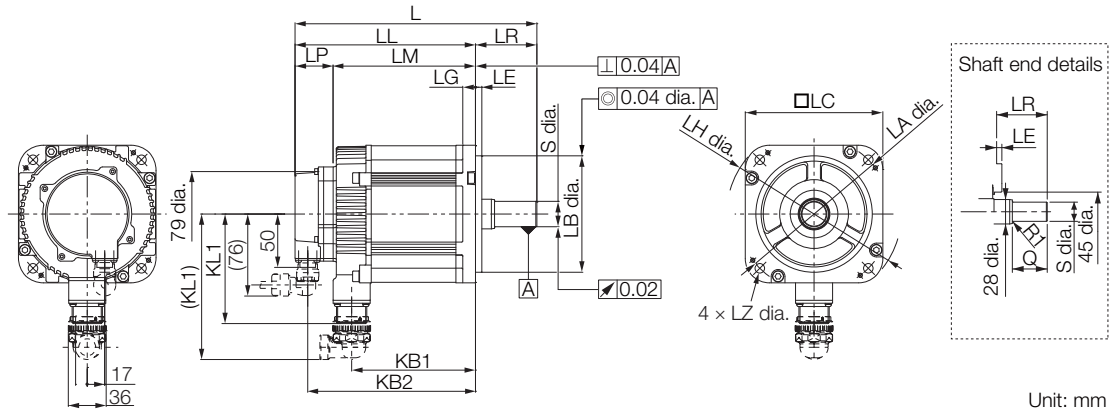
Manufacturer: Japan Aviation Electronics Industry, Ltd.

2.3.13 SGM7G-09 to -20 and SGMXG-09 to -20

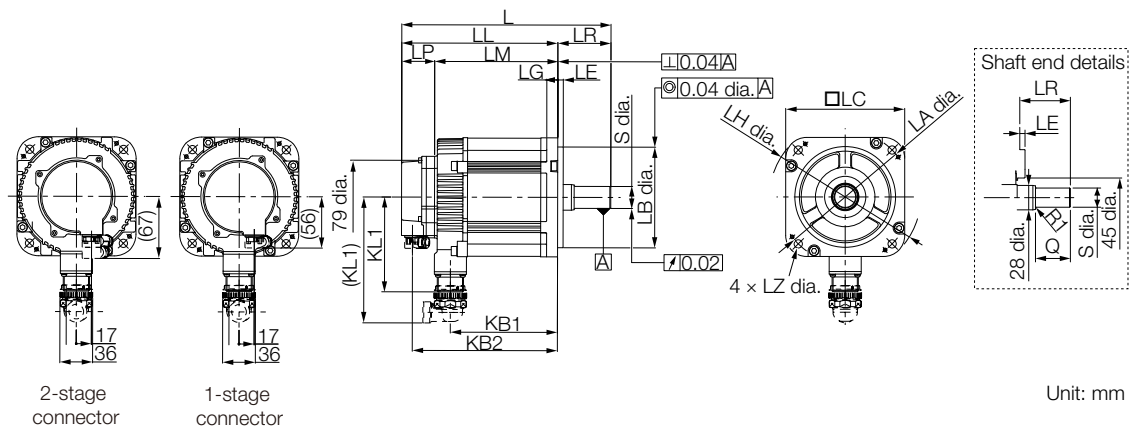
- Without Holding Brakes
<SGM7G>



<SGMXG-□□□□□□1□2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□1□1 (standard specifications)>



2-stage
connector

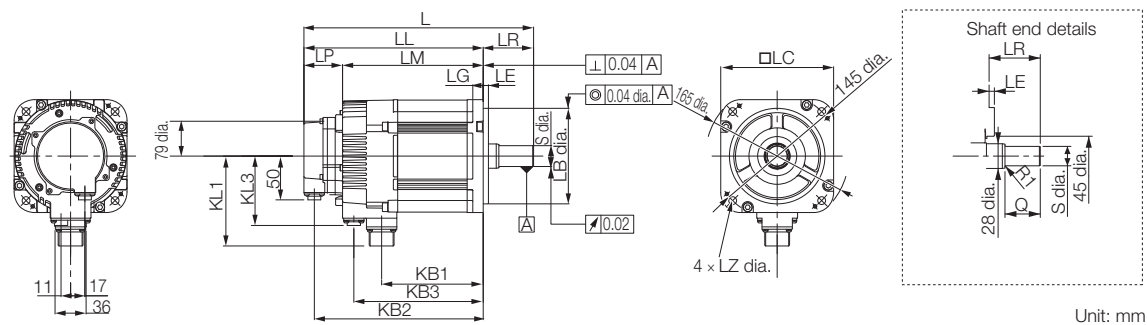
1-stage
connector

2.3 Servomotor External Dimensions and Installation Dimensions

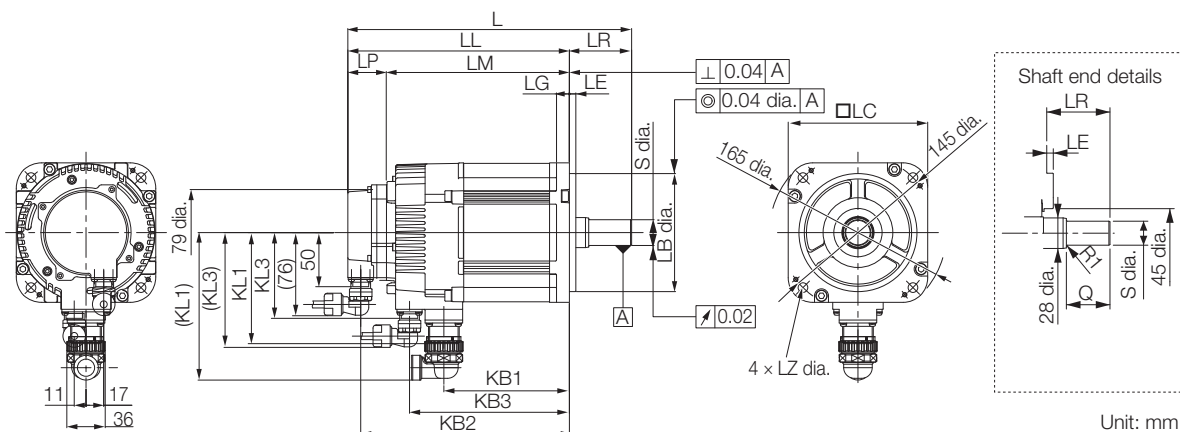
2.3.13 SGM7G-09 to -20 and SGMXG-09 to -20

• With Holding Brakes

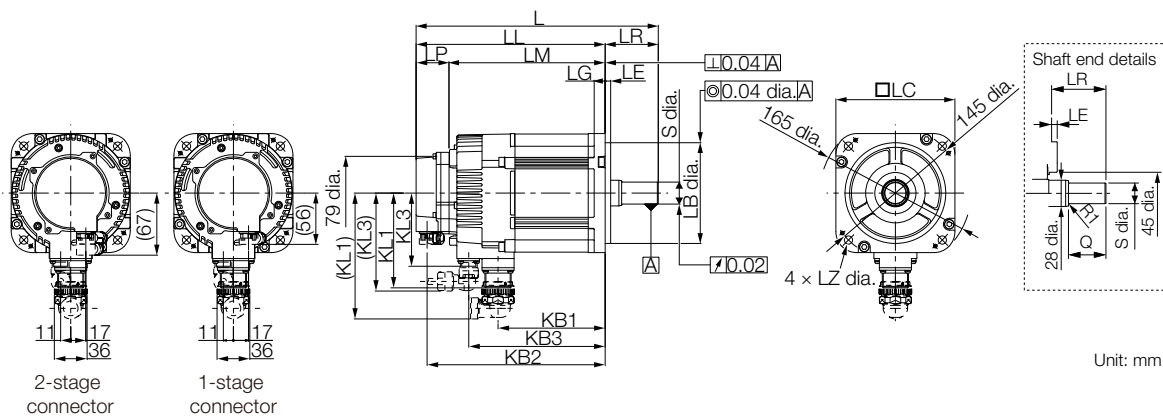
<SGM7G>



<SGMXG-□□□□□□C□2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□C□1 (standard specifications)>



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L ^{*1}	LL ^{*1}	LM	LP ^{*1}	LR	KB1	KB2 ^{*1}	KB3	KL1	(KL1) ^{*2}	KL3	(KL3) ^{*2}	Approx. Mass [kg]
850 W	SGM7G-09A□A2□	195.0 (231.0)	137.0 (173.0)	101.0 (137.0)	36	58	83	125 (161)	— (115)	104	—	— (80)	—	5.5 (7.5)
	SGMXG-09A□A2□A□	193.0 (229.0)	135.0 (171.0)		34			123 (159)			138	— (81)	— (106)	
1.3 kW	SGM7G-13A□A2□	211.0 (247.0)	153.0 (189.0)	117.0 (153.0)	36		99	141 (177)	— (131)		—	— (80)	—	7.1 (9.0)
	SGMXG-13A□A2□A□	209.0 (245.0)	151.0 (187.0)		34			139 (175)			138	— (81)	— (106)	
1.8 kW	SGM7G-20A□A2□	229.0 (265.0)	171.0 (207.0)	135.0 (171.0)	36		117	159 (195)	(149)		—	— (80)	—	8.6 (11.0)
	SGMXG-20A□A2□A□	227.0 (263.0)	169.0 (205.0)		34			157 (193)			138	— (81)	— (106)	

*1. For models that have a batteryless absolute encoder, L, LL, LP, and KB2 are +8 mm than the values provided here. Refer to the following section for the values for individual models.

*2. These values are for the case where a flexible connector is connected with the SGMXG-.

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
850 W	SGM7G-09A□A2□	145	110 ⁰ _{-0.035}	130	6	12	165	9	24 ⁰ _{-0.013}	40
	SGMXG-009A□A2□A□									
1.3 kW	SGM7G-13A□A2□									
	SGMXG-13A□A2□A□									
1.8 kW	SGM7G-20A□A2□									
	SGMXG-20A□A2□A□									

Servo-motor Capacity	Model	L	LL	LP	KB2
850 W	SGM7G-09A6A2□	203.0 (239.0)	145.0 (181.0)	44	133 (169)
	SGMXG-09AWA2□A□	201.0 (237.0)	143.0 (179.0)	42.0 (42.0)	131.0 (167.0)
1.3 kW	SGM7G-13A6A2□	219.0 (255.0)	161.0 (197.0)	44	149 (185)
	SGMXG-13AWA2□A□	217.0 (253.0)	159.0 (195.0)	42.0 (42.0)	147.0 (183.0)
1.8 kW	SGM7G-20A6A2□	237.0 (273.0)	179.0 (215.0)	44	167 (203)
	SGMXG-20AWA2□A□	235.0 (271.0)	177.0 (213.0)	42.0 (42.0)	165.0 (201.0)

Shaft End Specifications

The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

- Straight with Key and Tap

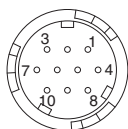
	Model	LR	Q	QK	S	W	T	U	P
	SGM7G-09A□A61	58	40	25	24 ⁰ _{-0.013}	8	7	4	M5 × 12L
	SGMXG-09A□A61□□								
	SGM7G-13A□A61								
	SGMXG-13A□A61□□								
	SGM7G-20A□A61								
	SGMXG-20A□A61□□								

Connector Mounting Dimensions

◆ For Encoders

- Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -7 series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -7 series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

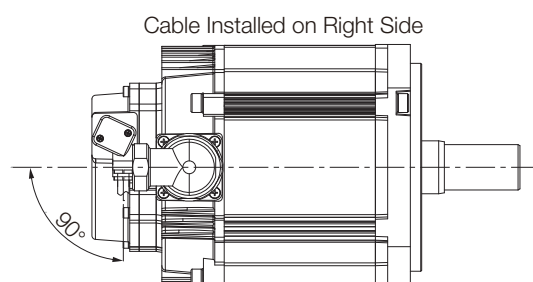
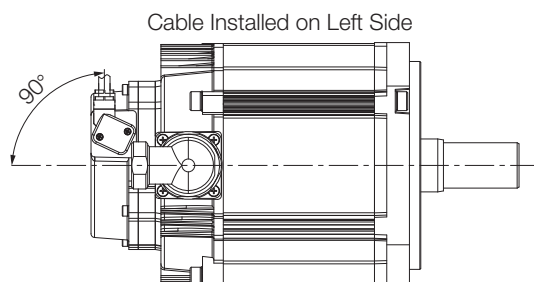
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

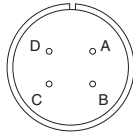
- Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -7 series and Σ -X series (Σ -7 compatible specifications) are identical.



A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

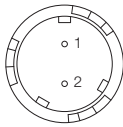
<Manufacturers>

Σ -7 series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -7 series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R2P-D

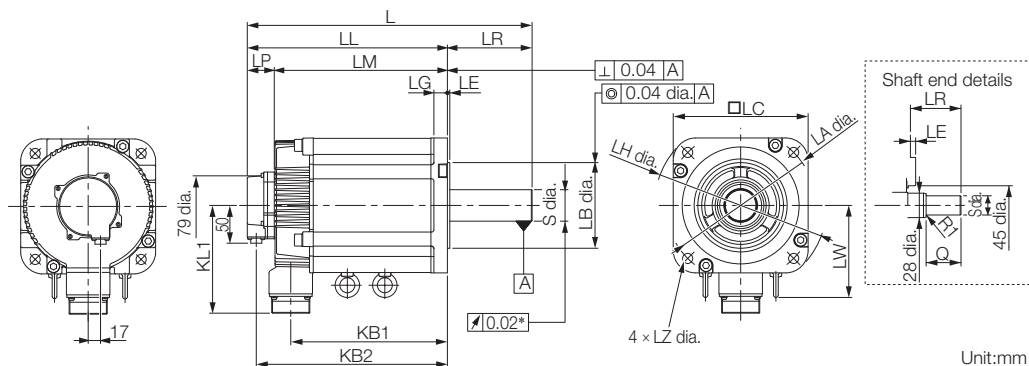
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

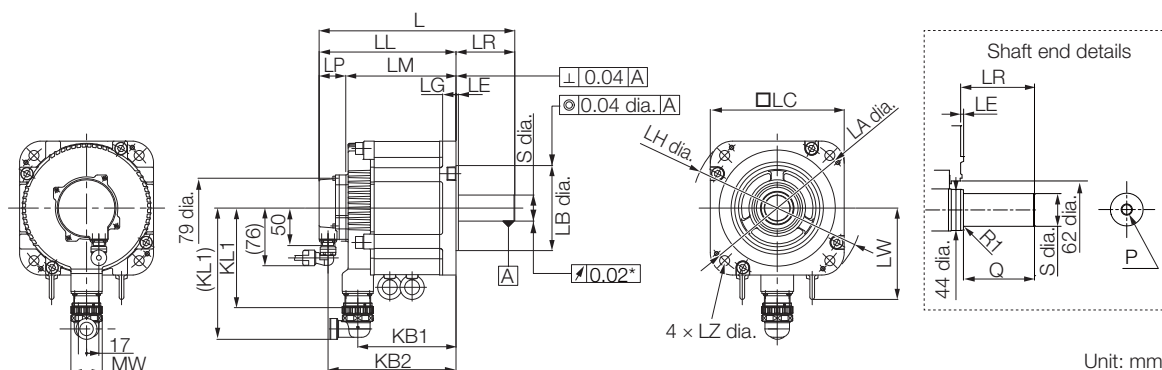
Manufacturer: DDK Ltd.

2.3.14 SGM7G-30 to -75 and SGMXG-30 to -75

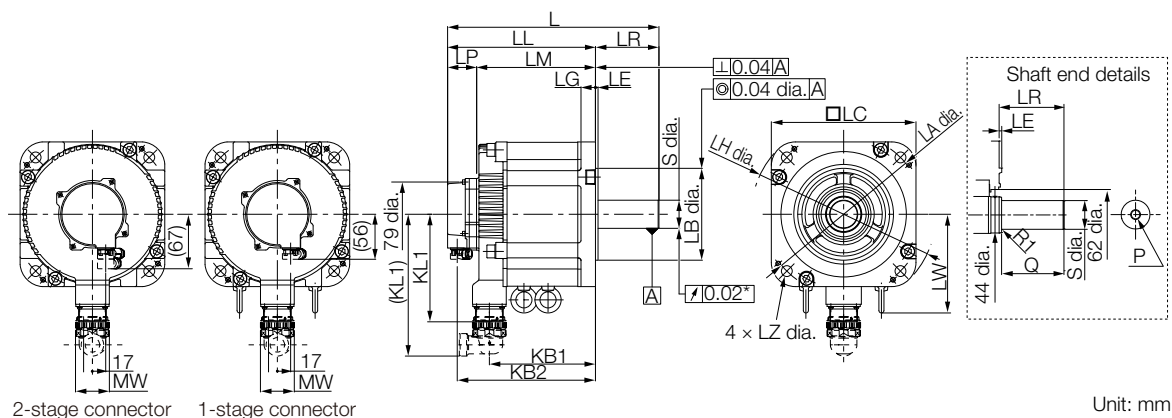
- Without Holding Brakes
<SGM7G>



<SGMXG-□□□□□□1□2 (Σ-7 compatible specifications)>

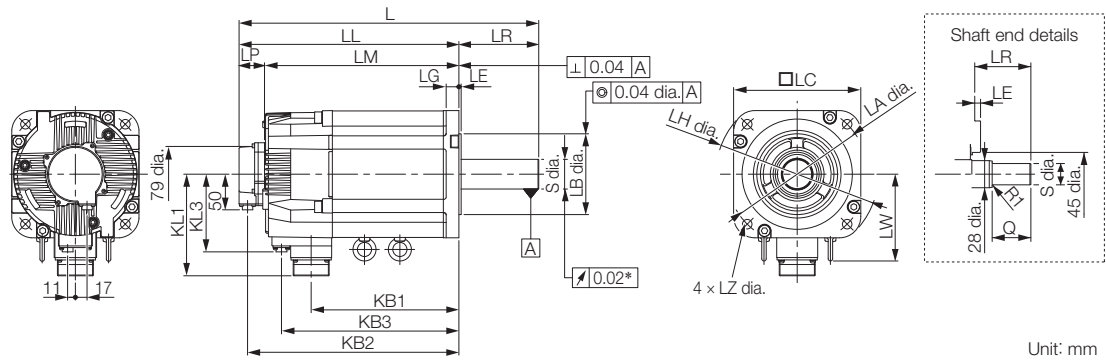


<SGMXG-□□□□□□1□1 (standard specifications)>

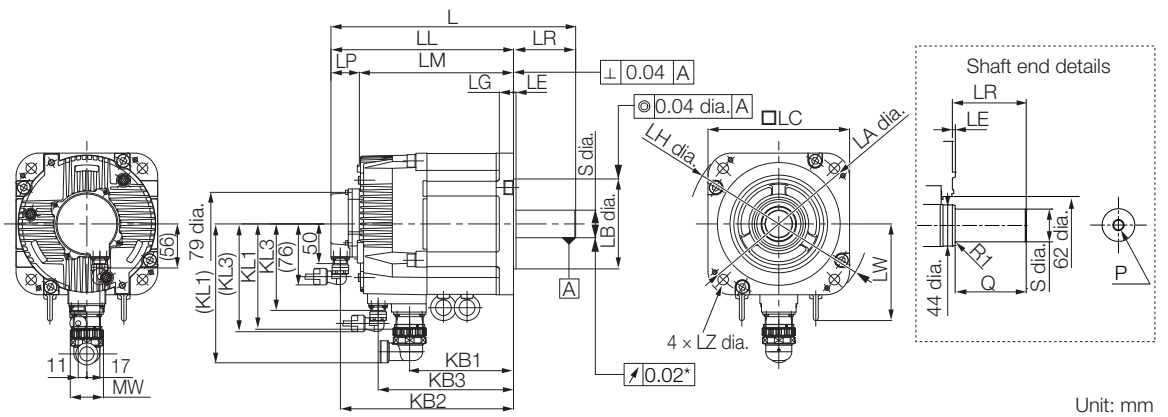


* This is 0.04 for the SGM□G-55 or SGM□G-75.

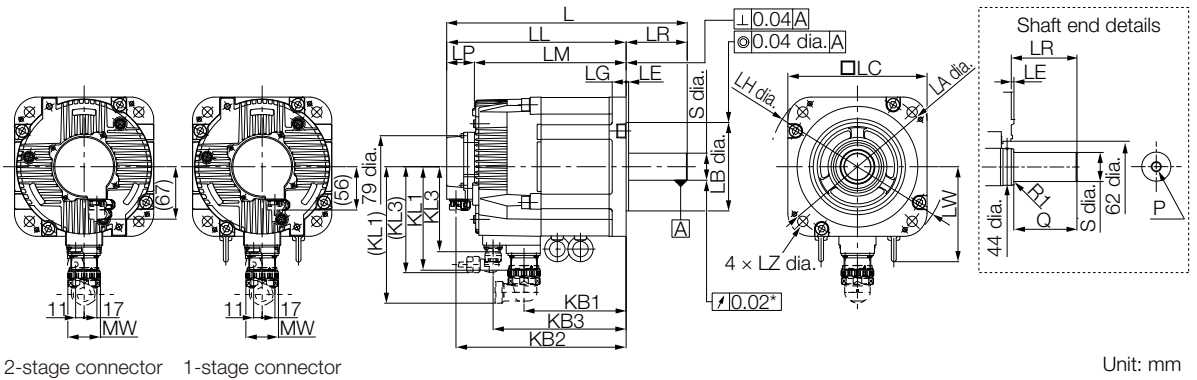
• With Holding Brakes
<SGM7G>



<SGMXG-□□□□□□□C2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□□C1 (standard specifications)>



2-stage connector 1-stage connector

* This is 0.04 for the SGM□G-55 or SGM□G-75.

2.3 Servomotor External Dimensions and Installation Dimensions

2.3.14 SGM7G-30 to -75 and SGMXG-30 to -75

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for the shaft end of Σ -7 series are for a straight shaft without key.

4. The values for the shaft end of Σ -X series are for a straight shaft without key and with tap.

Servo-motor Capacity	Model	L *1	LL *1	LM	LP *1	LR	KB1	KB2 *1	KB3	LW	KL1	(KL1) *2	KL3	(KL3) *2	MW	Approx. Mass [kg]			
2.9 kW	SGM7G-30A□A2□	239 (287)	160 (208)	124 (172)	36	79	108	148 (196)	— (148)	—	134	—	— (110)	—	43	13.5 (19.5)			
	SGMXG-30A□A8□A□	237 (287)	158 (208)	124 (174)	34			146 (196)	— (150)			177	— (111)	— (136)					
4.4 kW	SGM7G-44A□A2□	263 (311)	184 (232)	148 (196)	36		132	172 (220)	— (172)	—		—	— (110)	—		177	— (111)	— (136)	17.5 (23.5)
	SGMXG-44A□A8□A□	261 (311)	182 (232)	148 (198)	34			170 (220)	— (174)			177	— (111)	— (136)					
5.5 kW	SGM7G-55A□A2□	334 (378)	221 (265)	185 (229)	36	113	163	209 (253)	— (205)	123	144	—	— (110)	—	59	21.5 (27.5)			
	SGMXG-55A□A8□A□	332 (376)	219 (263)		34			207 (251)			145	221	— (111)	— (136)					
7.5 kW	SGM7G-75A□A2□	380 (424)	267 (311)	231 (275)	36		209	255 (299)	— (251)	123	144	—	— (110)	—		177	— (111)	— (136)	29.5 (35.0)
	SGMXG-75A□A8□A□	378 (422)	265 (309)		34			253 (297)			145	221	— (111)	— (136)					

*1. For models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

*2. These values are for the case where a flexible connector is connected with the SGMXG-.

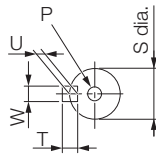
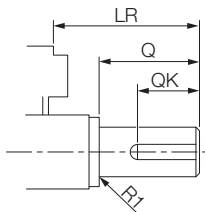
Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions		
		LA	LB	LC	LE	LG	LH	LZ	S	Q	P
2.9 kW	SGM7G-30A□A2□	200	114.3 ⁰ _{-0.025}	180	3.2	18	230	13.5	35 ^{+0.01} ₀	76	—
	SGMXG-30A□A8□A□										M12 × 25L
4.4 kW	SGM7G-44A□A2□										—
	SGMXG-44A□A8□A□										M12 × 25L
5.5 kW	SGM7G-55A□A2□								42 ⁰ _{-0.016}	110	—
	SGMXG-55A□A8□A□										M16 × 32L
7.5 kW	SGM7G-75A□A2□										—
	SGMXG-75A□A8□A□										M16 × 32L

Servo-motor Capacity	Model	L	LL	LP	KB2
2.9 kW	SGM7G-30A□A2□	247 (295)	168 (216)	44	156 (204)
	SGMXG-30A□A8□A□	245 (295)	166 (216)	42	154 (204)
4.4 kW	SGM7G-44A□A2□	271 (319)	192 (240)	44	180 (228)
	SGMXG-44A□A8□A□	269 (319)	190 (240)	42	178 (228)
5.5 kW	SGM7G-55A□A2□	342 (386)	229 (273)	44	217 (261)
	SGMXG-55A□A8□A□	340 (384)	227 (271)	42	215 (259)
7.5 kW	SGM7G-75A□A2□	388 (432)	275 (319)	44	264 (307)
	SGMXG-75A□A8□A□	386 (430)	273 (317)	42	261 (305)

Shaft End Specifications

The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

- Straight with Key and Tap



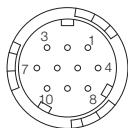
Model	LR	Q	QK	S	W	T	U	P
SGM7G-30A□A61	79	76	60	35 ^{+0.01} ₀	10	8	5	M12 × 25L
SGMXG-30A□A61□□								
SGM7G-44A□A61								
SGMXG-44A□A61□□								
SGM7G-55A□A61	113	110	90	42 ⁰ _{-0.016}	12	8	5	M16 × 32L
SGMXG-55A□A61□□								
SGM7G-75A□A61								
SGMXG-75A□A61□□								

Connector Mounting Dimensions

◆ For Encoders

• Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -7 series and Σ -X series (Σ -7 compatible specifications) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -7 series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

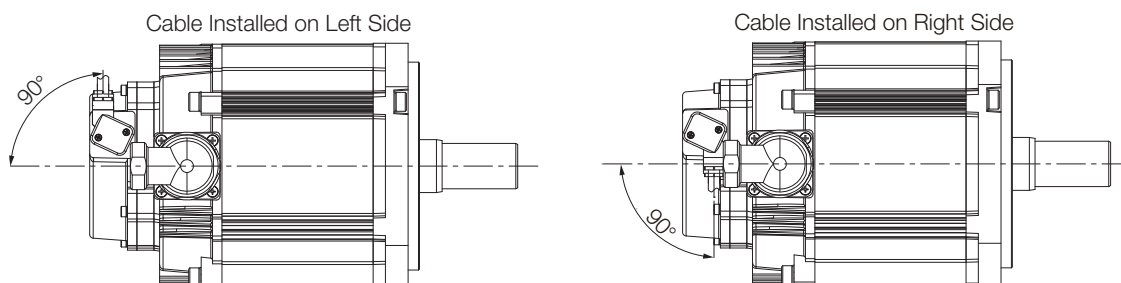
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

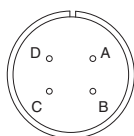
• Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

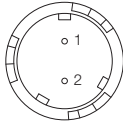
<Manufacturers>

Σ -7 series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -7 series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

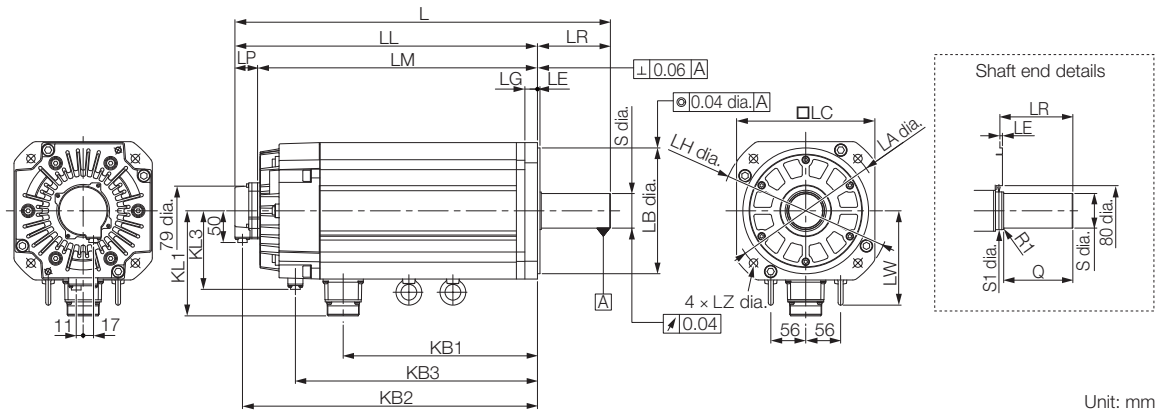
- Without Holding Brakes
<SGM7G>



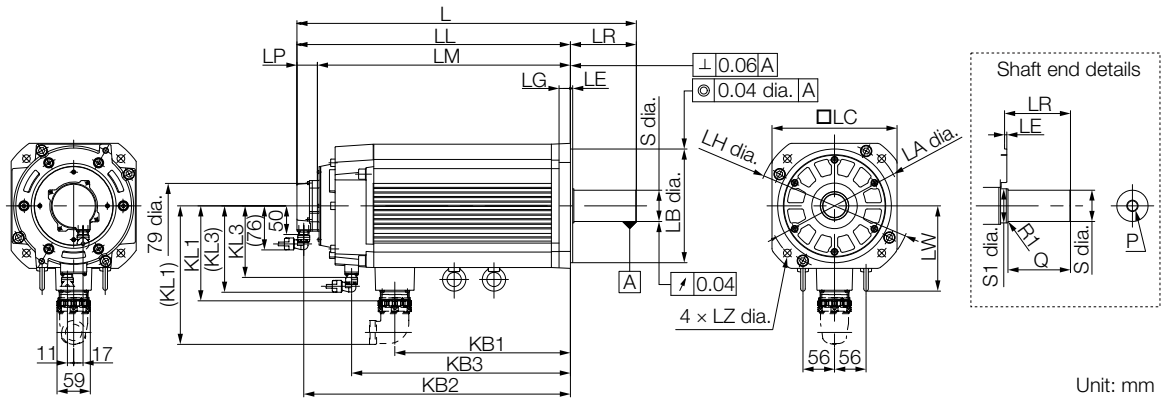
Unit: mm

Unit: mm

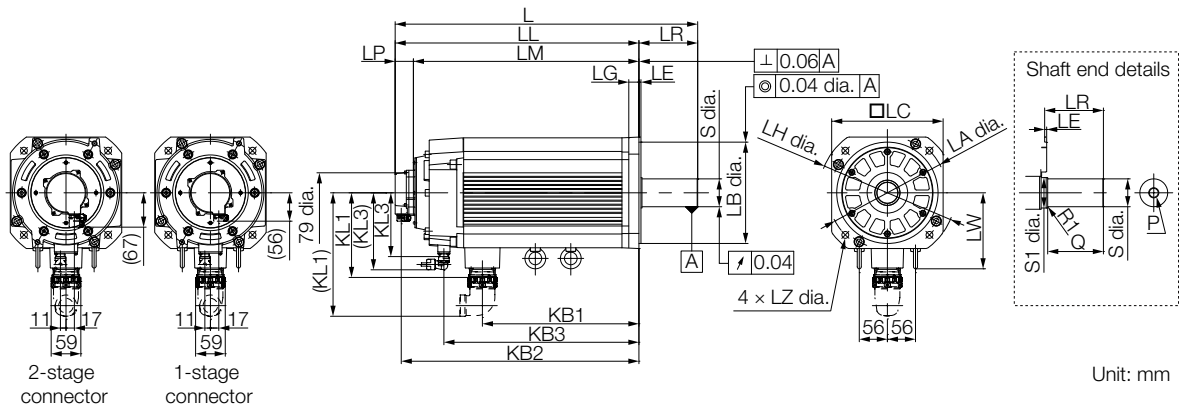
- With Holding Brakes
- <SGM7G>



<SGMXG-□□□□□□C2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□C1 (standard specifications)>



2-stage
connector

1-stage
connector

2.3 Servomotor External Dimensions and Installation Dimensions

2.3.15 SGM7G-1A to -1E and SGMXG-1A to -1E

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo- motor Capacity	Model	L* ¹	LL* ¹	LM	LP* ¹	LR	KB1	KB2* ¹	KB3	LW	KL1	(KL1) * ₂	KL3	(KL3) * ₂	Approx. Mass [kg]
11 kW	SGM7G-1AA□A2□	447 (498)	331 (382)	295 (346)	36	116	247	319 (370)	— (315)	150	168	—	— (125)	—	57 (65)
	SGMXG-1AA□A8□A□	445 (496)	329 (380)	295 (346)	34			317 (368)				245	— (126)	— (151)	
15 kW	SGM7G-1EA□A2□	509 (598)	393 (482)	357 (446)	36		309	381 (470)	— (385)			—	— (125)	—	67 (85)
	SGMXG-1EA□A8□A□	507 (596)	391 (480)	357 (446)	34			379 (468)				245	— (126)	— (151)	

Servomotor Capacity	Model	Flange Dimensions							Shaft End Dimensions			
		LA	LB	LC	LE	LG	LH	LZ	S	S1	Q	P
11 kW	SGM7G-1AA□A2□	235	200 ⁰ _{-0.046}	220	4	20	270	13.5	42 ⁰ _{-0.016}	50	110	M16 × 32L
	SGMXG-1AA□A8□A□											
15 kW	SGM7G-1EA□A2□								55 ^{+0.030} _{+0.011}	60		M20 × 40L
	SGMXG-1EA□A8□A□											

*1. For models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

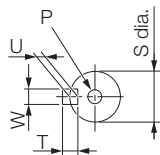
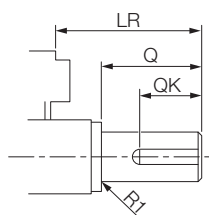
Servomotor Capacity	Model	L	LL	LP	KB2
11 kW	SGM7G-1AA□A2□	455 (506)	339 (390)	44 (44)	327 (378)
	SGMXG-1AA□A8□A□	453 (504)	337 (388)	42 (42)	325 (376)
15 kW	SGM7G-1EA□A2□	514 (606)	401 (490)	44 (44)	389 (478)
	SGMXG-1EA□A8□A□	515 (604)	399 (488)	42 (42)	387 (476)

*2. These values are for the case where a flexible connector is connected with the SGMXG-.

Shaft End Specifications

The specifications of the shaft ends for the Σ -7 series and Σ -X series are identical.

- Straight with Key and Tap



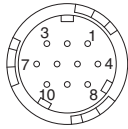
Model	LR	Q	QK	S	W	T	U	P
SGM7G-1AA□A61	116	110	90	42 ⁰ _{-0.016}	12	8	5	M16 × 32L
SGMXG-1AA□A61□□								
SGM7G-1EA□A61				55 ^{+0.030} _{+0.011}	16	10	6	M20 × 40L
SGMXG-1EA□A61□□								

Connector Mounting Dimensions

◆ For Encoders

• Σ -7 Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -7 series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -7 series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

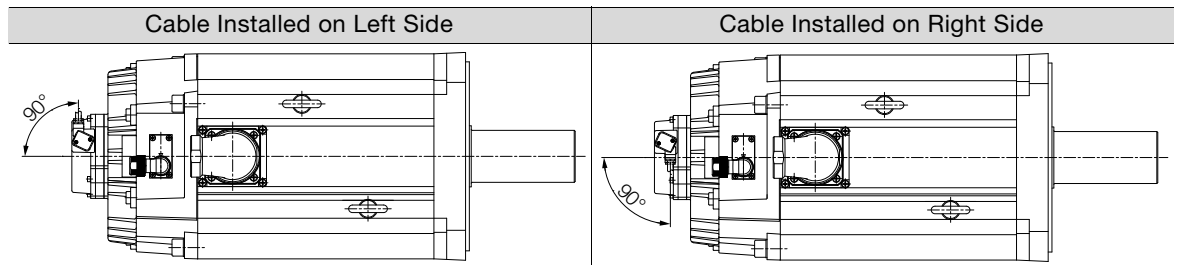
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

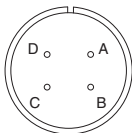
• Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

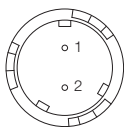
<Manufacturers>

Σ -7 series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -7 series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -7 series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right-angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

Specifications of SERVOPACK

3

This chapter describes model numbers, compatibility of connector terminals, external dimensions, and installation dimensions of SERVOPACKs.

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3.2 SERVOPACK Connector Terminal Compatibility . . 3-4

- 3.2.1 Terminal Symbols and Terminal Names 3-4
- 3.2.2 I/O Signal Connector (CN1) Pin Layout 3-7

3.3 SERVOPACK External Dimensions and Installation Dimensions . . 3-10

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- 3.3.11 SGD□W-1R6A, -2R8 3-29
- 3.3.12 SGD□W-5R5A, -7R6 3-31

3.4 Mounting Hole Dimensions 3-33

3.1

SERVOPACK Model Comparison Charts

Check the Σ -X-series SERVOPACK model that will replace the Σ -7-series SERVOPACK model that is being used.

3.1.1 SGD7S and SGDXS

SGD7S - $\square\square\square$ $\square$ $\square\square$ $\square$
(1) (2) (3) (4)

SGDXS - $\square\square\square$ $\square$ $\square\square$ $\square$
(1) (2) (3) (4)

No.	Item			SGD7S-	SGDXS-
(1)	Maximum applicable motor capacity	Three-phase, 200 VAC	0.05 kW	R70 ^{*1}	
			0.1 kW	R90 ^{*1}	
			0.2 kW	1R6 ^{*1}	
			0.4 kW	2R8 ^{*1}	
			0.5 kW	3R8	
			0.75 kW	5R5 ^{*1}	
			1.0 kW	7R6	
			1.5 kW	120 ^{*2}	
			2.0 kW	180	
			3.0 kW	200	
			5.0 kW	330	
			6.0 kW	470	
			7.5 kW	550	
			11 kW	590	
			15 kW	780	
(2)	Voltage		200 VAC	A	
			100 VAC	F	—
(3)	Interface ^{*3}		Analog voltage/pulse train references	00	
			MECHATROLINK-III communications reference	20	—
			MECHATROLINK-4 communications reference	40	—
			MECHATROLINK-4/III communications references ^{*4}	—	40
(4)	Design revision order		Standard	A	

*1. These models can be used with either a single-phase or three-phase input.

*2. The models with a single-phase, 200-VAC power supply input (SGD7S-120A□□A008, SGDXS-120A□□A0008) are available as a hardware option specification.

*3. The same SERVOPACKs are used for both rotary servomotors and linear servomotors.

*4. The Σ -X-series SERVOPACK can switch between use of MECHATROLINK-4 communications and MECHATROLINK-III communications. If the DIP switch (S3) is set to ON, MECHATROLINK-4 is used for communication, and if it is set to OFF, MECHATROLINK-III is used for communication.

3.1.2 SGD7W and SGDXW

SGD7W -

(1)	(2)	(3)	(4)

SGDXW -

(1)	(2)	(3)	(4)

No.	Item			SGD7W-	SGDXW-
(1)	Maximum applicable motor capacity per axis	Three-phase, 200 VAC	0.2 kW	1R6 ^{*1}	
			0.4 kW	2R8 ^{*1}	
			0.75 kW	5R5 ^{*1,*2}	
			1.0 kW	7R6	
(2)	Voltage		200 VAC	A	
(3)	Interface ^{*3}		MECHATROLINK-III communications reference	20	—
			MECHATROLINK-4/III communications references ^{*4}	—	40
(4)	Design revision order		Standard	A	

*1. These models can be used with either a single-phase or three-phase input.

*2. If you use the SERVOPACK with a single-phase 200-VAC power supply input, derate the load ratio to 65%. An example is given below.
If the load ratio of the first axis is 90%, use a load ratio of 40% for the second axis so that average load ratio for both axes is 65%.
((90% + 40%)/2 = 65%)

*3. The same SERVOPACKs are used for both rotary servomotors and linear servomotors.

*4. The Σ-X-series SERVOPACK can switch between use of MECHATROLINK-4 communications and MECHATROLINK-III communications. If the DIP switch (S3) is set to ON, MECHATROLINK-4 is used for communication, and if it is set to OFF, MECHATROLINK-III is used for communication.

3.2 SERVOPACK Connector Terminal Compatibility

The pin assignments for the terminal blocks of the Σ -7 series and Σ -X series are identical.

The following SERVOPACKs require the included power supply connector. (The power supply connector included with the Σ -7-series SERVOPACKs can also be used with the Σ -X-series SERVOPACKs.)

- SGD□S-R70A, -R90A, -1R6A, -2R8A, -3R8A, -5R5A, -7R6A, -120A
- SGD□W

3.2.1 Terminal Symbols and Terminal Names

The terminal symbols and terminal names for the Σ -7 series and Σ -X series are identical.

Model: SGD□S-

- Three-Phase, 200-VAC Power Supply Input

Terminal Symbols	Terminal Name	Specification	
L1, L2, L3	Main circuit power input terminals for AC power input	Three-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
L1C, L2C	Control main circuit terminals	AC input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz
		DC input	L1C: 270 VDC to 324 VDC, -15% to +10%, L2C: 0 VDC or L2C: 270 VDC to 324 VDC, -15% to +10%, L1C: 0 VDC
B1/⊕, B2, B3	Regenerative resistor terminals	• SGD□S-R70A, -R90A, -1R6A, -2R8A If the regenerative capacity is insufficient, connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
		• SGD□S-3R8A, -5R5A, -7R6A, -120A, -180A, -200A, -330A If the internal regenerative resistor is insufficient, remove the lead or short bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
		• SGD□S-470A, -550A Connect a regenerative resistor unit between B1/⊕ and B2. Obtain a regenerative resistor unit separately. These models do not have a B3 terminal.	
⊖1, ⊖2	DC reactor terminals for power supply harmonic suppression	These terminals are used to connect a DC reactor for harmonic suppression.	
⊖	–	None. (Do not connect anything to this terminal.) Note: The following SERVOPACKs do not have a ⊖ terminal: SGD□S-330A to -550A.	

• Single-Phase, 200-VAC Power Supply Input

Terminal Symbols	Terminal Name	Specification	
L1, L2	Main circuit power input terminals for AC power input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
L1C, L2C	Control main circuit terminals	AC input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz
		DC input	L1C: 270 VDC to 324 VDC, -15% to +10%, L2C: 0 VDC or L2C: 270 VDC to 324 VDC, -15% to +10%, L1C: 0 VDC
B1/⊕, B2, B3	Regenerative resistor terminals	- SGD□S-R70A, -R90A, -1R6A, -2R8A If the regenerative capacity is insufficient, connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately. - SGD□S-5R5A, SGD7S-120A□□□008, SGDXS-120A□□□0008 If the internal regenerative resistor is insufficient, remove the lead or short bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
⊖1, ⊖2	DC reactor terminals for power supply harmonic suppression	These terminals are used to connect a DC reactor for harmonic suppression.	
L3, ⊖	–	None. (Do not connect anything to these terminals.)	

A single-phase, 200-VAC power supply input can be used with the following SERVOPACK models.

- SGD□S-R70A, -R90A, -1R6A, -2R8A, -5R5A

Model: SGD□W-

• Three-Phase, 200-VAC Power Supply Input

Terminal Symbols	Terminal Name	Specification	
L1, L2, L3	Main circuit power input terminals for AC power input	Three-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
L1C, L2C	Control main circuit terminals	AC input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz
		DC input	L1C: 270 VDC to 324 VDC, -15% to +10%, L2C: 0 VDC or L2C: 270 VDC to 324 VDC, -15% to +10%, L1C: 0 VDC
B1/⊕, B2, B3	Regenerative resistor terminals	If the internal regenerative resistor is insufficient, remove the lead or short bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
⊖1, ⊖2	DC reactor terminals for power supply harmonic suppression	These terminals are used to connect a DC reactor for harmonic suppression.	
⊖	–	None. (Do not connect anything to this terminal.)	

- Single-Phase, 200-VAC Power Supply Input

Terminal Symbols	Terminal Name	Specification	
L1, L2	Main circuit power input terminals for AC power input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
L1C, L2C	Control main circuit terminals	AC input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz
		DC input	L1C: 270 VDC to 324 VDC, -15% to +10%, L2C: 0 VDC or L2C: 270 VDC to 324 VDC, -15% to +10%, L1C: 0 VDC
B1/⊕, B2, B3	Regenerative resistor terminals	If the internal regenerative resistor is insufficient, remove the lead or short bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
⊖1, ⊖2	DC reactor terminals for power supply harmonic suppression	These terminals are used to connect a DC reactor for harmonic suppression.	
L3, ⊖	—	None. (Do not connect anything to these terminals.)	

A single-phase, 200-VAC power supply input can be used with the following SERVOPACK models.

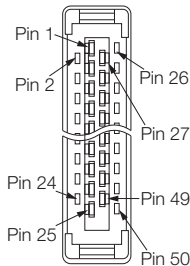
- SGD□W-1R6A, -2R8A, -5R5A

3.2.2 I/O Signal Connector (CN1) Pin Layout

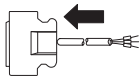
The pin layout for the I/O signal connector (CN1) of the Σ -7 series and Σ -X series are identical.

SGD□S-□□□□00A

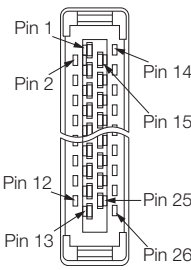
2	SG	Signal Ground	1	SG	Signal Ground	27	/SO2+ (/TGON+)	General-Purpose Sequence Output 2	26	/SO1- (/V-CMP-)	General-Purpose Sequence Output 1
4	SEN	Absolute Data Request Input (SEN)	3	PL1	Open-Collector Power Output for Reference Pulses	29	/SO3+ (/S-RDY+)	General-Purpose Sequence Output 3	28	/SO2- (/TGON-)	General-Purpose Sequence Output 2
6	SG	Signal Ground	5	V-REF	Speed Reference Input	31	ALM+	Servo Alarm Output	30	/SO3- (/S-RDY-)	General-Purpose Sequence Output 3
8	/PULS	Pulse Reference Input	7	PULS	Pulse Reference Input	33	PAO	Encoder Divided Pulse Output, Phase A	32	ALM-	Servo Alarm Output
10	SG	Signal Ground	9	T-REF	Torque Reference Input	35	PBO	Encoder Divided Pulse Output, Phase B	34	/PAO	Encoder Divided Pulse Output, Phase A
12	/SIGN	Sign Reference Input	11	SIGN	Sign Reference Input	37	ALO1	Alarm Code Output	36	/PBO	Encoder Divided Pulse Output, Phase B
14	/CLR	Position Deviation Clear Input	13	PL2	Open-Collector Power Output for Reference Pulses	39	ALO3	Alarm Code Output	38	ALO2	Alarm Code Output
16	—	—	15	CLR	Position Deviation Clear Input	41	/SI3 (/P-CON)	General-Purpose Sequence Input 3	40	/SI0 (/S-ON)	General-Purpose Sequence Input 0
18	PL3	Open-Collector Power Output for Reference Pulses	17	—	—	43	/SI2 (N-OT)	General-Purpose Sequence Input 2	42	/SI1 (P-OT)	General-Purpose Sequence Input 1
20	/PCO	Encoder Divided Pulse Output, Phase C	19	PCO	Encoder Divided Pulse Output, Phase C	45	/SI5 (/P-CL)	General-Purpose Sequence Input 5	44	/SI4 (/ALM-RST)	General-Purpose Sequence Input 4
22	BAT-	Battery for Absolute Encoder (-)	21	BAT+	Battery for Absolute Encoder (+)	47	+24VIN	Sequence Input Signal Power Supply Input	46	/SI6 (/N-CL)	General-Purpose Sequence Input 6
24	—	—	23	—	—	49	/PSO	Absolute Encoder Position Output	48	PSO	Absolute Encoder Position Output
			25	/SO1+ (/V-CMP+)	General-Purpose Sequence Output 1				50	TH	Overheat Protection Input



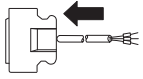
The above view is from the direction of the following arrow without the connector shell attached.



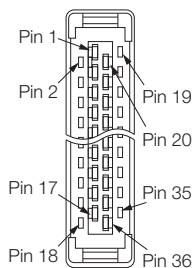
SGD7S-□□□□20A, SGD□S-□□□□40A

	2	/SO1- (/BK-)	General-Purpose Sequence Output 1	1	/SO1+ (/BK+)	General-Purpose Sequence Output 1	15	BAT-	Battery for Absolute Encoder (-)	14	BAT+	Battery for Absolute Encoder (+)
	4	ALM-	Servo Alarm Output	3	ALM+	Servo Alarm Output	17	PAO	Encoder Divided Pulse Output, Phase A	16	SG	Signal Ground
	6	+24VIN	Sequence Input Signal Power Supply Input	5	TH	Overheat Protection Input	19	PBO	Encoder Divided Pulse Output, Phase B	18	/PAO	Encoder Divided Pulse Output, Phase A
	8	/SI2 (N-OT)	General-Purpose Sequence Input 2	7	/SI1 (P-OT)	General-Purpose Sequence Input 1	21	PCO	Encoder Divided Pulse Output, Phase C	20	/PBO	Encoder Divided Pulse Output, Phase B
	10	/SI4 (/EXT1)	General-Purpose Sequence Input 4	9	/SI3 (/DEC)	General-Purpose Sequence Input 3	23	/SO2+	General-Purpose Sequence Output 2	22	/PCO	Encoder Divided Pulse Output, Phase C
	12	/SI6 (/EXT3)	General-Purpose Sequence Input 6	11	/SI5 (/EXT2)	General-Purpose Sequence Input 5	25	/SO3+	General-Purpose Sequence Output 3	24	/SO2-	General-Purpose Sequence Output 2
				13	/SI0	General-Purpose Sequence Input 0				26	/SO3-	General-Purpose Sequence Output 3

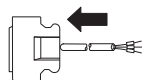
The above view is from the direction of the following arrow without the connector shell attached.



SGD7W-□□□□20A, SGD□W-□□□□40A



The above view is from the direction of the following arrow without the connector shell attached.



2	–	–	1	+24VIN	Sequence Input Signal Power Supply Input	20	ALM_A-	Servo Alarm Output for Axis A	19	ALM_A+	Servo Alarm Output for Axis A
4	/SI02 (N-OT_A)	General-Purpose Sequence Input 2	3	/SI01 (P-OT_A)	General-Purpose Sequence Input 1	22	ALM_B-	Servo Alarm Output for Axis B	21	ALM_B+	Servo Alarm Output for Axis B
6	/SI04 (/EXT_A1)	General-Purpose Sequence Input 4	5	/SI03 (/DEC_A)	General-Purpose Sequence Input 3	24	/SO1- (/BK_A-)	General-Purpose Sequence Output 1	23	/SO1+ (/BK_A+)	General-Purpose Sequence Output 1
8	/SI06 (/EXT_A3)	General-Purpose Sequence Input 6	7	/SI05 (/EXT_A2)	General-Purpose Sequence Input 5	26	/SO2- (/BK_B-)	General-Purpose Sequence Output 2	25	/SO2+ (/BK_B+)	General-Purpose Sequence Output 2
10	/SI08 (N-OT_B)	General-Purpose Sequence Input 8	9	/SI07 (P-OT_B)	General-Purpose Sequence Input 7	28	/SO3-	General-Purpose Sequence Output 3	27	/SO3+	General-Purpose Sequence Output 3
12	/SI10 (/EXT_B1)	General-Purpose Sequence Input 10	11	/SI09 (/DEC_B)	General-Purpose Sequence Input 9	30	/SO4-	General-Purpose Sequence Output 4	29	/SO4+	General-Purpose Sequence Output 4
14	/SI12 (/EXT_B3)	General-Purpose Sequence Input 12	13	/SI11 (/EXT_B2)	General-Purpose Sequence Input 11	32	/SO5-	General-Purpose Sequence Output 5	31	/SO5+	General-Purpose Sequence Output 5
16	SG	Signal Ground	15	SG	Signal Ground	34	TH_B	Overheat Protection Input for Axis B	33	TH_A	Overheat Protection Input for Axis A
18	BAT_A-	Battery for Absolute Encoder (-) for Axis A	17	BAT_A+	Battery for Absolute Encoder (+) for Axis A	36	BAT_B-	Battery for Absolute Encoder (-) for Axis B	35	BAT_B+	Battery for Absolute Encoder (+) for Axis B

3.3 SERVOPACK External Dimensions and Installation Dimensions

The external dimensions and installation dimensions of the Σ -7 series and Σ -X series differ for the following SERVOPACKs.

- SGD7S-R70A, SGD7S-R90A, SGD7S-1R6A, and SGD7S-2R8A MECHATROLINK-4 communications references
SGDXS-R70A, SGDXS-R90A, SGDXS-1R6A, and SGDXS-2R8A MECHATROLINK-4/III communications references
- Single-phase, 200 VAC: SGD7S-120A□□A008 and SGDXS-120A□□A008

The external dimensions and installation dimensions for SERVOPACKs other than the above are identical.

The Σ -7-series dimensional drawings show a typical example of the MECHATROLINK-III communications reference.

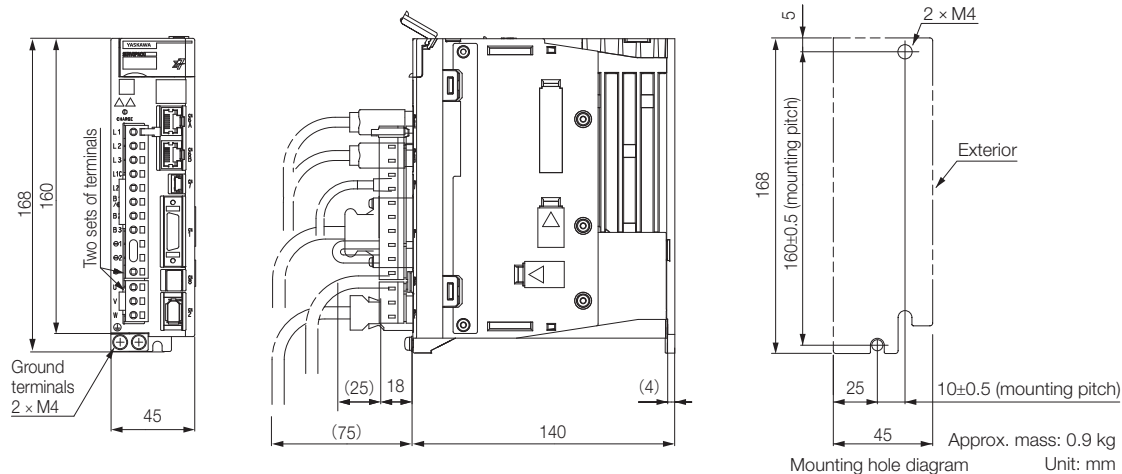
However, for the Σ -7S SERVOPACKs with different external dimensions and installation dimensions, the MECHATROLINK-4 communications reference is also shown.

The Σ -X-series dimensional drawings show a typical example of the MECHATROLINK-4/III communications references.

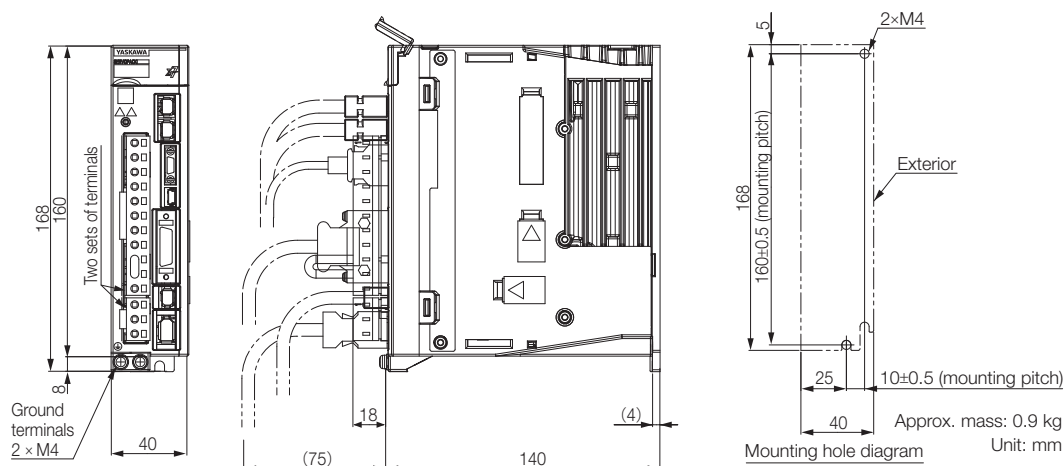
3.3.1 SGD□S-R70A, -R90A, -1R6A

Base-mounted SERVOPACKs

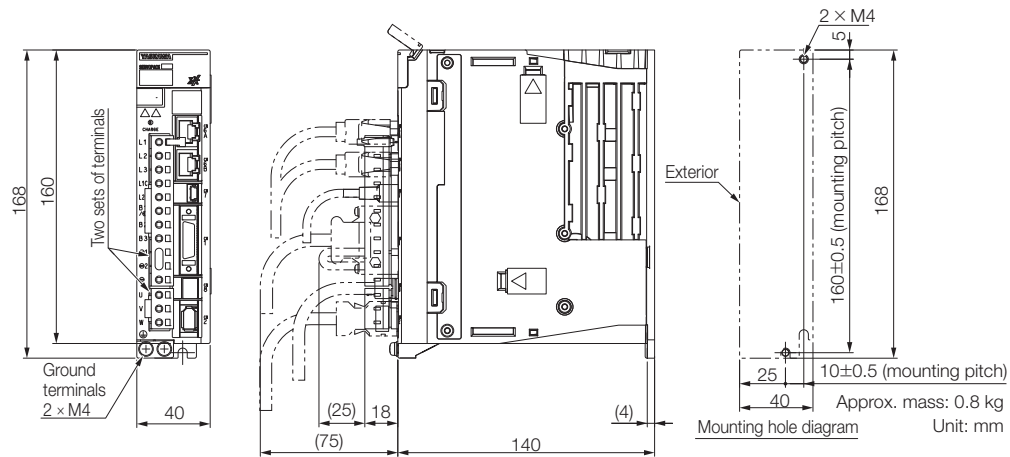
- SGD7S-R70A, -R90A, -1R6A
<MECHATROLINK-4 communications reference>



<MECHATROLINK-III communications reference>

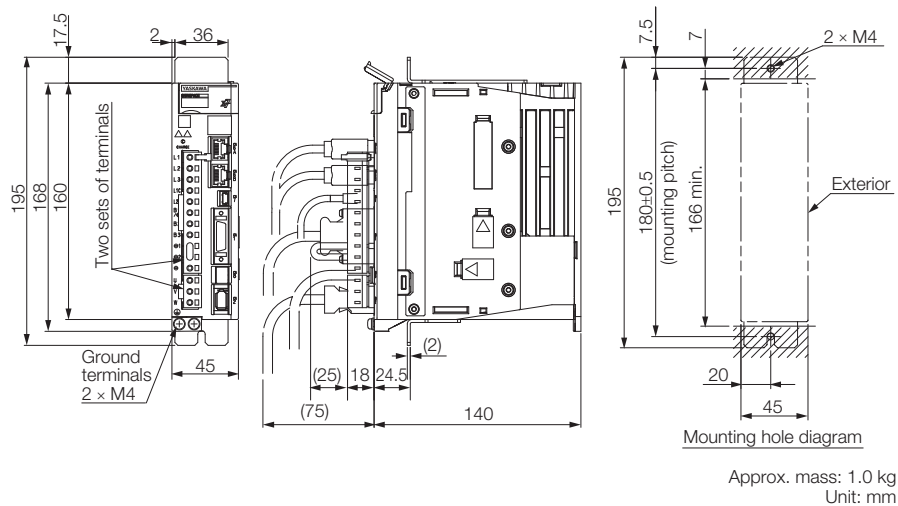


- SGDXS-R70A, -R90A, -1R6A
<MECHATROLINK-4/III communications references>

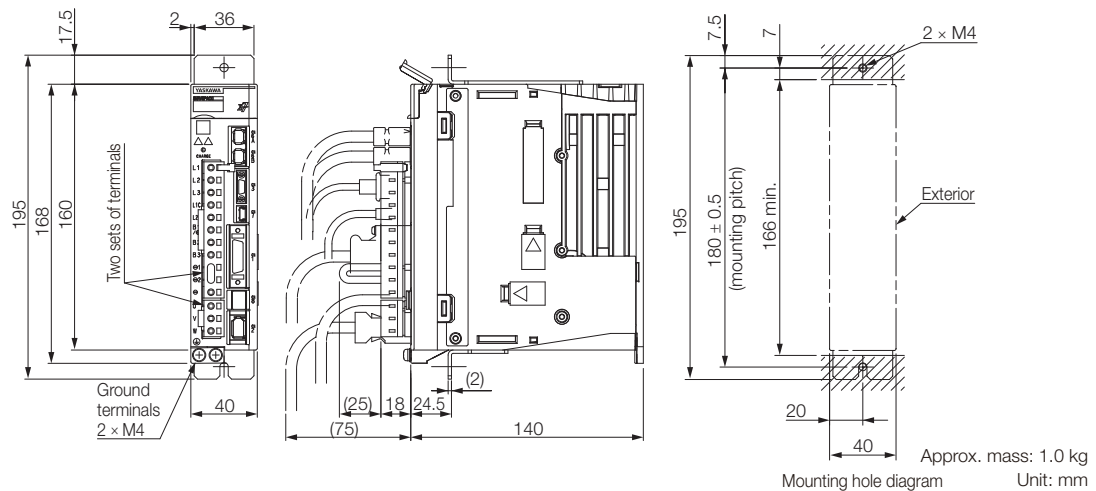


Rack-mounted SERVOPACKs

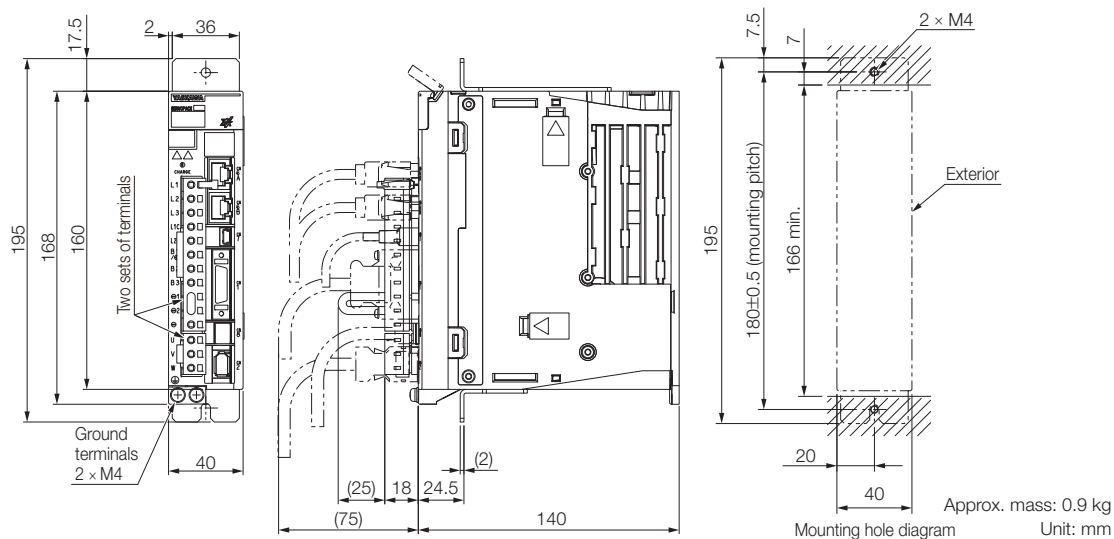
- SGD7S-R70A, -R90A, -1R6A
<MECHATROLINK-4 communications references>



<MECHATROLINK-III communications references>



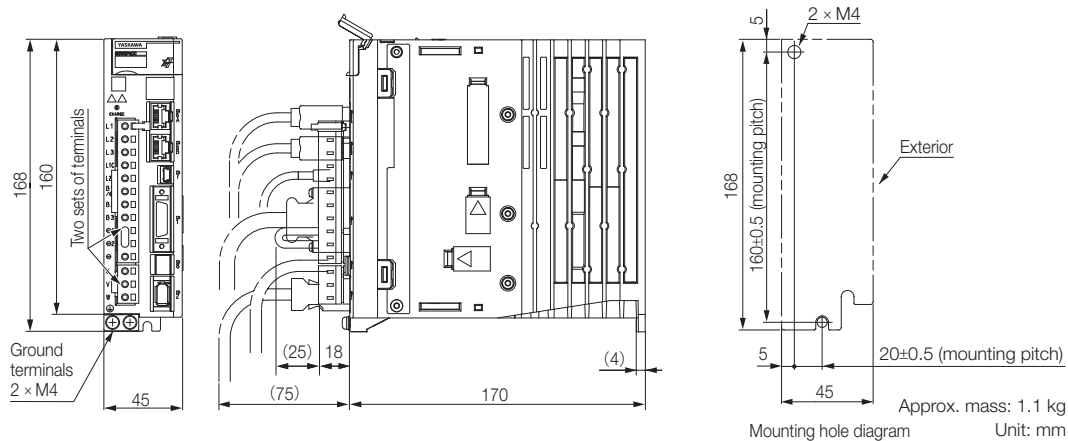
- SGDXS-R70A, -R90A, -1R6A
<MECHATROLINK-4/III communications references>



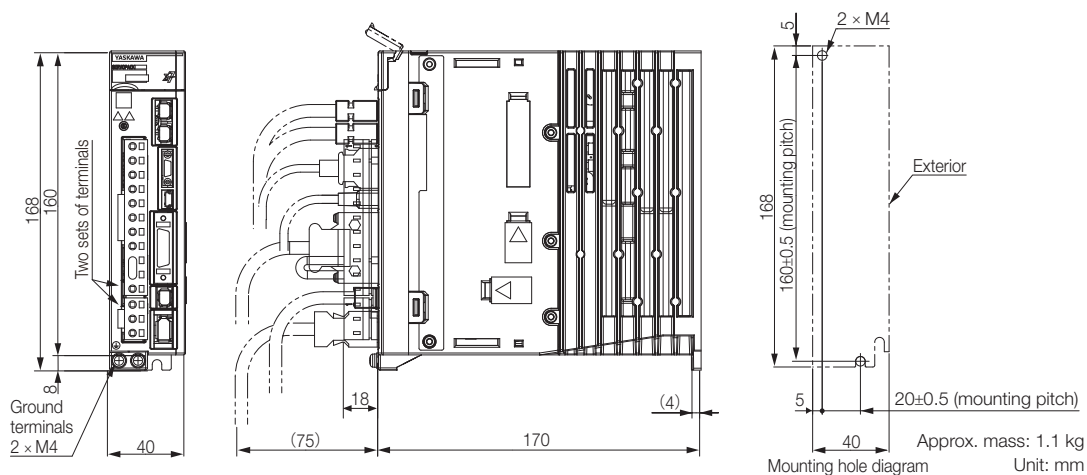
3.3.2 SGD□S-2R8A

Base-mounted SERVOPACKs

- SGD7S-2R8A
<MECHATROLINK-4 communications reference>

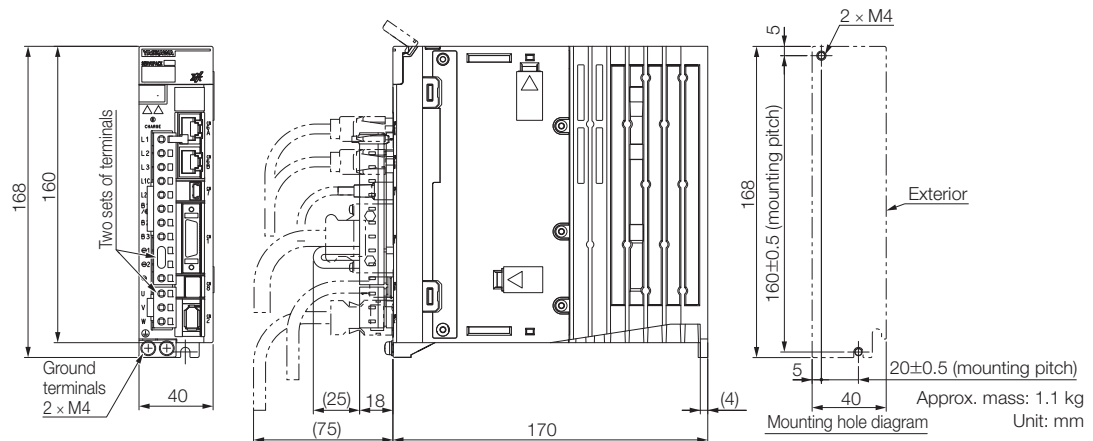


<MECHATROLINK-III communications reference>



- SGDXS-2R8A

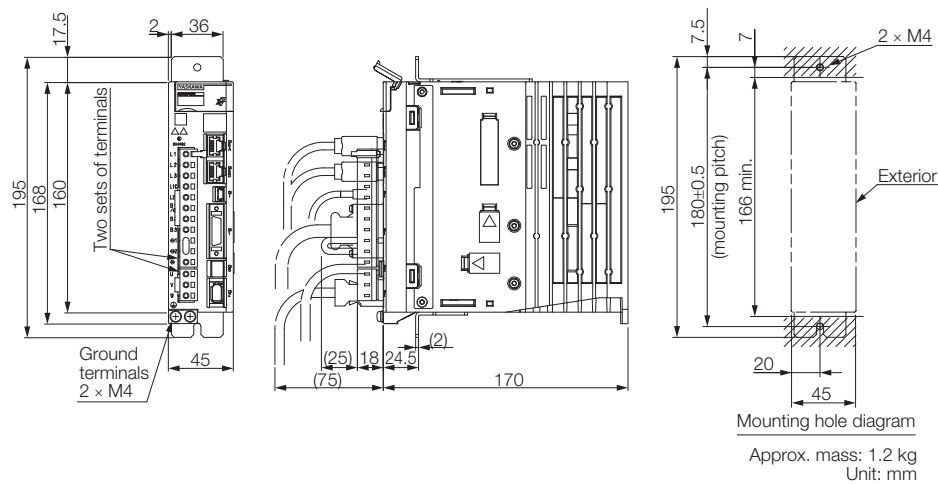
<MECHATROLINK-4/III communications references>



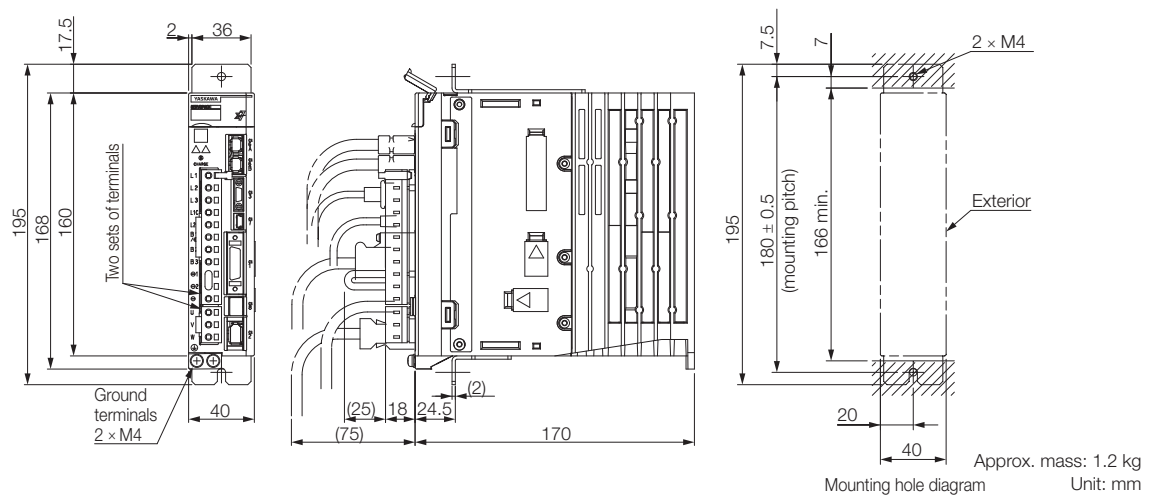
Rack-mounted SERVOPACKs

- SGD7S-2R8A

<MECHATROLINK-4 communications references>



<MECHATROLINK-III communications references>

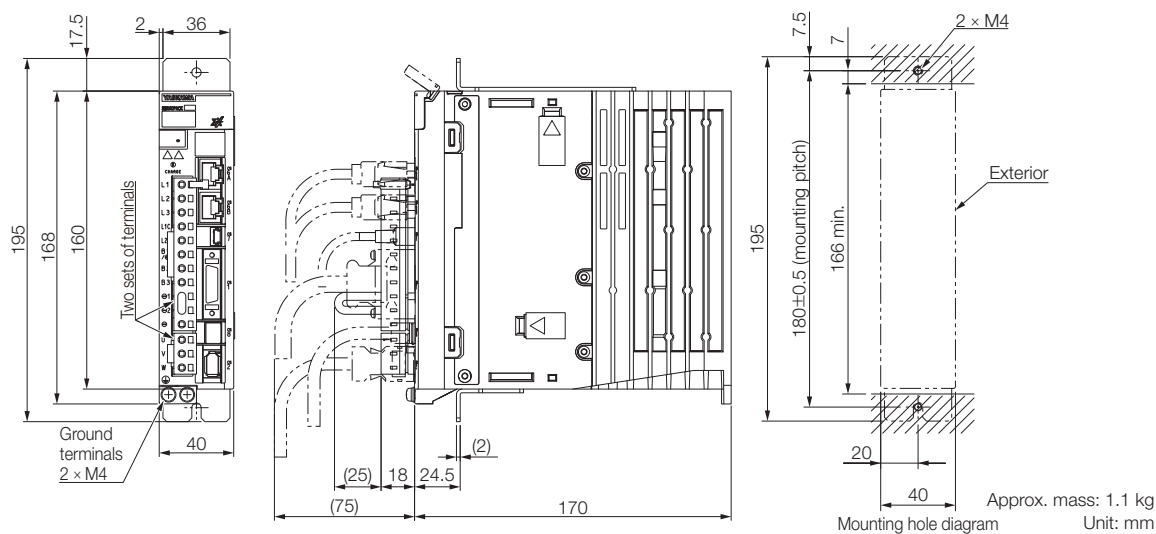


3.3 SERVOPACK External Dimensions and Installation Dimensions

3.3.3 SGD□S-3R8A

- SGDXS-2R8A

<MECHATROLINK-4/III communications references>

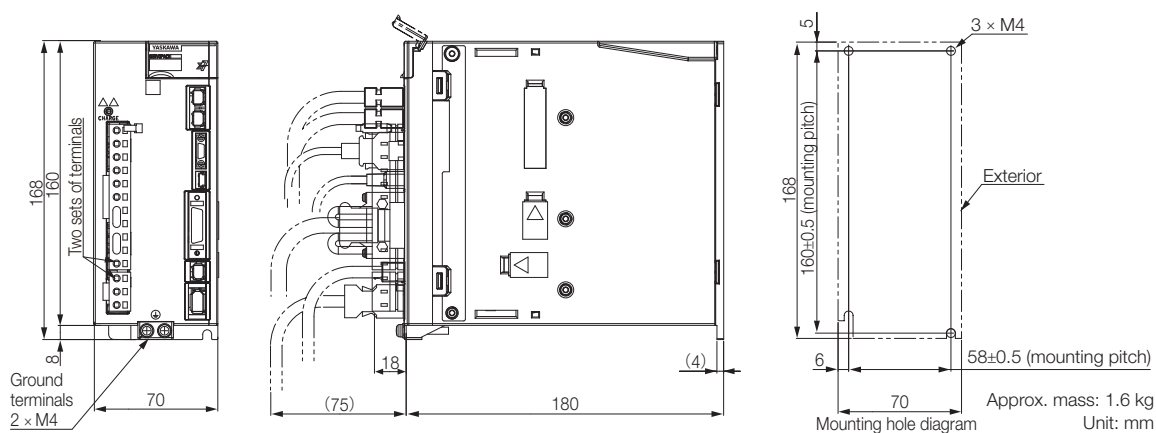


3.3.3

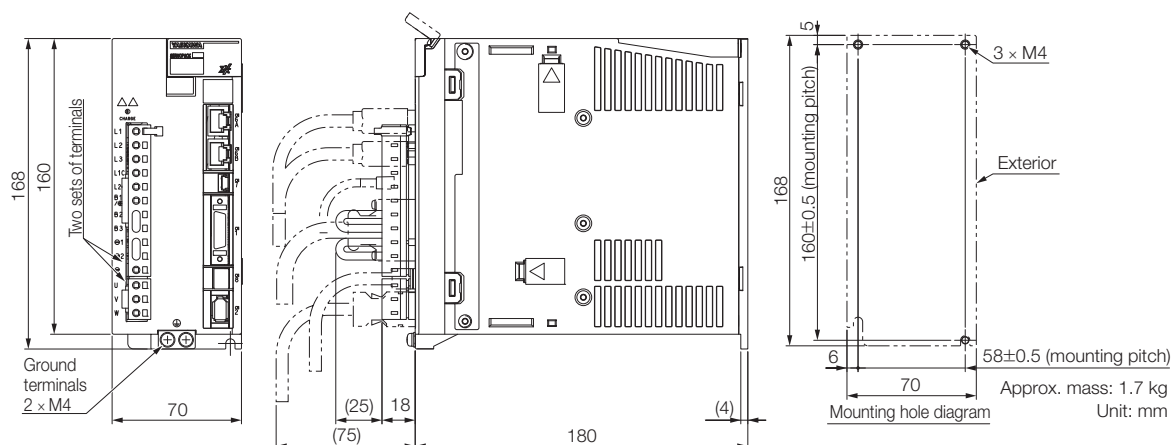
SGD□S-3R8A

Base-mounted SERVOPACKs

- SGD7S-3R8A

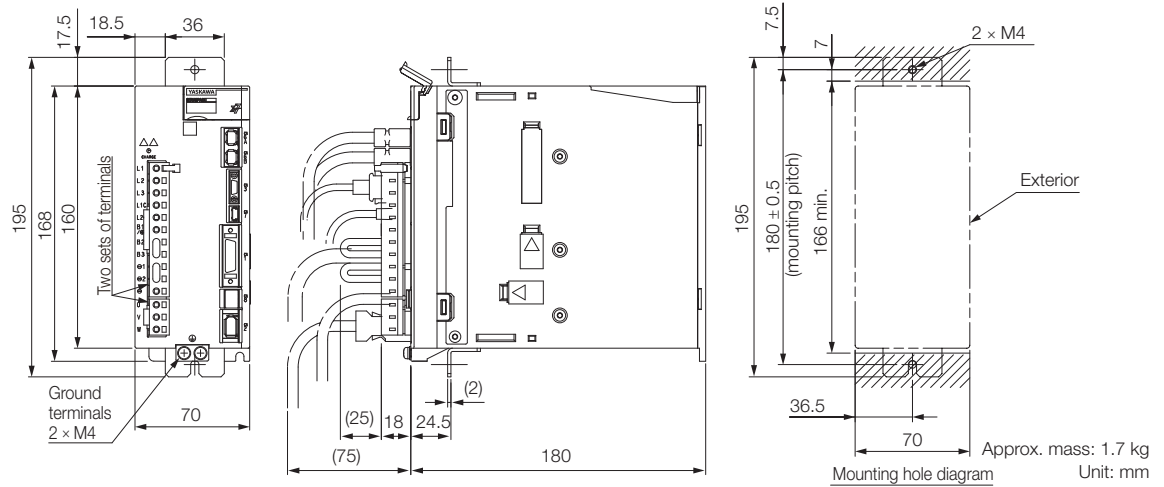


- SGDXS-3R8A

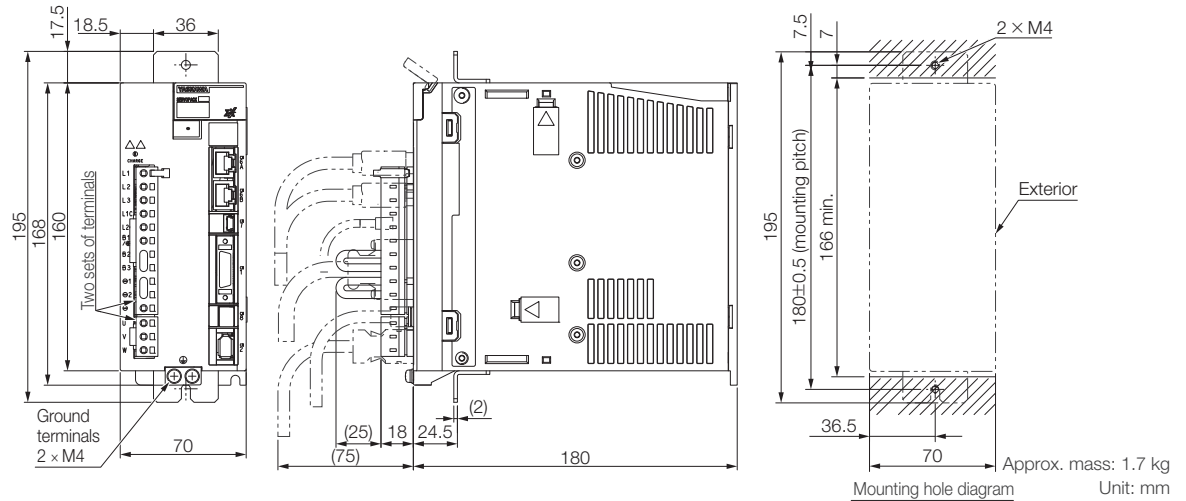


Rack-mounted SERVOPACKs

• SGD7S-3R8A



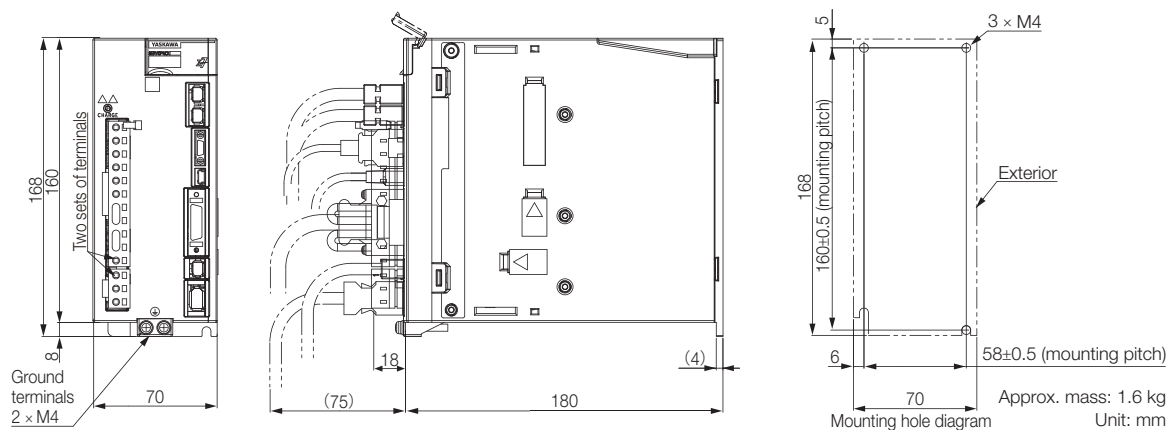
• SGDXS-3R8A



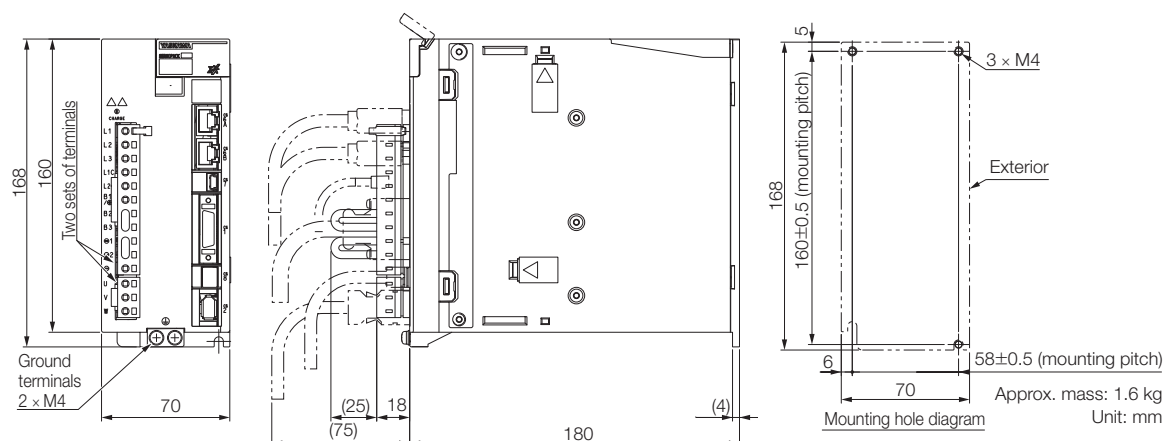
3.3.4 SGD□S-5R5A, -7R6A

Base-mounted SERVOPACKs

- SGD7S-5R5A, -7R6A

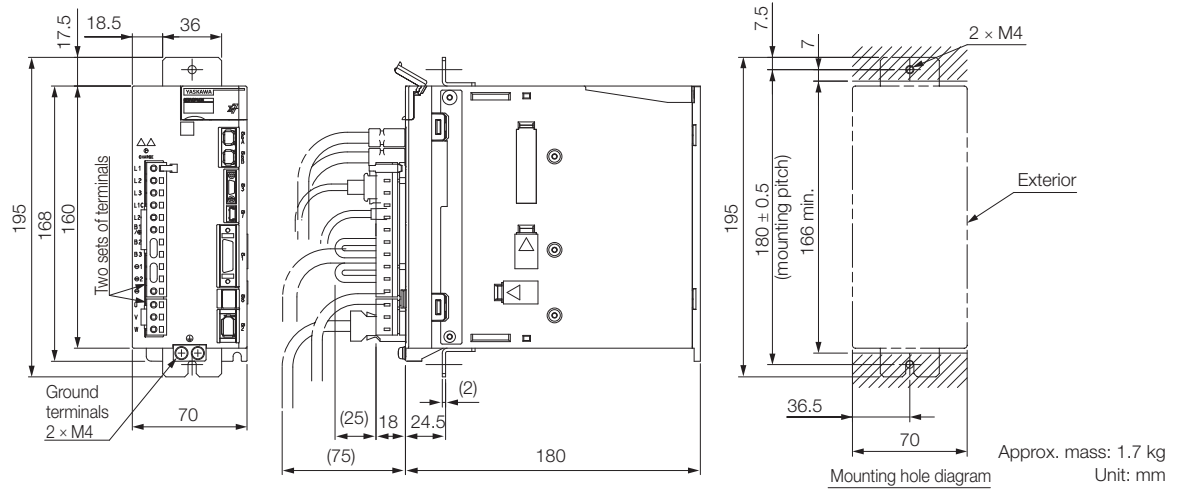


- SGDXS-5R5A, -7R6A

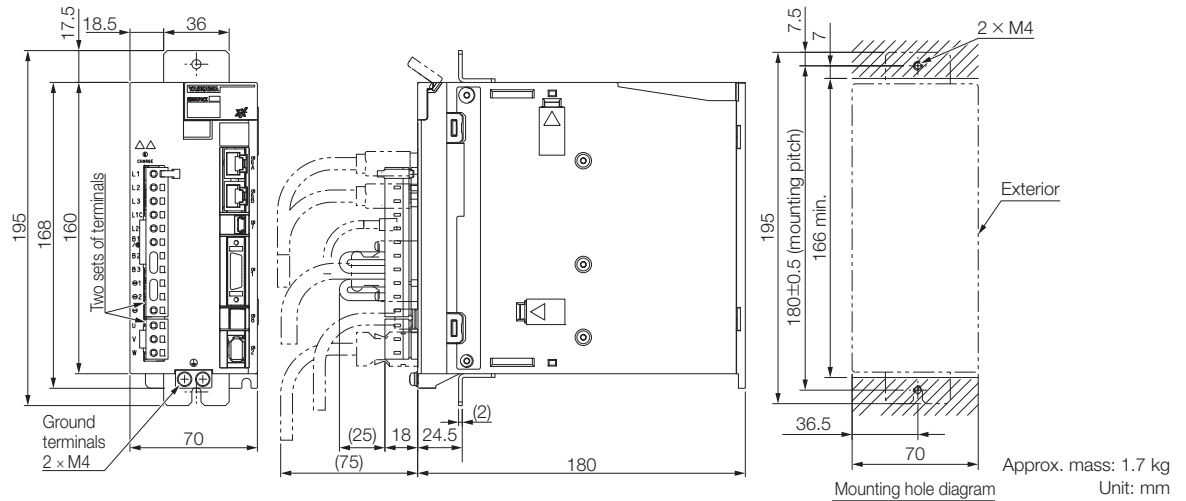


Rack-mounted SERVOPACKs

- SGD7S-5R5A, -7R6A



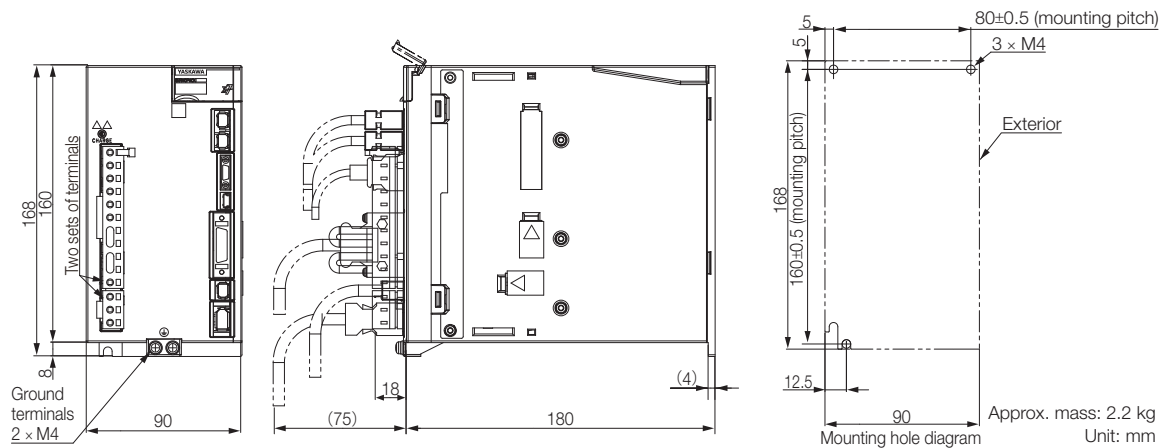
- SGDXS-5R5A, -7R6A



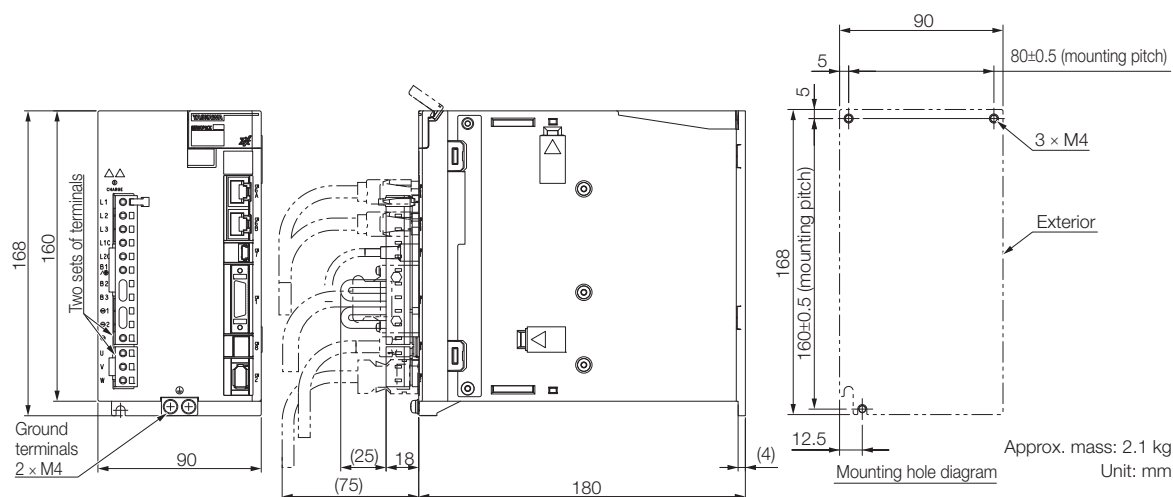
3.3.5 SGD□S-120A

Base-mounted SERVOPACKs

- SGD7S-120A

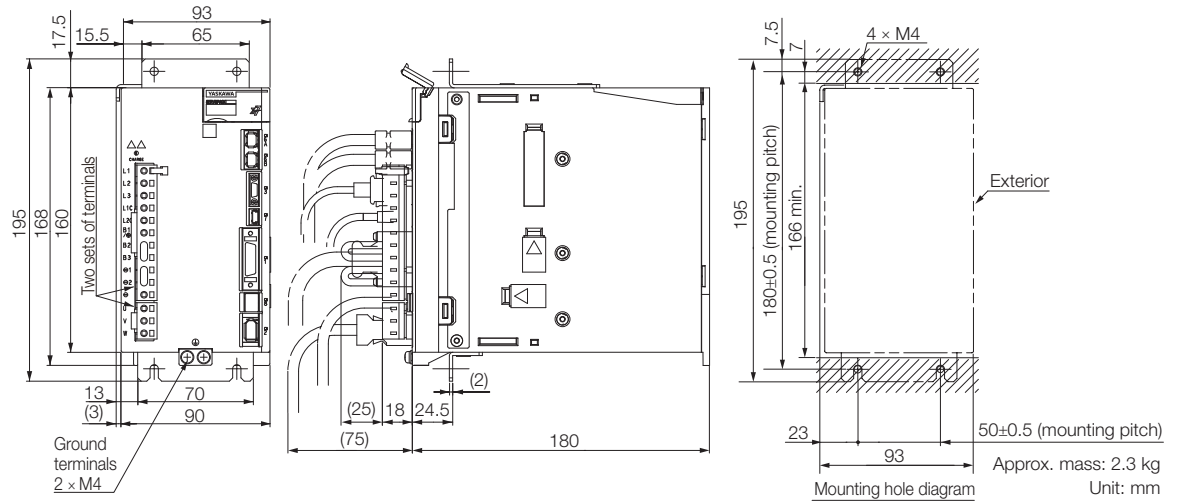


- SGDXS-120A

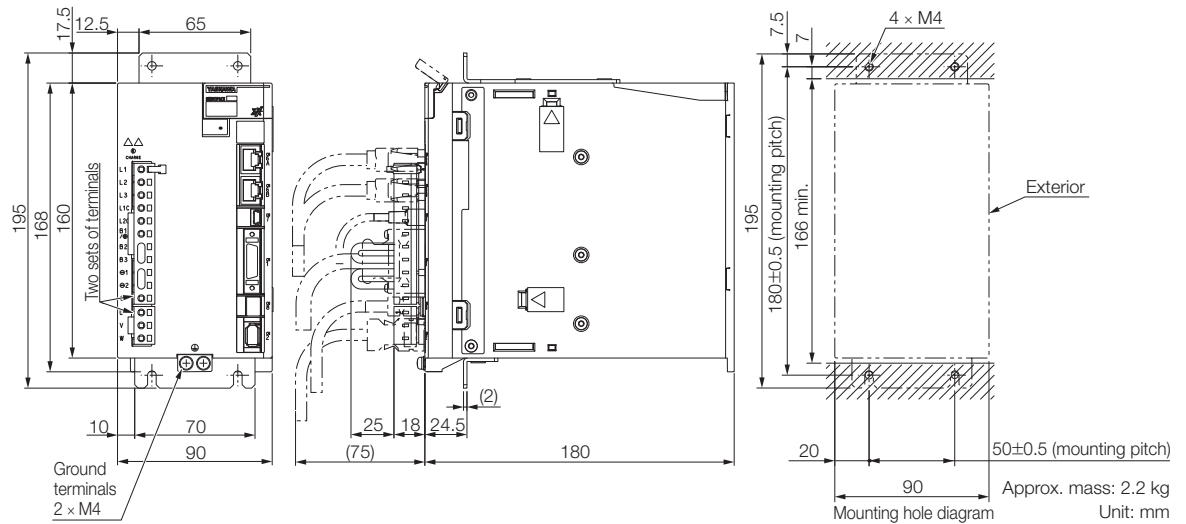


Rack-mounted SERVOPACKs

• SGD7S-120A



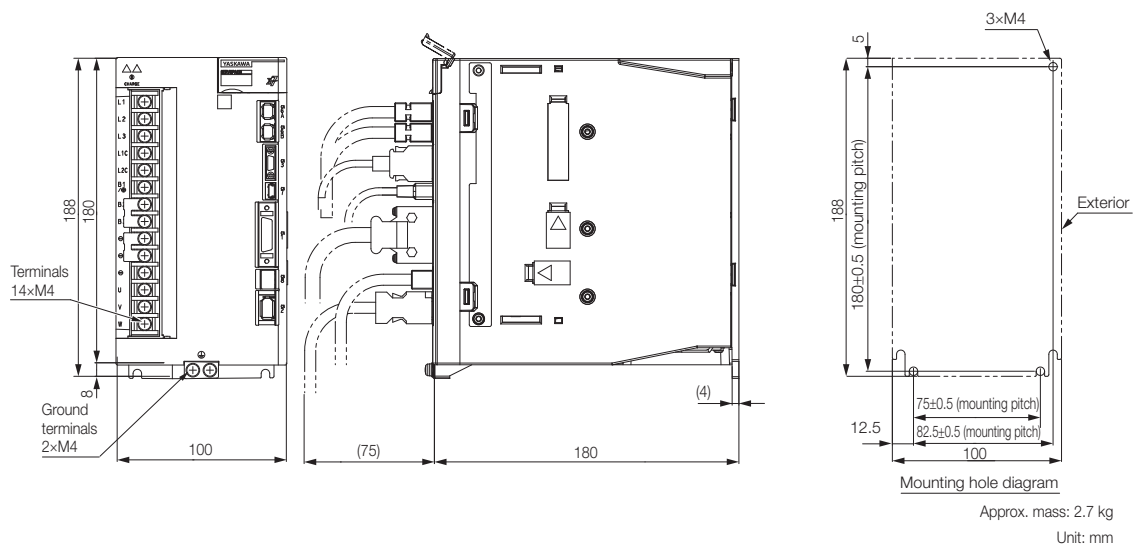
• SGDXS-120A



3.3.6 Single-phase, 200 VAC: SGD7S-120A□□A008, SGDXS-120A□□A0008

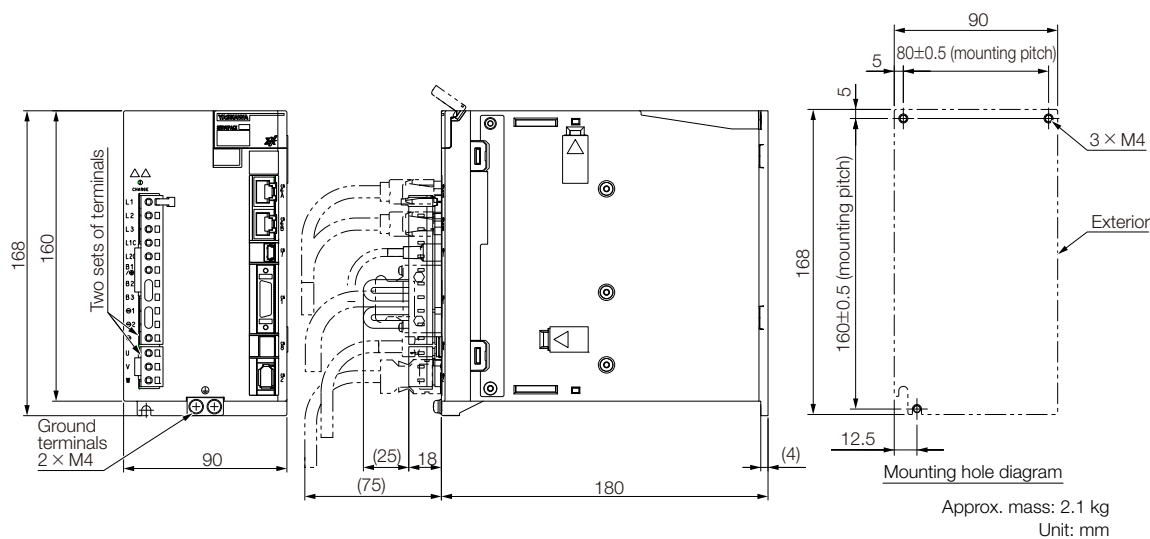
Base-mounted SERVOPACKs

- Single-phase, 200 VAC: SGD7S-120A□□A008



Note: The figures show the product with the terminal cover removed.

- Single-phase, 200 VAC: SGDXS-120A□□A0008

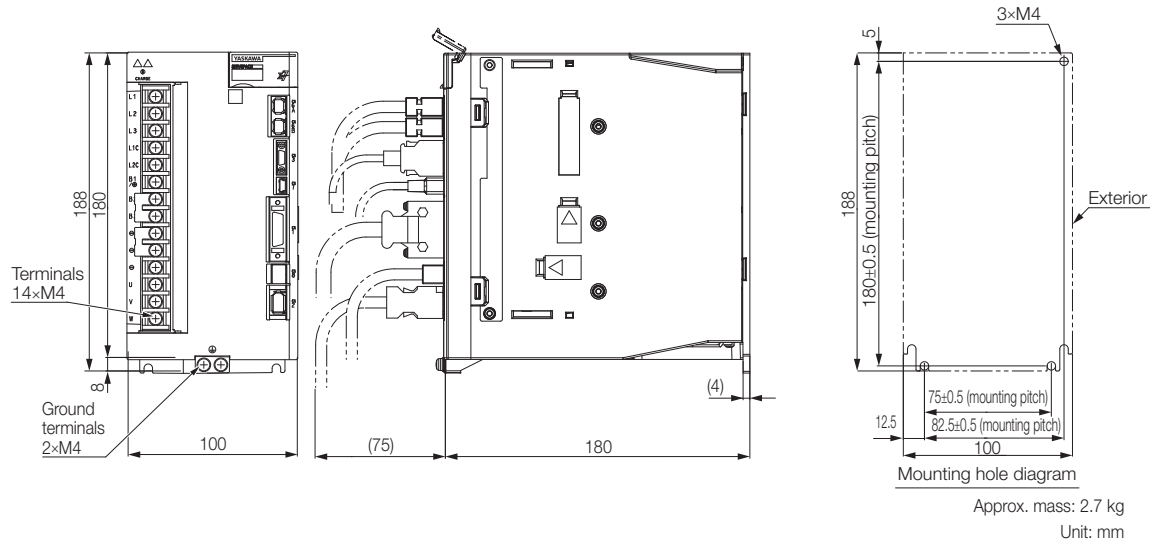


3.3.7 SGD□S-180A, -200A

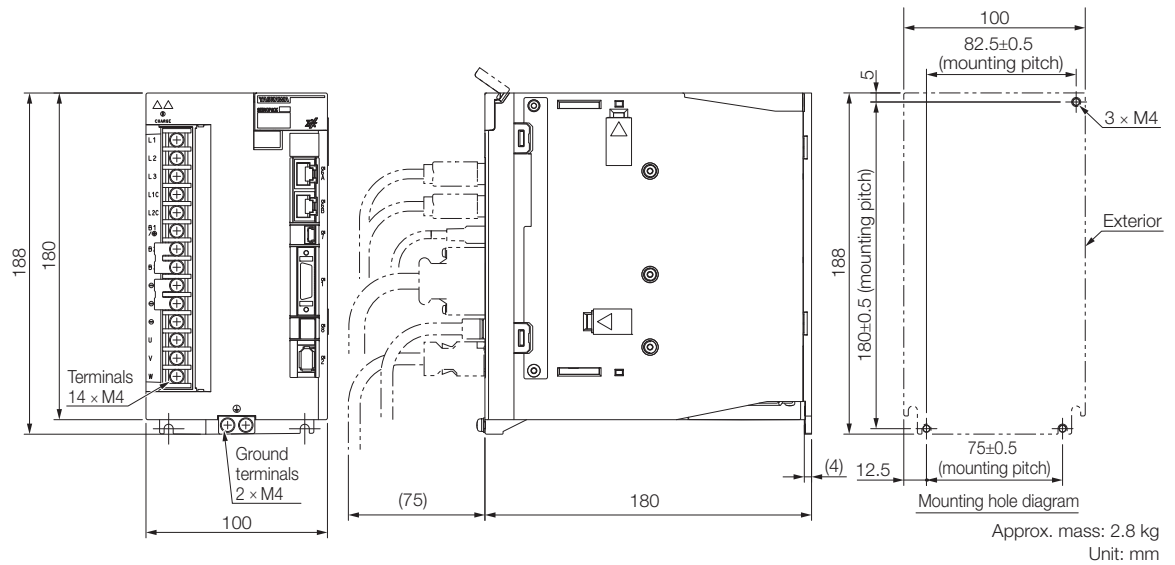
Base-mounted SERVOPACKs

Note: The figures show the product with the terminal cover removed.

- SGD7S-180A, -200A



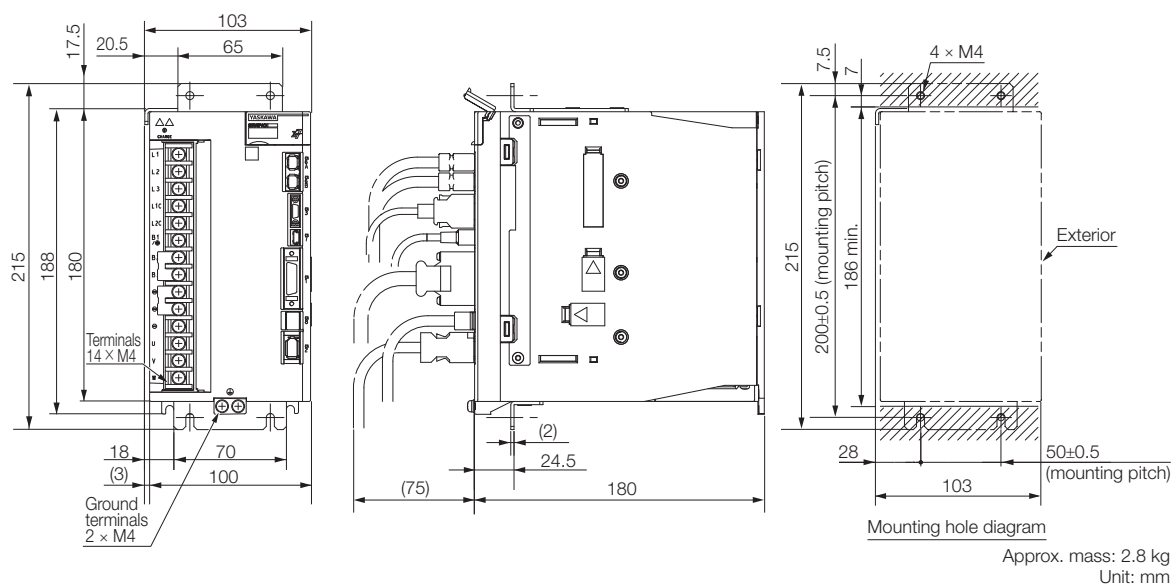
- SGDXS-180A, -200A



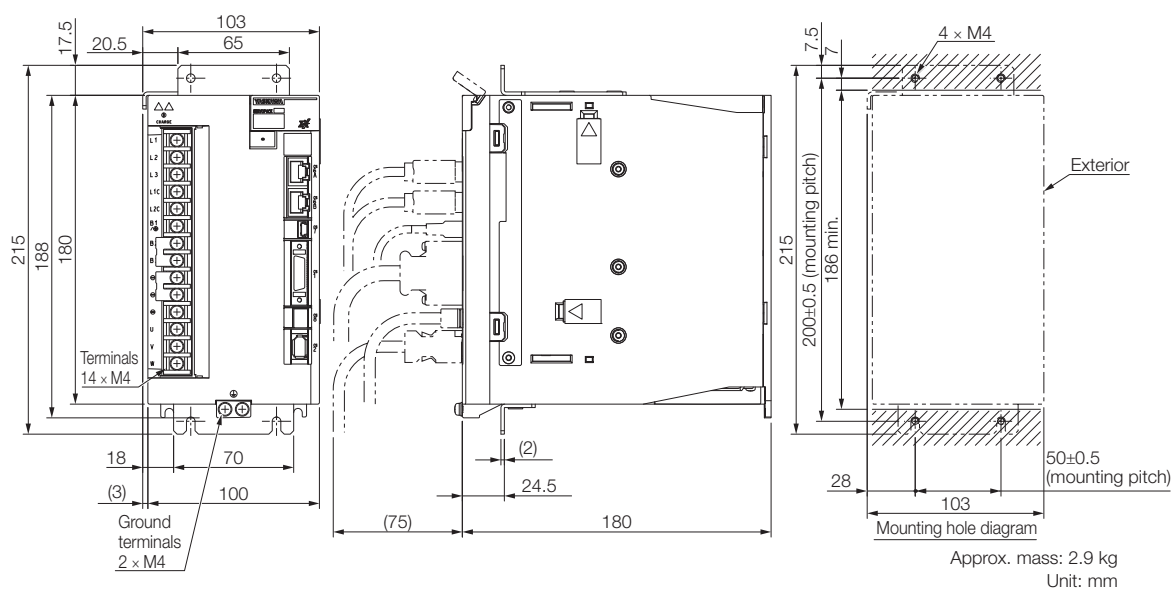
Rack-mounted SERVOPACKs

Note: The figures show the product with the terminal cover removed.

• SGD7S-180A, -200A



• SGDXS-180A, -200A

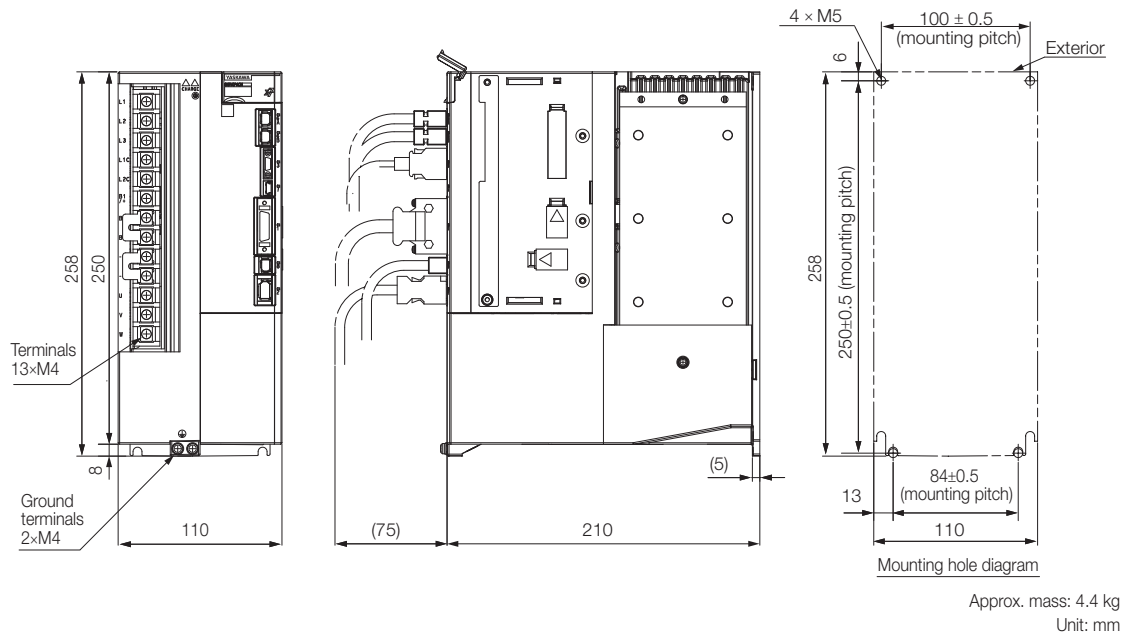


3.3.8 SGD□S-330A

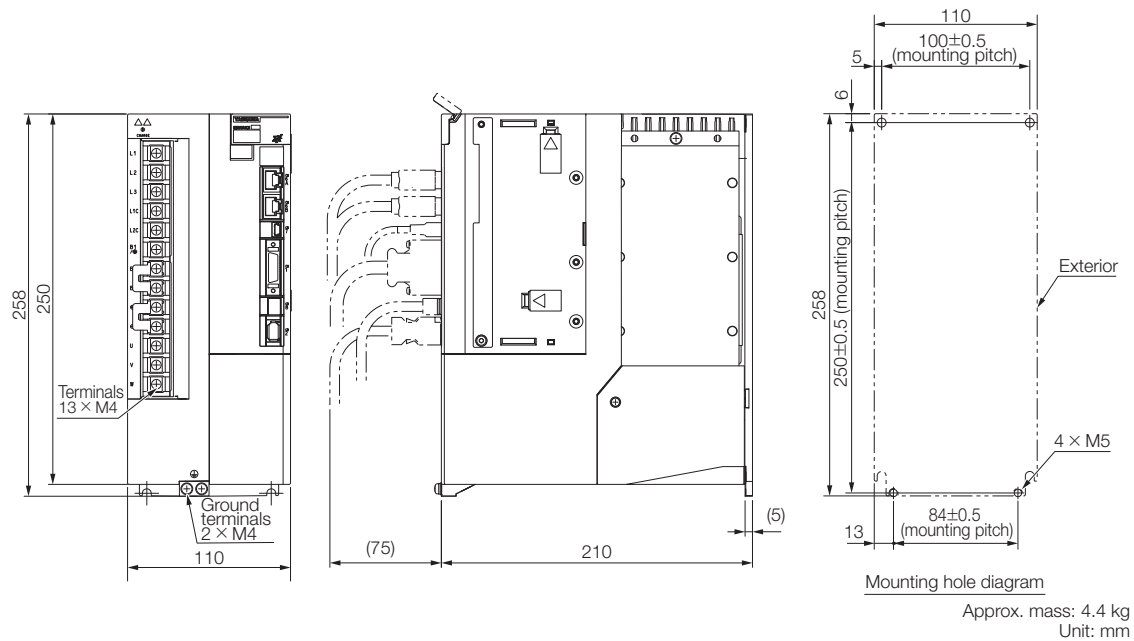
Base-mounted SERVOPACKs

Note: The figures show the product with the terminal cover removed.

- SGD7S-330A



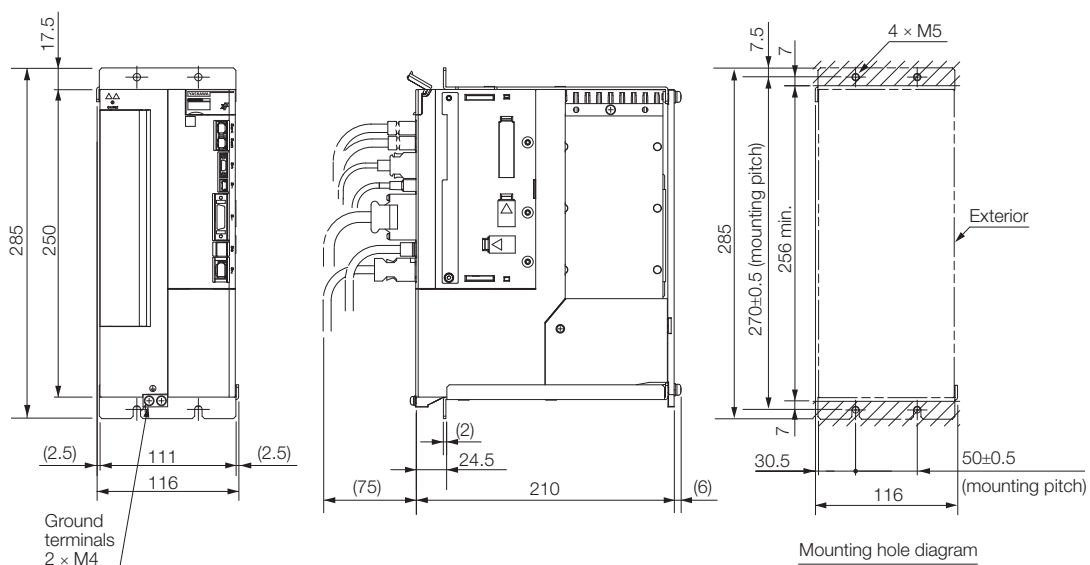
- SGDXS-330A



Rack-mounted SERVOPACKs

Note: The figures show the product with the terminal cover removed.

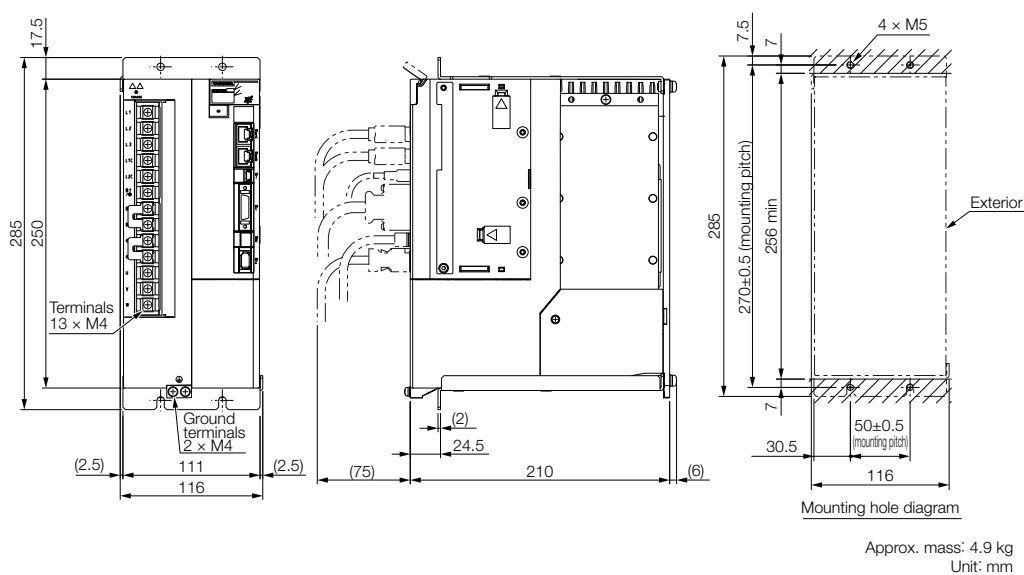
• SGD7S-330A



Approx. mass: 4.9 kg

Unit: mm

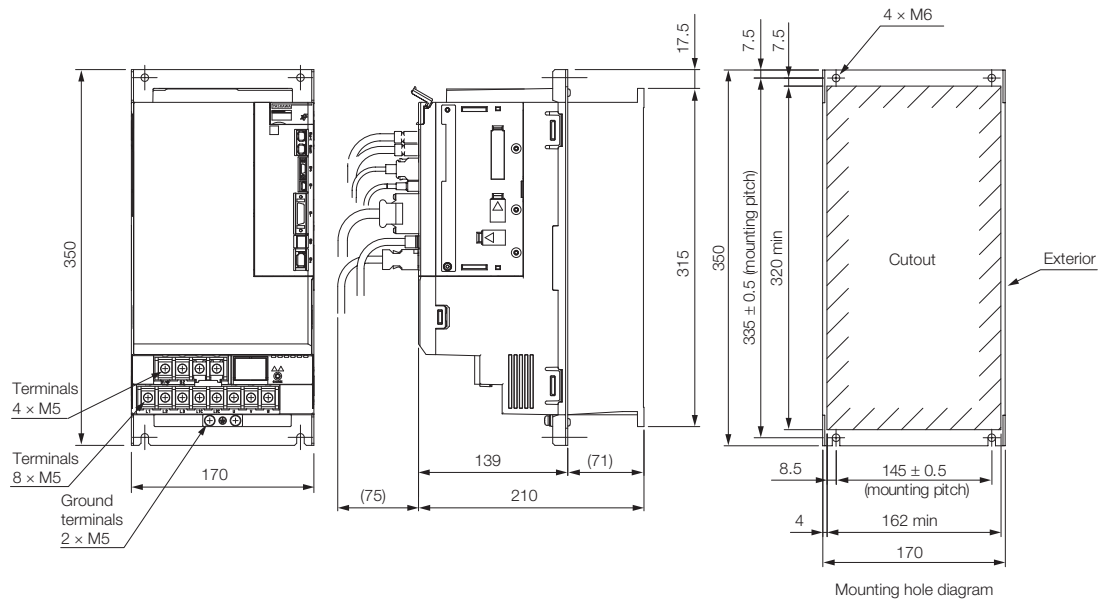
• SGDXS-330A



Approx. mass: 4.9 kg
Unit: mm

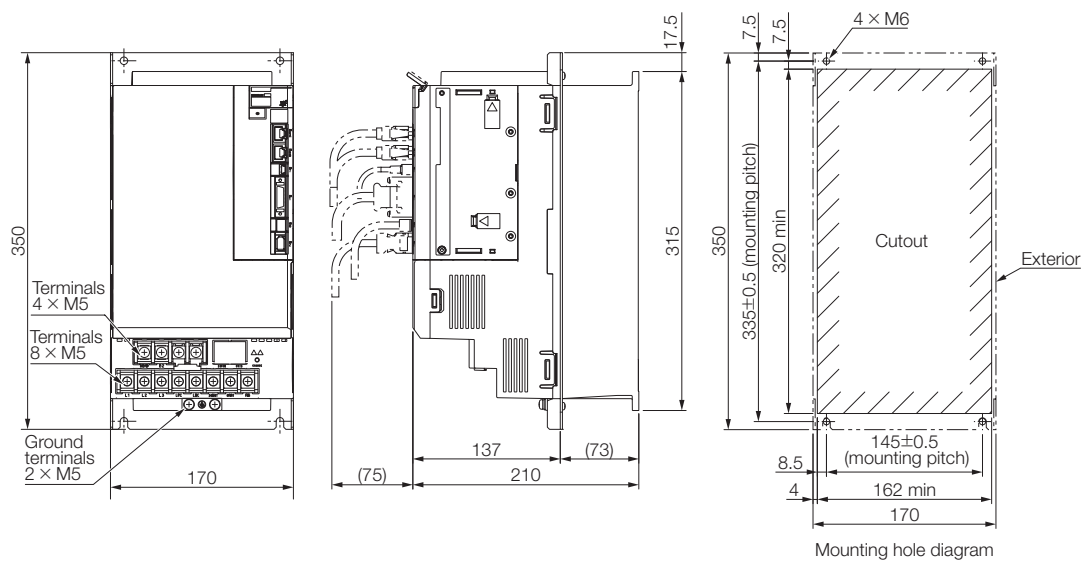
Duct-ventilated SERVOPACKs

- SGD7S-470A, -550A
[Hardware Option Code: 001]



Approx. mass: 8.4 kg
Unit: mm

- SGDXS-470A, -550A
[Hardware Option Code: 0001]

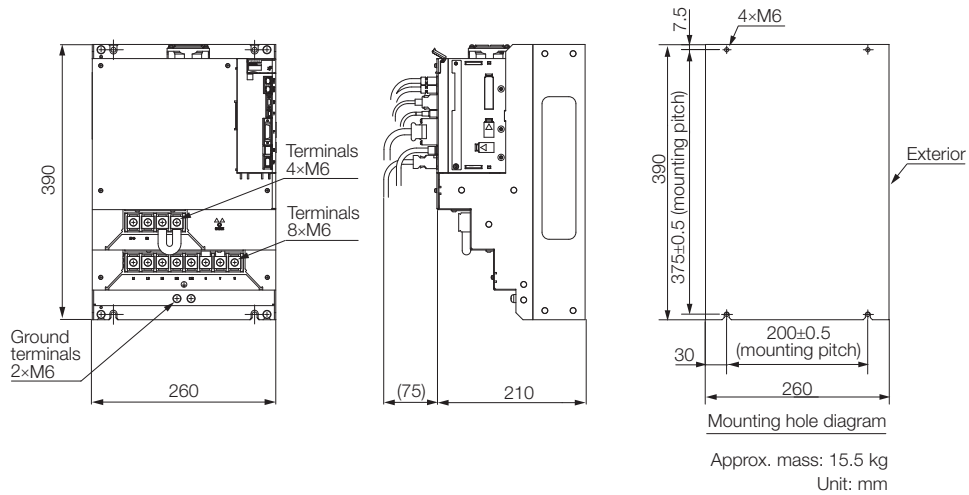


Approx. mass: 9.0 kg
Unit: mm

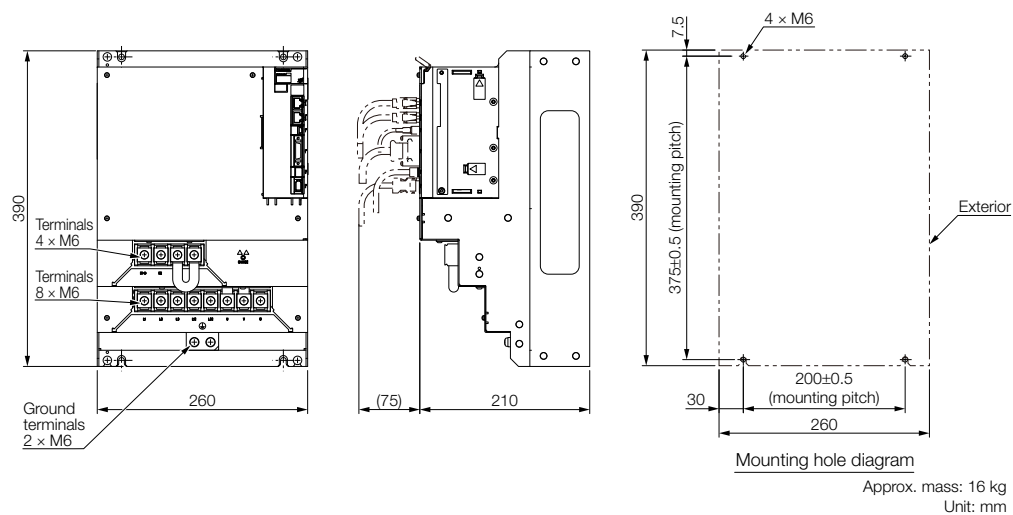
3.3.10 SGD□S-590A, -780A

Base-mounted SERVOPACKs

- SGD7S-590A, -780A



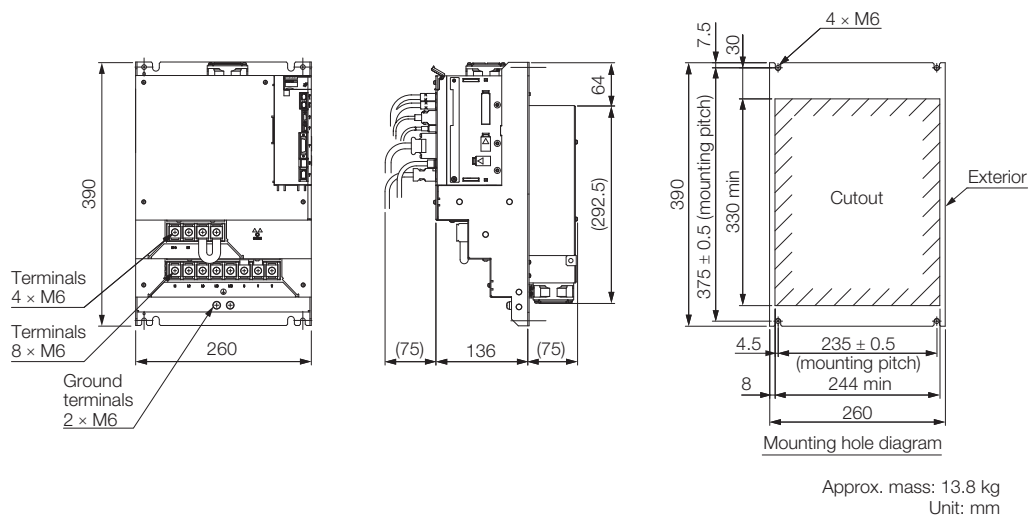
- SGDXS-590A, -780A



Duct-ventilated SERVOPACKs

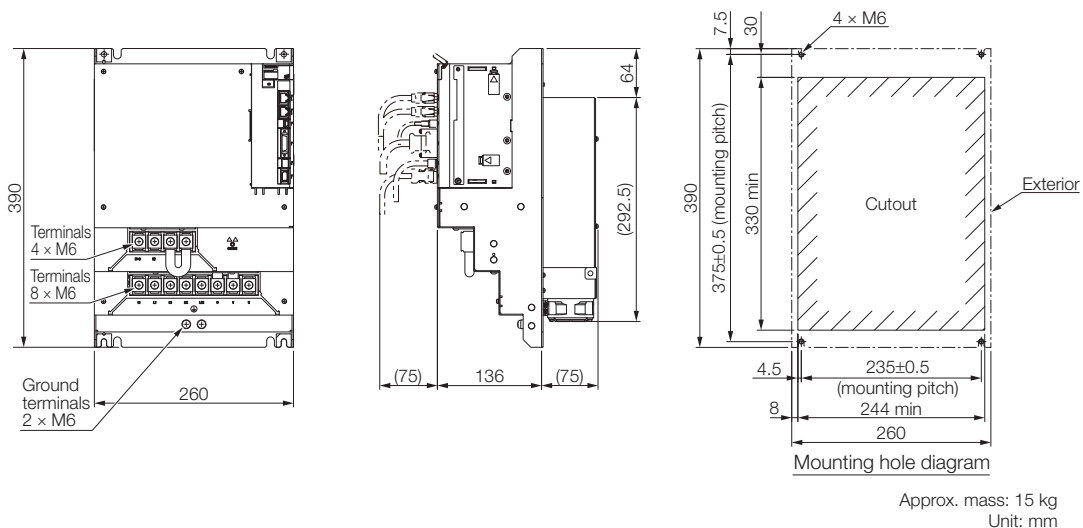
• SGD7S-590A, -780A

[Hardware Option Code: 001]



• SGDXS-590A, -780A

[Hardware Option Code: 001]

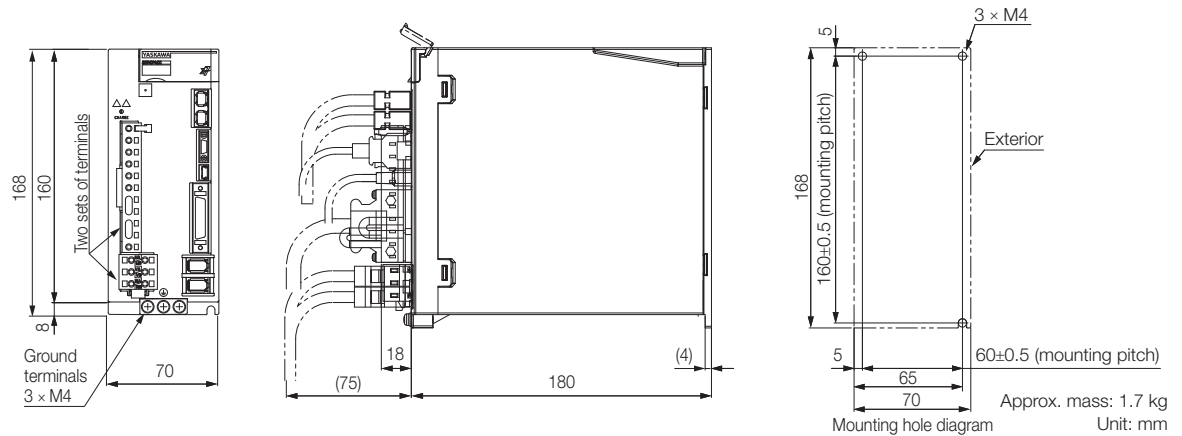


3.3.11 SGD□W-1R6A, -2R8

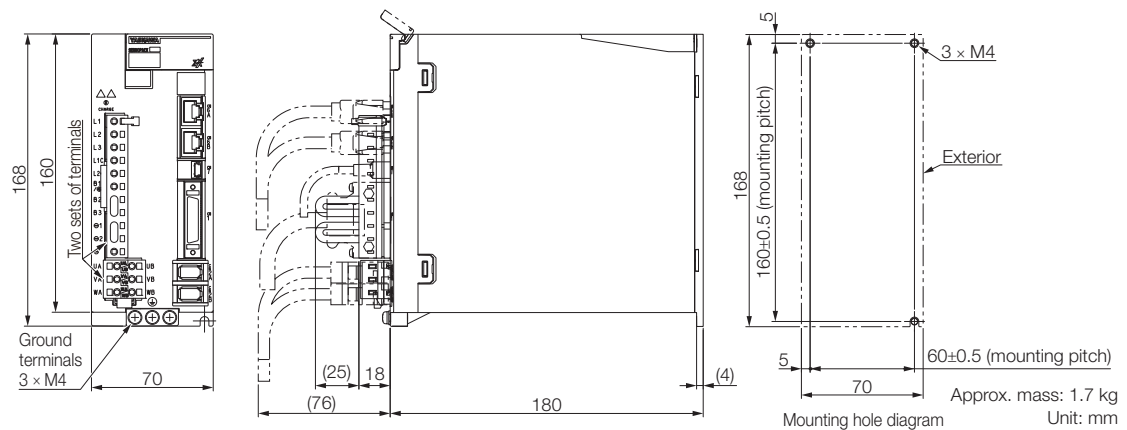
The Σ -7-series dimensional drawings show a typical example of the MECHATROLINK-III communications reference, and the Σ -X-series dimensional drawings show a typical example of the MECHATROLINK-4/III communications references.

Base-mounted SERVOPACKs

- SGD7W-1R6A, -2R8

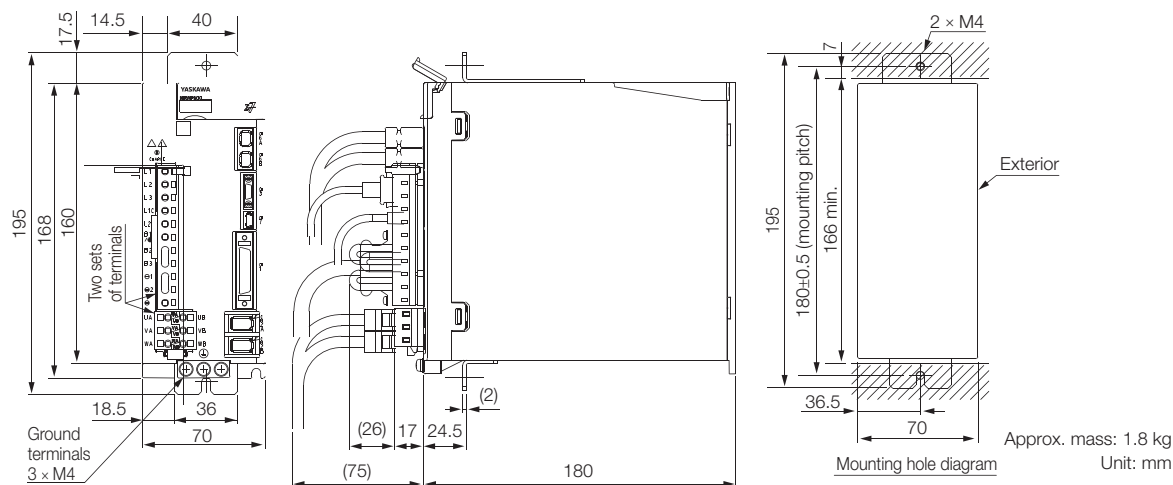


- SGD7W-1R6A, -2R8A

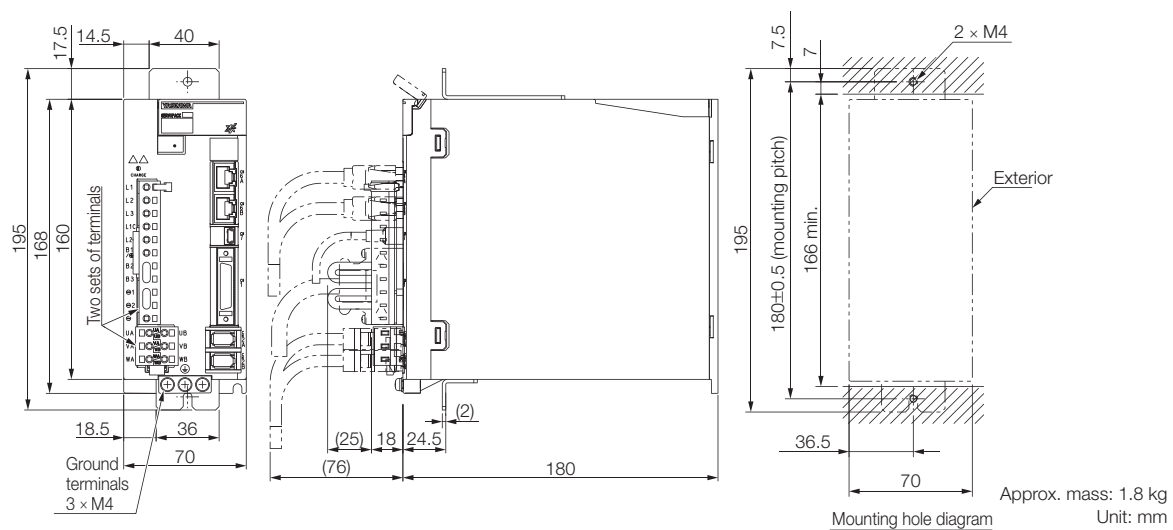


Rack-mounted SERVOPACKs

• SGD7W-1R6A, -2R8A



• SGD7W-1R6A, -2R8A

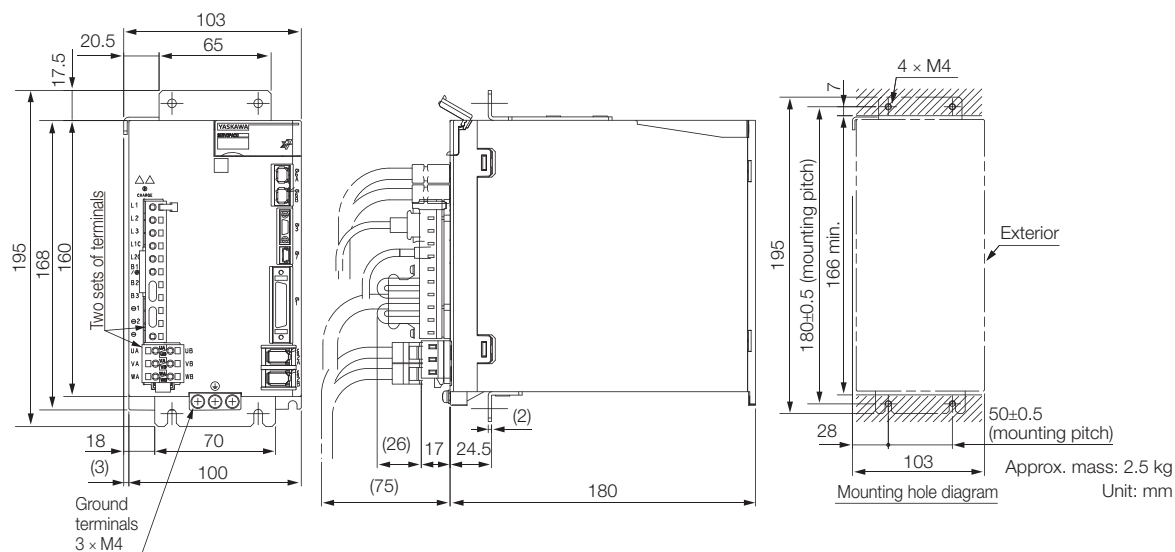


Base-mounted SERVOPACKs

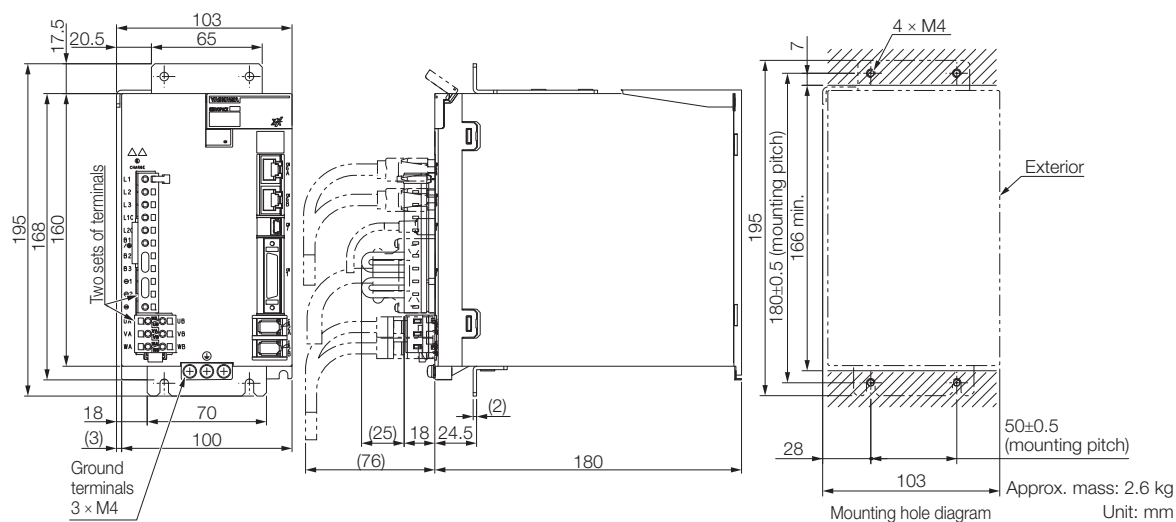
-
- Figure 1: Dimensions of the device. The figure consists of three views: a front view, a side view, and a mounting hole diagram. The front view shows a device with a height of 168 mm and a width of 100 mm. It features two sets of terminals on the left and ground terminals (3 x M4) at the bottom. The side view shows a depth of 180 mm and a mounting bracket width of 75 mm. The mounting hole diagram shows a rectangular plate with a width of 100 mm and a height of 160±0.5 mm. It has three mounting holes (3 x M4) at the top corners, with a pitch of 90±0.5 mm between them. The distance from the bottom edge to the mounting holes is 5 mm. The overall height of the device is 168 mm. The approximate mass is 2.4 kg. The unit is mm.

-
- Technical drawing of the SPS-1000 power supply unit, showing front, side, and mounting hole views with dimensions in mm.
- Front View Dimensions:**
- Total height: 168 mm
 - Height of terminal block area: 160 mm
 - Width: 100 mm
 - Ground terminals: 3 × M4
 - Two sets of terminals (labeled 1-16)
- Side View Dimensions:**
- Total width: 180 mm
 - Mounting flange width: 18 mm
 - Internal mounting structure width: (25) mm
 - Overall mounting structure width: (76) mm
 - Mounting hole offset: (4) mm
- Mounting Hole Diagram:**
- Mounting hole pitch (vertical): 160 ± 0.5 mm
 - Mounting hole pitch (horizontal): 90 ± 0.5 mm
 - Mounting hole diameter: 3 × M4
 - Mounting hole offset from edge: 5 mm
 - Overall mounting area width: 100 mm
 - Overall mounting area height: 168 mm
 - Exterior mounting points indicated
- Approx. mass: 2.4 kg
Unit: mm

- SGD7W-5R5A, -7R6A

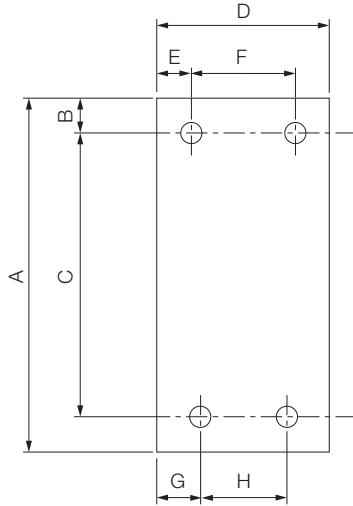


- SGDXW-5R5A, -7R6A



3.4 Mounting Hole Dimensions

The mounting hole dimensions for the Σ -7 series and Σ -X series are identical. (Excluding single phase, 200-VAC power supply compatible products (SGD7S-120A□□A008 and SGDXS-120A□□A0008).)



SERVOPACK Model	Dimensions (mm)								Screw Size	Number of Screws
	A	B	C	D	E	F	G	H		
SGD7S-120A□□A008	188	5	180±0.5	100	95	–	12.5	75±0.5	M4	3
SGDXS-120A□□A0008	168	5	160±0.5	90	5	80±0.5	12.5	–	M4	3

Specifications of Peripheral Devices

4

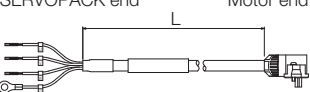
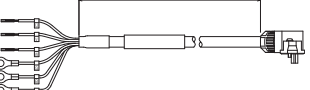
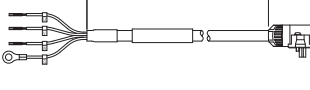
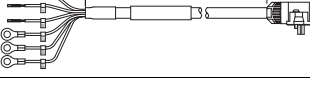
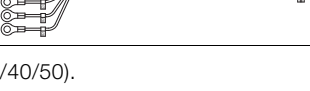
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4.1 Servomotor Main Circuit Cable

4.1.1 SGM7J, SGMXJ

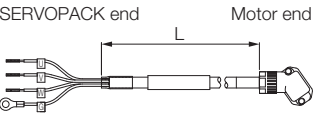
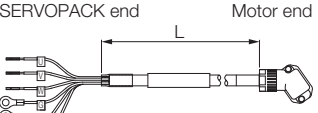
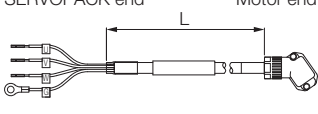
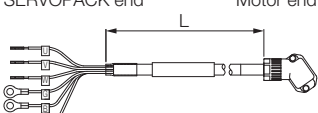
SGM7J-, SGMXJ-□□□□□□□□2 (Σ-7 compatible specifications)

Servomotor Model	Name	Cable Direction	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
SGM□J-A5 to -C2 (50 W to 150 W)	For servomotors without holding brakes	Load side	JZSP-C7M10F-□□-E	JZSP-C7M12F-□□-E	
		Non-load side	JZSP-C7M10G-□□-E	JZSP-C7M12G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M13F-□□-E	JZSP-C7M14F-□□-E	
		Non-load side	JZSP-C7M13G-□□-E	JZSP-C7M14G-□□-E	
SGM□J-02 to -06 (200 W to 600 W)	For servomotors without holding brakes	Load side	JZSP-C7M20F-□□-E	JZSP-C7M22F-□□-E	
		Non-load side	JZSP-C7M20G-□□-E	JZSP-C7M22G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M23F-□□-E	JZSP-C7M24F-□□-E	
		Non-load side	JZSP-C7M23G-□□-E	JZSP-C7M24G-□□-E	
SGM□J-08 (750 W)	For servomotors without holding brakes	Load side	JZSP-C7M30F-□□-E	JZSP-C7M32-□□-E	
		Non-load side	JZSP-C7M30G-□□-E	JZSP-C7M32G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M33F-□□-E	JZSP-C7M34F-□□-E	
		Non-load side	JZSP-C7M33G-□□-E	JZSP-C7M34G-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

SGMXJ-□□□□□□□□1 (standard specifications)

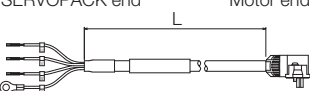
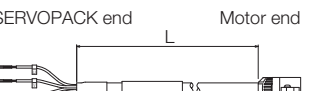
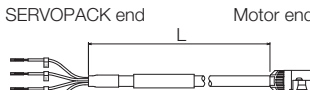
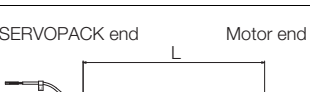
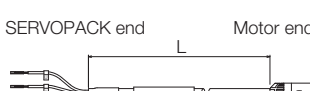
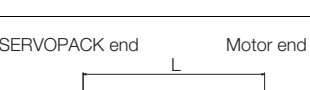
Servomotor Model	Name	Cable Direction	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
SGMXJ-A5 to -06 (50 W to 600 W)	For servomotors without holding brakes	Load side	JWSP-XMA5NS1-□□	JWSP-XMA5NF1-□□	
		Non-load side	JWSP-XMA5NS2-□□	JWSP-XMA5NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XMA5BS1-□□	JWSP-XMA5BF1-□□	
		Non-load side	JWSP-XMA5BS2-□□	JWSP-XMA5BF2-□□	
SGMXJ-08 (750 W)	For servomotors without holding brakes	Load side	JWSP-XM08NS1-□□	JWSP-XM08NF1-□□	
		Non-load side	JWSP-XM08NS2-□□	JWSP-XM08NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XM08BS1-□□	JWSP-XM08BF1-□□	
		Non-load side	JWSP-XM08BS2-□□	JWSP-XM08BF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

4.1.2 SGM7A, SGMXA

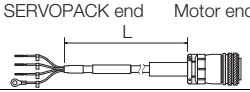
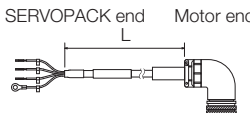
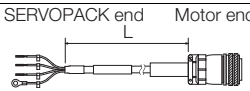
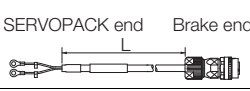
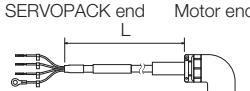
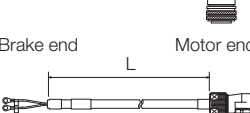
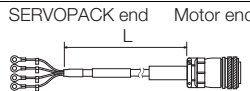
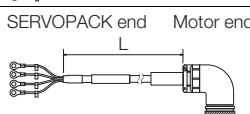
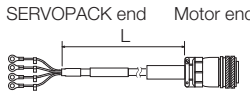
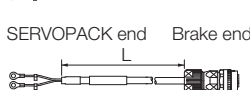
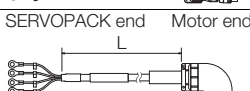
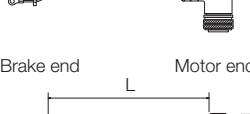
SGM7A-A5 to -10, SGMXA-A5□□□□□2 to -10□□□□□2 (Σ -7 compatible specifications)

Servomotor Model	Name	Cable Direction	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGM□A-A5 to -C2 (50 W to 150 W)	For servomotors without holding brakes	Load side	JZSP-C7M10F-□□-E	JZSP-C7M12F-□□-E	
		Non-load side	JZSP-C7M10G-□□-E	JZSP-C7M12G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M13F-□□-E	JZSP-C7M14F-□□-E	
		Non-load side	JZSP-C7M13G-□□-E	JZSP-C7M14G-□□-E	
SGM□A-02 to -06 (200 W to 600 W)	For servomotors without holding brakes	Load side	JZSP-C7M20F-□□-E	JZSP-C7M22F-□□-E	
		Non-load side	JZSP-C7M20G-□□-E	JZSP-C7M22G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M23F-□□-E	JZSP-C7M24F-□□-E	
		Non-load side	JZSP-C7M23G-□□-E	JZSP-C7M24G-□□-E	
SGM□A-08 to -10 (750 W to 1.0 W)	For servomotors without holding brakes	Load side	JZSP-C7M30F-□□-E	JZSP-C7M32-□□-E	
		Non-load side	JZSP-C7M30G-□□-E	JZSP-C7M32G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M33F-□□-E	JZSP-C7M34F-□□-E	
		Non-load side	JZSP-C7M33G-□□-E	JZSP-C7M34G-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

SGM7A-15 to -70

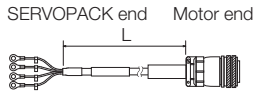
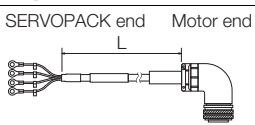
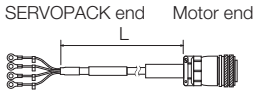
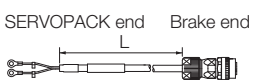
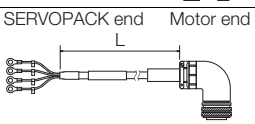
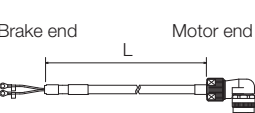
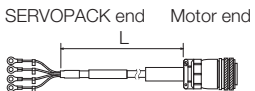
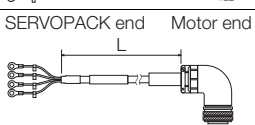
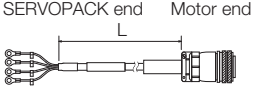
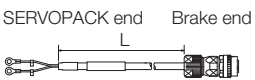
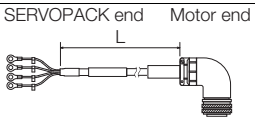
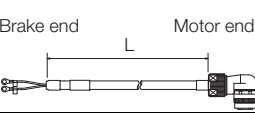
Servomotor Model	Name	Connector Specifications	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGM7A-15 (1.5 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVA101-□□-E	JZSP-UVA121-□□-E	
		Right-angle plug	JZSP-UVA102-□□-E	JZSP-UVA122-□□-E	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JZSP-UVA131-□□-E	JZSP-UVA141-□□-E	 
		Right-angle plug	JZSP-UVA132-□□-E	JZSP-UVA142-□□-E	 
SGM7A-20 (2.0 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVA301-□□-E	JZSP-UVA321-□□-E	
		Right-angle plug	JZSP-UVA302-□□-E	JZSP-UVA322-□□-E	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JZSP-UVA331-□□-E	JZSP-UVA341-□□-E	 
		Right-angle plug	JZSP-UVA332-□□-E	JZSP-UVA342-□□-E	 

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4.1 Servomotor Main Circuit Cable

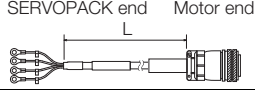
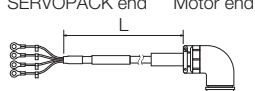
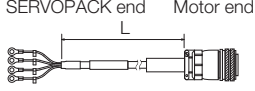
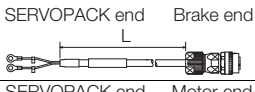
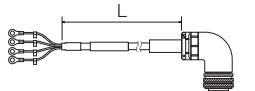
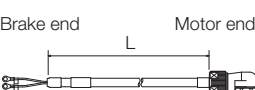
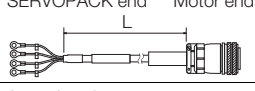
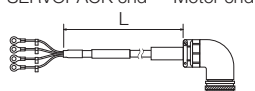
4.1.2 SGM7A, SGMXA

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Servomotor Model	Name	Connector Specifications	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGM7A-25 (2.5 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVA501-□□-E	JZSP-UVA521-□□-E	
		Right-angle plug	JZSP-UVA502-□□-E	JZSP-UVA522-□□-E	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JZSP-U7A551-□□-E	JZSP-U7A561-□□-E	 
		Right-angle plug	JZSP-U7A552-□□-E	JZSP-U7A562-□□-E	
					
SGM7A-30 (3.0 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVA601-□□-E	JZSP-UVA621-□□-E	
		Right-angle plug	JZSP-UVA602-□□-E	JZSP-UVA622-□□-E	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JZSP-UVA631-□□-E	JZSP-UVA641-□□-E	 
		Right-angle plug	JZSP-UVA632-□□-E	JZSP-UVA642-□□-E	
					

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Servomotor Model	Name	Connector Specifications	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGM7A-40, -50 (4.0 kW, 5.0 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVA701-□□-E	JZSP-UVA721-□□-E	
		Right-angle plug	JZSP-UVA702-□□-E	JZSP-UVA722-□□-E	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JZSP-UVA731-□□-E	JZSP-UVA741-□□-E	
					
		Right-angle plug	JZSP-UVA732-□□-E	JZSP-UVA742-□□-E	
					
SGM7A-70 (7.0 kW)* ⁴	For servomotors without holding brakes	Straight plug	JZSP-UVA901-□□-E	JZSP-UVA921-□□-E	
		Right-angle plug	JZSP-UVA902-□□-E	JZSP-UVA922-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

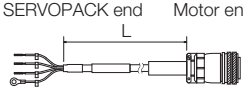
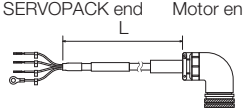
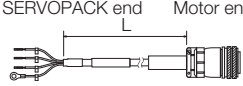
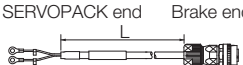
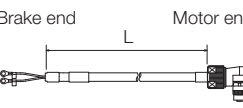
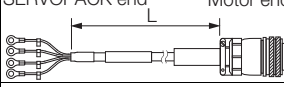
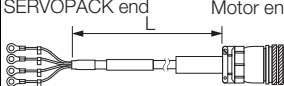
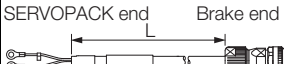
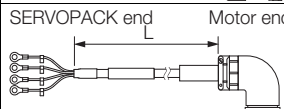
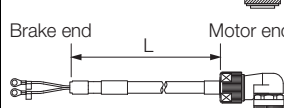
*3. This order number is for a set of two cables (main power supply cable and holding brake cable). When you purchase them separately, the order numbers for main power supply cables are the same as for a servomotor without a holding brake.

The following order numbers are for a holding brake cable. These standard cables are flexible cables.

- Straight plug: JZSP-U7B23-□□-E
- Right-angle plug: JZSP-U7B24-□□-E

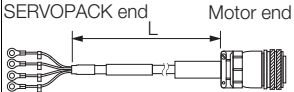
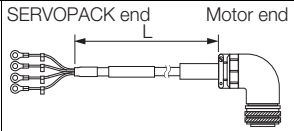
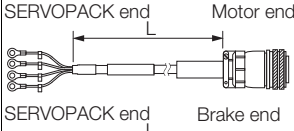
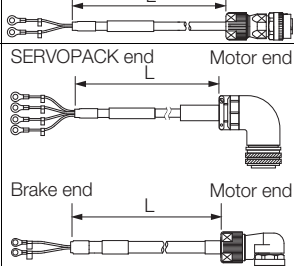
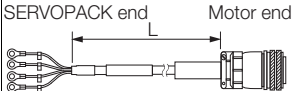
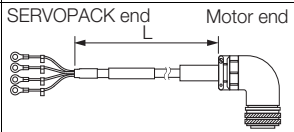
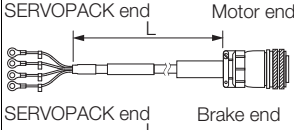
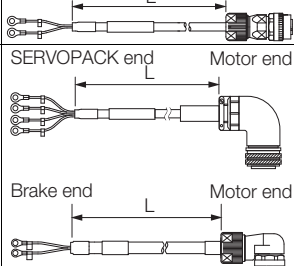
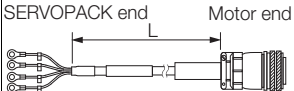
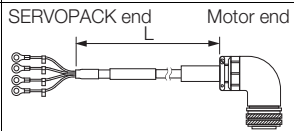
*4. A cooling fan is built into the SGM7A-70 servomotor. There is no specified cable to connect to the built-in cooling fan connector. Use appropriate wiring materials for the built-in cooling fan connector specifications.

SGMXA-15 to -70 (Σ -7 compatible specifications, standard specifications)

Servomotor Model	Name	Connector Specification	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
SGMXA-15 (1.5 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM15NSS-□□	JWSP-XM15NFS-□□	
		Right-angle plug ^{*3}	JWSP-XM15NSL-□□	JWSP-XM15NFL-□□	
	For servomotors with holding brakes (Set of two cables ^{*4})	Straight plug	JWSP-XM15BSS-□□	JWSP-XM15BFS-□□	
		Right-angle plug ^{*3}	JWSP-XM15BSL-□□	JWSP-XM15BFL-□□	
					
					
SGMXA-20, -25 (2.0 kW, 2.5 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM20NSS-□□	JWSP-XM20NFS-□□	
		Right-angle plug ^{*3}	JWSP-XM20NSL-□□	JWSP-XM20NFL-□□	
	For servomotors with holding brakes (Set of two cables ^{*4})	Straight plug	JWSP-XM20BSS-□□	JWSP-XM20BFS-□□	
		Right-angle plug ^{*3}	JWSP-XM20BSL-□□	JWSP-XM20BFL-□□	
					
					

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Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXA-30 (3.0 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM30NSS-□□	JWSP-XM30NFS-□□	
		Right-angle plug* ³	JWSP-XM30NSL-□□	JWSP-XM30NFL-□□	
	For servomotors with holding brakes (Set of two cables* ⁴)	Straight plug	JWSP-XM30BSS-□□	JWSP-XM30BFS-□□	
		Right-angle plug* ³	JWSP-XM30BSL-□□	JWSP-XM30BFL-□□	
SGMXA-40, -50 (4.0 kW, 5.0 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM40NSS-□□	JWSP-XM40NFS-□□	
		Right-angle plug* ³	JWSP-XM40NSL-□□	JWSP-XM40NFL-□□	
	For servomotors with holding brakes (Set of two cables* ⁴)	Straight plug	JWSP-XM40BSS-□□	JWSP-XM40BFS-□□	
		Right-angle plug* ³	JWSP-XM40BSL-□□	JWSP-XM40BFL-□□	
SGMXA-70 (7.0 kW)	For servomotors without holding brakes	Straight plug	—	JWSP-XM70NFS-□□	
		Right-angle plug* ³	—	JWSP-XM70NFL-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

*3. The lead installation direction is away from the load. Consult your Yaskawa representative for other lead installation directions.

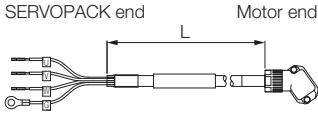
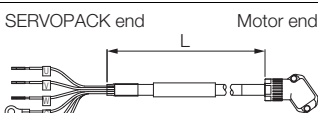
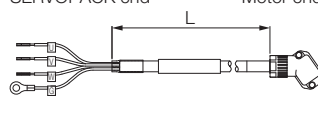
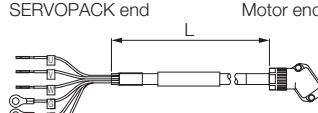
4.1 Servomotor Main Circuit Cable

4.1.2 SGM7A, SGMXA

- *4. This order number is for a set of two cables (main power supply cable and holding brake cable).
 When you purchase them separately, the order numbers for main power supply cables are the same as for a servomotor without a holding brake.
 The following order numbers are for a holding brake cable. These standard cables are flexible cables.
- Straight plug: JWSP-XB0FS-□□
 - Right-angle plug: JWSP-XB0FL-□□

Note: If you need a cable with a length of 20 m to 50 m, consider the operating conditions and specify a suitable length.

SGMXA-A5□□□□□□1 to -10□□□□□□1 (standard specifications)

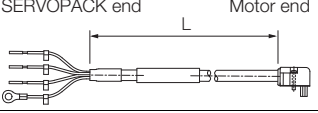
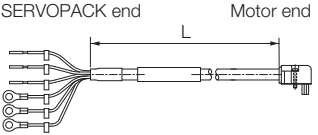
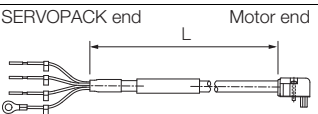
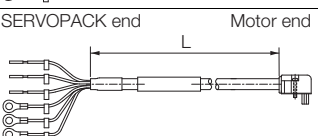
Servomotor Model	Name	Cable Direction	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXA-A5 to -06 (50 W to 600 W)	For servomotors without holding brakes	Load side	JWSP-XMA5NS1-□□	JWSP-XMA5NF1-□□	
		Non-load side	JWSP-XMA5NS2-□□	JWSP-XMA5NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XMA5BS1-□□	JWSP-XMA5BF1-□□	
		Non-load side	JWSP-XMA5BS2-□□	JWSP-XMA5BF2-□□	
SGMXA-08 to -10 (750 W to 1.0 W)	For servomotors without holding brakes	Load side	JWSP-XM08NS1-□□	JWSP-XM08NF1-□□	
		Non-load side	JWSP-XM08NS2-□□	JWSP-XM08NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XM08BS1-□□	JWSP-XM08BF1-□□	
		Non-load side	JWSP-XM08BS2-□□	JWSP-XM08BF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

4.1.3 SGM7P, SGMXP

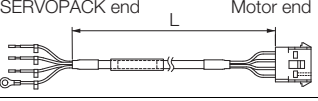
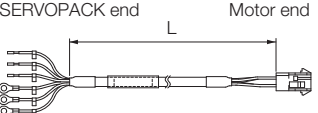
SGM7P-01 to -04

Servomotor Model	Name	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
SGM7P-01 (100 W)	For servomotors without holding brakes	JZSP-CSM01-□□-E	JZSP-CSM21-□□-E	
	For servomotors with holding brakes	JZSP-CSM11-□□-E	JZSP-CSM31-□□-E	
SGM7P-02, -04 (200 W, 400 W)	For servomotors without holding brakes	JZSP-CSM02-□□-E	JZSP-CSM22-□□-E	
	For servomotors with holding brakes	JZSP-CSM12-□□-E	JZSP-CSM32-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

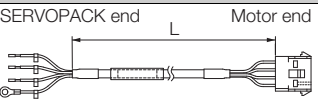
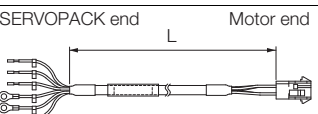
SGM□P-08

Servomotor Model	Name	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
SGM□P-08 (750 W)	For servomotors without holding brakes	JZSP-CMM00-□□-E	JZSP-CMM01-□□-E	
	For servomotors with holding brakes	JZSP-CMM10-□□-E	JZSP-CMM11-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

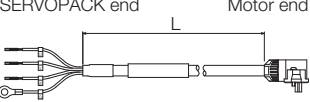
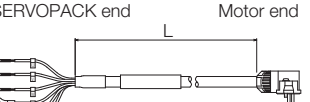
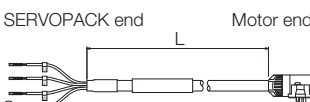
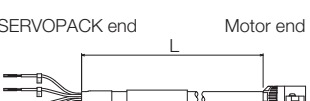
SGM□P-15

Servomotor Model	Name	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
SGM□P-15 (1.5 kW)	For servomotors without holding brakes	JZSP-CMM20-□□-E	—	
	For servomotors with holding brakes	JZSP-CMM30-□□-E	—	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

SGMXP-01□□□□□□2 to -04□□□□□□2 (Σ -7 compatible specifications)

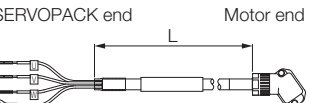
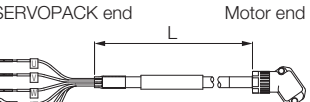
Servomotor Model	Name	Cable Direction	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXP-01 (100 W)	For servomotors without holding brakes	Load side	JZSP-C7M10F-□□-E	JZSP-C7M12F-□□-E	
		Non-load side	JZSP-C7M10G-□□-E	JZSP-C7M12G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M13F-□□-E	JZSP-C7M14F-□□-E	
		Non-load side	JZSP-C7M13G-□□-E	JZSP-C7M14G-□□-E	
SGMXP-02 to -04 (200 W to 400 W)	For servomotors without holding brakes	Load side	JZSP-C7M20F-□□-E	JZSP-C7M22F-□□-E	
		Non-load side	JZSP-C7M20G-□□-E	JZSP-C7M22G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M23F-□□-E	JZSP-C7M24F-□□-E	
		Non-load side	JZSP-C7M23G-□□-E	JZSP-C7M24G-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

Note: You can also use the cables for the SGM7P (JZSP-CSM□□-□□-E). The protective structure will be IP65 if you use the cables for the SGM7P.

SGMXP-01□□□□□□1 to -04□□□□□□1 (standard specifications)

Servomotor Model	Name	Cable Direction	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXP-01 to -04 (100 W to 400 W)	For servomotors without holding brakes	Load side	JWSP-XMA5NS1-□□	JWSP-XMA5NF1-□□	
		Non-load side	JWSP-XMA5NS2-□□	JWSP-XMA5NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XMA5BS1-□□	JWSP-XMA5BF1-□□	
		Non-load side	JWSP-XMA5BS2-□□	JWSP-XMA5BF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

4.1.4

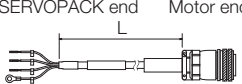
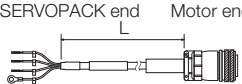
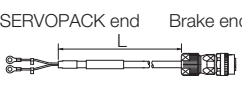
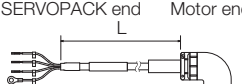
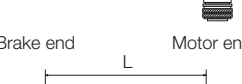
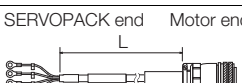
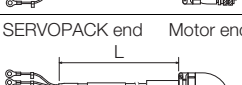
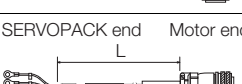
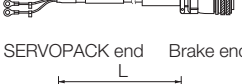
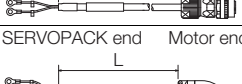
SGM7G, SGMXG

SGM□G-03, -05

Servomotor Model	Name	Order Number*1, *2	Appearance
SGM□G-03, -05 (300 W, 450 W)	For servomotors without holding brakes	JZSP-CVM21-□□-E	SERVOPACK end Motor end L
	For servomotors with holding brakes	JZSP-CVM41-□□-E	SERVOPACK end Motor end L

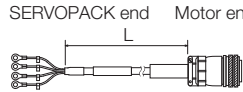
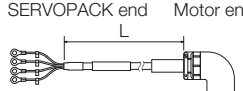
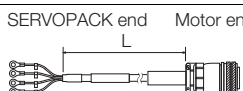
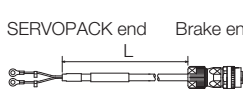
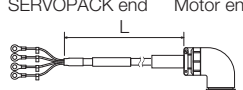
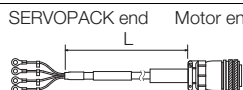
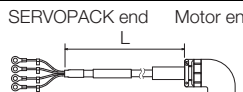
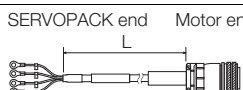
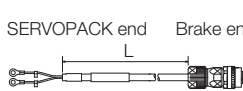
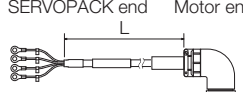
*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).
*2. These standard cables are flexible cables. The recommended bending radius (R) is 90 mm or larger.

SGM7G-09 to -1E

Servomotor Model	Name	Connector Specification	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
SGM7G-09, -13 (850 W, 1.3 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVA101-□□-E	JZSP-UVA121-□□-E	
		Right-angle plug	JZSP-UVA102-□□-E	JZSP-UVA122-□□-E	
	For servomotors with holding brakes (Set of two cables ^{*3})	Straight plug	JZSP-UVA131-□□-E	JZSP-UVA141-□□-E	
		Right-angle plug	JZSP-UVA132-□□-E	JZSP-UVA142-□□-E	
					
					
SGM7G-20 (1.8 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVA301-□□-E	JZSP-UVA321-□□-E	
		Right-angle plug	JZSP-UVA302-□□-E	JZSP-UVA322-□□-E	
	For servomotors with holding brakes (Set of two cables ^{*3})	Straight plug	JZSP-UVA331-□□-E	JZSP-UVA341-□□-E	
		Right-angle plug	JZSP-UVA332-□□-E	JZSP-UVA342-□□-E	
					
					

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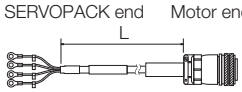
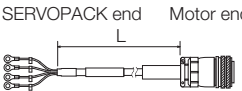
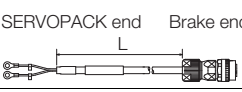
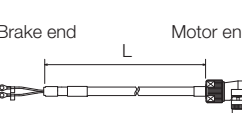
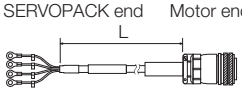
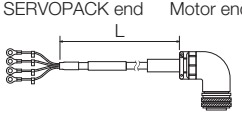
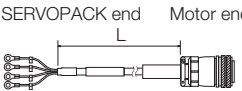
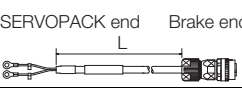
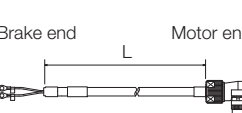
Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGM7G-30 (2.4 kW) (when used in combination with the SGD7S-200A)	For servomotors without holding brakes	Straight plug	JZSP-UVA601-□□-E	JZSP-UVA621-□□-E	
		Right-angle plug	JZSP-UVA602-□□-E	JZSP-UVA622-□□-E	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JZSP-UVA631-□□-E	JZSP-UVA641-□□-E	
					
		Right-angle plug	JZSP-UVA632-□□-E	JZSP-UVA642-□□-E	
					
SGM7G-30, -44 (2.9 kW, 4.4 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVA701-□□-E	JZSP-UVA721-□□-E	
		Right-angle plug	JZSP-UVA702-□□-E	JZSP-UVA722-□□-E	
	For Servomotors with Holding Brakes (Set of two cables* ³)	Straight plug	JZSP-UVA731-□□-E	JZSP-UVA741-□□-E	
					
		Right-angle plug	JZSP-UVA732-□□-E	JZSP-UVA742-□□-E	
					

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4.1 Servomotor Main Circuit Cable

4.1.4 SGM7G, SGMXG

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Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGM7G-55, -75 (5.5 kW, 7.5 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVAA01-□□-E	JZSP-UVAA21-□□-E	
		Right-angle plug	JZSP-UVAA02-□□-E	JZSP-UVAA22-□□-E	
	For Servomotors with Holding Brakes (Set of two cables* ³)	Straight plug	JZSP-UVAA31-□□-E	JZSP-UVAA41-□□-E	
					
		Right-angle plug	JZSP-UVAA32-□□-E	JZSP-UVAA42-□□-E	
					
SGM7G-1A, -1E (11 kW, 15 kW)	For servomotors without holding brakes	Straight plug	JZSP-UVAB01-□□-E	JZSP-UVAB21-□□-E	
		Right-angle plug	JZSP-UVAB02-□□-E	JZSP-UVAB22-□□-E	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JZSP-UVAB31-□□-E	JZSP-UVAB41-□□-E	
					
		Right-angle plug	JZSP-UVAB32-□□-E	JZSP-UVAB42-□□-E	
					

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

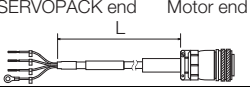
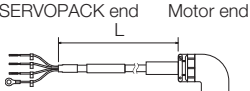
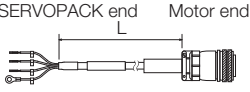
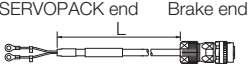
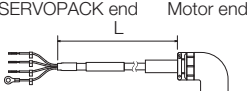
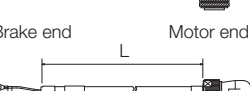
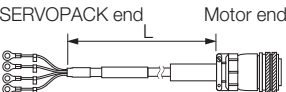
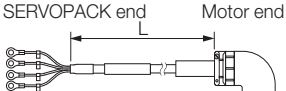
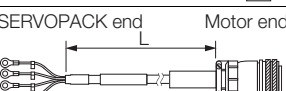
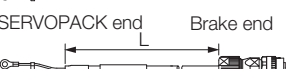
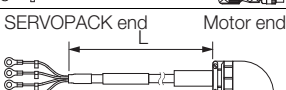
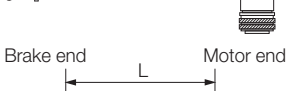
*3. This order number is for a set of two cables (main power supply cable and holding brake cable).
When you purchase them separately, the order numbers for main power supply cables are the same as for a servomotor without a holding brake.
The following order numbers are for a holding brake cable. These standard cables are flexible cables.

- Straight plug: JZSP-U7B23-□□-E
- Right-angle plug: JZSP-U7B24-□□-E

Note: If you need a cable with a length of 20 m to 50 m, consider the operating conditions and specify a suitable length.

SGMXG-09 to -1E

Information The SGMXG servomotor can use the cables for the SGM7G servomotor.

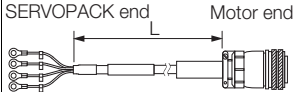
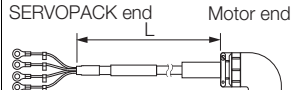
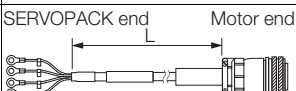
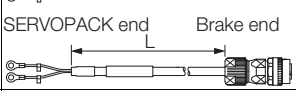
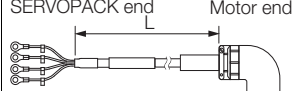
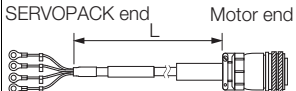
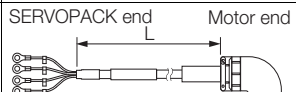
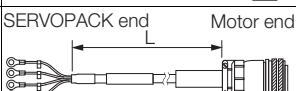
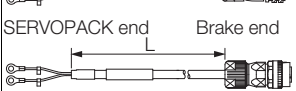
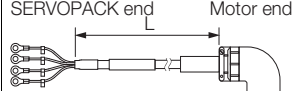
Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXG-09, -13 (850 W, 1.3 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM15NSS-□□	JWSP-XM15NFS-□□	
		Right-angle plug	JWSP-XM15NSL-□□	JWSP-XM15NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM15BSS-□□	JWSP-XM15BFS-□□	 
		Right-angle plug	JWSP-XM15BSL-□□	JWSP-XM15BFL-□□	 
	For servomotors without holding brakes	Straight plug	JWSP-XM20NSS-□□	JWSP-XM20NFS-□□	
		Right-angle plug	JWSP-XM20NSL-□□	JWSP-XM20NFL-□□	
SGMXG-20 (1.8 kW)	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM20BSS-□□	JWSP-XM20BFS-□□	 
		Right-angle plug	JWSP-XM20BSL-□□	JWSP-XM20BFL-□□	 

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4.1 Servomotor Main Circuit Cable

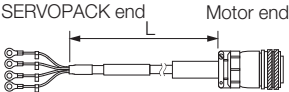
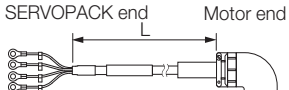
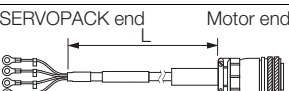
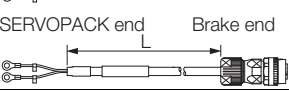
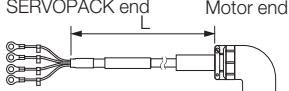
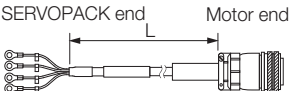
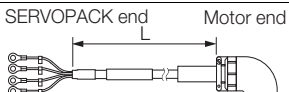
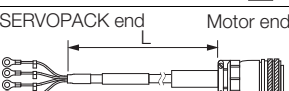
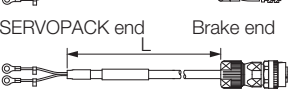
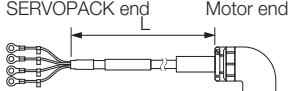
4.1.4 SGM7G, SGMXG

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Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXG-30 (2.9 kW) (when used in combination with the SGDXS-200A)	For servomotors without holding brakes	Straight plug	JWSP-XM30NSS-□□	JWSP-XM30NFS-□□	
		Right-angle plug	JWSP-XM30NSL-□□	JWSP-XM30NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM30BSS-□□	JWSP-XM30BFS-□□	
					
		Right-angle plug	JWSP-XM30BSL-□□	JWSP-XM30BFL-□□	
					
SGMXG-30, -44 (2.9 kW, 4.4 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM40NSS-□□	JWSP-XM40NFS-□□	
		Right-angle plug	JWSP-XM40NSL-□□	JWSP-XM40NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM40BSS-□□	JWSP-XM40BFS-□□	
					
		Right-angle plug	JWSP-XM40BSL-□□	JWSP-XM40BFL-□□	
					

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Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXG-55, -75 (5.5 kW, 7.5 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM55NSS-□□	JWSP-XM55NFS-□□	
		Right-angle plug	JWSP-XM55NSL-□□	JWSP-XM55NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM55BSS-□□	JWSP-XM55BFS-□□	
		Right-angle plug	JWSP-XM55BSL-□□	JWSP-XM55BFL-□□	
					
					
SGMXG-1A, -1E (11 kW, 15 kW)	For servomotors without holding brakes	Straight plug	—	JWSP-XM1ANFS-□□	
		Right-angle plug	—	JWSP-XM1ANFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	—	JWSP-XM1ABFS-□□	
		Right-angle plug	—	JWSP-XM1ABFL-□□	
					
					

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

*3. This order number is for a set of two cables (main power supply cable and holding brake cable). When you purchase them separately, the order numbers for main power supply cables are the same as for a servomotor without a holding brake.

The following order numbers are for a holding brake cable. These standard cables are flexible cables.

- Straight plug: JWSP-XB0FS-□□
- Right-angle plug: JWSP-XB0FL-□□

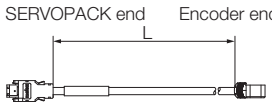
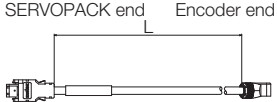
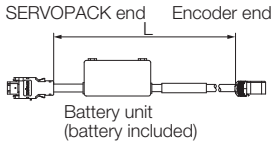
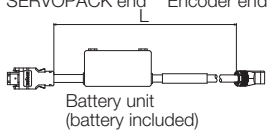
Note: If you need a cable with a length of 20 m to 50 m, consider the operating conditions and specify a suitable length.

4.2 Encoder Cable

4.2.1 SGM7J, SGMXJ

Encoder Cable of 20 m or Less

◆ SGM7J-, SGMXJ-□□□□□□□□2 (Σ-7 compatible specifications)

Name	Cable Direction	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Load side	JZSP-C7PI0D-□□-E	JZSP-C7PI2D-□□-E	
	Non-load side	JZSP-C7PI0E-□□-E	JZSP-C7PI2E-□□-E	
For absolute encoder: With battery unit* ³	Load side	JZSP-C7PA0D-□□-E	JZSP-C7PA2D-□□-E	
	Non-load side	JZSP-C7PA0E-□□-E	JZSP-C7PA2E-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Relay Encoder Cables (Exceeding 20 m)

◆ SGM7J-, SGMXJ-□□□□□□□□2 (Σ-7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Cable installed toward load	0.3	JZSP-C7PRCD-E	
Relay encoder cable (for all types of encoders) Cable installed away from load	0.3	JZSP-C7PRCE-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*	0.3	JZSP-CSP12-E	

- * In the following cases, these cables are not required.
- When using a servomotor equipped with a batteryless absolute encoder.
 - When connecting a battery to the host controller.
 - When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXJ-□□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Load side	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	Non-load side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit* ³	Load side	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	Non-load side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

- *3. In the following cases, use an encoder cable for batteryless absolute encoders.
- When connecting a battery to the host controller.
 - When using an absolute encoder as an incremental encoder.

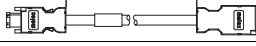
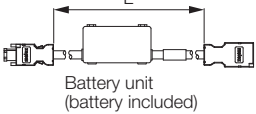
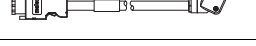
Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXJ-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
Encoder Cable (with connectors on both ends) ^{*3}	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	SERVOPACK end Encoder end 
	For absolute encoder: with battery unit ^{*4}		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	SERVOPACK end Encoder end Battery unit (battery included) 
Encoder Cable	Load side	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	SERVOPACK end Encoder end 
	Non-load side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

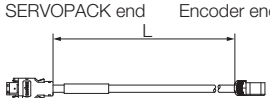
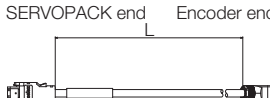
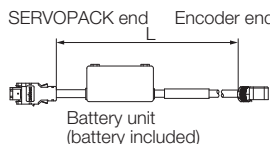
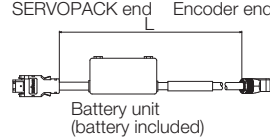
*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

4.2.2 SGM7A, SGMXA

Encoder Cable of 20 m or Less

◆ SGM7A-A5 to -10, SGMXA-A5□□□□□□2 to -10□□□□□□2 (Σ-7 compatible specifications)

Name	Cable Direction	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Load side	JZSP-C7PI0D-□□-E	JZSP-C7PI2D-□□-E	
	Non-load side	JZSP-C7PI0E-□□-E	JZSP-C7PI2E-□□-E	
For absolute encoder: with battery unit* ³	Load side	JZSP-C7PA0D-□□-E	JZSP-C7PA2D-□□-E	
	Non-load side	JZSP-C7PA0E-□□-E	JZSP-C7PA2E-□□-E	

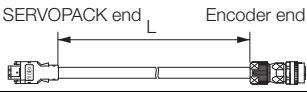
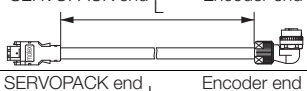
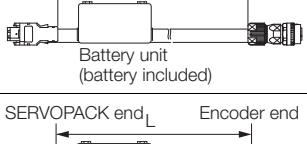
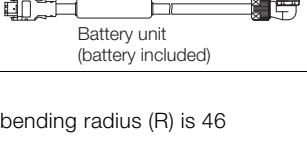
*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGM7A-15 to -70

Name	Connector Specification	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Straight plug	JZSP-CVP01-□□-E	JZSP-CVP11-□□-E	
	Right-angle plug	JZSP-CVP02-□□-E	JZSP-CVP12-□□-E	
For absolute encoder: with battery unit* ³	Straight plug	JZSP-CVP06-□□-E	JZSP-CVP26-□□-E	
	Right-angle plug	JZSP-CVP07-□□-E	JZSP-CVP27-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXA-15□□□□□□2 to -70□□□□□□2 (Σ-7 compatible specifications)

Information SGMXA-15 to -70 Σ-7 compatible specification servomotors can also use the cables for the SGM7G servomotor.

Name	Connector Specification	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders	Straight plug	JWSP-XPISS-□□	JWSP-XPIFS-□□	
	Right-angle plug ^{*4, *5}	JWSP-XPISL-□□	JWSP-XPIFL-□□	
For absolute encoder: with battery unit ^{*3}	Straight plug	JWSP-XPASS-□□	JWSP-XPAFS-□□	
	Right-angle plug ^{*4, *5}	JWSP-XPASL-□□	JWSP-XPAFL-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

*4. The lead installation direction is away from the load. Consult your Yaskawa representative for other lead installation directions.

*5. An encoder cable with a right-angle plug cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable with a straight plug.

Relay Encoder Cables (Exceeding 20 m)

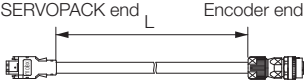
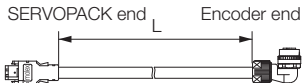
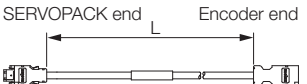
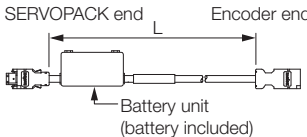
◆ SGM7A-A5 to -10, SGMXA-A5□□□□□□2 to -10□□□□□□2 (Σ-7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Cable installed toward load	0.3	JZSP-C7PRCD-E	
Relay encoder cable (for all types of encoders) Cable installed away from load	0.3	JZSP-C7PRCE-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*	0.3	JZSP-CSP12-E	

* In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGM7A-15 to -70, SGMXA-15□□□□□□2 to -70□□□□□□2 (Σ-7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Straight plug	0.3	JZSP-CVP01-E	
Relay encoder cable (for all types of encoders) Right-angle plug*1, *2	0.3	JZSP-CVP02-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*3	0.3	JZSP-CSP12-E	

*1. The lead installation direction of the right-angle plug connector is the non-load side. Consult your Yaskawa representative for other lead installation directions.

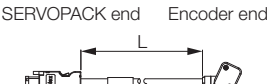
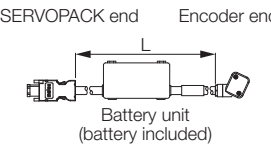
*2. An encoder cable with a right-angle plug cannot be used for the SGM7A-70 (7.0 kW). Use an encoder cable with a straight plug.

*3. In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXA-□□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number*1		Appearance
		Standard Cable	Flexible Cable*2	
For batteryless absolute encoders	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side*3	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit*4	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side*3	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. An encoder cable installed toward the left side cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable installed toward the right side.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

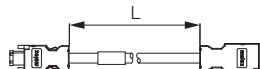
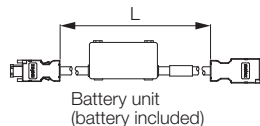
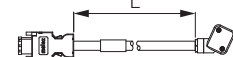
Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXA-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
Encoder Cable (with connectors on both ends) ^{*3}	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	
	For absolute encoder: with battery unit ^{*4}		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	
Encoder cable	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side ^{*5}	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

*5. An encoder cable installed toward the left side cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable installed toward the right side.

4.2.3 SGM7P, SGMXP

Encoder Cable of 20 m or Less

◆ SGM7P-01 to -04, SGMXP-01□□□□□□2 to -04□□□□□□2 (Σ-7 compatible specifications)

Name	Cable Direction	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Load side	JZSP-C7PI0D-□□-E	JZSP-C7PI2D-□□-E	
	Non-load side* ³	JZSP-C7PI0E-□□-E	JZSP-C7PI2E-□□-E	
For absolute encoder: with battery unit* ⁴	Load side	JZSP-C7PA0D-□□-E	JZSP-C7PA2D-□□-E	
	Non-load side* ³	JZSP-C7PA0E-□□-E	JZSP-C7PA2E-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. An encoder cable installed toward the non-load side cannot be used for the SGM7P.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGM7P-08, -15, SGMXP-08□□□□□□2, -15□□□□□□2 (Σ-7 compatible specifications)

Name	Order Number* ¹		Appearance
	Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders Cable installed toward load	JZSP-CMP00-□□-E	JZSP-CMP10-□□-E	
For absolute encoder: with battery unit* ³ Cable installed toward load	JZSP-CSP19-□□-E	JZSP-CSP29-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Relay Encoder Cables (Exceeding 20 m)

◆ SGM7P, SGMXP-□□□□□□□□2 (Σ-7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Cable installed toward load	0.3	JZSP-C7PRCD-E	
Relay encoder cable (for all types of encoders) Cable installed away from load*1	0.3	JZSP-C7PRCE-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*2	0.3	JZSP-CSP12-E	

*1. An encoder cable installed toward the non-load side cannot be used for the SGM7P.

*2. In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXP-□□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number*1		Appearance
		Standard Cable	Flexible Cable*2	
For batteryless absolute encoders	Load side	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	Non-load side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit*3	Load side	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	Non-load side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

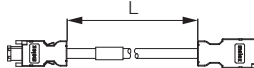
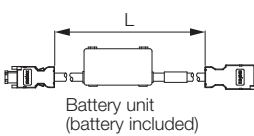
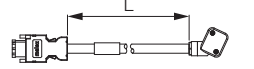
Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXP-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
Encoder cable (with connectors on both ends) ^{*3}	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	SERVOPACK end Encoder end 
	For absolute encoder: with battery unit ^{*4}		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	SERVOPACK end Encoder end  Battery unit (battery included)
Encoder cable	Load side	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	SERVOPACK end Encoder end 
	Non-load side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

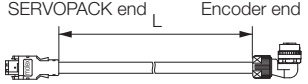
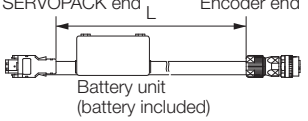
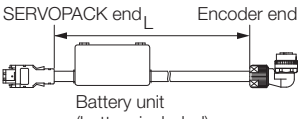
*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

4.2.4 SGM7G, SGMXG

Encoder Cable of 20 m or Less

◆ SGM7G-

Name	Connector Specification	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders	Straight plug	JZSP-CVP01-□□-E	JZSP-CVP11-□□-E	
	Right-angle plug	JZSP-CVP02-□□-E	JZSP-CVP12-□□-E	
For absolute encoder: with battery unit ^{*3}	Straight plug	JZSP-CVP06-□□-E	JZSP-CVP26-□□-E	
	Right-angle plug	JZSP-CVP07-□□-E	JZSP-CVP27-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20)

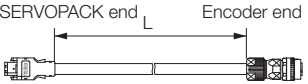
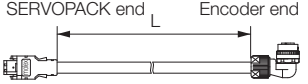
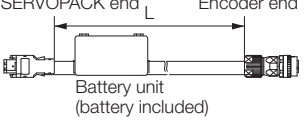
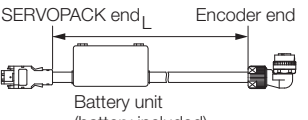
*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXG-□□□□□□□□2 (Σ-7 compatible specifications)

Information The SGMXG servomotor can use the cables for the SGM7G servomotor.

Name	Connector Specification	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders	Straight plug	JWSP-XPISS□□	JWSP-XPIFS-□□	
	Right-angle plug ^{*3}	JWSP-XPISL-□□	JWSP-XPIFL-□□	
For absolute encoder: with battery unit ^{*4}	Straight plug	JWSP-XPASS-□□	JWSP-XPAFS-□□	
	Right-angle plug ^{*3}	JWSP-XPASL-□□	JWSP-XPAFL-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

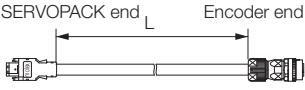
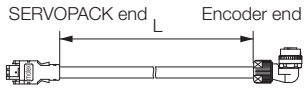
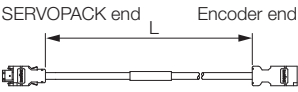
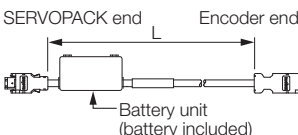
*3. The lead installation direction is away from the load. Consult your Yaskawa representative for other lead installation directions.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Relay Encoder Cables (Exceeding 20 m)

◆ SGM7G-, SGMXG-□□□□□□□2 (Σ-7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Straight plug	0.3	JZSP-CVP01-E	
Relay encoder cable (for all types of encoders) Right-angle plug* ¹		JZSP-CVP02-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit* ²	0.3	JZSP-CSP12-E	

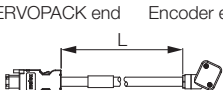
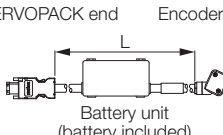
*1. The lead installation direction of the right-angle plug connector is the non-load side. Consult your Yaskawa representative for other lead installation directions.

*2. In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXG-□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Left side	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	Right side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit* ³	Left side	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	Right side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

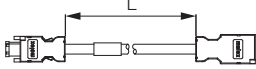
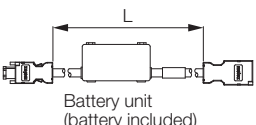
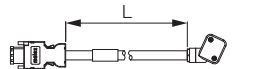
Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXG-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
Encoder cable (with connectors on both ends) ^{*3}	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	SERVOPACK end Encoder end 
	For absolute encoder: with battery unit ^{*4}		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	SERVOPACK end Encoder end  Battery unit (battery included)
Encoder cable	Load side	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	SERVOPACK end Encoder end 
	Non-load side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

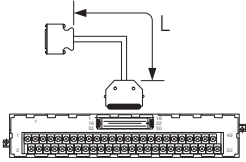
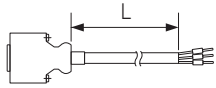
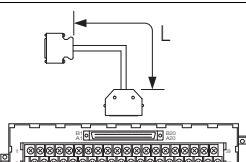
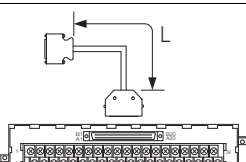
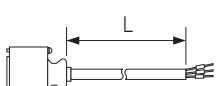
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

4.3

Cables for Connecting SERVOPACKs

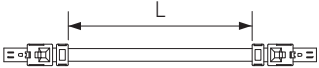
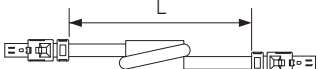
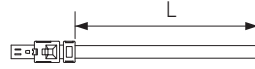
4.3.1

I/O Signal Cables

Model	Interface	Name	Length (L)	Order Number	Appearance
SGD□S-	Analog voltage/ pulse train references	Connector kit (soldered)	–	JZSP-CSI9-1-E	
		Connector-terminal block converter unit (with cable)	0.5 m	JUSP-TA50PG-E	
			1 m	JUSP-TA50PG-1-E	
			2 m	JUSP-TA50PG-2-E	
		Cable with loose wires at one end (loose wires on peripheral device end)	1 m	JZSP-CSI01-1-E	
			2 m	JZSP-CSI01-2-E	
			3 m	JZSP-CSI01-3-E	
	With MECHATROLINK -4/III communi- cations references	Connector kit (soldered)	–	JZSP-CSI9-2-E	
		Connector-terminal block converter unit (with cable)	0.5 m	JUSP-TA26P-E	
			1 m	JUSP-TA26P-1-E	
			2 m	JUSP-TA26P-2-E	
		Cable with loose wires at one end (loose wires on peripheral device end)	1 m	JZSP-CSI02-1-E	
			2 m	JZSP-CSI02-2-E	
			3 m	JZSP-CSI02-3-E	
SGD□W-	With MECHATROLINK -4/III communi- cations references	Connector kit (soldered)	–	DP9420007-E	
		Connector-terminal block converter unit (with cable)	0.5 m	JUSP-TA36P-E	
			1 m	JUSP-TA36P-1-E	
			2 m	JUSP-TA36P-2-E	
		Cable with loose wires at one end (loose wires on peripheral device end)	1 m	JZSP-CSI03-1-E	
			2 m	JZSP-CSI03-2-E	
			3 m	JZSP-CSI03-3-E	

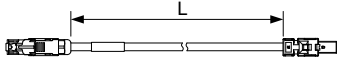
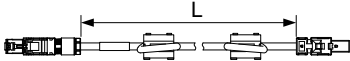
4.3.2 MECHATROLINK Communications Cables

Σ -7 Series

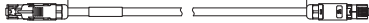
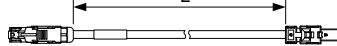
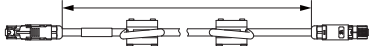
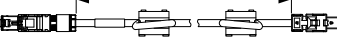
Interface	Name	Length (L)	Order Number	Appearance
MECHATROLINK-III communications reference	Cable with connectors on both ends	0.2 m	JEPMC-W6012-A2-E	
		0.5 m	JEPMC-W6012-A5-E	
		1 m	JEPMC-W6012-01-E	
		2 m	JEPMC-W6012-02-E	
		3 m	JEPMC-W6012-03-E	
		4 m	JEPMC-W6012-04-E	
		5 m	JEPMC-W6012-05-E	
		10 m	JEPMC-W6012-10-E	
		20 m	JEPMC-W6012-20-E	
		30 m	JEPMC-W6012-30-E	
		50 m	JEPMC-W6012-50-E	
	Cable with connectors on both ends (with ferrite cores)	10 m	JEPMC-W6013-10-E	
		20 m	JEPMC-W6013-20-E	
		30 m	JEPMC-W6013-30-E	
		50 m	JEPMC-W6013-50-E	
	Cable with loose wires at one end	0.5 m	JEPMC-W6014-A5-E	
		1 m	JEPMC-W6014-01-E	
		3 m	JEPMC-W6014-03-E	
		5 m	JEPMC-W6014-05-E	
		10 m	JEPMC-W6014-10-E	
		30 m	JEPMC-W6014-30-E	
		50 m	JEPMC-W6014-50-E	

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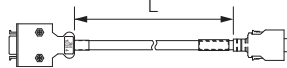
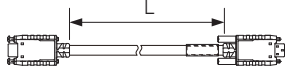
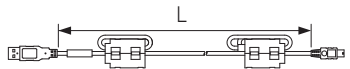
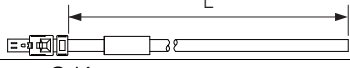
Interface	Name		Length (L)	Order Number	Appearance
MECHATROLINK-4 communications references	(without ferrite cores)	RJ-45 connectors on both ends	0.2 m	JZSP-CM3RRM0-00P2-E	
			0.5 m	JZSP-CM3RRM0-00P5-E	
			1 m	JZSP-CM3RRM0-01-E	
			2 m	JZSP-CM3RRM0-02-E	
			3 m	JZSP-CM3RRM0-03-E	
			4 m	JZSP-CM3RRM0-04-E	
			5 m	JZSP-CM3RRM0-05-E	
			10 m	JZSP-CM3RRM0-10-E	
			20 m	JZSP-CM3RR00-20-E	
			30 m	JZSP-CM3RR00-30-E	
		RJ-45 connector on one end Industrial mini I/O (IMI) connector on one end	0.2 m	JZSP-CM3RMM0-00P2-E	
			0.5 m	JZSP-CM3RMM0-00P5-E	
			1 m	JZSP-CM3RMM0-01-E	
			2 m	JZSP-CM3RMM0-02-E	
			3 m	JZSP-CM3RMM0-03-E	
			4 m	JZSP-CM3RMM0-04-E	
			5 m	JZSP-CM3RMM0-05-E	
			10 m	JZSP-CM3RMM0-10-E	
			20 m	JZSP-CM3RM00-20-E	
			30 m	JZSP-CM3RM00-30-E	
	(with ferrite cores)	RJ-45 connectors on both ends	0.3 m	JZSP-CM3RRM1-00P3-E	
			3 m	JZSP-CM3RRM1-03-E	
			10 m	JZSP-CM3RRM1-10-E	
			20 m	JZSP-CM3RR01-20-E	
			30 m	JZSP-CM3RR01-30-E	
			50 m	JZSP-CM3RR01-50-E	
		RJ-45 connector on one end Industrial mini I/O (IMI) connector on one end	0.3 m	JZSP-CM3RMM1-00P3-E	
			3 m	JZSP-CM3RMM1-03-E	
			10 m	JZSP-CM3RMM1-10-E	
			20 m	JZSP-CM3RM01-20-E	
			30 m	JZSP-CM3RM01-30-E	
			50 m	JZSP-CM3RM01-50-E	

Σ-X Series

Interface	Name		Length (L)	Order Number	Appearance
MECHATROLINK-4/III communications references	(without ferrite cores)	RJ-45 connectors on both ends	0.2 m	JZSP-CM3RRM0-00P2-E	
			0.5 m	JZSP-CM3RRM0-00P5-E	
			1 m	JZSP-CM3RRM0-01-E	
			2 m	JZSP-CM3RRM0-02-E	
			3 m	JZSP-CM3RRM0-03-E	
			4 m	JZSP-CM3RRM0-04-E	
			5 m	JZSP-CM3RRM0-05-E	
			10 m	JZSP-CM3RRM0-10-E	
			20 m	JZSP-CM3RR00-20-E	
			30 m	JZSP-CM3RR00-30-E	
	(without ferrite cores)	RJ-45 connector on one end Industrial mini I/O (IMI) connector on one end	0.2 m	JZSP-CM3RMM0-00P2-E	
			0.5 m	JZSP-CM3RMM0-00P5-E	
			1 m	JZSP-CM3RMM0-01-E	
			2 m	JZSP-CM3RMM0-02-E	
			3 m	JZSP-CM3RMM0-03-E	
			4 m	JZSP-CM3RMM0-04-E	
			5 m	JZSP-CM3RMM0-05-E	
			10 m	JZSP-CM3RMM0-10-E	
			20 m	JZSP-CM3RM00-20-E	
			30 m	JZSP-CM3RM00-30-E	
	(with ferrite cores)	RJ-45 connectors on both ends	0.3 m	JZSP-CM3RRM1-00P3-E	
			3 m	JZSP-CM3RRM1-03-E	
			10 m	JZSP-CM3RRM1-10-E	
			20 m	JZSP-CM3RR01-20-E	
			30 m	JZSP-CM3RR01-30-E	
			50 m	JZSP-CM3RR01-50-E	
		RJ-45 connector on one end Industrial mini I/O (IMI) connector on one end	0.3 m	JZSP-CM3RMM1-00P3-E	
			3 m	JZSP-CM3RMM1-03-E	
			10 m	JZSP-CM3RMM1-10-E	
			20 m	JZSP-CM3RM01-20-E	
			30 m	JZSP-CM3RM01-30-E	
			50 m	JZSP-CM3RM01-50-E	

4.3.3 Other Cables

The specifications of the other cables for the Σ -7 series and Σ -X series are identical.

Name		Length (L)	Order Number	Appearance
Analog monitor cable		1 m	JZSP-CA01-E	
Digital operator conversion cable		0.3 m	JZSP-CVS05-A3-E* ¹	
			JZSP-CVS07-A3-E* ²	
Computer cable		2.5 m	JZSP-CVS06-02-E	
Safety function device cable	Cables with connectors* ³	1 m	JZSP-CVH03-01-E	
		3 m	JZSP-CVH03-03-E	
		Connector kit* ⁴	—	

*1. This converter cable is required to use the Σ -III-series digital operator (JZSP-OP05A).

*2. This converter cable is required to prevent the cable from disconnecting from the digital operator.

*3. When using safety functions, connect this cable to the safety function devices.

When not using safety functions, connect the enclosed safety jumper connector (JZSP-CVH05-E) to the SERVOPACK.

*4. Use the connector kit when you make cables yourself.

4.4 Digital Operator

Model	Interface	Order Number
SGD7S-	All	JUSP-OP05A-1-E
SGDXS-	Analog voltage/pulse train references	JUSP-OP05A-1-E JUSP-OP07A-E
	MECHATROLINK-4/III communications references	JUSP-OP07A-E

4.5 Noise Filters

The specifications of the noise filters for the Σ -7 series and Σ -X series are identical.

• SGD□S-

Main Circuit Power Supply	SERVOPACK		Order Number
	Maximum Applicable Motor Capacity [kW]	Model: SGD□S-	
Single-phase, 200 VAC	0.05	R70A	HF2010A-UPF
	0.1	R90A	
	0.2	1R6A	
	0.4	2R8A	
	0.75	5R5A	HF2020A-UPF-2BB
	1.5	120A	HF2030A-UPF-2BB
Three-phase, 200 VAC	0.05	R70A	HF3010C-SZC
	0.1	R90A	
	0.2	1R6A	
	0.4	2R8A	
	0.5	3R8A	
	0.75	5R5A	HF3020C-SZC
	1.0	7R6A	
	1.5	120A	
	2.0	180A	
	3.0	200A	HF3030C-SZC
	5.0	330A	HF3050C-SZC-47EDD
	6.0	470A	
	7.5	550A	HF3060C-SZC
	11	590A	HF3100C-SZC
	15	780A	

• SGD□W-

Main Circuit Power Supply	SERVOPACK		Order Number
	Maximum Applicable Motor Capacity [kW]	Model: SGD□W-	
Single-phase, 200 VAC	0.2	1R6A	HF2010A-UPF
	0.4	2R8A	HF2020A-UPF-2BB
	0.75	5R5A	HF2030A-UPF-2BB
Three-phase, 200 VAC	0.2	1R6A	HF3010C-SZC
	0.4	2R8A	HF3020C-SZC
	0.75	5R5A	
	1.0	7R6A	

4.6 DC Reactors

The specifications of the DC reactors for the Σ -7 series and Σ -X series are identical.

- SGD□S-

Main Circuit Power Supply	SERVOPACK		Order Number
	Maximum Applicable Motor Capacity [kW]	Model: SGD□S-	
Single-phase, 200 VAC	0.05	R70A	X5071
	0.1	R90A	
	0.2	1R6A	X5070
	0.4	2R8A	X5069
	0.75	5R5A	X5079
	1.5	120A	X5078
Three-phase, 200 VAC	0.05	R70A	X5061
	0.1	R90A	
	0.2	1R6A	
	0.4	2R8A	
	0.5	3R8A	
	0.75	5R5A	
	1.0	7R6A	X5060
	1.5	120A	
	2.0	180A	X5059
	3.0	200A	X5068
	5.0	330A	X008025
	6.0	470A	X008026
	7.5	550A	X008027
	11	590A	X008028
	15	780A	

- SGD□W-

Main Circuit Power Supply	SERVOPACK		Order Number
	Maximum Applicable Motor Capacity [kW]	Model: SGD□W-	
Single-phase, 200 VAC	0.2	1R6A	X5069
	0.4	2R8A	X5079
	0.75	5R5A	X5078
Three-phase, 200 VAC	0.2	1R6A	X5061
	0.4	2R8A	
	0.75	5R5A	X5060
	1.0	7R6A	

4.7 Magnetic Contactors

The specifications of the magnetic contactors for the Σ -7 series and Σ -X series are identical.

• SGD□S-

Main Circuit Power Supply	SERVOPACK		Order Number
	Maximum Applicable Motor Capacity [kW]	Model: SGD□S-	
Single-phase, 200 VAC	0.05	R70A	SC-03
	0.1	R90A	
	0.2	1R6A	
	0.4	2R8A	
	0.75	5R5A	SC-4-1
	1.5	120A	SC-5-1
Three-phase, 200 VAC	0.05	R70A	SC-03
	0.1	R90A	
	0.2	1R6A	
	0.4	2R8A	
	0.5	3R8A	
	0.75	5R5A	SC-4-1
	1.0	7R6A	
	1.5	120A	
	2.0	180A	SC-5-1
	3.0	200A	
	5.0	330A	SC-N1
	6.0	470A	
	7.5	550A	SC-N2
	11	590A	SC-N2S
	15	780A	SC-N3

• SGD□W-

Main Circuit Power Supply	SERVOPACK		Order Number
	Maximum Applicable Motor Capacity [kW]	Model: SGD□W-	
Single-phase, 200 VAC	0.2	1R6A	SC-03
	0.4	2R8A	SC-4-1
	0.75	5R5A	SC-5-1
Three-phase, 200 VAC	0.2	1R6A	SC-03
	0.4	2R8A	SC-4-1
	0.75	5R5A	
	1.0	7R6A	SC-5-1

4.8 Other Peripheral Devices

The specifications of the other peripheral devices for the Σ -7 series and Σ -X series are identical.

Name	Model	Input Voltage
Surge absorber	LT-C12G801WS	Single-phase, 200 VAC
	LT-C32G801WS	Three-phase, 200 VAC
Battery	JZSP-BA01 (ER6V C3N or equivalent)	—
Battery unit	JUSP-BA01-E	
Brake power supply (24-VDC power supply)	Not provided by Yaskawa	
CN8 jumper connector	JZSP-CVH05-E	

Making Settings for Replacement

5

This chapter provides the settings used for replacement.

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- 5.1.2 Exporting Parameters 5-2
- 5.1.3 Parameter Converter 5-2
- 5.1.4 Importing Parameters 5-3

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- 5.2.1 Setting Parameters for Encoder Usage
Method 5-4
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5.3 Backward Compatibility Function 5-7

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Compatibility Selection 5-7

5.1 Converting Parameters

5.1.1 Introduction

The import/export function and the parameter converter function of SigmaWin+ can be used to enable use of the parameters from the Σ -7-series SERVOPACK in the Σ -X-series SERVOPACK. The procedure for parameter conversion is as follows.

Procedure	Description	Reference
1	Export the parameters of the Σ -7-series SERVOPACK.	5.1.2 <i>Exporting Parameters</i> on page 5-2
2	Convert the exported parameters.	5.1.3 <i>Parameter Converter</i> on page 5-2
3	Import the exported parameters to the Σ -X-series SERVOPACK.	5.1.4 <i>Importing Parameters</i> on page 5-3



Important

Use version 5.70 or later of SigmaWin+ to convert the parameters.

Information

To replace a single-axis SERVOPACK (model: SGD7S) with a Σ -X-series two-axis SERVOPACK (model: SGDXW), export the parameters for two axes each, convert each parameter for a Σ -X-series single-axis SERVOPACK (model: SGDXS), and then import each parameter into a Σ -X-series two-axis SERVOPACK as axes A and B.

5.1.2 Exporting Parameters

The operation procedure for exporting SERVOPACK parameters is as follows.

1. Use SigmaWin+ to establish an online connection to the SERVOPACK that contains the parameters to be exported (Σ -7-series SERVOPACK before replacement).
2. Click the [Menu] button in SigmaWin+ to open the Menu window, and click [Edit Parameters].

The Edit Parameters window will be displayed.

3. Click [Export] - [Usrs (SERVOPACK file)].

The Export window will be displayed.

4. Set the storage location of the data to be exported, set the file name, and click the [Save] button.

The export process will be started.

5. Check that the export data is saved to the specified location.

This completes the operation. Proceed to the next step.

5.1.3 Parameter Converter

The operation procedure for converting the exported SERVOPACK parameters is as follows.

1. Click the [Menu] button in SigmaWin+ to open the Menu window, and click [Parameter Converter].

The Parameter Converter window will be displayed.

2. Click the [Browse] button under [Conversion source Previous series], select the parameter data to be exported, and click the [OK] button.

The conversion source data will be displayed in the Parameter Converter window.

3. Click the [Save] button under [Conversion destination Σ -X series], specify the file name and file storage location, and click the [OK] button.

The conversion target file name will be displayed in the Parameter Converter window.

4. To save the conversion log, insert a check mark for [Save the log file (csv) at the same time].
5. Select the SERVOPACK model after replacement.
6. Enter information into the [Comments] box if necessary.
7. Click the [Convert] button.

The parameter conversion process will be started. Once the parameter conversion process is completed, the conversion results will be displayed in the Parameter Converter window.

8. Check the conversion results.
The points requiring special attention are highlighted. For details on the color-coded indicators, check the information at the top right of the window.
9. Click the [Complete] button.
10. Check that the converted results were saved to the specified location.
This completes the operation. Proceed to the next step.

5.1.4 Importing Parameters

The operation procedure for importing the converted parameters into the SERVOPACK after replacement is as follows.

1. Use SigmaWin+ to establish an online connection to the SERVOPACK after replacement (Σ -X-series SERVOPACK).
2. Click the [Menu] button in SigmaWin+ to open the Menu window, and click [Edit Parameters].

The Edit Parameters window will be displayed.

3. Correct the parameter setting values if necessary.
Refer to the following sections for details.
 5.1.3 Parameter Converter on page 5-2: Step 5
 5.2 Parameter Settings on page 5-4

4. Click [Import] - [Usrs (SERVOPACK file)].

The Import window will be displayed.

5. Set the storage location of the data to be imported, set the file name, and click the [Save] button.

The message dialog box will be displayed.

6. Check the information, and click the [Yes] button.

The parameter import process to the SERVOPACK will be started.
This completes the operation.

5.2 Parameter Settings

5.2.1 Setting Parameters for Encoder Usage Method

Absolute encoders only are available for the Σ -X-series servomotors.

And so, if you use a servomotor with an incremental encoder in the Σ -7 series and the following settings are used, A.810 (Encoder Backup Alarm) will occur.

Pn002 to n.□0□□ (Use the encoder according to encoder specifications.)

In this case, change to the following setting. (This is not changed by the parameter converter function.)

Pn002 to n.□1□□ (Use the encoder as an incremental encoder.)

5.2.2 Setting Parameters for Encoder Resolution

Introduction

The encoder resolutions of the servomotors for the Σ -7/ Σ -X series are different.

- Σ -7 series: 20 bits, 24 bits
- Σ -X series: 26 bits

And so, when the old servomotor is replaced with a new one, the parameter settings for the electronic gear ratio or encoder bit count must be changed.

The parameters that are set vary depending on the usage method of the servomotor after replacement as shown below.

Usage Method of Servomotor After Replacement	Required Parameter Settings After Replacement	Reference
Use at encoder resolution of servomotor after replacement	Pn20E (Electronic Gear Ratio (Numerator)) Pn210 (Electronic Gear Ratio (Denominator))	<i>Setting Pn20E and Pn210 (Electronic Gear Ratio) on page 5-5</i>
Use at same encoder resolution as servomotor before replacement*	Pn21D (Encoder Resolution Setting)	<i>Setting Pn21D (Encoder Resolution Setting) on page 5-5</i>

* For Σ -7-series SERVOPACKs, also check the setting value of Pn040 = n.□□X□ (encoder resolution compatibility selection). When Pn040 = n.□□1□ is set, the resolution of the servomotor is recognized as 20 bits even though it is 24 bits.

Setting Pn20E and Pn210 (Electronic Gear Ratio)

If the encoder resolution of the servomotor changes before and after replacement, Pn20E and Pn210 (electronic gear ratio) must be set.

To use the same settings for the reference unit as before replacement, change the electronic gear ratio as shown below.

Encoder Resolution of Servomotor Before Replacement	Electronic Gear Ratio After Replacement Setting of (Pn20E/ Pn210)	Electronic Gear Ratio After Replacement Setting example of (Pn20E/ Pn210)*
20 bits	64 x Electronic gear ratio before replacement	Pn20E = 64, Pn210 = 1
24 bits	4 x Electronic gear ratio before replacement	Pn20E = 4, Pn210 = 1

* This is an example when the electronic gear ratio before replacement was set to 1:1 (Pn20E = 1, Pn210 = 1).

If the reference unit is changed from the value before replacement, set the values calculated by the following formula for Pn20E and Pn210. If the machine reduction gear ratio between the servomotor shaft and the load is given as n/m, where n is the number of load shaft rotations per m servomotor shaft rotations, the settings for the electronic gear ratio can be calculated as follows:

$$\text{Electronic gear ratio} \frac{B}{A} = \frac{Pn20E}{Pn210} = \frac{\text{Encoder resolution}}{\text{Travel distance per load shaft revolution (reference units)}} \times \frac{m}{n}$$



Important

Set the electronic gear ratio within the following range.

$0.001 \leq \text{Electronic gear ratio} \leq 64000$

If the electronic gear ratio is outside of this range, an A.040 alarm (Parameter Setting Error) will occur.

Setting Pn21D (Encoder Resolution Setting)

To use the encoder resolution of the servomotor before replacement, Pn21D (encoder resolution setting) must be set.

First set Pn21D to n.□□□1 (enable encoder resolution compatibility), and then set the encoder resolution in Pn21D = n.□□X□.

Parameter		Description	When Enabled	Classification
Pn21D	n.□□□0 (default setting)	Disable encoder resolution compatibility.	After restart	Setup
	n.□□□1	Enable encoder resolution compatibility.		

Parameter		Description	When Enabled	Classification
Pn21D	n.□□4□	Operate as 20-bit encoder.	After restart	Setup
	n.□□6□	Operate as 22-bit encoder.		
	n.□□8□ (default setting)	Operate as 24-bit encoder.		
	n.□□A□	Operate as 26-bit encoder.		

Information

When Pn21D (encoder resolution setting) is set, Pn20E and Pn210 (electronic gear ratio) do not need to be changed from the values set before replacement.

5.2.3 Setting Parameters for Acceleration/Deceleration Time



If the parameter setting value is used without changing it, the load ratio could increase.

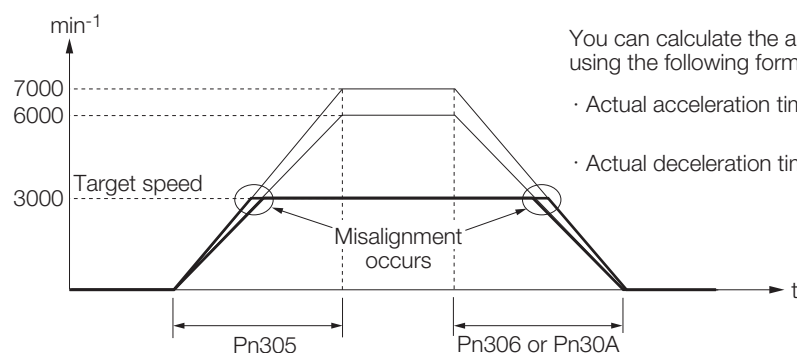
The maximum speed of the servomotor is different between Σ -7-series servomotors and Σ -X-series servomotors.

The maximum speed of the Σ -7-series servomotor is 6000 min^{-1} , and the maximum speed of the Σ -X-series servomotor is 7000 min^{-1} .

The following parameters are related to the maximum servomotor speed.

Consequently, in order to have the same acceleration and deceleration slope as before replacement, the setting values of the parameters must be changed.

Pn305 (Soft Start Acceleration Time)	The time required for the servomotor to accelerate from a stopped state to the maximum motor speed
Pn306 (Soft Start Deceleration Time)	The time to decelerate the servomotor from the maximum motor speed
Pn30A (Deceleration Time for Servo OFF and Forced Stops)	The time to decelerate the servomotor from the maximum motor speed



You can calculate the actual acceleration/deceleration times using the following formulas.

$$\cdot \text{Actual acceleration time} = \frac{\text{Target speed}}{\text{Maximum speed}} \times \text{Pn305}$$

$$\cdot \text{Actual deceleration time} = \frac{\text{Target speed}}{\text{Maximum speed}} \times \text{Pn306 or Pn30A}$$

Change the values by using the conversion formula below.

$$\text{Pn305 } (\Sigma\text{-X value}) = \text{Pn305 } (\Sigma\text{-7 value}) \times \frac{7}{6}$$

$$\text{Pn306 } (\Sigma\text{-X value}) = \text{Pn306 } (\Sigma\text{-7 value}) \times \frac{7}{6}$$

$$\text{Pn30A } (\Sigma\text{-X value}) = \text{Pn30A } (\Sigma\text{-7 value}) \times \frac{7}{6}$$

5.3

Backward Compatibility Function

5.3.1

Setting the Communications Interface Compatibility Selection

An existing servo system's Σ -7-series SERVOPACKs can be easily replaced with Σ -X-series SERVOPACKs by setting the communications interface compatibility selection.

If MECHATROLINK communication is used for the communication between a host device and a SERVOPACK, a Σ -X-series SERVOPACK can be treated like a Σ -7-series SERVOPACK.

	Parameter	Description	When Enabled	Classification
Pn040	n.□□□0 (default setting)	Perform Sigma-X communications.	After restart	Setup
	n.□□□2	Perform Sigma-7 communications. (Reserved parameter when using the MECHATROLINK-4 communications reference of the Σ -XW SERVOPACK.)		



The setting Pn040 = n.□□□X (Communications Interface Compatibility Selection) does not constitute a guarantee of performance compatibility. Before using the setting, be sure to evaluate its performance in the equipment.

When using the backward compatibility function, the device code of the device ID read by the ID_RD command in MECHATROLINK communications is as follows.

Setting of Pn040 = n.□□□X	Device code of the device ID read by the ID_RD command	Remarks
n.□□□2	When using Σ -XS SERVOPACK MECHATROLINK-III communications refer- ences: 02250000H	The device code of the Σ -7S SERVO- PACK MECHATROLINK- III communi- cations reference will be displayed.
	When using Σ -XW SERVOPACK MECHATROLINK-III communications refer- ences: 02250001H	The device code of the Σ -7W SERVO- PACK MECHATROLINK- III communi- cations reference will be displayed.
	When using MECHATROLINK-4 communica- tions: 02250006H	The device code of the Σ -7S SERVO- PACK MECHATROLINK-4 communi- cations reference will be displayed.

Operation Check After Replacement

6

This chapter describes the operation checks after replacement.

6.1 Flow of Operation Checks After Replacement . . 6-2

6.1 Flow of Operation Checks After Replacement

Step	Item	Description
1	Power ON	Turn on the power, and check that the SERVOPACK is powered on and that there are no problems with signal input from peripheral devices.
2	Test operation	Use the jog operation function to check the rotation direction of the motor without connecting the servomotor to the machine. Next, connect the servomotor to the machine, and issue an operation command from the host reference device to check the movement of the machine.
3	Gain adjustment	Perform gain adjustment as needed to optimize machine movement.
4	Full operation	In position control mode, perform the origin return operation if necessary.
5	Stopped	Quit the command, and stop operation. Also, check the conditions that lead to the servomotor coming to a stop.

Appendix



7.1 Checksheet for Replacing the Σ -7 series with the Σ -X series . . 7-2

7.1

Checksheet for Replacing the Σ -7 series with the Σ -X series

Classification	Item	Check Point	Check
Motor	Check of main unit mounting position	Check the mounting dimensions between the motor being used and the machine. Centering location diameter, mounting hole pitch, mounting hole diameter, shaft diameter, shaft shape (straight, key, center tap, taper), etc.	
	Check of specifications	Check that the motor currently being used is not a customer-specific type. If the motor is a special type, check the specifications in the delivery specifications.	
SERVOPACK (main unit)	Check of main unit mounting position	Check the dimensions (W, H, D) and mounting hole positions of the SERVOPACK that is being used.	
	Check of specifications	Check the delivery specifications of the SERVOPACK that is being used to make sure that it does not have NP, shapes, or processing (special treatment, etc.) specially designed for the customer.	
	Check of safety signal input	Check if the SERVOPACK that is being used is using the safety signal input. The SGDXW does not have a safety input. Support is planned as an option, but the connector will be facing downward.	
	Check of option specifications	Check if the SERVOPACK that is being used is using an option module. Reference options cannot be replaced. Also, the SGDXW does not support option modules.	
	Single-phase AC power supply input	- To use with a single-phase AC power supply input, connect the main circuit power supply cable to L1 and L2. - To use with a single-phase 200 V power supply input, change the parameter [Application Function Selections B] to enable support. (Pn00B.2 = 1)	
	DC power supply input	- Depending on the model, a protective fuse and an inrush current prevention circuit must be added between the DC power supply and the SERVOPACK. If this applies to your model, contact your Yaskawa representative. - To use with a DC power supply input, change the parameter [Application Function Selections 1] to enable support. (Pn001.0 = 1) Note: Connect the main circuit DC power supply after changing the parameters.	
SERVOPACK (software)	Check for any dedicated software	- Check whether the software of the SERVOPACK that is being used is standard software by checking the version number. If you are unsure whether the software is standard software, please contact Yaskawa and provide the version number that you found. - The software version can be checked using the product information readout function in the SigmaWin+ PC support software or the utility function Fn012 of the digital operator or the built-in panel operator.	
	Check of parameters	Check the parameters of the SERVOPACK that is being used. SigmaWin+ has a parameter converter function that converts parameters for the Σ -7 series to those for the Σ -X series. Because the Σ -X-series motor has an improved encoder resolution, the electronic gear ratio setting must be changed.	

Part 2: Σ -V Series $\rightarrow$ Σ -X Series

Introduction

1

This chapter describes the flow of operations for replacing a system that uses the Σ -V series with the Σ -X series and the eligible models for replacement.

1.1 Table of Servomotor and SERVOPACK Replacements ..1-2

1.2 Flow of Replacement Operations 1-4

1.1

Table of Servomotor and SERVOPACK Replacements

The following table shows the combinations of Σ -V-series servomotors and SERVOPACKs and their replacement combinations in the Σ -X series. Combinations that do not have any replacement in the Σ -X series are not listed.

To verify the detailed compatibility, refer to the following sections.

 Chapter 2 Specifications of Servomotor

 Chapter 3 Specifications of SERVOPACK

Your Model			Replacement Model		
Servomotor		SERVOPACK	Servomotor		SERVOPACK
SGMJV-	A5A	SGDV-R70A	SGMXJ-	A5A	SGDXS-R70A
	01A	SGDV-R90A		01A	SGDXS-R90A
	C2A	SGDV-1R6A		C2A	SGDXS-1R6A
	02A	SGDV-1R6A		02A	SGDXS-1R6A
	04A	SGDV-2R8A		04A	SGDXS-2R8A
	06A	SGDV-5R5A		06A	SGDXS-5R5A
	08A	SGDV-5R5A		08A	SGDXS-5R5A
SGMAV-	A5A	SGDV-R70A	SGMXA-	A5A	SGDXS-R70A
	01A	SGDV-R90A		01A	SGDXS-R90A
	C2A	SGDV-1R6A		C2A	SGDXS-1R6A
	02A	SGDV-1R6A		02A	SGDXS-1R6A
	04A	SGDV-2R8A		04A	SGDXS-2R8A
	06A	SGDV-5R5A		06A	SGDXS-5R5A
	08A	SGDV-5R5A		08A	SGDXS-5R5A
SGMSV-	10A	SGDV-120A	SGMXA-	10A	SGDXS-120A
	15A	SGD7S-120A		15A	SGDXS-120A
	20A	SGD7S-180A		20A	SGDXS-180A
	25A	SGD7S-200A		25A	SGDXS-200A
	30A	SGD7S-200A		30A	SGDXS-200A
	40A	SGD7S-330A		40A	SGDXS-330A
	50A	SGD7S-330A		50A	SGDXS-330A
SGMPS-	70A	SGD7S-550A		70A	SGDXS-550A
	01A	SGDV-R90A	SGMXP-	01A	SGDXS-R90A
	02A	SGDV-2R8A		02A	SGDXS-2R8A
	04A	SGDV-2R8A		04A	SGDXS-2R8A
	08A	SGDV-5R5A		08A	SGDXS-5R5A
SGMGV-	15A	SGDV-120A		15A	SGDXS-120A
	03A	SGDV-3R8A	SGMXG-*	03A	SGDXS-3R8A
	05A	SGDV-3R8A		05A	SGDXS-3R8A
	09A	SGDV-7R6A		09A	SGDXS-7R6A (SGDXS-120A)
	13A	SGDV-120A		13A	SGDXS-120A (SGDXS-180A)
	20A	SGDV-180A		20A	SGDXS-180A (SGDXS-200A)
	30A	SGDV-330A		30A	SGDXS-330A (SGDXS-470A)
	44A	SGDV-330A		44A	SGDXS-330A (SGDXS-550A)
	55A	SGDV-470A		55A	SGDXS-470A (SGDXS-780A)
	75A	SGDV-550A		75A	SGDXS-550A
	1AA	SGDV-590A		1AA	SGDXS-590A
	1EA	SGDV-780A		1EA	SGDXS-780A

* To increase the instantaneous maximum torque, use the SERVOPACK model indicated in parentheses.

1.2 Flow of Replacement Operations

This document describes how to replace servomotors, SERVOPACKs, cables, and peripheral devices from the Σ -V series with those in the Σ -X series.

The operation flow for replacing the Σ -V series with the Σ -X series is as follows.

Step	Item	Description
1	Selecting the replacement model	 1.1 Table of Servomotor and SERVOPACK Replacements on page 1-2
2	Checking the system before replacement	To replace the servomotor and the SERVOPACK, check the following points. • How is the servomotor mounted in the machine • How is it wired (e.g., racks, pits, piping) • Information on devices in the control panel (e.g., check the capacity of circuit breakers, etc.) Refer to the following chapters for details on the check points.  7.1 Checksheet for Replacing the Σ-V series with the Σ-X series on page 7-2
3	Checking the specifications of the servomotor	 Chapter 2 Specifications of Servomotor
4	Checking the specifications of the SERVOPACK	 Chapter 3 Specifications of SERVOPACK
5	Checking the specifications of the peripheral devices	 Chapter 4 Specifications of Peripheral Devices
6	Making settings for replacement	 Chapter 5 Making Settings for Replacement
7	Replacing the peripheral devices	—
8	Replacing the servomotor	For details on the installation procedure for the servomotor, refer to the product manual for the replacement (new) servomotor.
9	Replacing the SERVOPACK	For details on the installation procedure for the SERVOPACK, refer to the product manual for the replacement (new) SERVOPACK.
10	Operation check after replacement	 Chapter 6 Operation Check After Replacement

Specifications of Servomotor

2

This chapter describes model numbers, characteristics, external dimensions, and installation dimensions of servomotors.

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2.1 Servomotor Model Comparison Charts

This section provides the model numbers of Σ -7-series and Σ -X-series.

2.1.1 SGMJV and SGMXJ

SGMJV -

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(1) (2) (3) (4) (5) (6)

SGMXJ -

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(1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ -V SGMJV-	Σ -X SGMXJ-
(1)	Rated output	50 W	A5	
		100 W	01	
		150 W	C2	
		200 W	02	
		400 W	04	
		600 W	06	
		750 W	08	
(2)	Power supply voltage	200 VAC	A	
(3)	Serial encoder	20-bit absolute	3	–
		20-bit incremental	D	–
		13-bit incremental	A	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design revision order		A	
(5)	Shaft end	Straight without key	2	
		Straight with key and tap	6	
		With two flat seats	B	
(6)	Option	Without options	1	
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specifications	–	1
		Σ -7 compatible specifications	–	2

2.1.2 SGMV and SGMXA

SGMV - □□ □ □ □ □ □
(1) (2) (3) (4) (5) (6)

SGMXA - □□ □ □ □ □ □ □ □
(1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ-V SGMV-	Σ-X SGMXA-
(1)	Rated output	50 W	A5	
		100 W	01	
		150 W	C2	
		200 W	02	
		400 W	04	
		600 W	06	
		750 W	08	
		1.0 kW	10	
(2)	Power supply voltage	200 VAC	A	
(3)	Serial encoder	20-bit absolute	3	–
		20-bit incremental	D	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design revision order	Standard	A	
(5)	Shaft end	Straight without key	2	
		Straight with key and tap	6	
		With two flat seats	B	
(6)	Option	Without options	1	
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specifications	–	1
		Σ-7 compatible specifications	–	2

2.1.3 SGMSV and SGMXA

SGMSV - □□ □ □ □ □ □
(1) (2) (3) (4) (5) (6)

SGMXA - □□ □ □ □ □ □ □ □
(1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ-V SGMSV-	Σ-X SGMXA-
(1)	Rated output	1.5 kW	15	
		2.0 kW	20	
		2.5 kW	25	
		3.0 kW	30	
		4.0 kW	40	
		5.0 kW	50	
		7.0 kW	70	
(2)	Power supply voltage	200 VAC	A	
		400 VAC	D	–
(3)	Serial encoder	20-bit absolute	3	–
		20-bit incremental	D	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design revision order	Standard	A	
(5)	Shaft end	Straight without key	2	
		Straight with key and tap	6	
(6)	Option*	Without options	1	
		With holding brake (90 VDC)	B	–
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (90 VDC)	D	–
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specification	–	1
		Σ-7 compatible specifications	–	2

* There are no models with a holding brake for 7.0 kW.

2.1.4 SGMPS and SGMXP

SGMPS - □□ □ □ □ □ □ - E
 (1) (2) (3) (4) (5) (6) RoHS directive

SGMXP - □□ □ □ □ □ □ □ □
 (1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ-V SGMPS-	Σ-X SGMXP-
(1)	Rated output	100 W	01	
		200 W	02	
		400 W	04	
		750 W	08	
		1.5 kW	15	
(2)	Power supply voltage	200 VAC	A	
(3)	Serial encoder	17-bit absolute	2	–
		17-bit incremental	C	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design revision order	IP55	A	–
		IP67	E	–
		Standard*	–	A
(5)	Shaft end	Straight without key	2	
		Straight with key and tap	6	
(6)	Option	Without options	1	
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specification	–	1
		Σ-7 compatible specifications	–	2

* The standard specification is IP67.

2.1.5 SGMGV and SGMXG

SGMGV-
 (1) (2) (3) (4) (5) (6)

SGMXG-
 (1) (2) (3) (4) (5) (6) (7) (8)

No.	Item		Σ -V SGMGV-	Σ -X SGMXG-
(1)	Rated output	300 W	03	
		450 W	05	
		850 W	09	
		1.3 kW	13	
		1.8 kW	20	
		2.9 kW	30 * ¹	
		4.4 kW	44	
		5.5 kW	55	
		7.5 kW	75	
		11 kW	1A	
		15 kW	1E	
(2)	Power supply voltage	200 VAC	A	
		400 VAC	D	–
(3)	Serial encoder	20-bit absolute	3	–
		20-bit incremental	D	–
		26-bit absolute	–	U
		26-bit batteryless absolute	–	W
(4)	Design revision order	Standard	A	
(5)	Shaft end	Straight without key* ²	2	
		Straight with key and tap	6	
		Straight without key and with tap* ³	–	8
(6)	Option	Without options	1	
		With holding brake (90 VDC)	B	–
		With holding brake (24 VDC)	C	
		With oil seal and holding brake (90 VDC)	D	–
		With oil seal and holding brake (24 VDC)	E	
		With oil seal	S	
(7)	Destination		–	A
(8)	Ancillary specifications	Standard specifications	–	1
		Σ -7 compatible specifications	–	2

*1. The rated output is 2.4 kW if you use the following combinations.

- SGMGV-30A servomotor and SGD7V-200A SERVOPACK
- SGMXG-30A servomotor and SGD7S-200A SERVOPACK

*2. In the Σ -X series, only SGMXG-03 to -20 servomotors are available with this shaft end.

*3. Only SGMXG-30 to -1E servomotors are available with this shaft end.

2.2

Comparison of Servomotor Characteristics

The following table compares the characteristics of the Σ -7-series servomotor and the Σ -X-series servomotor.

2.2.1

SGMJV and SGMXJ

Ratings

Servomotor Capacity	Model Σ -V: SGMJV- Σ -X: SGMXJ-	Rated Torque ^{*1,*2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia ($\times 10^{-4}$ kg·m ²)	
		Σ -V	Σ -X	Σ -V	Σ -X	Σ -V	Σ -X
50 W	A5	0.159		0.557		0.0414 (0.0561)	0.0421 (0.0501)
100 W	01	0.318		1.11		0.0665 (0.0812)	0.0669 (0.0749)
150 W	C2	0.477		1.67		0.0883 (0.103)	0.0946 (0.103)
200 W	02	0.637		2.23		0.259 (0.323)	0.263 (0.323)
400 W	04	1.27		4.46		0.442 (0.506)	0.486 (0.546)
600 W	06	1.91		6.69		0.667 (0.744)	0.800 (0.860)
750 W	08	2.39		8.36		1.57 (1.74)	1.59 (1.76)

*1. These items and the torque-rotation speed characteristics are based on operation in combination with a SER-VOPACK when the temperature of the armature winding is 100°C. The other items are values at 20°C.

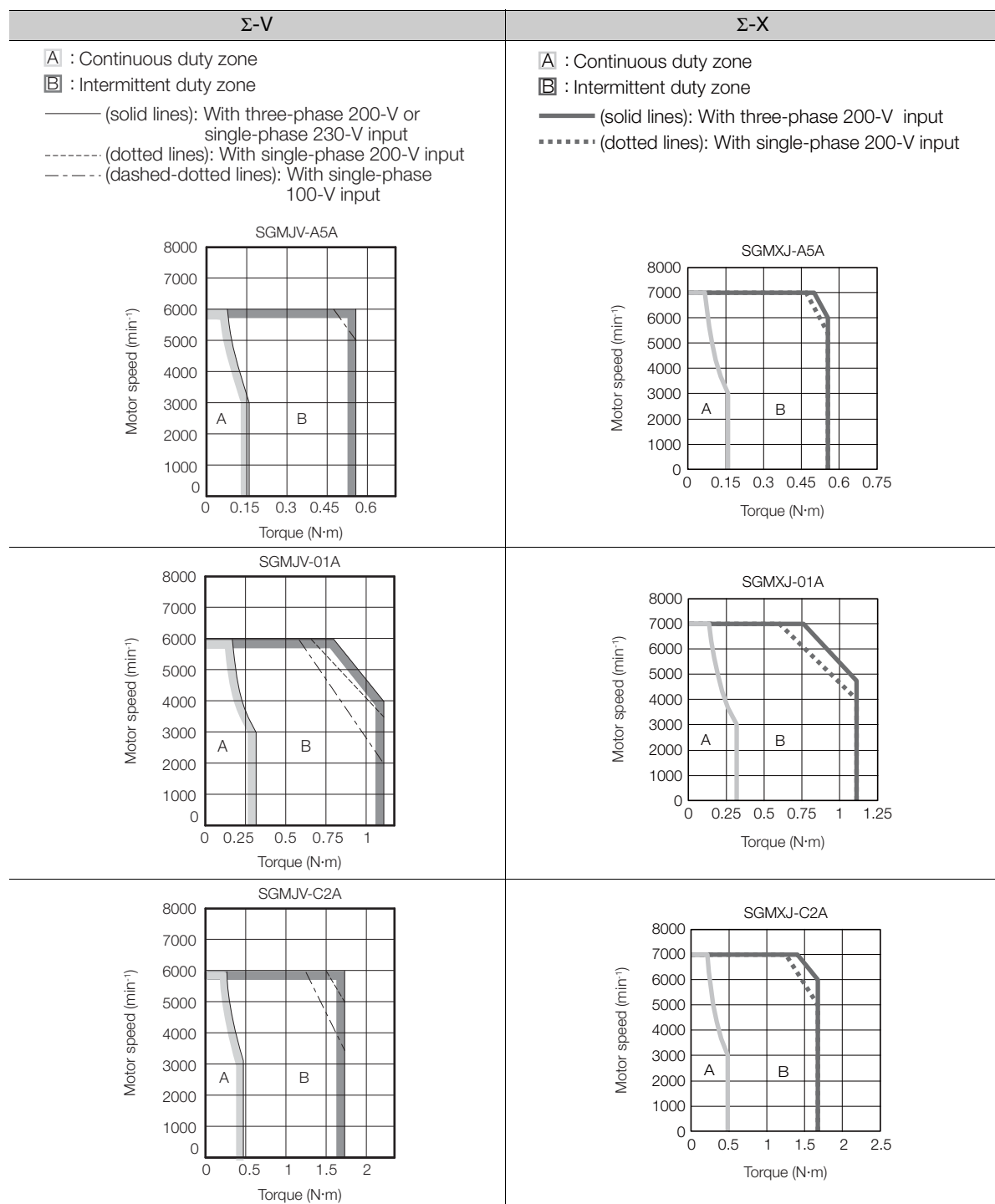
*2. The rated torques are the continuous allowable torque values at an ambient temperature of 40°C with an aluminum heat sink having the following dimensions.

Capacity 50 W, 100 W: 200 mm $\times$ 200 mm $\times$ 6 mm

Capacity 150 W to 750 W: 250 mm $\times$ 250 mm $\times$ 6 mm

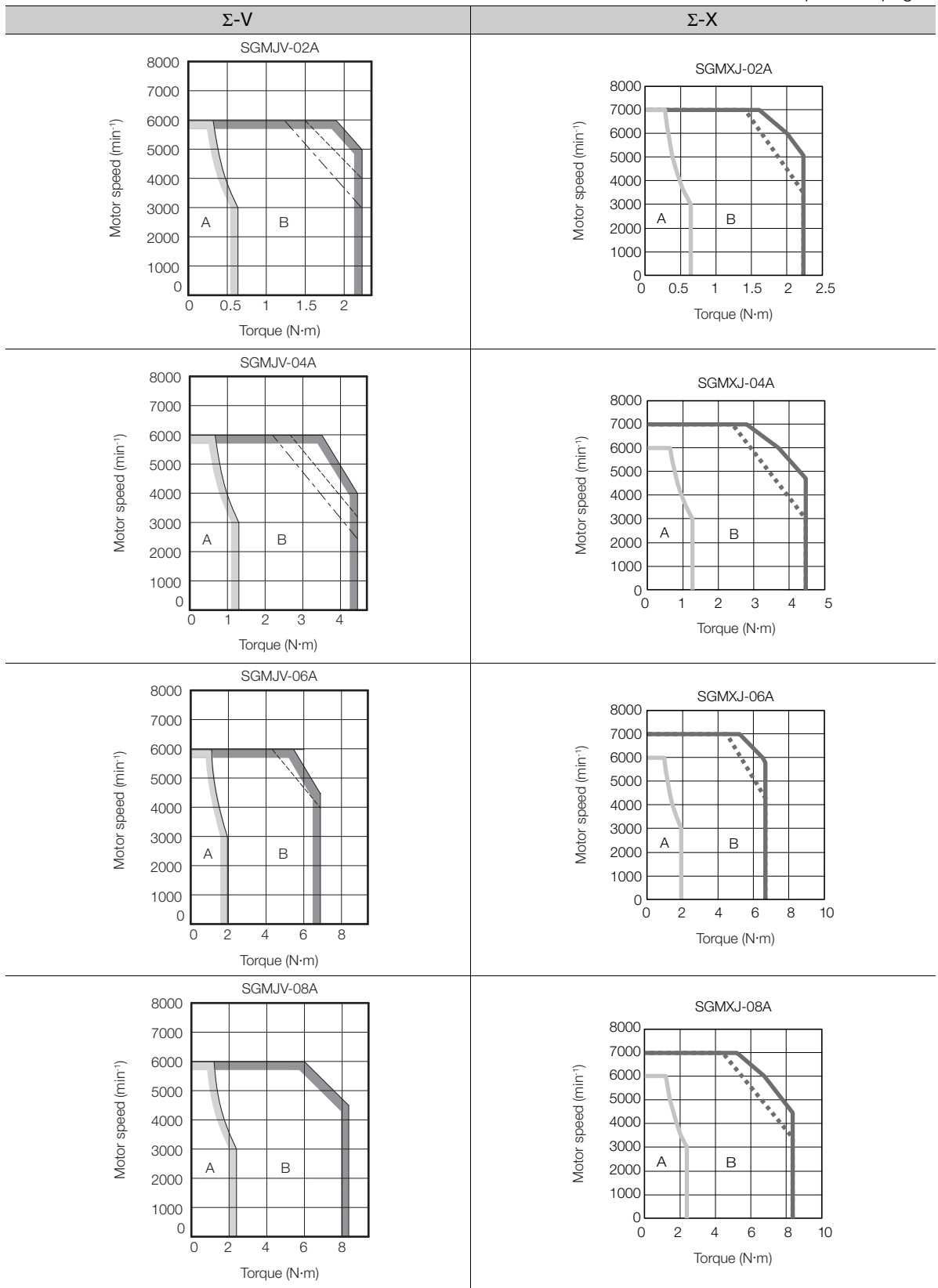
Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics



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Note: 1. The characteristics in the intermittent duty zone depend on the power supply voltage.

The solid line shows the characteristics for three-phase 200 V and single-phase 230 V input, the dotted line shows the characteristics for single-phase 200 V input, and the dashed-dotted line shows the characteristics for single-phase 100 V input.

However, the SGMJV-A5A has the same characteristics for three-phase 200 V and single-phase 200 V.

- If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.
- If the length of the servomotor main circuit cable exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

2.2.2 SGMV and SGMXA

Ratings

Model Σ-V: SGMV- Σ-X: SGMXA-	Servomotor Capacity	Rated Torque ^{*1,*2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia (×10 ⁻⁴ kg·m ²)	
		Σ-V	Σ-X	Σ-V	Σ-X	Σ-V	Σ-X
A5	50 W	0.159		0.477	0.557	0.0242 (0.0389)	0.0220 (0.0300)
01	100 W	0.318		0.955	1.11	0.0380 (0.0527)	0.0340 (0.0420)
C2	150 W	0.477		1.43	1.67	0.0531 (0.0678)	0.0461 (0.0541)
02	200 W	0.637		1.91	2.23	0.116 (0.180)	0.139 (0.199)
04	400 W	1.27		3.82	4.46	0.190 (0.254)	0.216 (0.276)
06	600 W	1.75	1.91 ^{*3}	5.25	6.69	0.326 (0.403)	0.315 (0.375)
08	750 W	2.39		7.16	8.36	0.769 (0.940)	0.773 (0.943)
10	1.0 kW	3.18		9.55	11.1	1.20 (1.41)	0.969 (1.14)

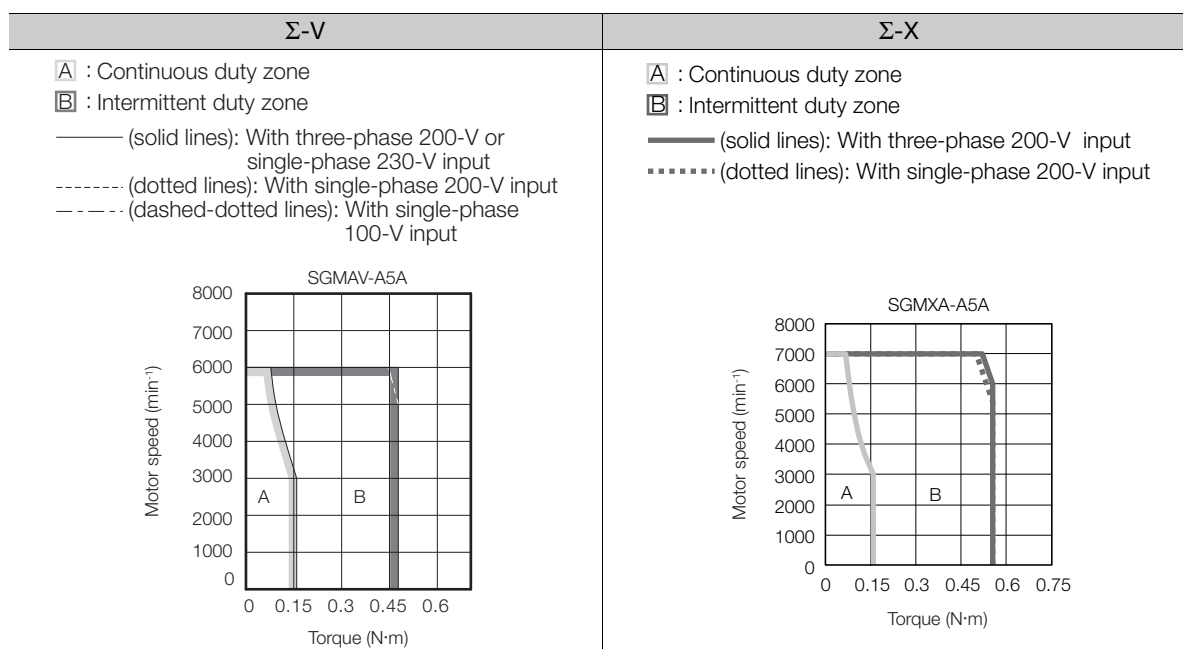
*1. These items and the torque-rotation speed characteristics are based on operation in combination with a SER-VOPACK when the temperature of the armature winding is 100°C. The other items are values at 20°C.

*2. The rated torques are the continuous allowable torque values at an ambient temperature of 40°C with an aluminum heat sink having the following dimensions.
Capacity 50 W, 100 W: 200 mm × 200 mm × 6 mm
Capacity 150 W to 400 W, 750 W: 250 mm × 250 mm × 6 mm
Capacity 600 W: Σ-V series is 250 mm × 250 mm × 6 mm, Σ-X series is 300 mm × 300 mm × 12 mm.
Capacity 1.5 kW: 300 mm × 300 mm × 12 mm

*3. If a heat sink of 250 mm × 250 mm × 6 mm is mounted, the rated output is 550 W and the rated torque is 1.75 N·m.

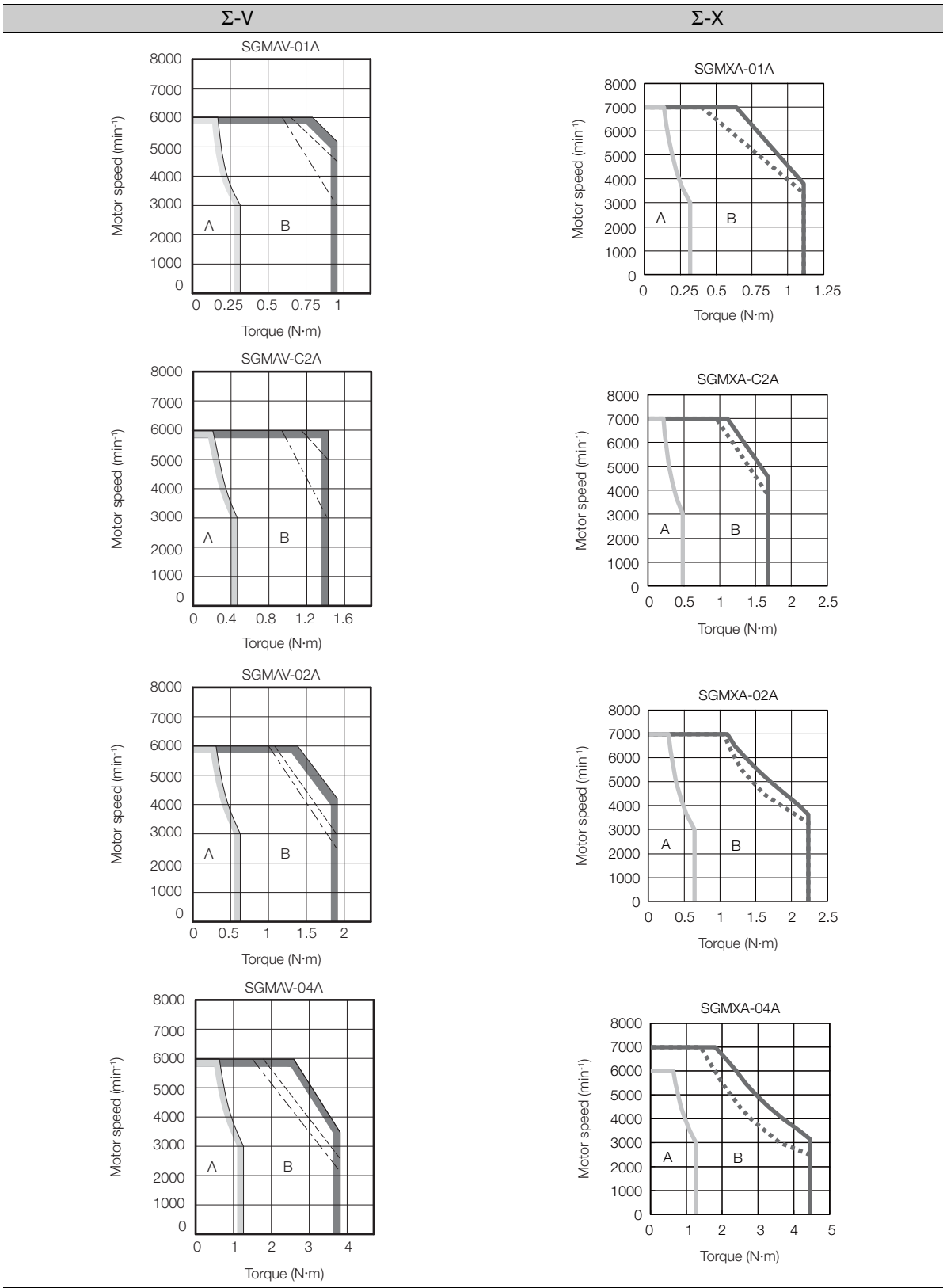
Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics



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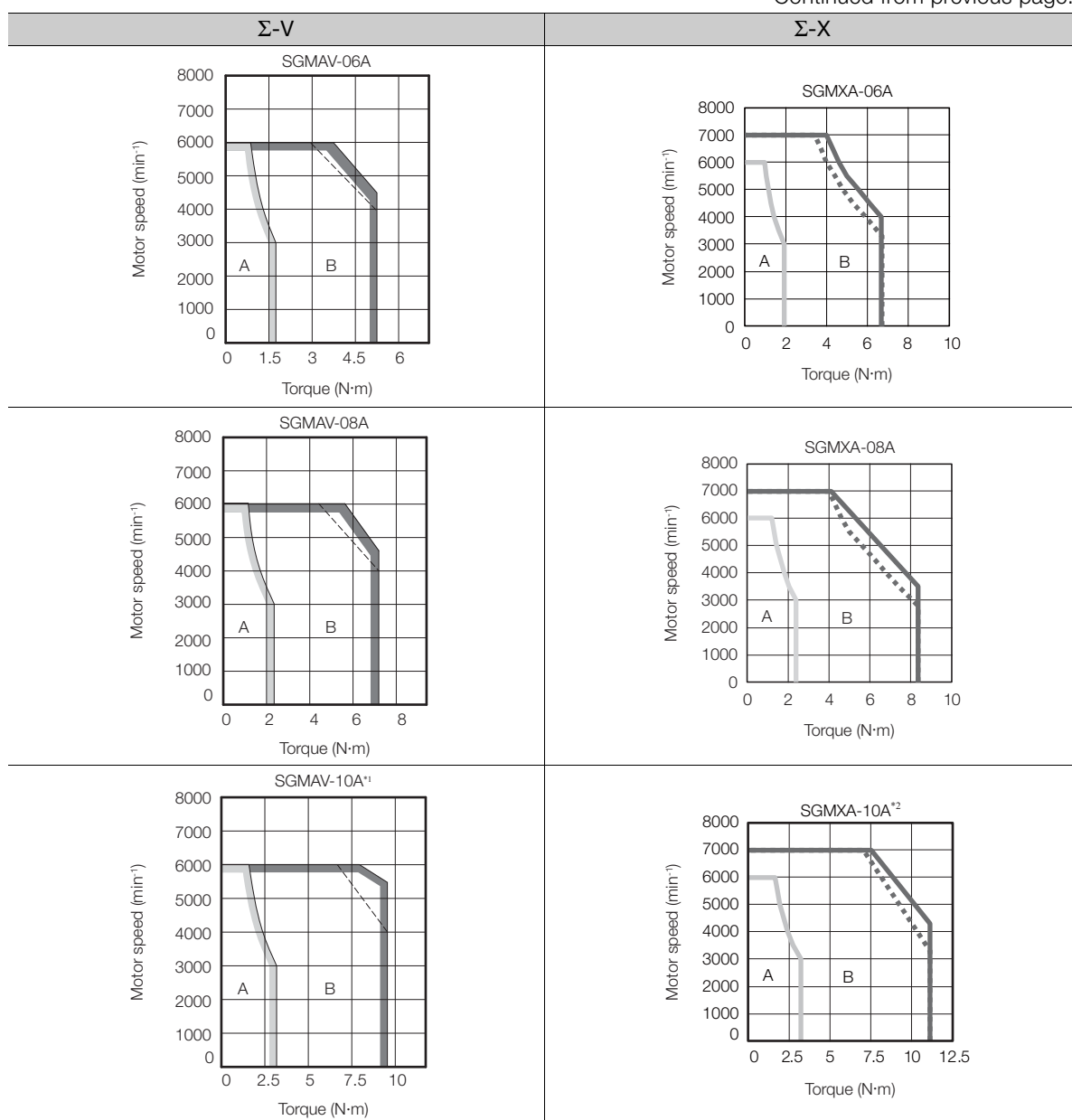


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2.2 Comparison of Servomotor Characteristics

2.2.2 SGMV and SGMXA

Continued from previous page.



*1. The SGMGV-13A can use a single-phase power input in combination with the SGD-120A□□A008.

*2. The SGMXG-09A and -13A can use a single-phase power input in combination with the SGD-120A□□A008.

Note: 1. The characteristics in the intermittent duty zone depend on the power supply voltage.

The solid line shows the characteristics for three-phase 200 V and single-phase 230 V input, the dotted line shows the characteristics for single-phase 200 V input, and the dashed-dotted line shows the characteristics for single-phase 100 V input.

However, the SGMV-A5A has the same characteristics for three-phase 200 V and single-phase 200 V.

2. If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.

3. If the length of the servomotor main circuit cable exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

2.2.3 SGMSV and SGMXA

Ratings

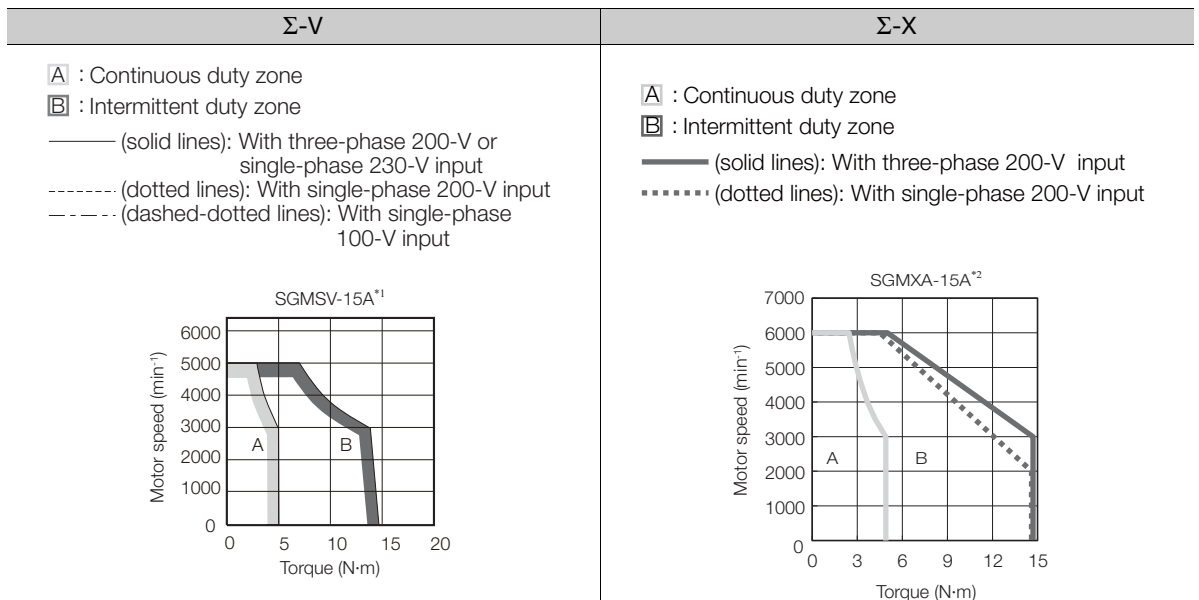
Model Σ-V: SGMSV- Σ-X: SGMXA-	Servomotor Capacity	Rated Torque ^{*1,*2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia (×10 ⁻⁴ kg·m ²)	
		Σ-V	Σ-X	Σ-V	Σ-X	Σ-V	Σ-X
15	1.5 kW	4.90		14.7		2.00 (2.25)	
20	2.0 kW	6.36		19.1		2.47 (2.72)	
25	2.5 kW	7.96		23.9		3.19 (3.44)	
30	3.0 kW	9.80		29.4		7.00 (9.20)	
40	4.0 kW	12.6		37.8		9.60 (11.8)	
50	5.0 kW	15.8		47.6		12.3 (14.5)	
70	7.0 kW	22.3		54.0		12.3 (-)	

*1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C. These are typical values.

*2. The rated torques are the continuous allowable torque values at an ambient operating temperature of 40°C with an aluminum heat sink of the following dimensions.
Capacity 1.5 kW to 2.5 kW: 300 mm × 300 mm × 12 mm, Capacity 3.0 kW to 7.0 kW: 400 mm × 400 mm × 20 mm

Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics

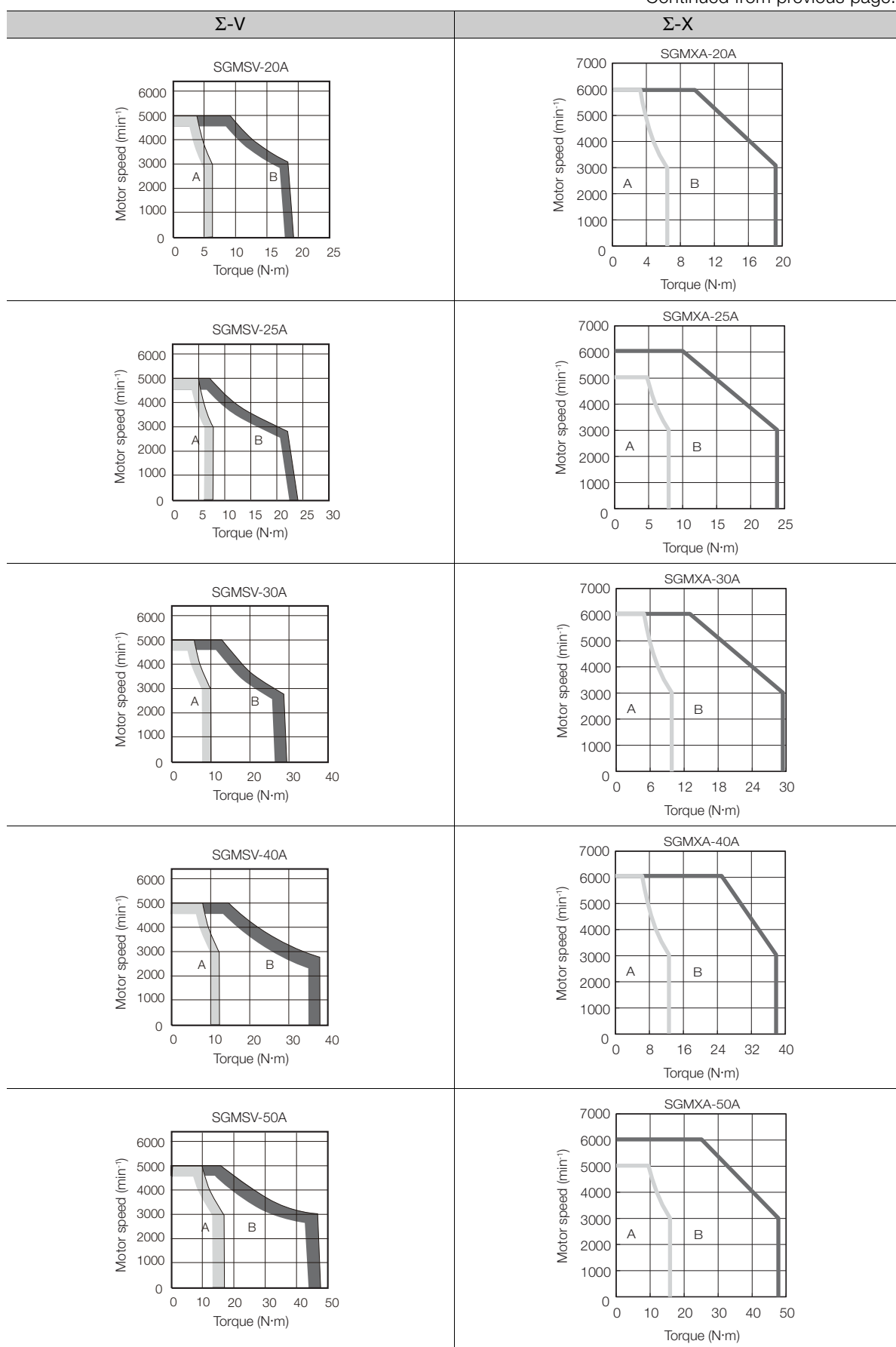


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2.2 Comparison of Servomotor Characteristics

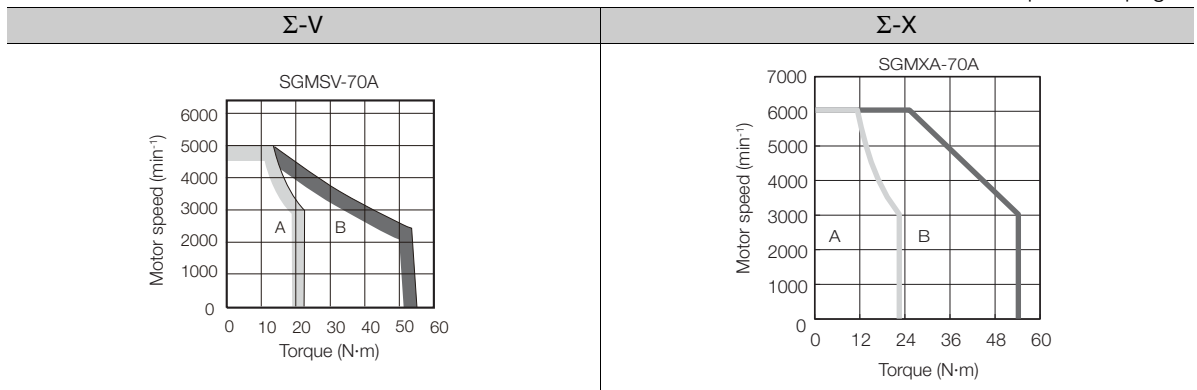
2.2.3 SGMSV and SGMXA

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*1. The SGMPS-15A can use a single-phase power input in combination with the SGD7S-120A□□A008.

*2. The SGMXP-15A can use a single-phase power input in combination with the SGD7S-120A□□A008.

Note: 1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C.

2. The characteristics in the intermittent duty zone depend on the power supply voltage.

3. If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.

4. If you use a servomotor main circuit cable that exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

2.2.4 SGMPS and SGMXP

Ratings

Model Σ -V: SGMPS- Σ -X: SGMXP-	Servomotor Capacity	Rated Torque*1,*2 (N·m)		Instantaneous Maximum Torque*1 (N·m)		Rotor Moment of Inertia ($\times 10^{-4}$ kg·m ²)	
		Σ -V	Σ -X	Σ -V	Σ -X	Σ -V	Σ -X
01	100 W	0.318		1.11		0.0592 (0.0892)	0.0594 (0.0922)
02	200 W	0.637		2.23		0.263 (0.415)	0.263 (0.423)
04	400 W	1.27		4.46		0.409 (0.561)	0.409 (0.569)
08	750 W	2.39		7.16		2.10 (2.98)	2.10 (2.98)
15	1.5 kW	4.77		14.3		4.02 (4.90)	4.02 (4.90)

*1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for other items are at 20°C. These are typical values.

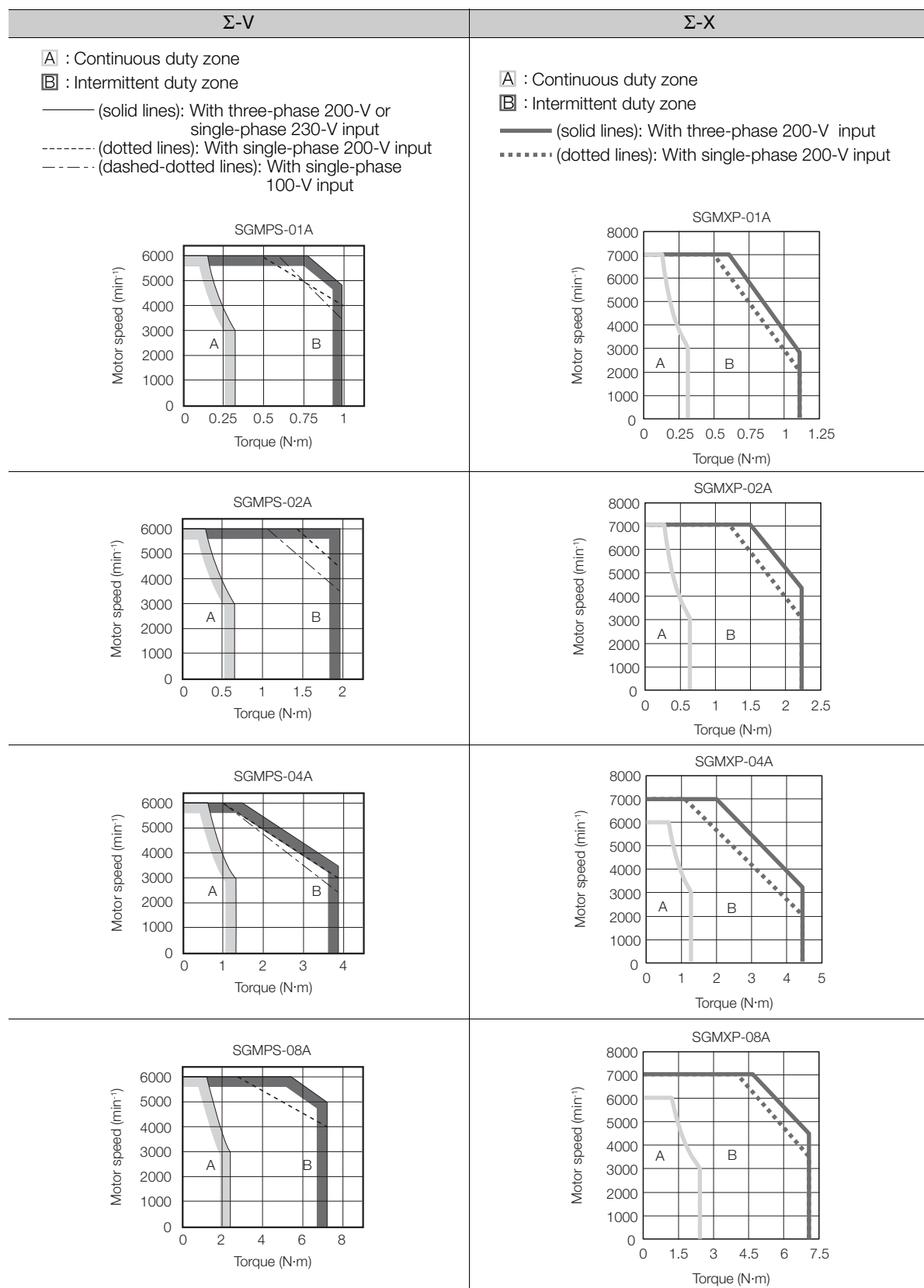
*2. The rated torques are the continuous allowable torque values at an ambient operating temperature of 40°C with an aluminum heat sink of the following dimensions.

Capacity 100 W to 400 W: 250 mm $\times$ 250 mm $\times$ 6 mm

Capacity 750 W, 1.5 kW: 300 mm $\times$ 300 mm $\times$ 12 mm

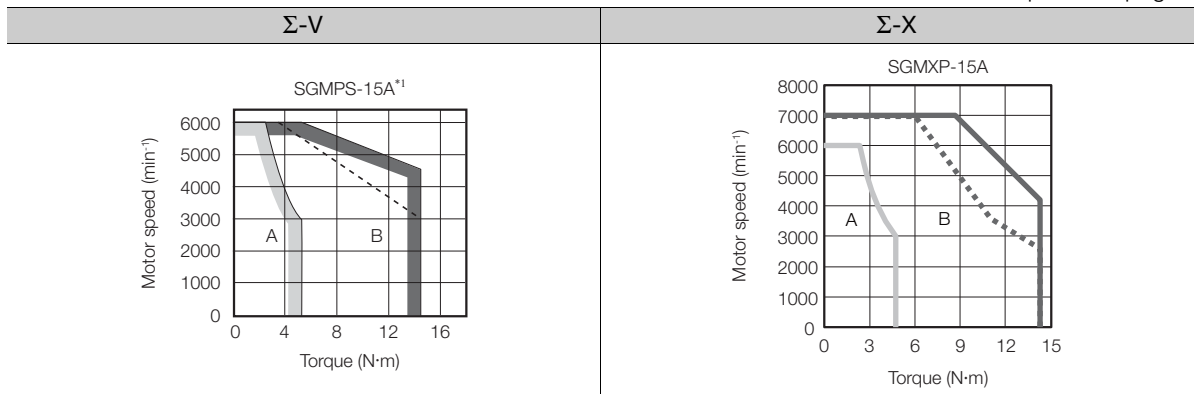
Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics



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*1. The SGMPS-15A can use a single-phase power input in combination with the SGD-120A□□A008.

*2. The SGMXP-15A can use a single-phase power input in combination with the SGD-120A□□A008.

Note: 1. These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C.

2. The characteristics in the intermittent duty zone depend on the power supply voltage.

3. If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.

4. If you use a servomotor main circuit cable that exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

2.2.5 SGMGV and SGMXG

Ratings

Model Σ -V: SGMGV- Σ -X: SGMXG-	Servomotor Capacity	Rated Torque ^{*1, *2} (N·m)		Instantaneous Maximum Torque ^{*1} (N·m)		Rotor Moment of Inertia ($\times 10^{-4}$ kg·m ²)	
		Σ -V	Σ -X	Σ -V	Σ -X	Σ -V	Σ -X
03	300 W	1.96		5.88		2.48 (2.73)	
05	450 W	2.86		8.92		3.33 (3.58)	
09	850 W	5.39		13.8	14.2 20.0 ^{*3}	13.9 (16.0)	
13	1.3 kW	8.34		23.3	23.3 30.0 ^{*4}	19.9 (22.0)	
20	1.8 kW	11.5		28.7	28.7 35.4 ^{*5}	26.0 (28.1)	
30	2.9 kW 2.4 kW ^{*6}	18.6	15.1 ^{*6}	45.1	54.0 45.1 ^{*6} 66.8 ^{*7}	46.0 (54.5)	46.0 (53.9)
44	4.4 kW	28.4		71.1	71.6 95.6 ^{*8}	67.5 (76.0)	67.5 (75.4)
55	5.5 kW	35.0		87.6	102 134 ^{*9}	89.0 (97.5)	89.0 (96.9)
75	7.5 kW	48.0		119	119	125 (134)	125 (133)
1A	11 kW	70.0		175		242 (261)	
1E	15 kW	95.4		224		303 (341)	

*1. These items and the torque-rotation speed characteristics are based on operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C.

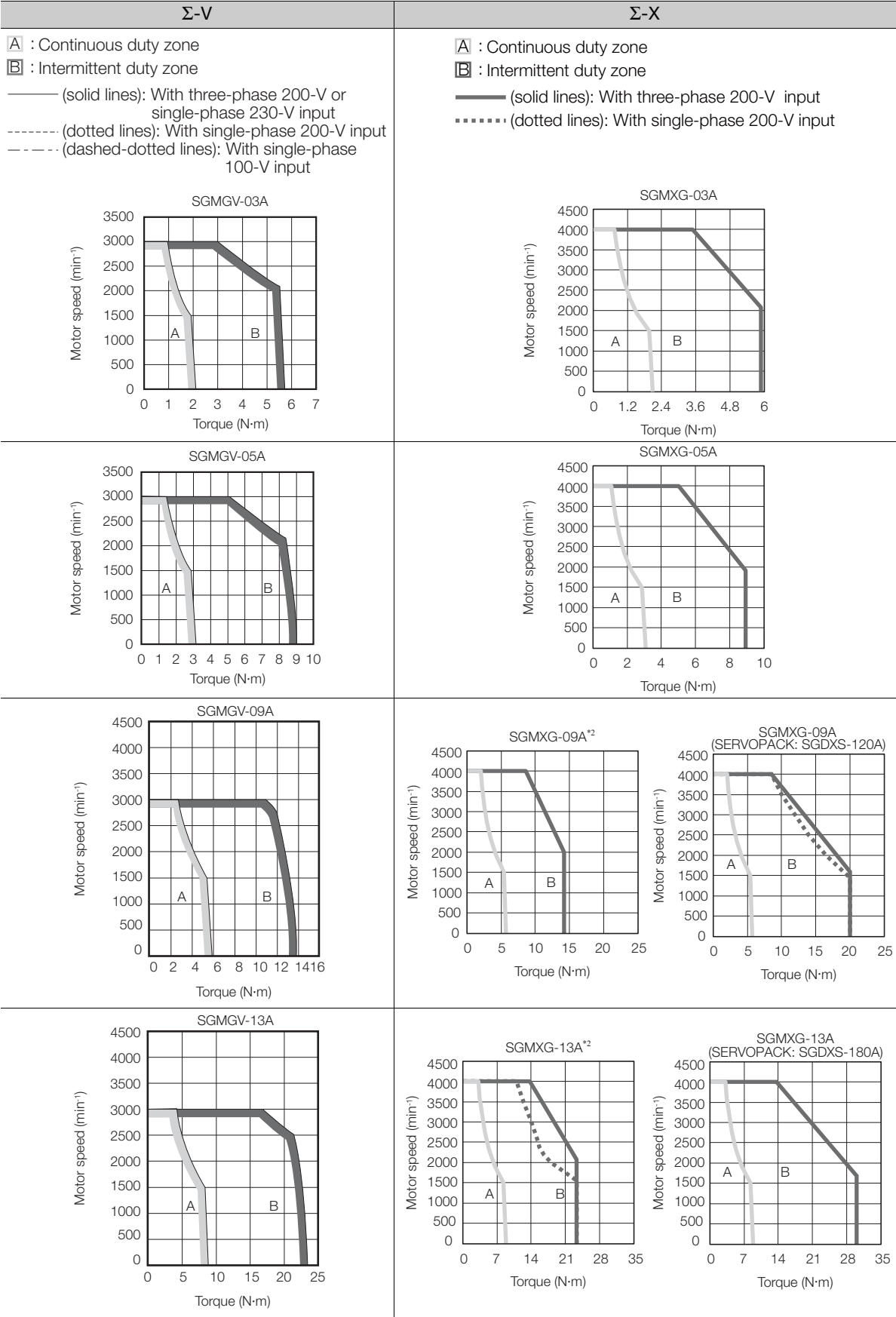
2.2 Comparison of Servomotor Characteristics

2.2.5 SGMGV and SGMXG

- *2. The rated torques are the continuous allowable torque values with an aluminum or steel heat sink of the following dimensions.
Capacity 300 W, 450 W: 250 mm × 250 mm × 6 mm (aluminum), capacity 850 W to 1.8 kW: 400 mm × 400 mm × 20 mm (iron), capacity 2.9 kW (2.4 kW) to 7.5 kW: 550 mm × 550 mm × 30 mm (iron), capacity 11 kW to 15 kW: 650 mm × 650 mm × 35 mm (iron).
- *3. This is the value when combined with the SERVOPACK SGDXS-120A.
- *4. This is the value when combined with the SERVOPACK SGDXS-180A.
- *5. This is the value when combined with the SERVOPACK SGDXS-200A.
- *6. This is the value when the following servomotors and SERVOPACKs are combined.
 - The servomotor SGMGV-30A and the SERVOPACK SGDV-200A
 - The servomotor SGMXG-30A and the SERVOPACK SGDXS-200AServomotor output is limited by the rated current and maximum current of the used SERVOPACK.
The load ratio is calculated based on the servomotor's rated current of 24.5 Arms.
Use the servomotor at a load ratio of 80% or less.
- *7. This is the value when combined with the SERVOPACK SGDXS-470A.
- *8. This is the value when combined with the SERVOPACK SGDXS-550A.
- *9. This is the value when combined with the SERVOPACK SGDXS-780A.

Note: The values in parentheses are for servomotors with holding brakes.

Torque - Rotation Speed Characteristics

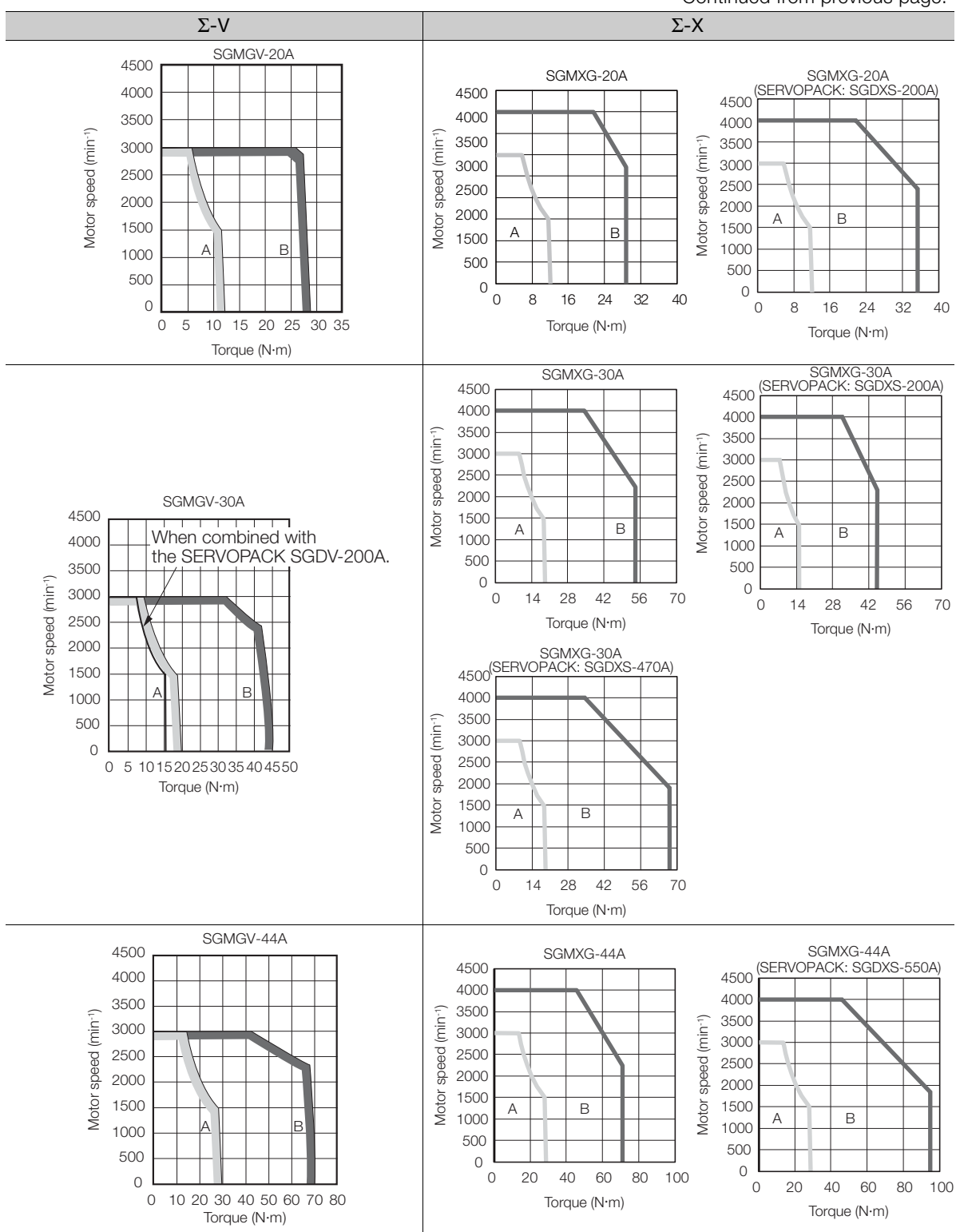


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2.2 Comparison of Servomotor Characteristics

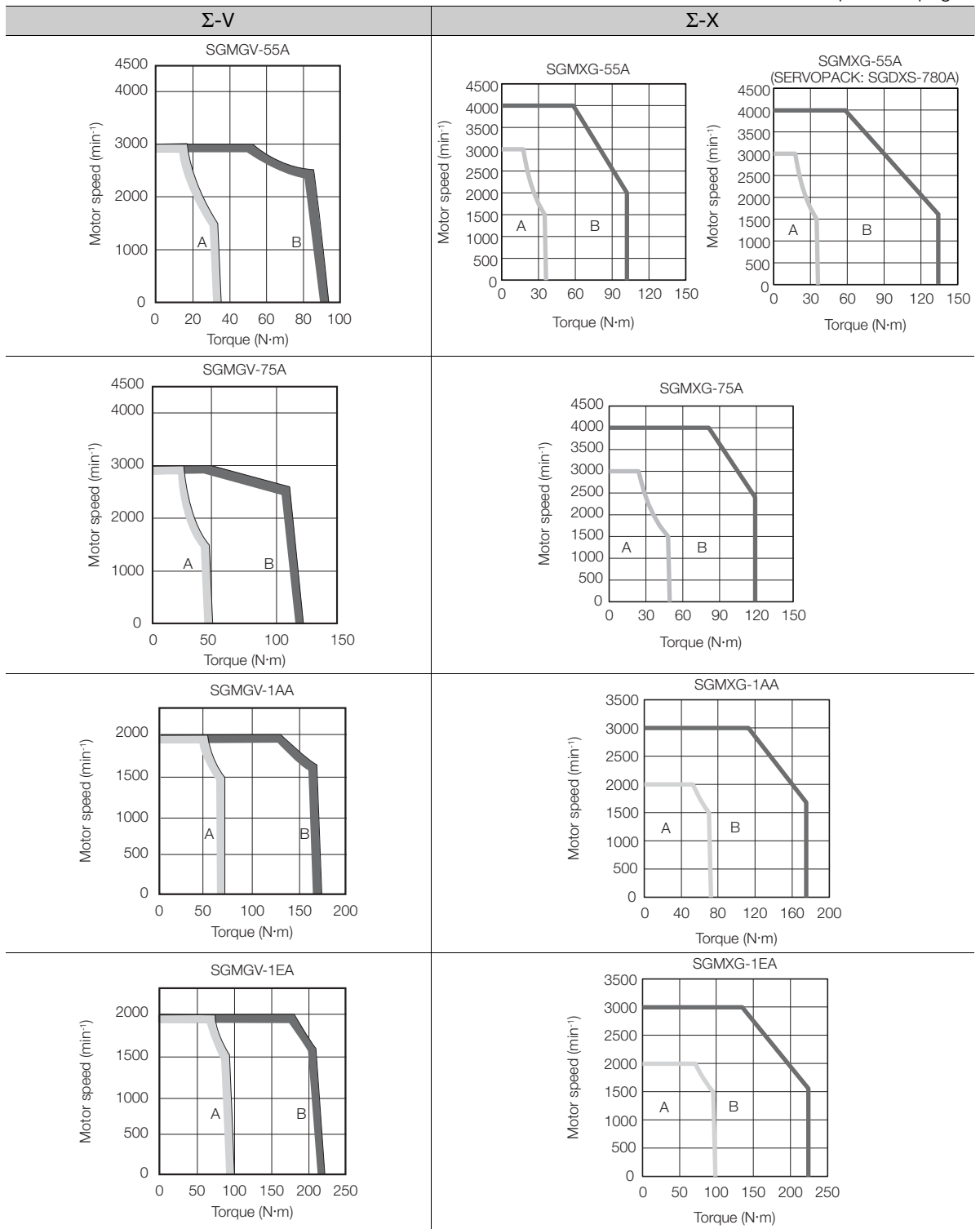
2.2.5 SGMGV and SGMXG

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*1. The SGMGV-13A can use a single-phase power input in combination with the SGD-120A□□A008.

*2. The SGMXG-09A and -13A can use a single-phase power input in combination with the SGD-120A□□A008.

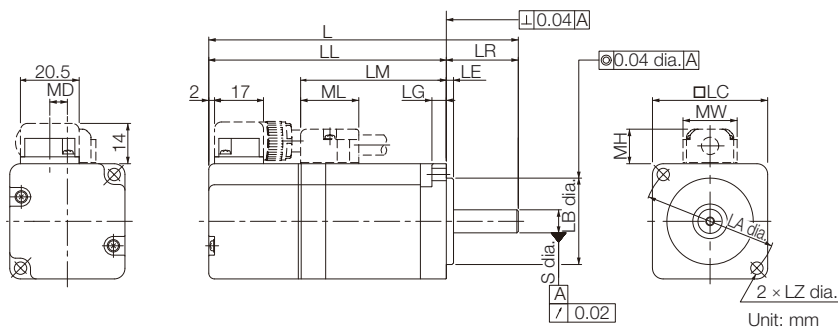
Note: 1. If the effective torque is within the allowable range for the rated torque, the servomotor can be used within the intermittent duty zone.

2. If the length of the servomotor main circuit cable exceeds 20 m, the intermittent duty zone will become smaller because the voltage drop increases.

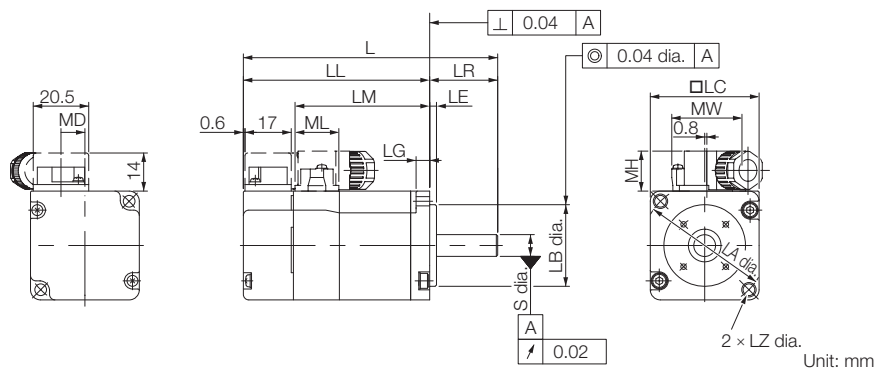
2.3 Servomotor External Dimensions and Installation Dimensions

2.3.1 SGMJV-A5 to -C2 and SGMXJ-A5 to -C2

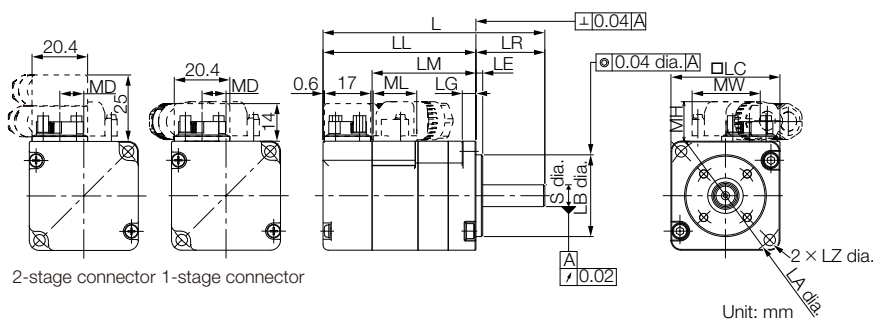
- SGMJV



- SGMXJ-□□□□□□□2 (Σ -7 compatible specifications)



- SGMXJ-□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

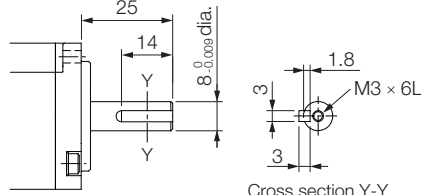
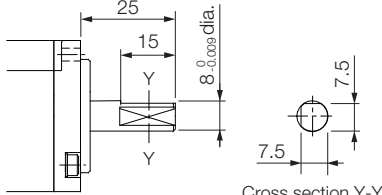
Servo- motor Capacity	Model	L *	LL *	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*																
					LR	LE	LG	LC	LA	LB	LZ																						
50 W	SGMJV- A5A□A21	94 (139)	69 (114)	37	25	2.5	5	40	46	30 ⁰ _{-0.021}	4.3	8 ⁰ _{-0.009}	6.1	19	12	20	0.3 (0.6)																
	SGMXJ- A5A□A2□A2	80.5 (121.0)	55.5 (96.0)	37.5									8.8	25.8	14.7	16.1																	
	SGMXJ- A5A□A2□A1												8.4	25	14.5	16																	
100 W	SGMJV- 01A□A21	107.5 (152.5)	82.5 (127.5)	50.5									25	2.5	5	40	46	30 ⁰ _{-0.021}	4.3	8 ⁰ _{-0.009}	6.1	19	12	20	0.4 (0.7)								
	SGMXJ- 01A□A2□A2	92.5 (133.0)	67.5 (108.0)	49.5																	8.8	25.8	14.7	16.1									
	SGMXJ- 01A□A2□A1																				8.4	25	14.5	16									
150 W	SGMJV- C2A□A21	119.5 (164.5)	94.5 (139.5)	62.5																	25	2.5	5	40	46	30 ⁰ _{-0.021}	4.3	8 ⁰ _{-0.009}	6.1	19	12	20	0.5 (0.8)
	SGMXJ- C2A□A2□A2	104.5 (153.0)	79.5 (128.0)	61.5																									8.8	25.8	14.7	16.1	
	SGMXJ- C2A□A2□A1																												8.4	25	14.5	16	

* In models that have a batteryless absolute encoder, the Σ -X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following table for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
50 W	SGMXJ-A5AWA2□A□	88.0 (128.5)	63.0 (103.5)	0.4 (0.7)
100 W	SGMXJ-01AWA2□A□	100.0 (140.5)	75.0 (115.5)	0.5 (0.8)
150 W	SGMXJ-C2AWA2□A□	112.0 (160.5)	87.0 (135.5)	0.6 (0.9)

Shaft End Specifications

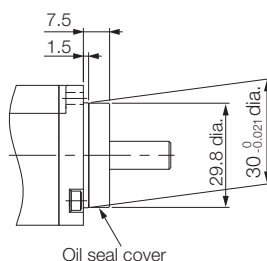
The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

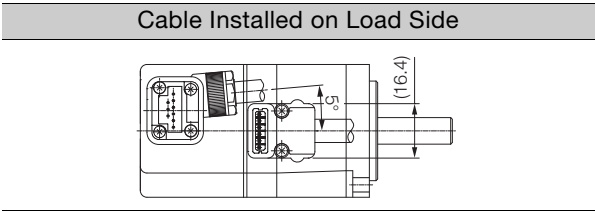
The specifications of the options for the Σ -V series and Σ -X series are identical.

- With Oil Seal



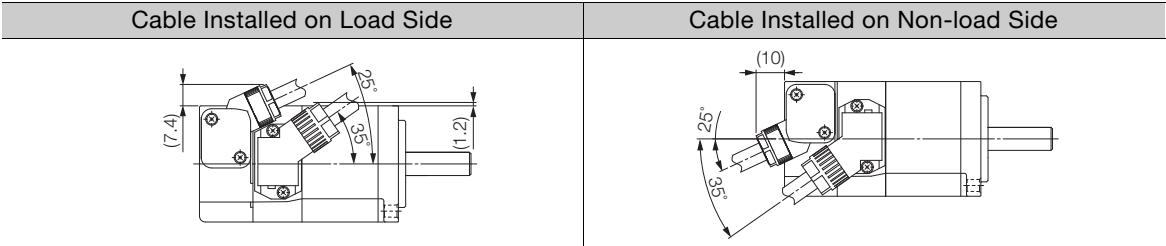
Connector Mounting Dimensions

- Σ -V Series

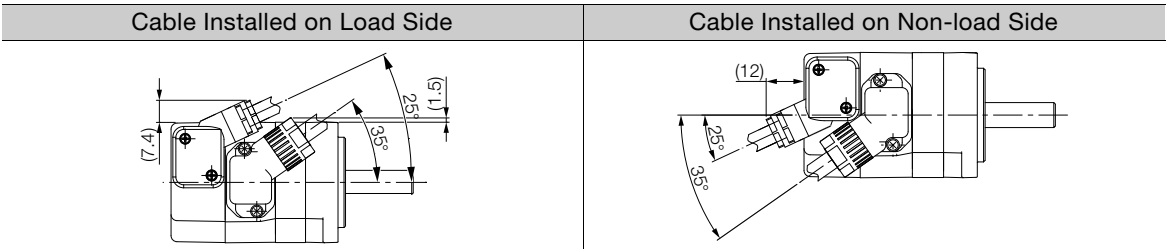


Information The Σ -V series is not available with a cable installed on the non-load side.

- Σ -X Series (Σ -7 compatible specifications)

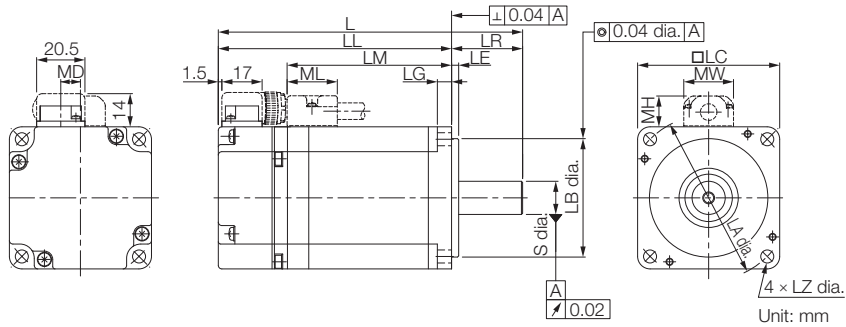


- Σ -X Series (standard specifications)

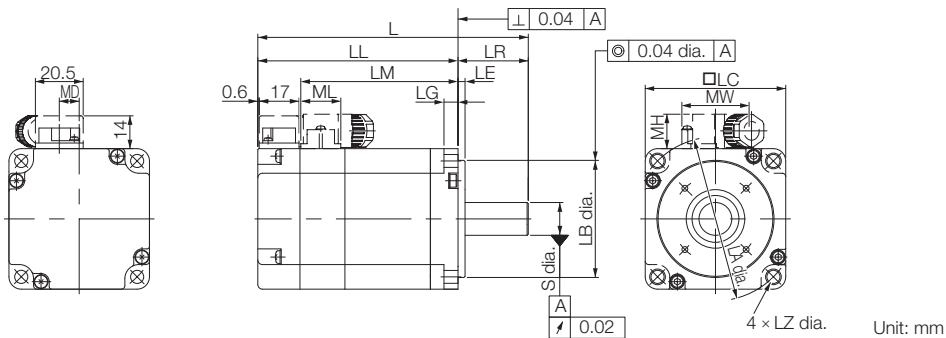


2.3.2 SGMJV-02 to -06 and SGMXJ-02 to -06

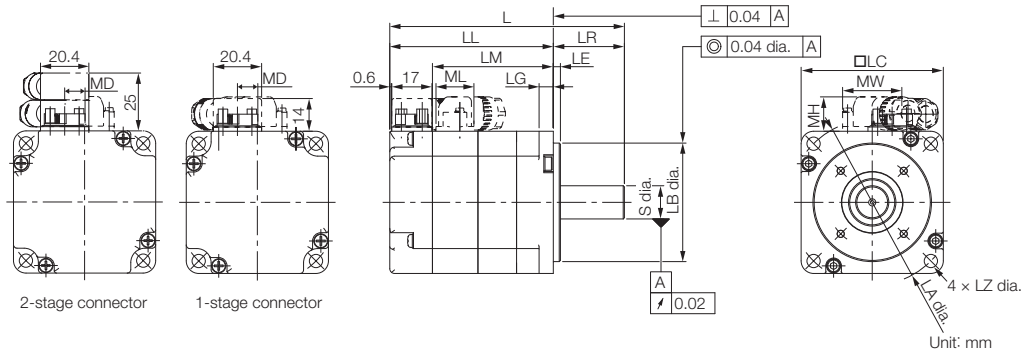
• SGMJV



• SGMXJ-□□□□□□□2 (Σ-7 compatible specifications)



• SGMXJ-□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.
2. The values for a straight, without key specification are given.

2.3 Servomotor External Dimensions and Installation Dimensions

2.3.2 SGMJV-02 to -06 and SGMXJ-02 to -06

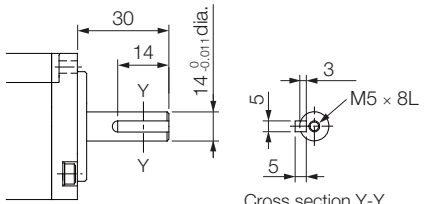
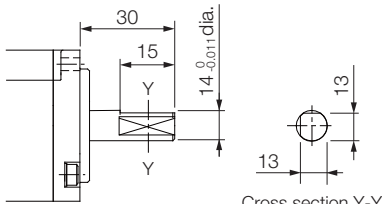
Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
200 W	SGMJV-02A□A21	110.0 (150.0)	80.0 (120.0)	51.0	30	3	6	60	70	50 ⁰ _{-0.025}	5.5	14 ⁰ _{-0.011}	8.3	21	13	21	0.9 (1.5)
	SGMXJ-02A□A2□A2	98.5 (139.0)	68.5 (109.0)	50.5									8.5	28.7	14.7	17.1	0.8 (1.4)
	SGMXJ-02A□A2□A1												8.4	25	14.5	16	
400 W	SGMJV-04A□A21	128.5 (168.5)	98.5 (138.5)	69.5									8.3	21	13	21	1.3 (1.9)
	SGMXJ-04A□A2□A2	115.0 (155.5)	85.0 (125.5)	67.0									8.5	28.7	14.7	17.1	1.1 (1.7)
	SGMXJ-04A□A2□A1												8.4	25	14.5	16	
600 W	SGMJV-06A□A21	154.5 (200.5)	124.5 (170.5)	95.5									8.3	21	13	21	1.7 (2.4)
	SGMXJ-06A□A2□A2	137.0 (191.0)	107.0 (161.0)	89.0									8.5	28.7	14.7	17.1	1.6 (2.2)
	SGMXJ-06A□A2□A1												8.4	25	14.5	16	

* In models that have a batteryless absolute encoder, the Σ -X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following table for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
200 W	SGMXJ-02AWA2□A□	106.0 (146.5)	76.0 (116.5)	0.9 (1.5)
400 W	SGMXJ-04AWA2□A□	122.5 (163.0)	92.5 (133.0)	1.2 (1.8)
600 W	SGMXJ-06AWA2□A□	144.5 (198.5)	114.5 (168.5)	1.7 (2.3)

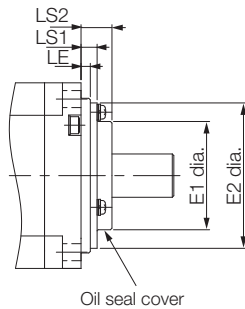
Shaft End Specifications

The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

- With Oil Seal

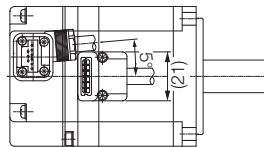


Model	Dimensions with Oil Seal [mm]			
	E1	E2	LS1	LS2
SGMJV-02, 04, 06	36	47	6.7	10
SGMXJ-02, 04, 06	47	35	5.2	10

Connector Mounting Dimensions

- Σ -V Series

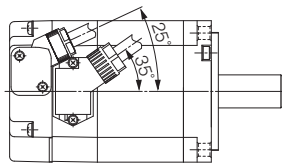
Cable Installed on Load Side



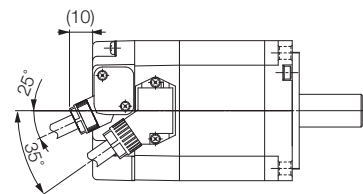
Information The Σ -V series is not available with a cable installed on the non-load side.

- Σ -X Series (Σ -7 compatible specifications)

Cable Installed on Load Side

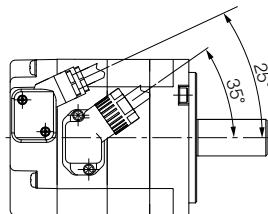


Cable Installed on Non-load Side

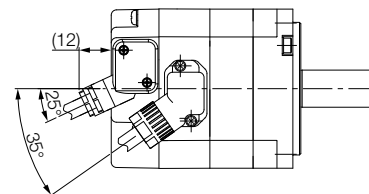


- Σ -X Series (standard specifications)

Cable Installed on Load Side

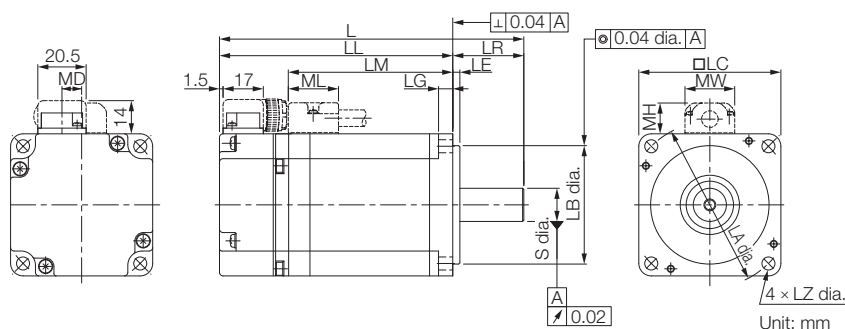


Cable Installed on Non-load Side

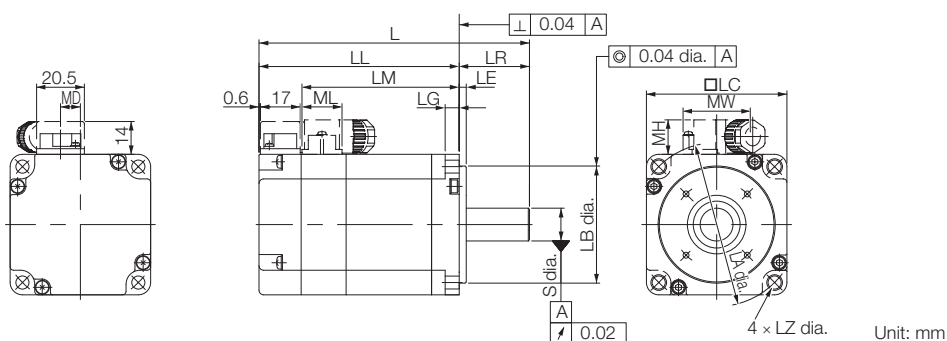


2.3.3 SGMJV-08 and SGMXJ-08

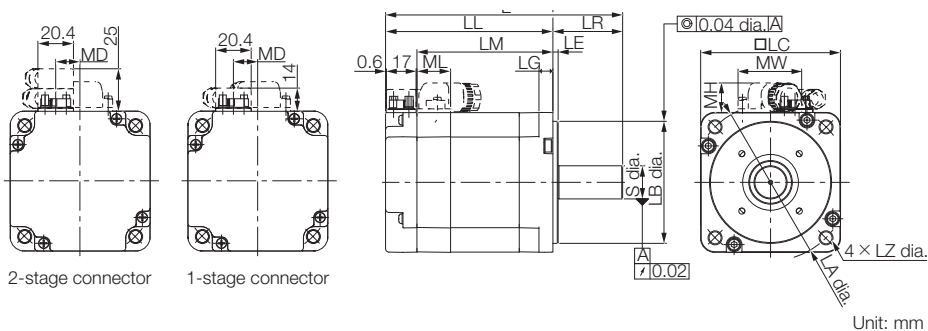
• SGMJV



• SGMXJ-□□□□□□□□2 (Σ-7 compatible specifications)



• SGMXJ-□□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

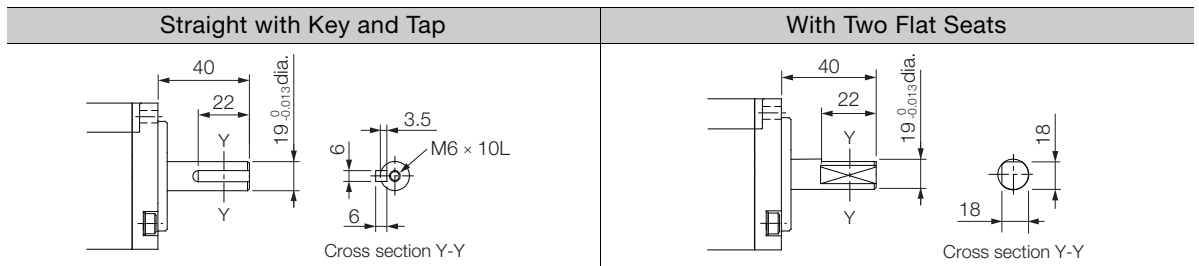
Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
750 W	SGMJV-08A□A21	155.0 (200.0)	115.0 (160.0)	85.0									13.8	27	15	21	2.7 (3.6)
	SGMXJ-08A□A2□A2	136.0 (183.0)	96.0 (143.0)	78.0	40	3	8	80	90	70 ⁰ _{-0.030}	7	19 ⁰ _{-0.013}	13.6	38	17	19.3	2.2 (2.8)
	SGMXJ-08A□A2□A1												14	37			

* In models that have a batteryless absolute encoder, the Σ-X series has L and LL that are +6.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following table for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
750 W	SGMXJ-08AWA2□A□	142.5 (189.5)	102.5 (149.5)	2.3 (2.9)

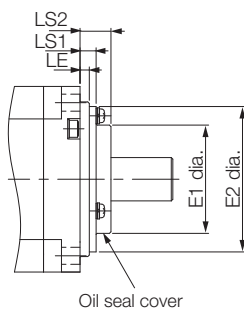
Shaft End Specifications

The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.



Specifications of Options

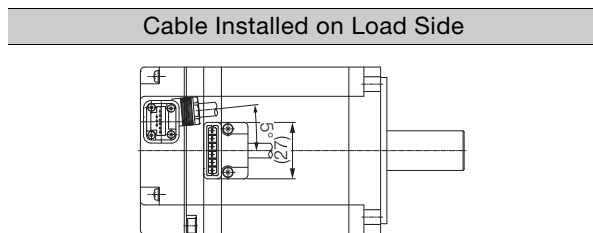
- With Oil Seal



Model SGMJV-	Dimensions with Oil Seal [mm]			
	E1	E2	LS1	LS2
SGMJV-08	49	66	5.5	11
SGMXJ-08	47	61	5.5	11

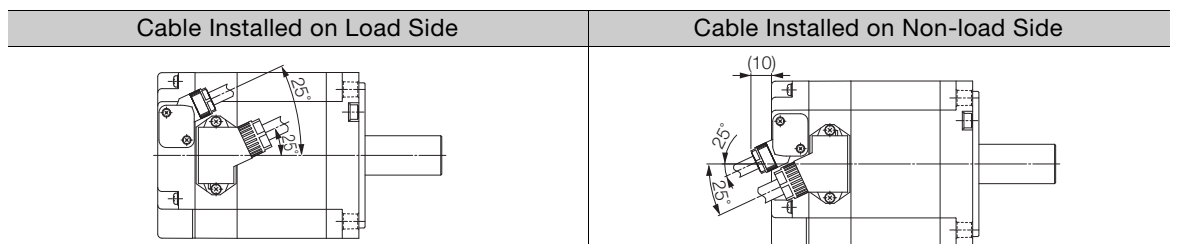
Connector Mounting Dimensions

- Σ -V Series

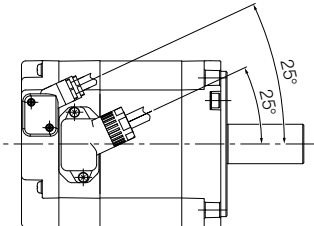
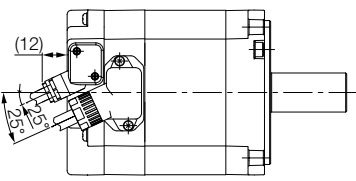


Information Σ -V series is not available with a cable installed on the non-load side.

- Σ -X Series (Σ -7 compatible specifications)

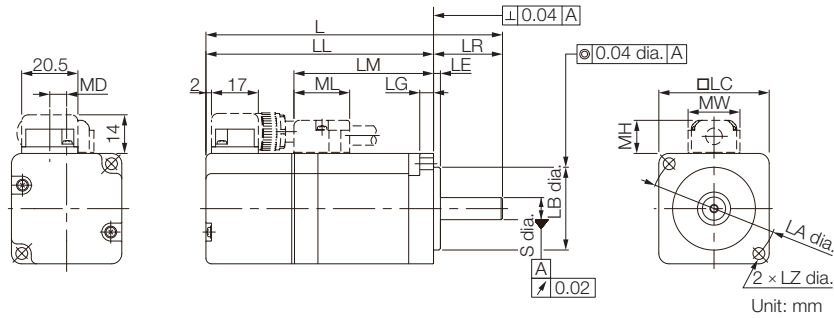


- Σ -X Series (standard specifications)

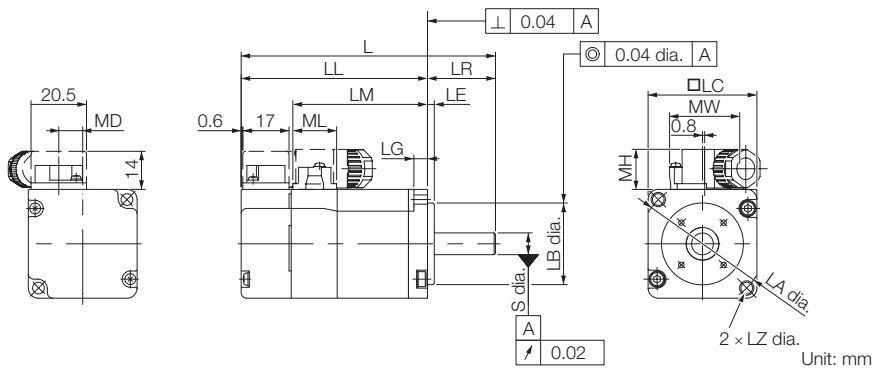
Cable Installed on Load Side	Cable Installed on Non-load Side
	

2.3.4 SGMV-A5 to -C2 and SGMXA-A5 to -C2

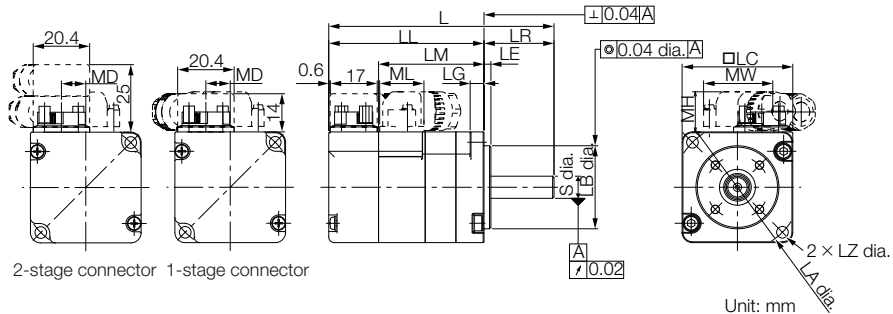
• SGMV



• SGMXA-□□□□□□□□2 (Σ-7 compatible specifications)



• SGMXA-□□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

2.3 Servomotor External Dimensions and Installation Dimensions

2.3.4 SGMV-A5 to -C2 and SGMXA-A5 to -C2

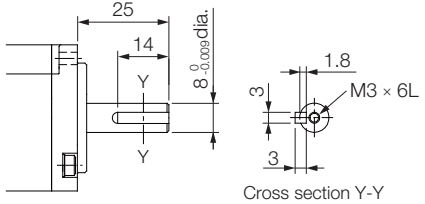
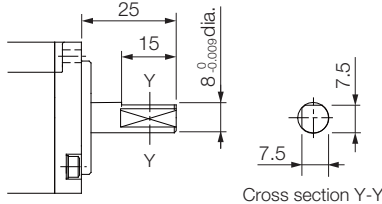
Servo- motor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*																
					LR	LE	LG	LC	LA	LB	LZ																						
50 W	SGMAV-A5A□A21	95.5 (140.5)	70.5 (115.5)	38.5	25	2.5	5	40	46	30 ⁰ _{-0.021}	4.3	8 ⁰ _{-0.009}	6.1	19	12	20	0.3 (0.6)																
	SGMXA-A5A□A2□A2	80.5 (121.0)	55.5 (96.0)	37.5									8.8	25.8	14.7	16.1																	
	SGMXA-A5A□A2□A1												8.4	25	14.5	16																	
100 W	SGMAV-01A□A21	107.5 (152.5)	82.5 (127.5)	50.5									25	2.5	5	40	46	30 ⁰ _{-0.021}	4.3	8 ⁰ _{-0.009}	6.1	19	12	20	0.4 (0.7)								
	SGMXA-01A□A2□A2	92.5 (133.0)	67.5 (108.0)	49.5																	8.8	25.8	14.7	16.1									
	SGMXA-01A□A2□A1																				8.4	25	14.5	16									
150 W	SGMAV-C2A□A21	119.5 (164.5)	94.5 (139.5)	62.5																	25	2.5	5	40	46	30 ⁰ _{-0.021}	4.3	8 ⁰ _{-0.009}	6.1	19	12	20	0.5 (0.8)
	SGMXA-C2A□A2□A2	104.5 (153.0)	79.5 (128.0)	61.5																									8.8	25.8	14.7	16.1	
	SGMXA-C2A□A2□A1																												8.4	25	14.5	16	

* In models that have a batteryless absolute encoder, the Σ -X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following table for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
50 W	SGMXA-A5AWA2□A□	88.0 (128.5)	63.0 (103.5)	0.4 (0.7)
100 W	SGMXA-01AWA2□A□	100.0 (140.5)	75.0 (115.5)	0.5 (0.8)
150 W	SGMXA-C2AWA2□A□	112.0 (160.5)	87.0 (135.5)	0.6 (0.9)

Shaft End Specifications

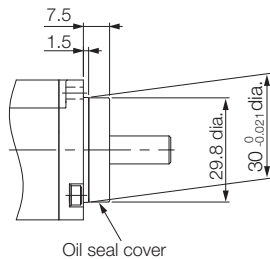
The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

The specifications of the options for the Σ -V series and Σ -X series are identical.

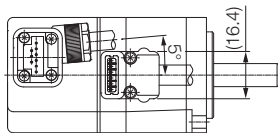
- With Oil Seal



Connector Mounting Dimensions

- Σ -V Series

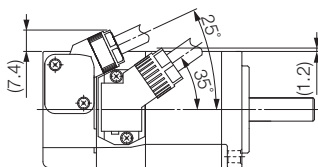
Cable Installed on Load Side



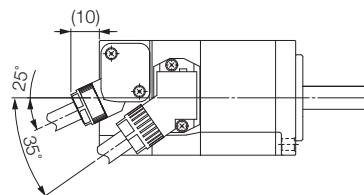
Information The Σ -V series is not available with a cable installed on the non-load side.

- Σ -X Series (Σ -7 compatible specifications)

Cable Installed on Load Side

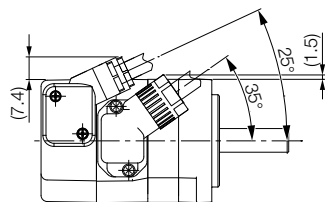


Cable Installed on Non-load Side

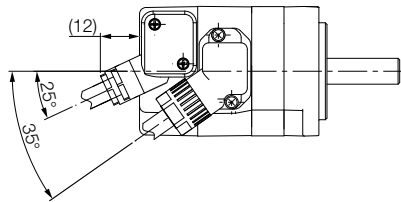


- Σ -X Series (standard specifications)

Cable Installed on Load Side

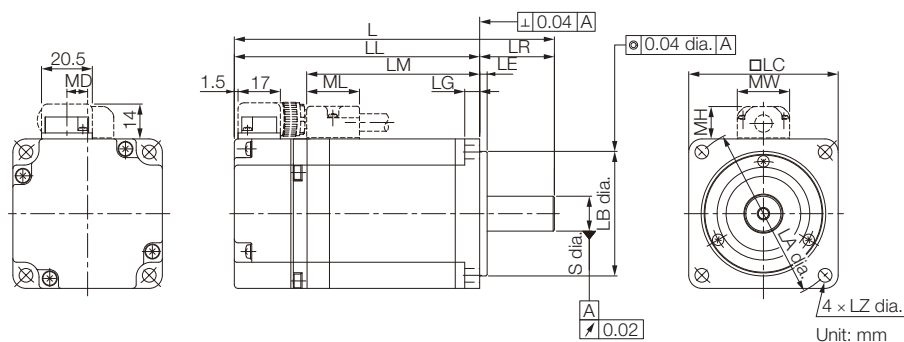


Cable Installed on Non-load Side

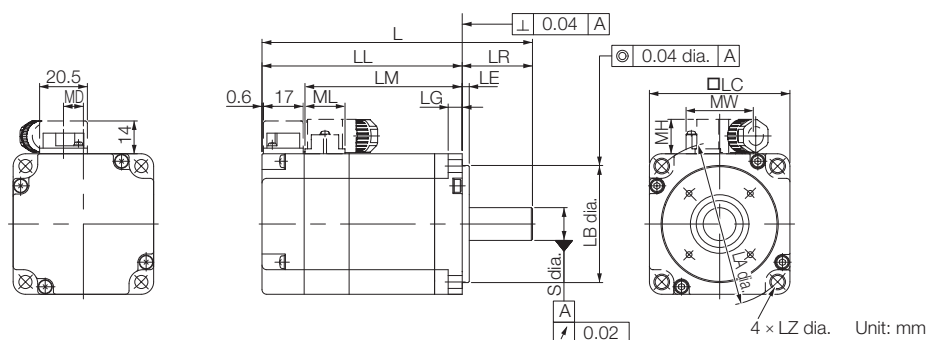


2.3.5 SGMV-02 to -06 and SGMXA-02 to -06

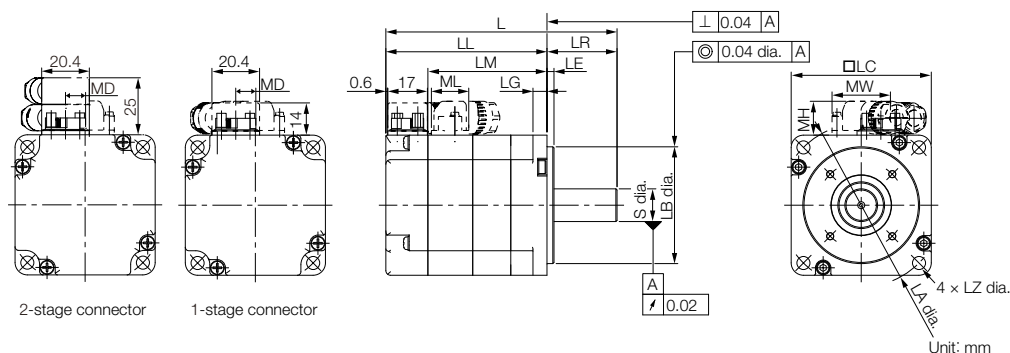
- SGMV



- SGMXA-□□□□□□□2 (Σ-7 compatible specifications)



- SGMXA-□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

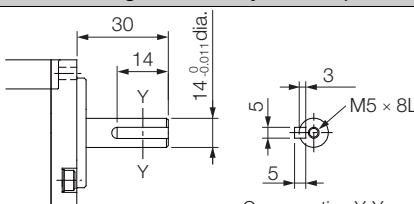
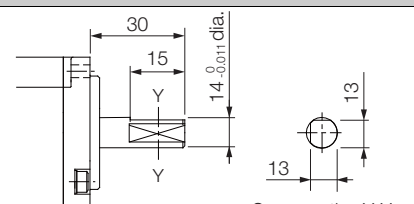
Servo- motor Capacity	Model	L *	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
200 W	SGMAV-02A□A21	110.0 (150.0)	80.0 (120.0)	51.0	30	3	6	60	70	50 ⁰ _{-0.025}	5.5	14 ⁰ _{-0.011}	8.5	21	13	21	0.9 (1.5)
	SGMXA-02A□A2□A2	98.5 (139.0)	68.5 (109.0)	50.5										28.7	14.7	17.1	0.8 (1.4)
	SGMXA-02A□A2□A1												8.4	25	14.5	16	
400 W	SGMAV-04A□A21	128.5 (168.5)	98.5 (138.5)	69.5									8.5	21	13	21	1.2 (1.8)
	SGMXA-04A□A2□A2	115.0 (155.5)	85.0 (125.5)	67.0										28.7	14.7	17.1	
	SGMXA-04A□A2□A1													8.4	25	14.5	
600 W	SGMAV-08A□A21	154.5 (200.5)	124.5 (170.5)	95.5									8.5	21	13	21	1.7 (2.4)
	SGMXA-06A□A2□A2	137.0 (191.0)	107.0 (161.0)	89.0										28.7	14.7	17.1	1.6 (2.2)
	SGMXA-06A□A2□A1													8.4	25	14.5	

* In models that have a batteryless absolute encoder, the Σ -X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following table for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
200 W	SGMXA-02AWA2□A□	106.0 (146.5)	76.0 (116.5)	0.9 (1.5)
400 W	SGMXA-04AWA2□A□	122.5 (163.0)	92.5 (133.0)	1.3 (1.9)
600 W	SGMXA-06AWA2□A□	144.5 (198.5)	114.5 (168.5)	1.7 (2.3)

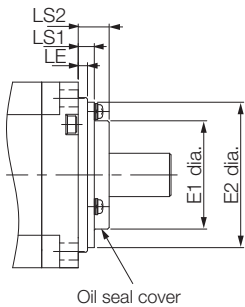
Shaft End Specifications

The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
 Cross section Y-Y	 Cross section Y-Y

Specifications of Options

- With Oil Seal

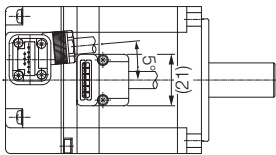


Model	Dimensions with Oil Seal [mm]			
	E1	E2	LS1	LS2
SGMAV-02, -04, -06	36	48	4	10
SGMXV-02, -04, -06	35	47	5.2	10

Connector Mounting Dimensions

- Σ -V Series

Cable Installed on Load Side



Information Σ -V series is not available with a cable installed on the non-load side.

- Σ -X Series (Σ -7 compatible specifications)

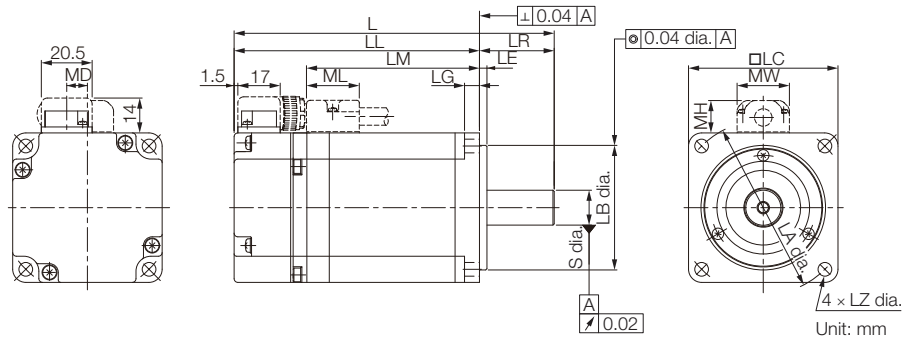
Cable Installed on Load Side	Cable Installed on Non-load Side

- Σ -X Series (standard specifications)

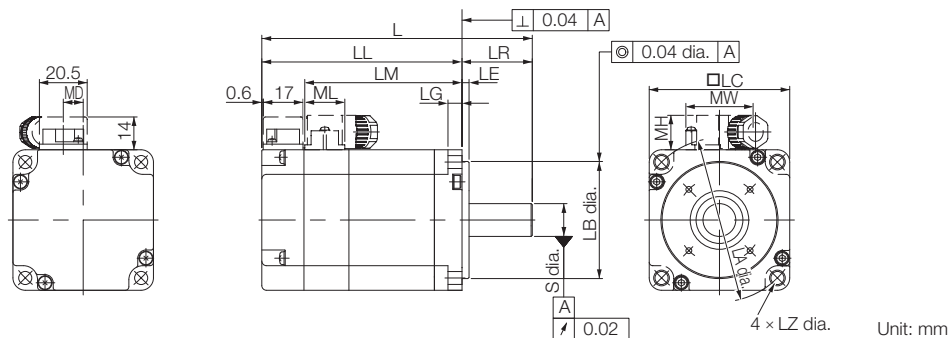
Cable Installed on Load Side	Cable Installed on Non-load Side

2.3.6 SGMV-08, -10 and SGMXA-08, -10

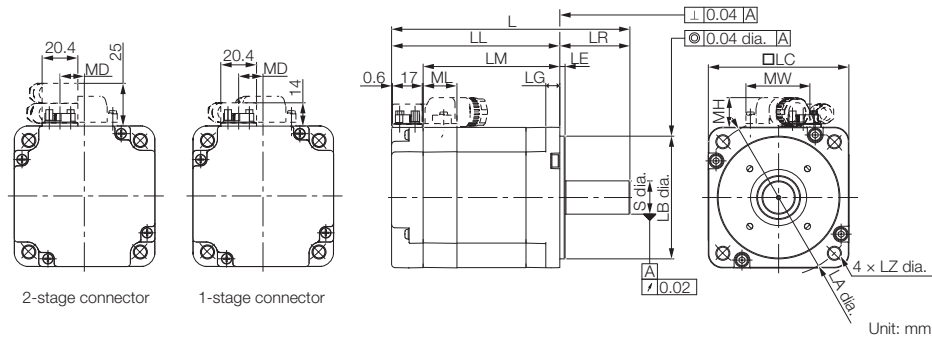
• SGMV



• SGMXA-□□□□□□□2 (Σ-7 compatible specifications)



• SGMXA-□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

Servomotor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ						
750 W	SGMAV-08A□A21	155.0 (200.0)	115.0 (160.0)	85.0	40	3	8	80	90	70 ⁰ _{-0.030}	7	19 ⁰ _{-0.013}	13.8	27	15	21	2.6 (3.2)
	SGMXA-08A□A2□A2	136.0 (183.0)	96.0 (143.0)	78.0									13.6	38	17	19.3	2.3 (2.9)
	SGMXA-08A□A2□A1												14	37			
1.0 kW	SGMAV-10A□A21	185.0 (235.0)	145.0 (195.0)	115.0	40	3	8	80	90	70 ⁰ _{-0.030}	7	19 ⁰ _{-0.013}	13.8	27	15	21	3.6 (4.6)
	SGMXA-10A□A2□A2	161.0 (208.0)	121.0 (168.0)	103.0									13.6	38	17	19.3	3.1 (3.7)
	SGMXA-10A□A2□A1												14	37			

2.3 Servomotor External Dimensions and Installation Dimensions

2.3.6 SGMAV-08, -10 and SGMXA-08, -10

* In models that have a batteryless absolute encoder, the Σ -X series has L and LL that are +7.5 mm and an approximate mass that is +0.1 kg than the values provided here. Refer to the following table for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
750 W	SGMXA-08AWA2□A□	143.5 (190.5)	103.5 (150.5)	2.4 (3.0)
1.0 kW	SGMXA-10AWA2□A□	167.5 (214.5)	92.5 (133.0)	3.2 (3.8)

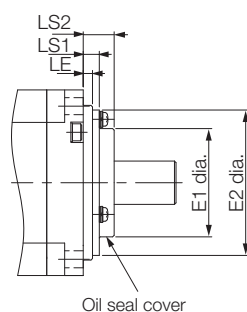
Shaft End Specifications

The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

Straight with Key and Tap	With Two Flat Seats
Cross section Y-Y	Cross section Y-Y

Specifications of Options

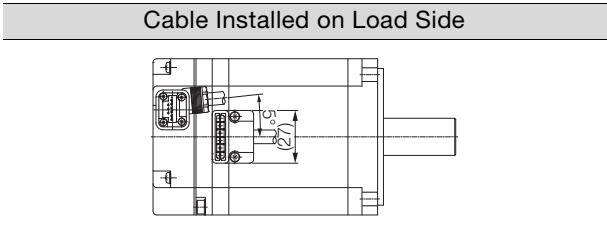
- With Oil Seal



Model	Dimensions with Oil Seal [mm]			
	E1	E2	LS1	LS2
SGMAV-08, -10	49	66	6	11
SGMXV-08, -10	47	61	5.5	11

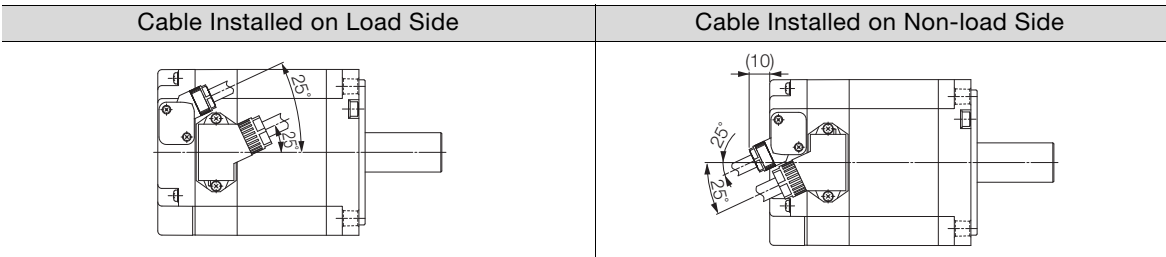
Connector Mounting Dimensions

- Σ -V Series

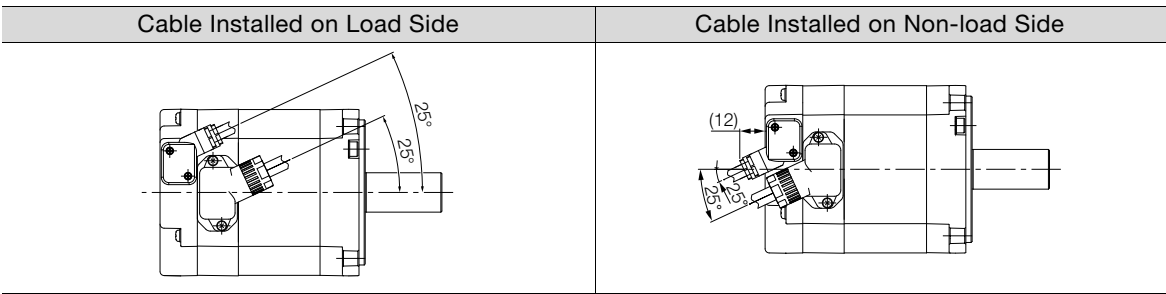


Information The Σ -V series is not available with a cable installed on the non-load side.

- Σ -X Series (Σ -7 compatible specifications)

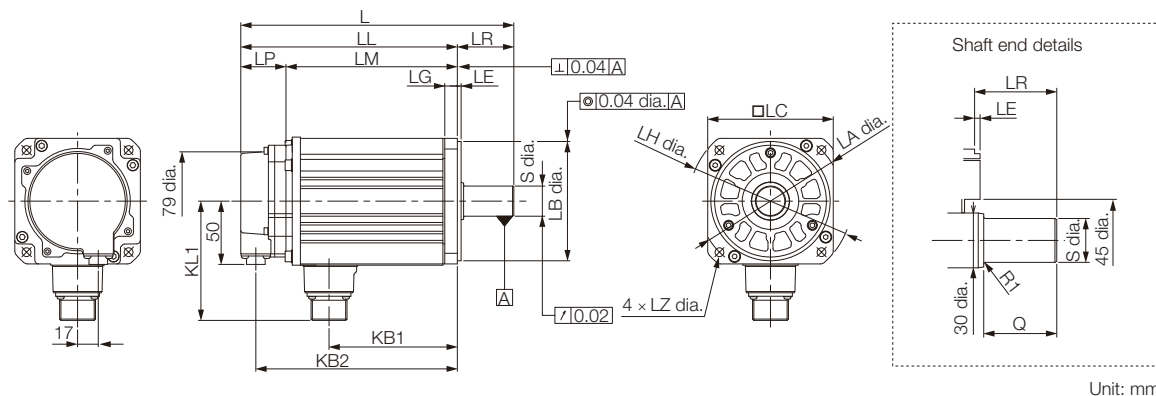


- Σ -X Series (standard specifications)

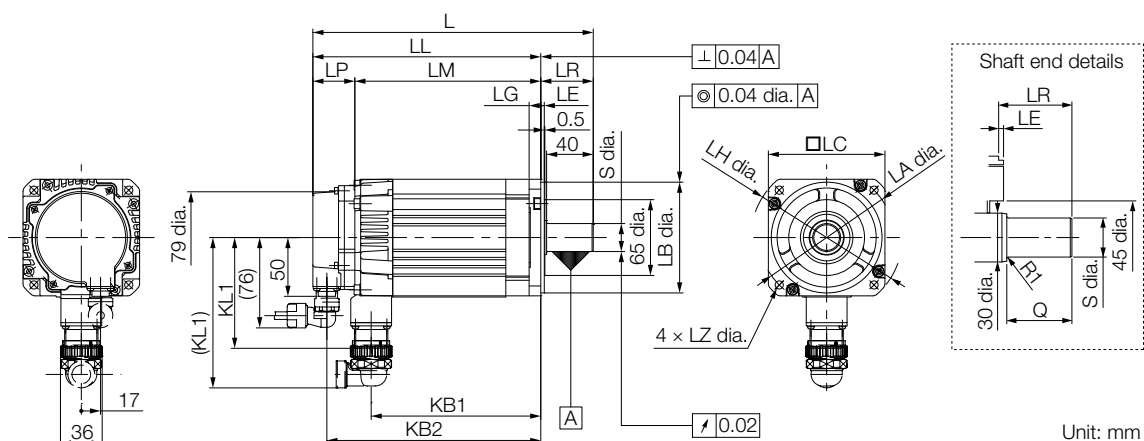


2.3.7 SGMSV-15 to -25 and SGMXA-15 to -25

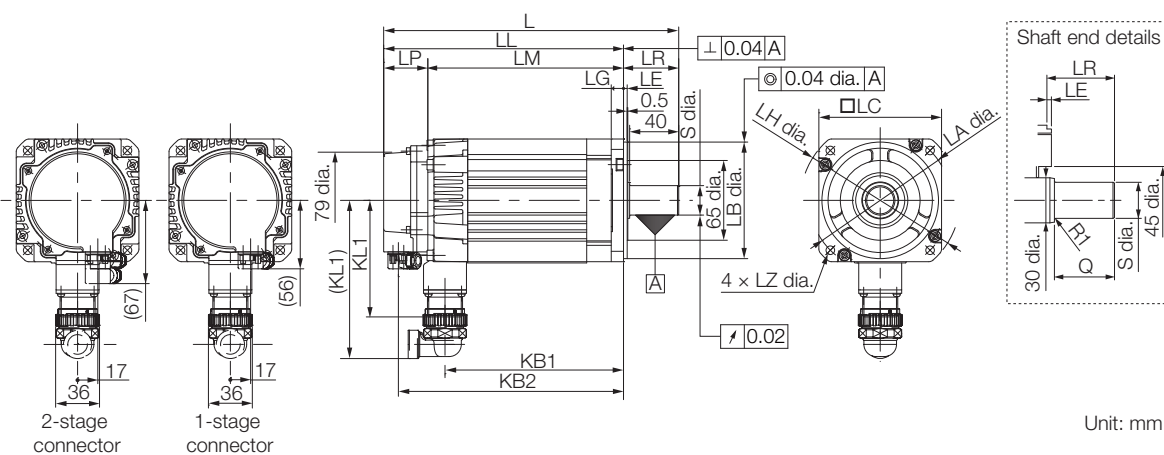
- Without Holding Brakes
<SGMSV>



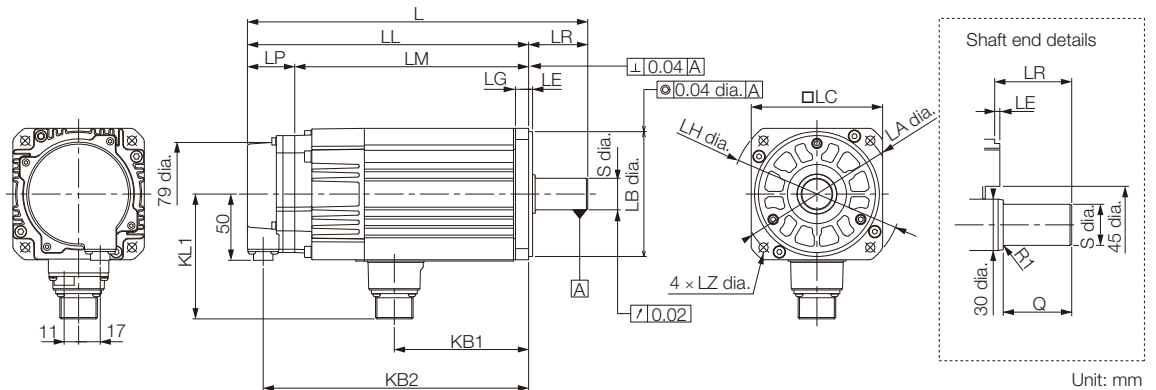
<SGMXA-□□□□□□1□2 (Σ-7 compatible specifications)>



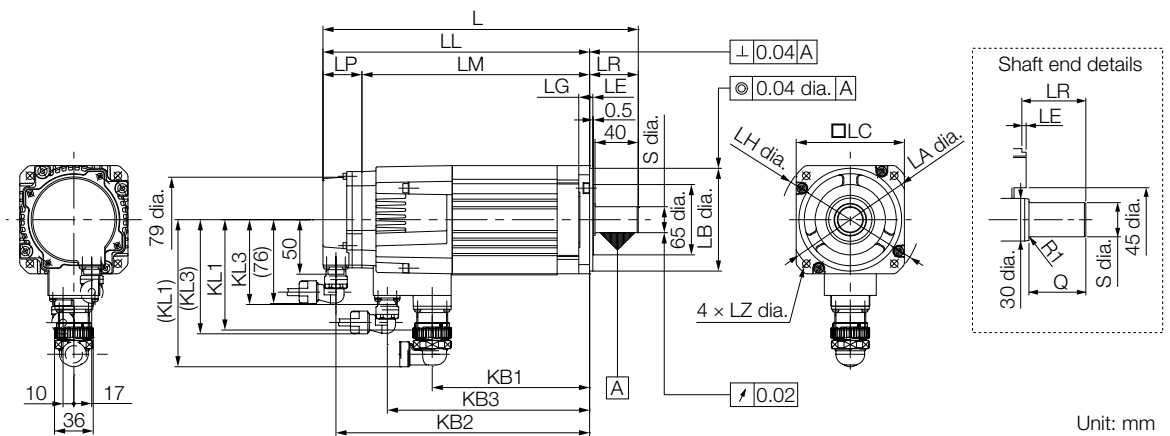
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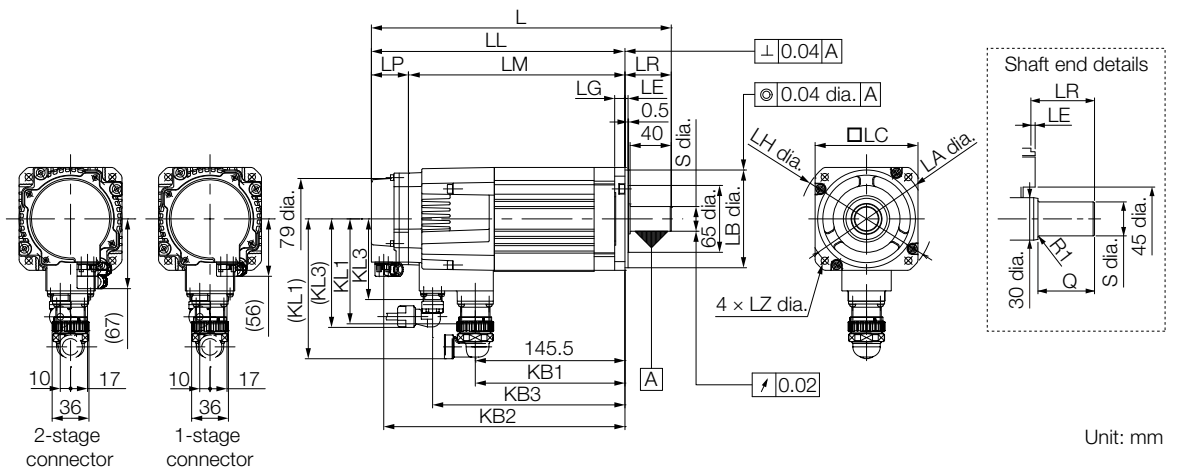
• With Holding Brakes
<SGMSV>



<SGMXA-□□□□□□C□2 (Σ-7 compatible specifications)>



<SGMXA-□□□□□□C□1 (standard specifications)>



2.3 Servomotor External Dimensions and Installation Dimensions

2.3.7 SGMSV-15 to -25 and SGMXA-15 to -25

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo- motor Capacity	Model	L ^{*1}	LL ^{*1}	LM	LP ^{*1}	LR	KB1	KB2 ^{*1}	KB3	KL1	(KL1) *2	KL3	(KL3) *2	Approx. Mass [kg]
1.5 kW	SGMSV-15A□A2□	202 (243)	157 (198)	121 (162)	36	45	86 (77)	145 (186)	—	96 (102)	—	—	—	4.6 (6.0)
	SGMXA-15A□A2□A□	200 (241)	155 (196)		34		107 (107)	143 (184)	— (139)	95 (102)	129 (136)	— (80)	— (105)	
2.0 kW	SGMSV-20A□A2□	218 (259)	173 (214)	137 (178)	36		102 (93)	161 (202)	—	96 (102)	—	—	—	5.4 (6.8)
	SGMXA-20A□A2□A□	216 (257)	171 (212)		34		123 (123)	159 (200)	— (155)	95 (102)	129 (136)	— (80)	— (105)	
2.5 kW	SGMSV-25A□A2□	241 (292)	196 (247)	160 (211)	36		125 (116)	184 (225)	—	96 (102)	—	—	—	6.8 (8.7)
	SGMXA-25A□A2□A□	239 (290)	194 (245)		34		146 (156)	182 (233)	— (188)	95 (102)	129 (136)	— (80)	— (105)	

Servo- motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
1.5 kW	SGMSV-15A□A2□	115	95 ⁰ _{-0.035}	100	3	10	130	7	24 ⁰ _{-0.013}	40
	SGMXA-15A□A2□A□									
2.0 kW	SGMSV-20A□A2□									
	SGMXA-20A□A2□A□									
2.5 kW	SGMSV-25A□A2□									
	SGMXA-25A□A2□A□									

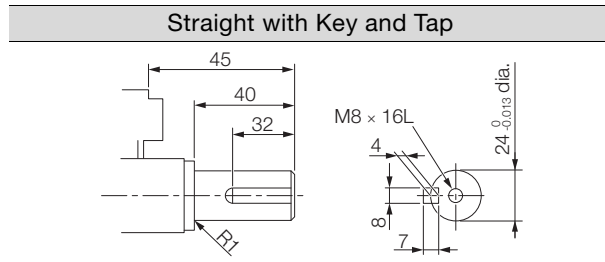
*1. For models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	LP	KB2
1.5 kW	SGMXA-15AWA2□A□	208 (249)	163 (204)	42 (42)	151 (192)
2.0 kW	SGMXA-20AWA2□A□	224 (265)	179 (220)	42 (42)	167 (208)
2.5 kW	SGMXA-25AWA2□A□	247 (298)	202 (253)	42 (42)	190 (241)

*2. These values are for the case where a flexible connector is connected with the SGMXA-.

Shaft End Specifications

The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

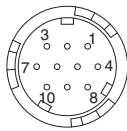


Connector Mounting Dimensions

◆ For Encoders

• Σ -V Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -V series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -V series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug

(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,

CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,

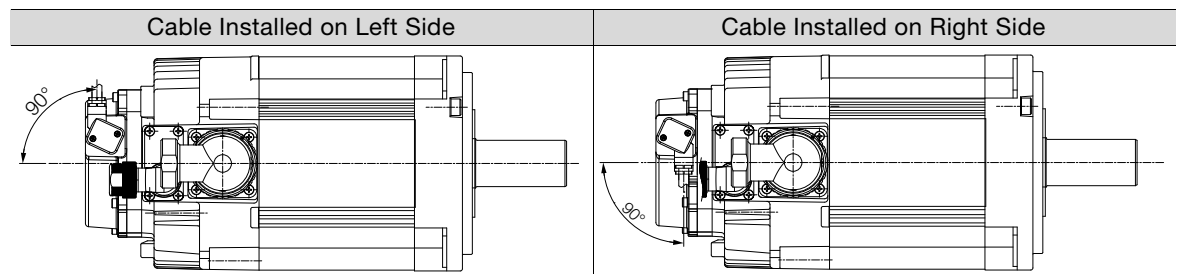
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug

(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

• Σ -X Series (standard specifications)

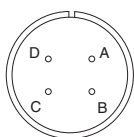
The following figures show the installation direction of the encoder cable.



◆ For Servomotors

• Σ -V Series without Holding Brake and Σ -X Series

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



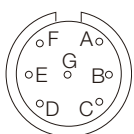
A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

<Manufacturers>

Σ -V series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

• Σ -V Series with Holding Brakes



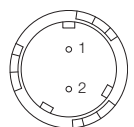
A	Phase U	E	Brake terminal
B	Phase V	F	Brake terminal
C	Phase W	G	—
D	FG (frame ground)		

<Manufacturers>

Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -V series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

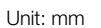
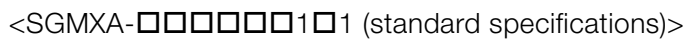
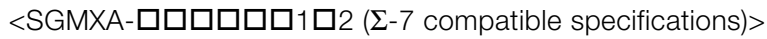
Receptacle: CMV1-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right-angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

- Without Holding Brakes
<SGMSV>

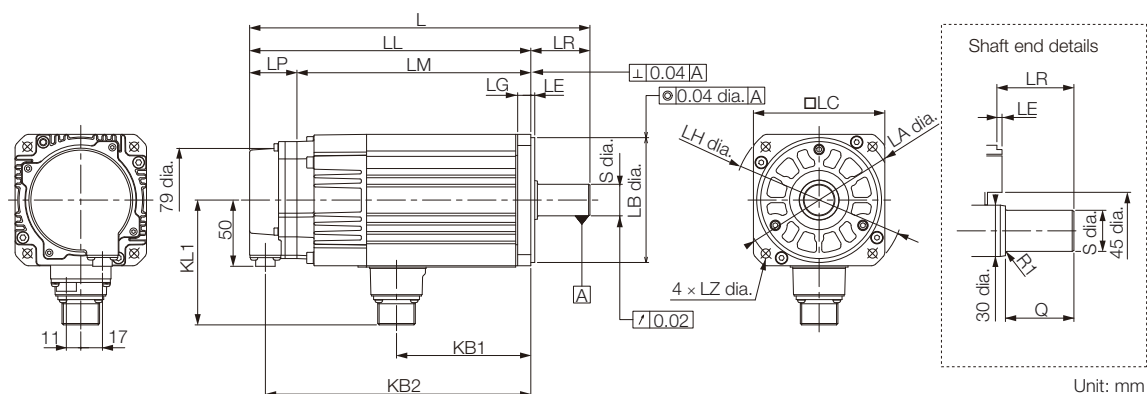


2.3 Servomotor External Dimensions and Installation Dimensions

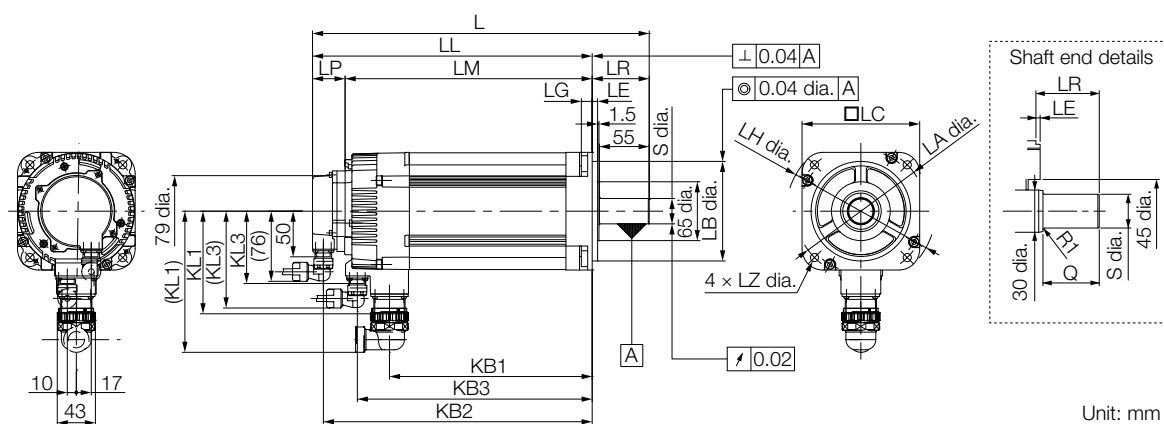
2.3.8 SGMSV-30 to -50 and SGMXA-30 to -50

• With Holding Brakes

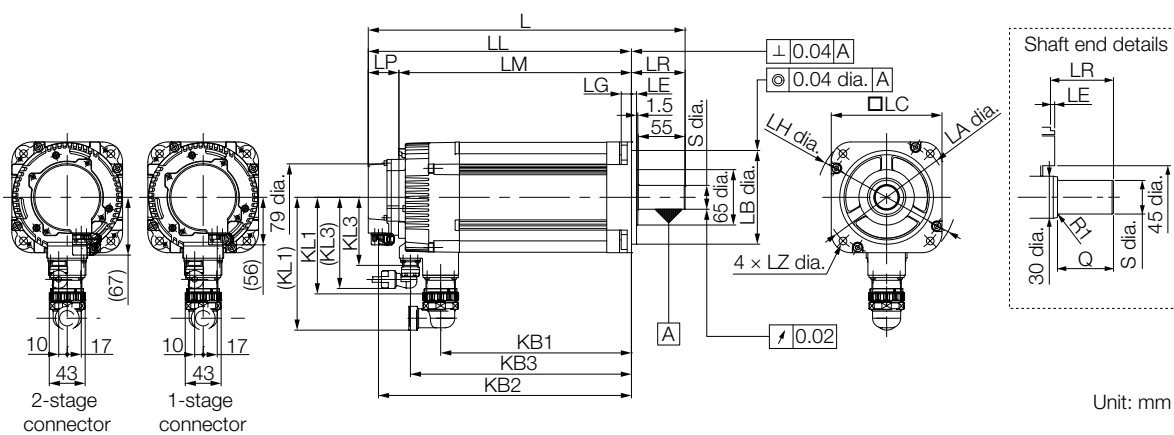
<SGMSV>



<SGMXA-□□□□□□C□2 (Σ-7 compatible specifications)>



<SGMXA-□□□□□□C□1 (standard specifications)>



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L ^{*1}	LL ^{*1}	LM	LP [*] ₁	LR	KB1	KB2 [*] ₁	KB3	KL1	(KL1))* ₂	KL3	(KL3))* ₂	Approx. Mass [kg]
3.0 kW	SGMSV-30A□A2□	259 (295)	196 (232)	160 (196)	36	63	124 (114)	184 (220)	—	114 (119)	—	—	—	10.5 (13)
	SGMXA-30A□A2□A□	255 (291)	192 (228)	158 (194)	34		145	180 (216)	— (181)	114 (114)	157	— (81)	— (106)	
4.0 kW	SGMSV-40A□A2□	296 (332)	233 (269)	197 (233)	36		161 (151)	221 (257)	—	114 (119)	—	—	—	13.5 (16)
	SGMXA-40A□A2□A□	294 (330)	231 (267)		34		184	219 (255)	— (220)	114 (114)	157	— (81)	— (106)	
5.0 kW	SGMSV-50A□A2□	336 (372)	273 (309)	237 (273)	36		201 (191)	261 (297)	—	114 (119)	—	—	—	16.5 (19)
	SGMXA-50A□A2□A□	334 (370)	271 (307)		34		224	259 (295)	— (260)	114 (114)	157	— (81)	— (106)	

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
3.0 kW	SGMSV-30A□A2□	145	110 ⁰ _{-0.035}	130	6	12	165	9	28 ⁰ _{-0.013}	55
	SGMXA-30A□A2□A□									
4.0 kW	SGMSV-40A□A2□									
	SGMXA-40A□A2□A□									
5.0 kW	SGMSV-50A□A2□									
	SGMXA-50A□A2□A□									

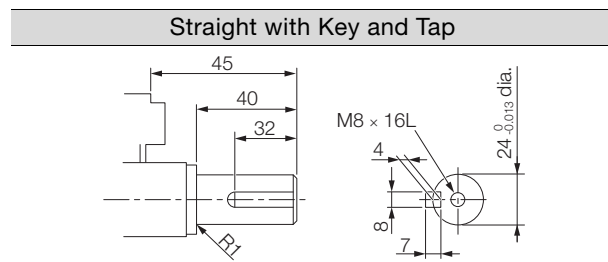
*1. For models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	LP	KB2
3.0 kW	SGMXA-30AWA2□A□	263 (299)	200 (238)	42	188 (226)
4.0 kW	SGMXA-40AWA2□A□	302 (338)	239 (275)	42	227 (263)
5.0 kW	SGMXA-50AWA2□A□	342 (378)	279 (315)	42	267 (303)

*2. These values are for the case where a flexible connector is connected with the SGMXA-.

Shaft End Specifications

The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

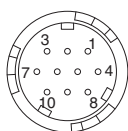


Connector Mounting Dimensions

◆ For Encoders

• Σ -V Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -V series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -V series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug

(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,

CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,

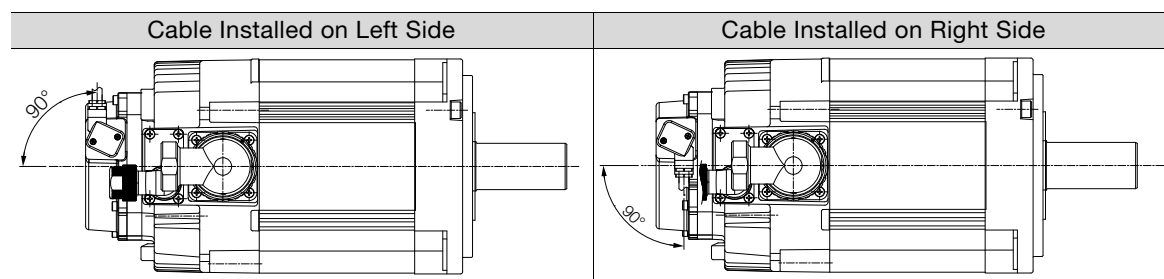
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug

(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

• Σ -X Series (standard specifications)

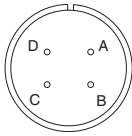
The following figures show the installation direction of the encoder cable.



◆ For Servomotors

• Σ -V Series without Holding Brake and Σ -X Series

The specifications of the connectors for the Σ -V series and Σ -X series are identical.

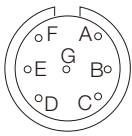


A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

<Manufacturers>

Japan Aviation Electronics Industry, Ltd.

• Σ -V Series with Holding Brakes



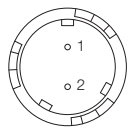
A	Phase U	E	Brake terminal
B	Phase V	F	Brake terminal
C	Phase W	G	—
D	FG (frame ground)		

<Manufacturers>

Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -V series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

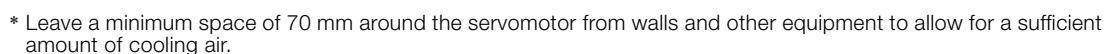
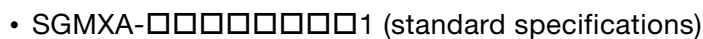
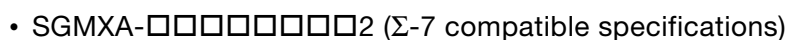
Receptacle: CMV1-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right-angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

- SGMSV



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The dimensions are same for models with oil seals.

2. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L	LL	LM	LR	KB1	KB2*	KL1	(KL1)	Approx. Mass [kg]
7.0 kW	SGMSV-70A□A2□	397	334	291	63	201	261	114	—	18.5
	SGMXA-70A□A2□A□					224	259		157	

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
7.0 kW	SGMSV-70A□A2□	145	110 ⁰ _{-0.035}	130	6	12	165	9	28 ⁰ _{-0.013}	55
	SGMXA-70A□A2□A□									

* For models that have a batteryless absolute encoder, KB2 is 8 mm greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	KB2
7.0 kW	SGMXA-70AWA2□A□	267

Cooling Fan Specifications

The cooling fan specifications for the Σ -V series and Σ -X series are identical.

- Single-phase, 220 V
- 50 Hz/60 Hz
- 17 W/15 W
- 0.11 A/0.09 A

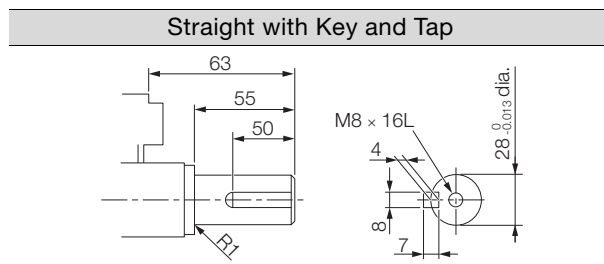
Specifications of Fan Operation Error Detector

Only the Σ -V series features the fan operation error detector.

- Contact capacity maximum allowable voltage: 350 V (AC/DC)
Maximum allowable current: 120 mA (AC/DC)
Maximum controllable power: 360 mW
- Alarm contacts ON for normal fan rotation.
OFF at $1680 \pm 100 \text{ min}^{-1}$ max.
OFF for 3 seconds at startup.

Shaft End Specifications

The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

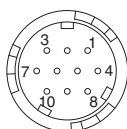


Connector Mounting Dimensions

◆ For Encoders

- Σ -V Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -V series and Σ -X series (Σ -7 compatible specification) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

2.3 Servomotor External Dimensions and Installation Dimensions

2.3.9 SGMSV-70 and SGMXA-70

* A battery is required only for an absolute encoder.

< Σ -V series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

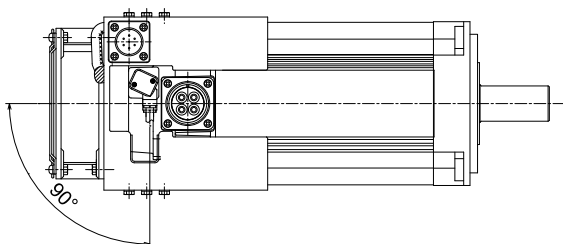
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug,
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

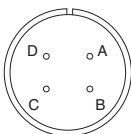
• Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



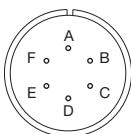
A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

<Manufacturers>

Japan Aviation Electronics Industry, Ltd.

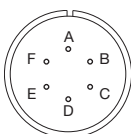
◆ For Fans

• Σ -V Series



A	Fan motor	D	Alarm pin
B	Fan motor	E	Alarm pin
C	—	F	FG (frame ground)

• Σ -X Series



A	Fan motor	D	—
B	Fan motor	E	—
C	—	F	FG (frame ground)

Receptacle: MS3102A14S-6P

Applicable plug: Not provided by Yaskawa.

Plug: MS3108B14S-6S

Cable Clamp: MS3057-6A

Manufacturer: Japan Aviation Electronics Industry, Ltd.

Note: 1. The servomotor connector (receptacle) is RoHS compliant.

Contact the connector manufacturer for RoHS-compliant cable-side connectors (not provided by Yaskawa).

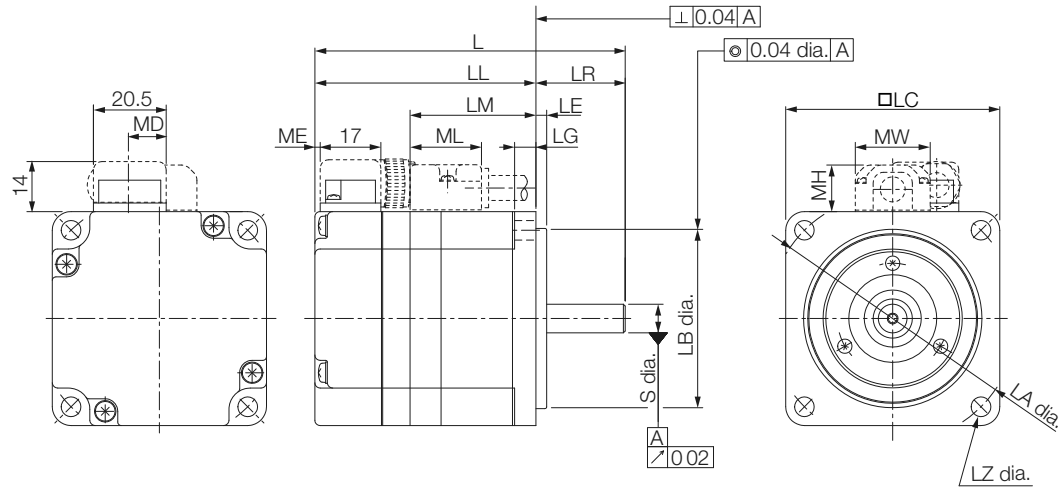
2. Only the Σ -V series features the fan operation error detector.

For the Σ -X series, the D and E terminals are short-circuited on the servomotor.

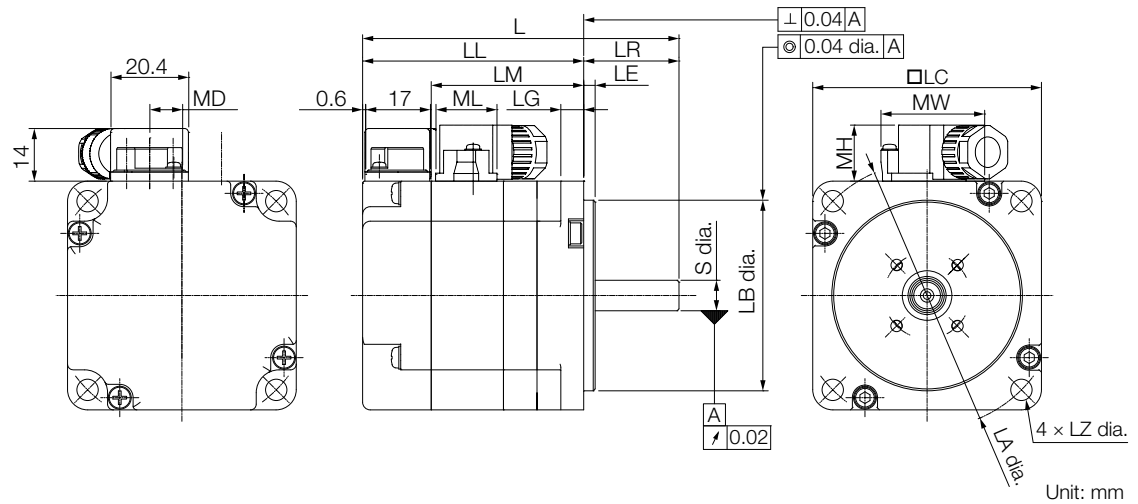
When the fan is stopped, the servomotor is protected by the temperature sensor in the encoder.

2.3.10 SGMPS-01 to -04 and SGMXP-01 to -04

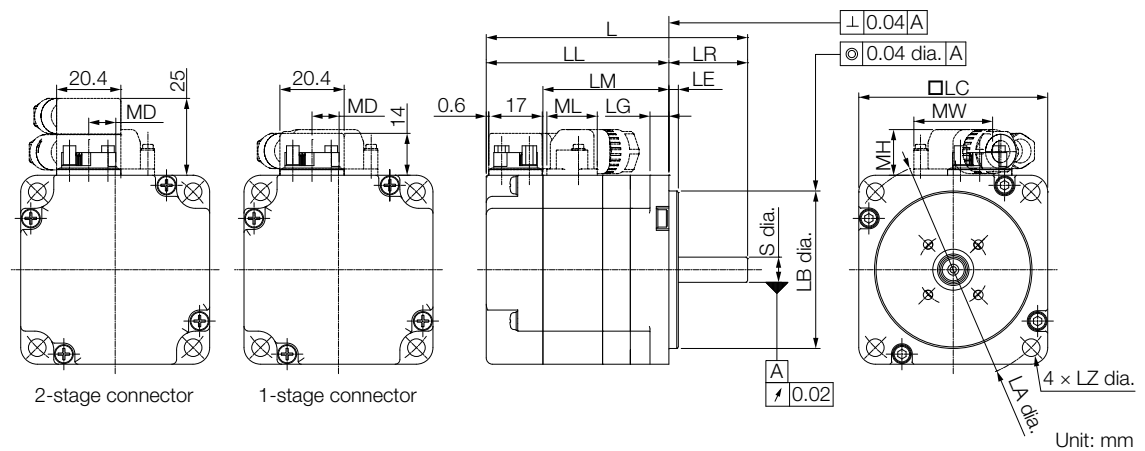
• SGMPS



• SGMXP-□□□□□□□2 (Σ -7 compatible specifications)



• SGMXP-□□□□□□□1 (standard specifications)



2.3 Servomotor External Dimensions and Installation Dimensions

2.3.10 SGMPS-01 to -04 and SGMXP-01 to -04

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

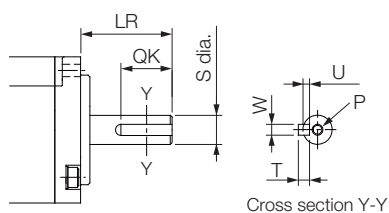
Servomotor Capacity	Model	L*	LL*	LM	Flange Dimensions							S	MD	ME	MW	MH	ML	Approx. Mass [kg]*
					LR	LE	LG	LC	LA	LB	LZ							
100 W	SGMPS-01A□A21-E	87 (115)	62 (90)	36	25		6	60	70	50 ⁰ _{-0.025}	5.5	8 ⁰ _{-0.009}	9	1	19.8	12	20	0.5 (0.7)
	SGMXP-01A□A2□A2	83 (113.0)	58 (88.0)	40									8.5	—	25.8	14.7	16.1	0.4 (0.7)
	SGMXP-01A□A2□A1												8.4	—	25	14.5	16	
200 W	SGMPS-02A□A21-E	97 (128.5)	67 (98.5)	43	30	3	8	80	90	70 ⁰ _{-0.030}	7	14 ⁰ _{-0.011}	14	1.5	21	13	21	1.1 (1.6)
	SGMXP-02A□A2□A2	95 (113.0)	65 (96.5)	47										—	28.7	14.7	17.1	1.1 (1.8)
	SGMXP-02A□A2□A1													—	25	14.5	16	
400 W	SGMPS-04A□A21-E	107 (138.5)	77 (108.5)	53	30		8	80	90	70 ⁰ _{-0.030}	7	14 ⁰ _{-0.011}	14	1.5	21	13	21	1.4 (1.9)
	SGMXP-04A□A2□A2	105 (136.5)	75 (106.5)	57										—	28.7	14.7	17.1	1.4 (2.1)
	SGMXP-04A□A2□A1													—	25	14.5	16	

* For Σ-X-series models that have a batteryless absolute encoder, the SGMXP-01 has L and LL that are 7.5 mm greater, the SGMXP-02A and 04A have L and LL that are 6.5 mm greater, and the SGMXP-01A, 02A, and 04A have an approximate mass that is 0.1 kg greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
100 W	SGMXP-01AWA2□A□	90.5 (120.5)	65.5 (95.5)	0.5 (0.8)
200 W	SGMXP-02AWA2□A□	101.5 (133)	71.5 (103)	1.2 (1.9)
400 W	SGMXP-04AWA2□A□	111.5 (143)	81.5 (113)	1.5 (2.2)

Shaft End Specifications

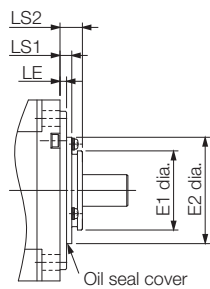
- Straight with Key and Tap



Model	LR	QK	S	W	T	U	P
SGMPS-01A□A61-E	25	14	8 ⁰ _{-0.009}	3	3	1.8	M3 × 6L
SGMXP-01A□A61□□		16					
SGMPS-02A□A61-E	30	14	14 ⁰ _{-0.011}	5	5	3	M5 × 8L
SGMXP-02A□A61□□		16					
SGMPS-04A□A61-E		16					
SGMXP-04A□A61□□		14					

Specifications of Options

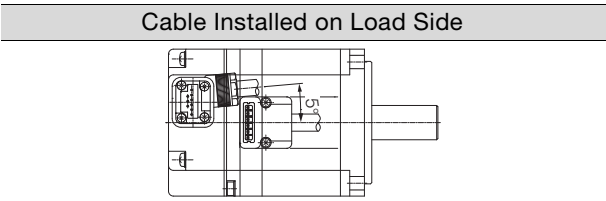
- With oil seal



Model	E1	E2	LS1	LS2	LE
SGMPS-01A□A61-E	22	39	3.5	7	3
SGMXP-01A□A61□□		38			
SGMPS-02A□A61-E	35	49	6.5	10	
SGMXP-02A□A61□□		47	5.2		
SGMPS-04A□A61-E		49	6.5		
SGMXP-04A□A61□□		47	5.2		

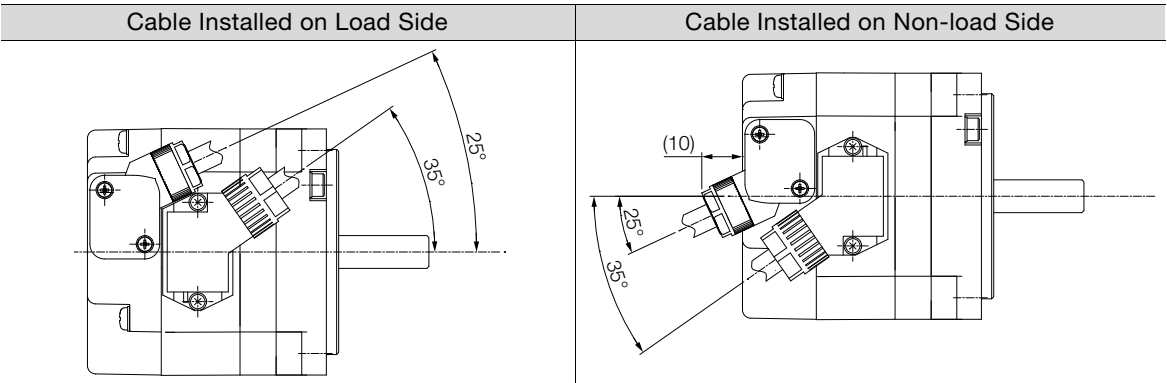
Connector Mounting Dimensions

- Σ-V Series

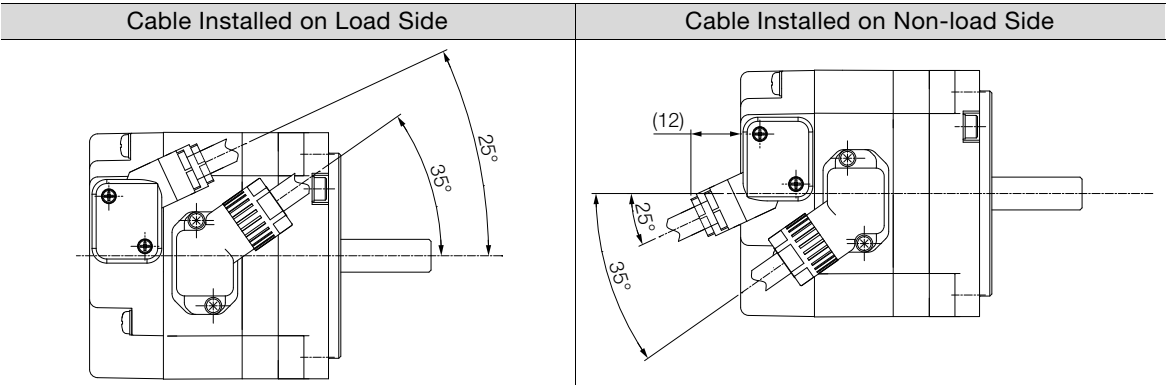


Information Σ-V series is not available with a cable installed on the non-load side.

- Σ-X Series (Σ-7 compatible specifications)

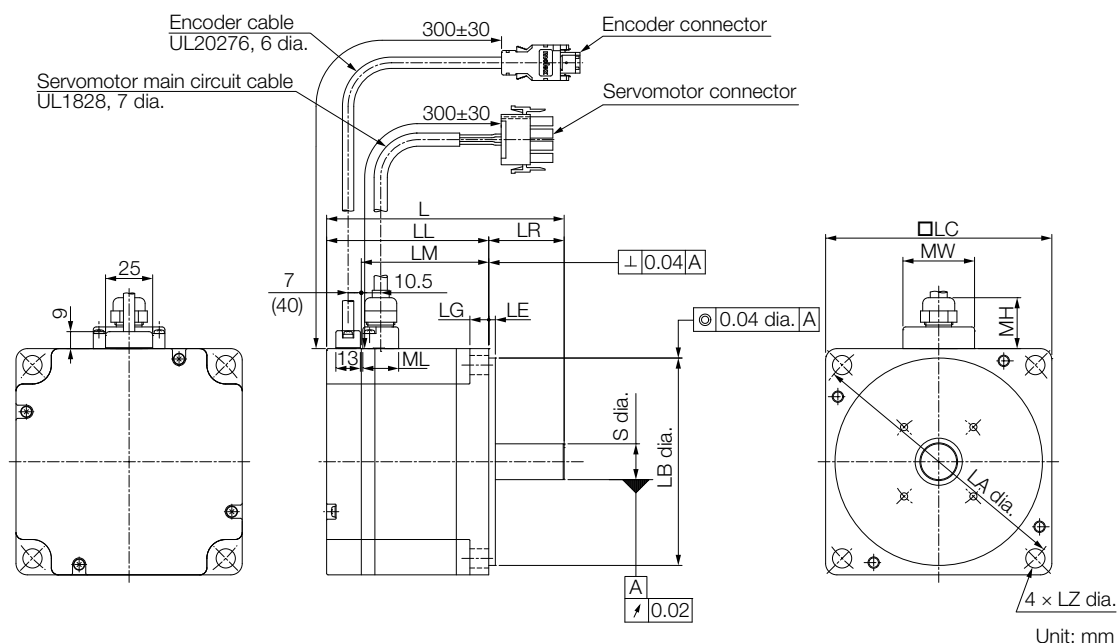


- Σ-X Series (standard specifications)

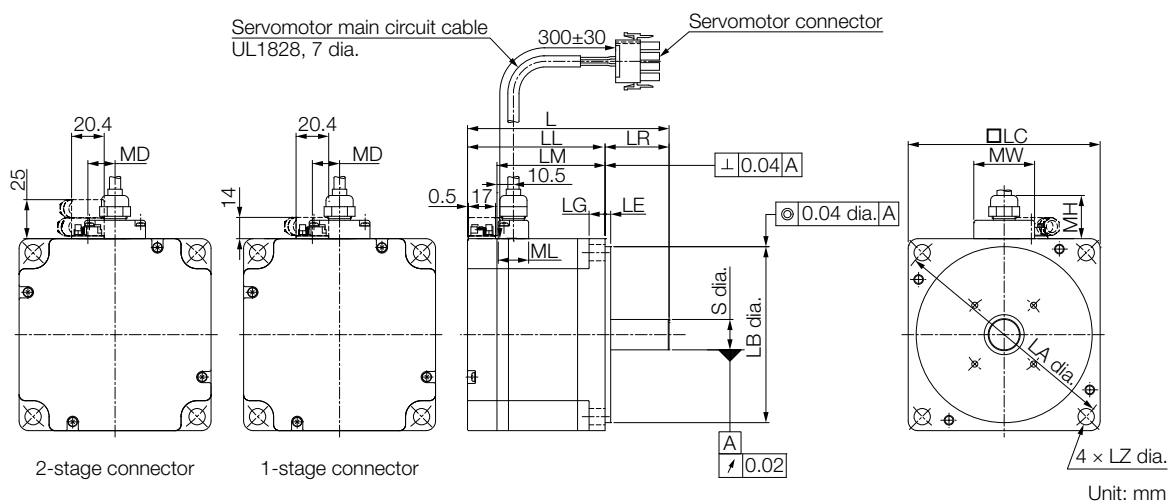


2.3.11 SGMPS-08, -15 and SGMXP-08, -15

- SGMPS, SGMXP-□□□□□□□□2 (Σ-7 compatible specifications)



- SGMXP-□□□□□□□□1 (standard specifications)



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The values for a straight, without key specification are given.

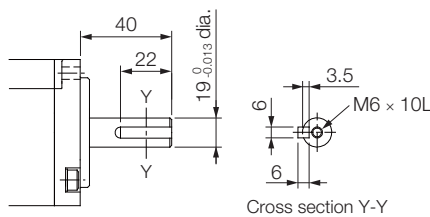
Servomotor Capacity	Model	L*	LL*	LM	Flange Dimensions						S	MD	MW	MH	ML	Approx. Mass [kg]*
					LE	LG	LC	LA	LB	LZ						
750 W	SGMPS-08A□A21-E	126.5 (160.0)	86.5 (120.0)	66.7	3.5	10	120	145	110 ⁰ _{-0.035}	10	16 ⁰ _{-0.011}	—	38	28	19 (25.5)	4.2 (5.9)
	67.6			10.2						19 ⁰ _{-0.013}	17					
	SGMXP-08A□A2□A1															
1.5 kW	SGMPS-15A□A21-E	154.5 (187.5)	114.5 (147.5)	94.7	3.5	10	120	145	110 ⁰ _{-0.035}	10	19 ⁰ _{-0.013}	—	38	28	19 (25.5)	6.6 (8.2)
	154.5 (188.0)	114.5 (148.0)	95.6	10.2						17						
	SGMXP-15A□A2□A1															

* For Σ -X-series models that have a batteryless absolute encoder, L and LL are 8 mm greater and the approximate mass is 0.1 kg greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	Approx. Mass [kg]
750 W	SGMXP-08AWA2□A□	134.5 (168)	94.5 (128)	4.3 (6)
1.5 kW	SGMXP-15AWA2□A□	162.5 (196)	122.5 (156)	6.7 (8.3)

Shaft End Specifications

- Straight with Key and Tap



Model	LR	QK	S	W	T	U	P
SGMPS-08A□A61-E	40	22	16 ⁰ _{-0.011}	5	5	3	M5 x 8L
SGMXP-08A□A61□□			19 ⁰ _{-0.013}	6	6	3.5	M6 x 10L
SGMPS-15A□A61-E							
SGMXP-15A□A61□□							

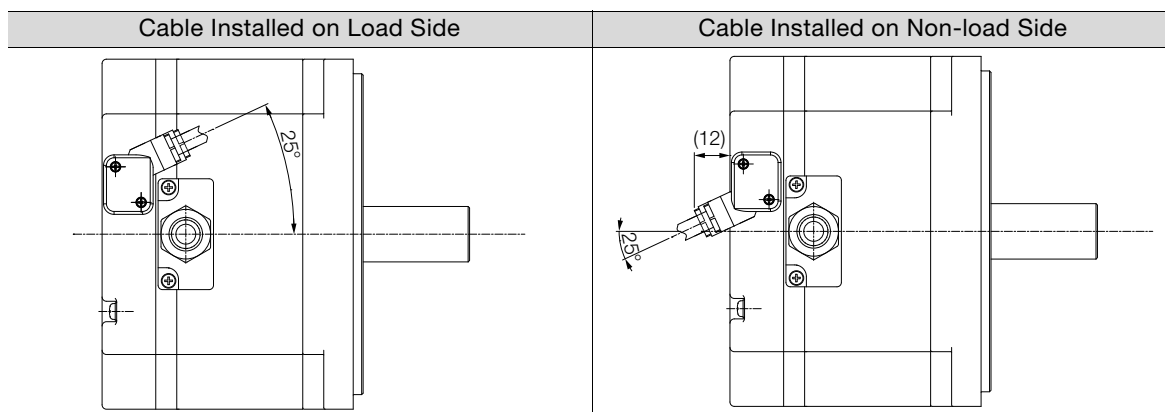
Specifications of Options

- With Oil Seal

Σ -V	Σ -X
Technical drawing of the shaft end for the Σ-V model with an oil seal cover. Dimensions shown: 10.5 (total length), 5 (key length), 3.5 (key height), 55 dia. (shaft diameter), 77 dia. (oil seal cover diameter), and Oil seal cover.	Technical drawing of the shaft end for the Σ-X model with an oil seal cover. Dimensions shown: 10 (total length), 5 (key length), 3.5 (key height), 47 dia. (shaft diameter), 66 dia. (oil seal cover diameter), and Oil seal cover.

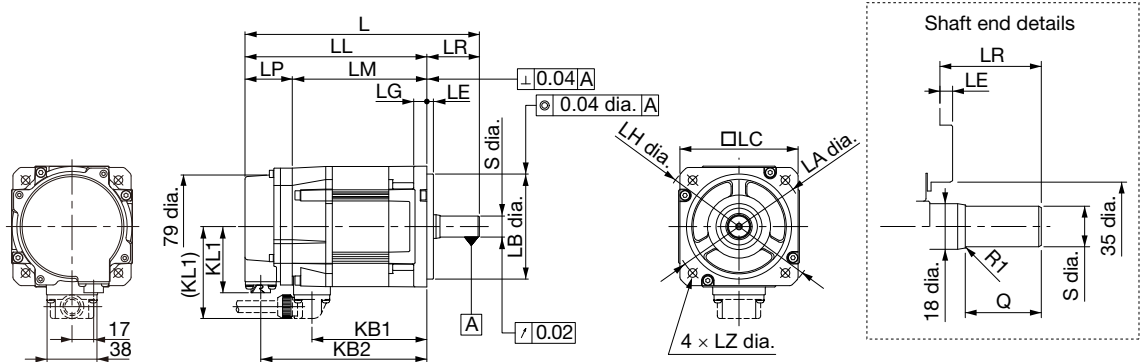
Connector Mounting Dimensions

- Σ -X Series (standard specifications)

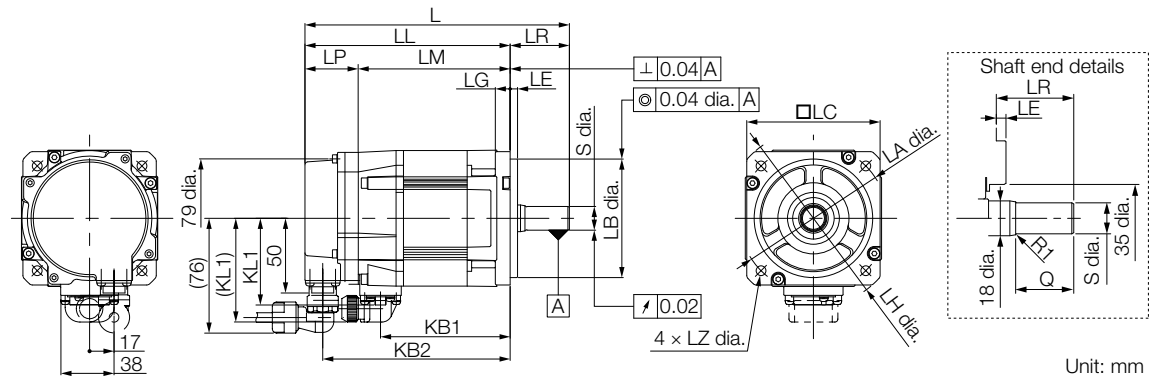


2.3.12 SGMGV-03, -05 and SGMXG-03, -05

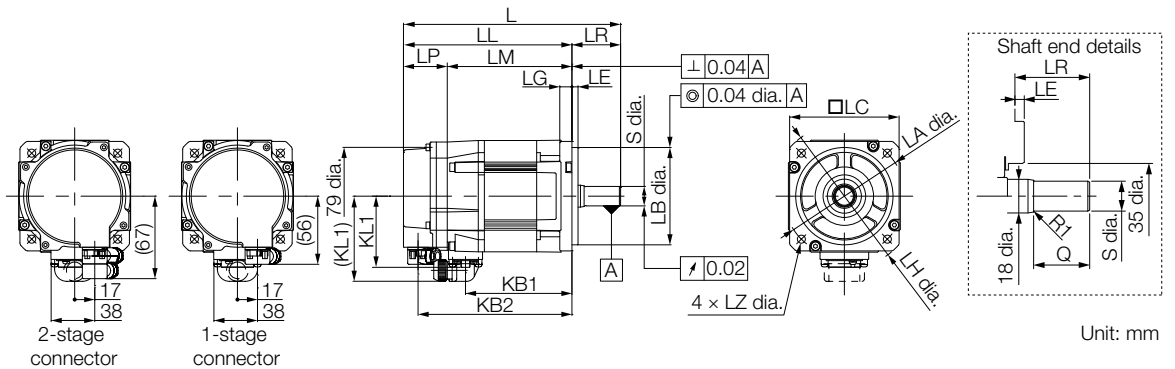
- Without Holding Brakes
<SGMGV>



<SGMXG-□□□□□□1□2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□1□1 (standard specifications)>

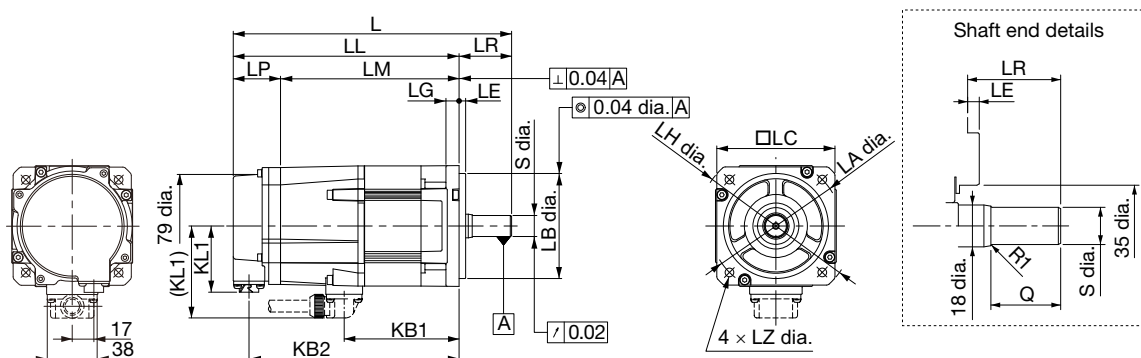


2.3 Servomotor External Dimensions and Installation Dimensions

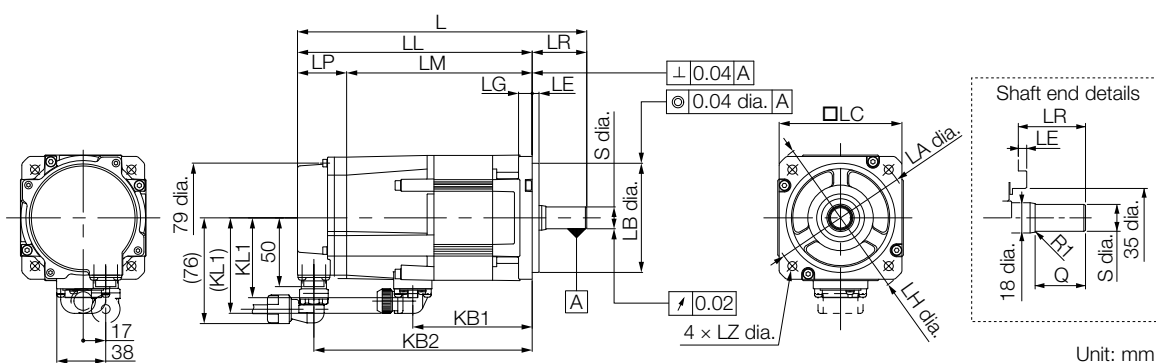
2.3.12 SGMGV-03, -05 and SGMXG-03, -05

• With Holding Brakes

<SGMGV>

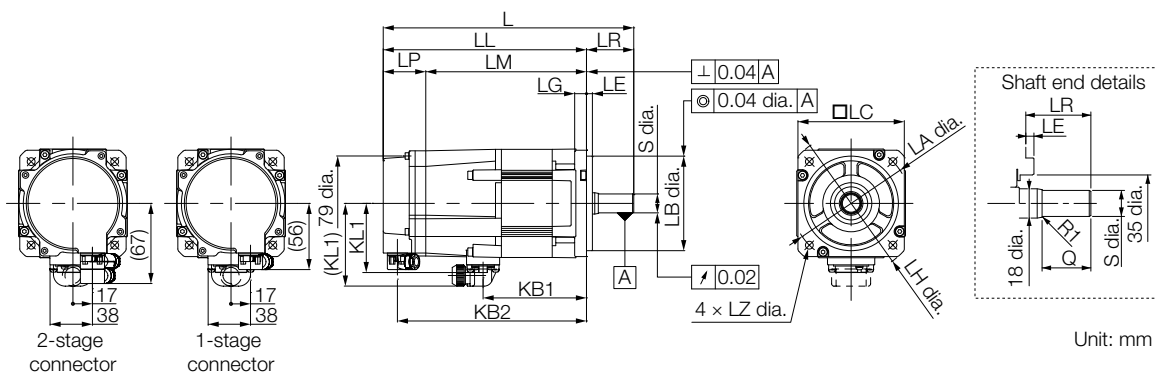


<SGMXG-□□□□□□C□2 (Σ-7 compatible specifications)>



Unit: mm

<SGMXG-□□□□□□C□1 (standard specifications)>



Unit: mm

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L*	LL*	LM	LP*	LR	KB1	KB2*	KL1	(KL1)	Approx. Mass [kg]
300 W	SGMGV-03A□A2□	163 (196)	126 (159)	90 (123)	36	37	75	114 (147)	50	70	2.6 (3.6)
	SGMXG-03A□A2□A□	164 (197)	124 (157)		34	40		112 (145)	59		
450 W	SGMGV-05A□A2□	179 (212)	139 (172)	103 (136)	36	40	88	127 (160)	50		3.2 (4.2)
	SGMXG-05A□A2□A□	177 (210)	137 (170)		34			125 (158)	59		

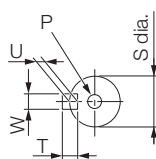
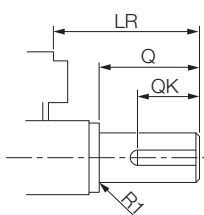
Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions	
		LA	LB	LC	LE	LG	LH	LZ	S	Q
300 W	SGMGV-03A□A2□	100	80 ⁰ _{-0.030}	90	5	10	120	6.6	14 ⁰ _{-0.011}	25
	SGMXG-03A□A2□A□								16 ⁰ _{-0.011}	30
450 W	SGMGV-05A□A2□									
	SGMXG-05A□A2□A□									

* For Σ-X-series models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

Servomotor Capacity	Model	L	LL	LP	KB2
300 W	SGMXG-03A□A2□A□	172 (205)	132 (165)	42 (42)	120 (153)
450 W	SGMXG-05A□A2□A□	185 (218)	145 (178)	42 (42)	133 (166)

Shaft End Specifications

- Straight with Key and Tap



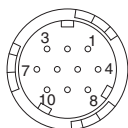
Model	LR	Q	QK	S	W	T	U	P
SGMGV-03A□A61	37	25	15	14 ⁰ _{-0.011}	5	5	3	M4 × 10L
SGMXG-03A□A61□□	40	30	20	16 ⁰ _{-0.011}				M5 × 12L
SGMGV-05A□A61								
SGMXG-05A□A61□□								

Connector Mounting Dimensions

◆ For Encoders

• Σ -V Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -V series and Σ -X series (Σ -7 compatible specifications) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -V series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

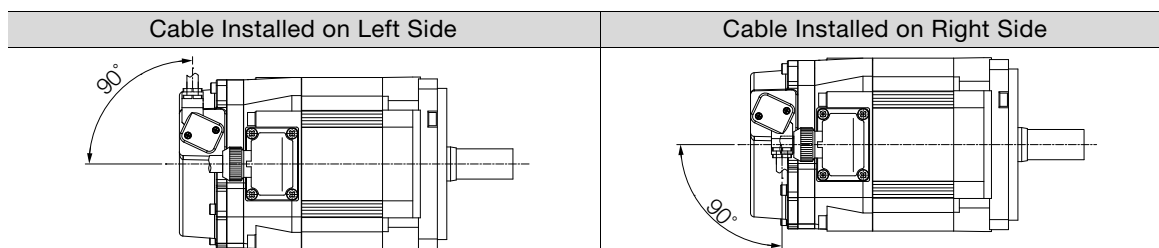
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

• Σ -X Series (standard specifications)

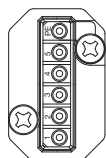
The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -V series and Σ -X series are identical.

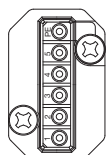
• Without Holding Brakes



PE	FG (frame ground)	3	Phase U
5	—	2	Phase V
4	—	1	Phase W

Manufacturer: Japan Aviation Electronics Industry, Ltd.

• With Holding Brakes

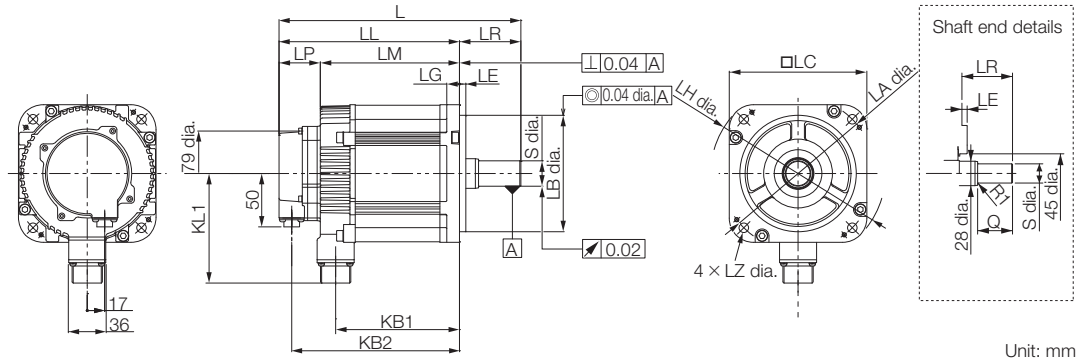


PE	FG (frame ground)	3	Phase U
5	Brake terminal	2	Phase V
4	Brake terminal	1	Phase W

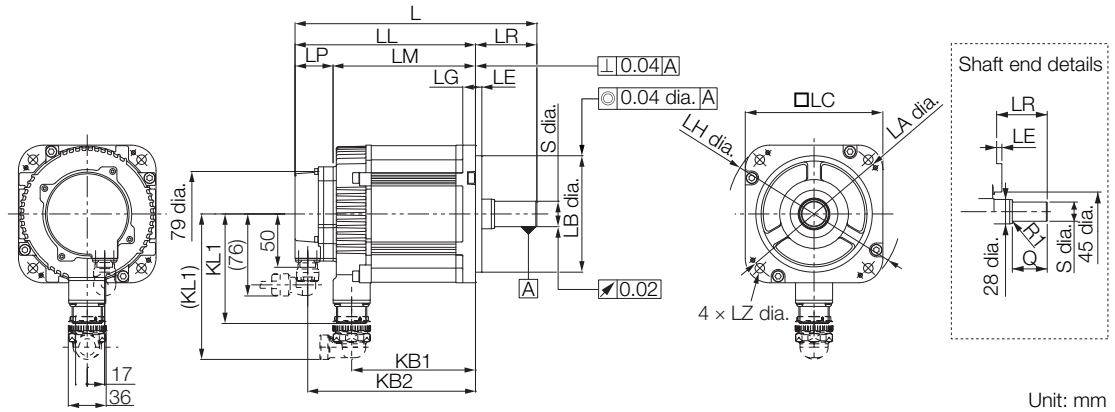
Manufacturer: Japan Aviation Electronics Industry, Ltd.

2.3.13 SGMGV-09 to -20 and SGMXG-09 to -20

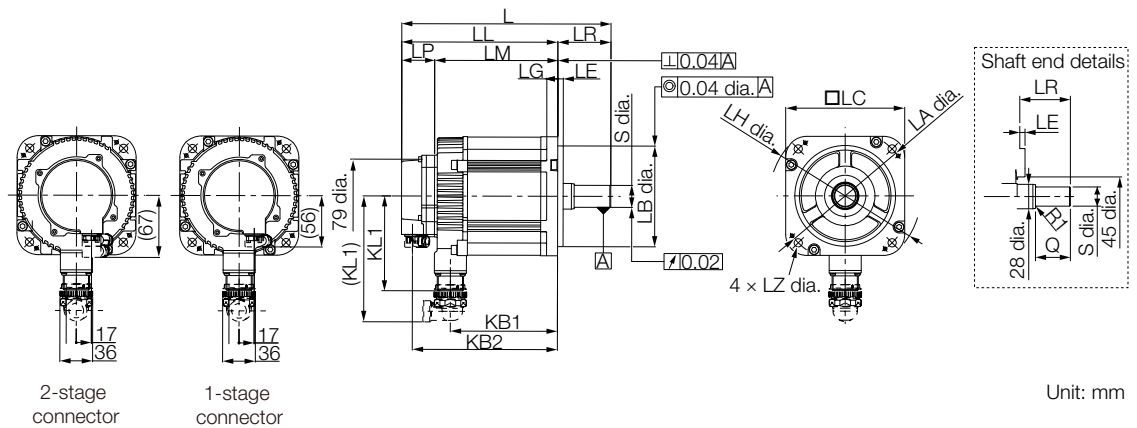
- Without Holding Brakes
<SGMGV>



<SGMXG-□□□□□□1□2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□1□1 (standard specifications)>

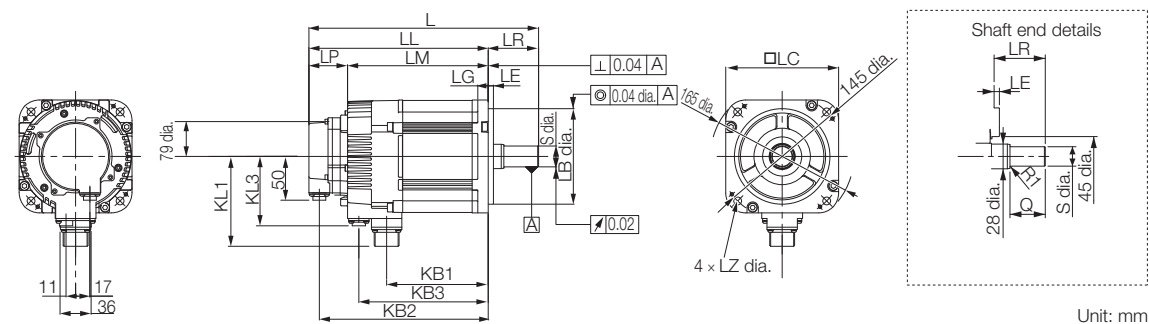


2.3 Servomotor External Dimensions and Installation Dimensions

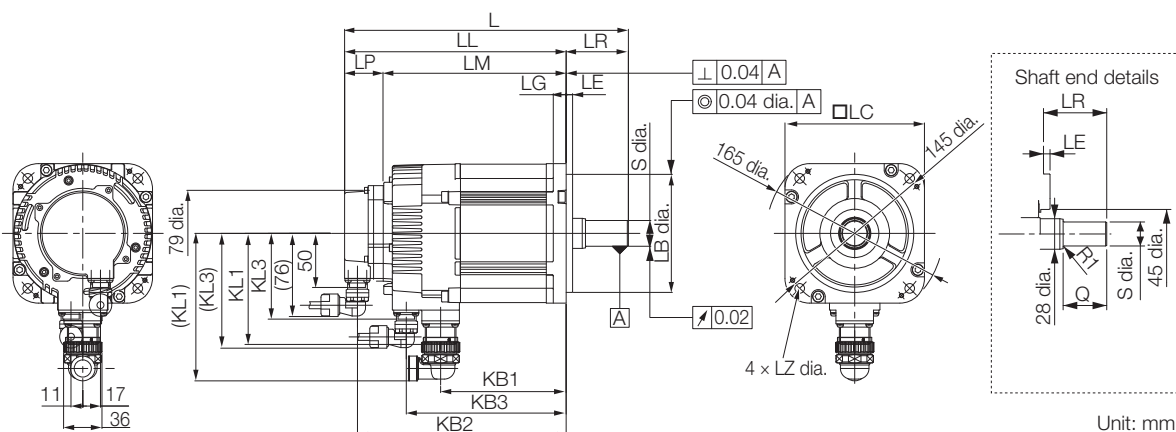
2.3.13 SGMGV-09 to -20 and SGMXG-09 to -20

• With Holding Brakes

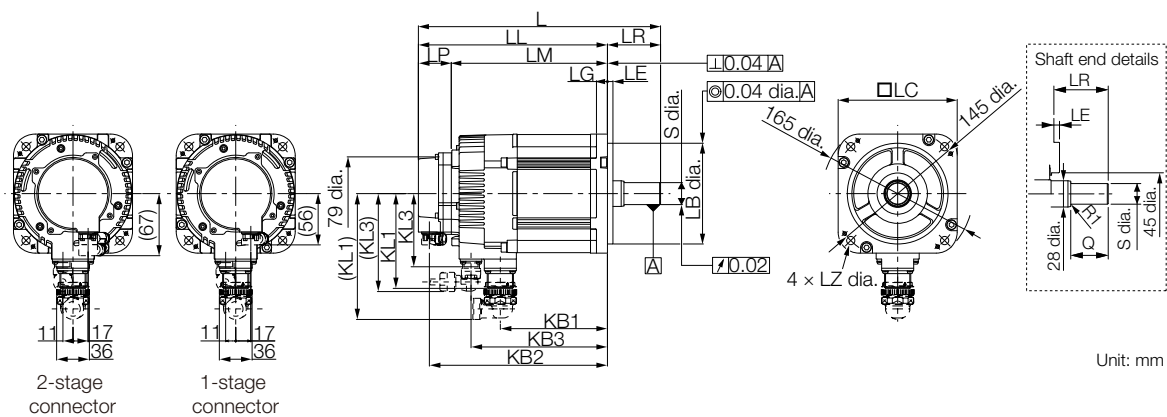
<SGMGV>



<SGMXG-□□□□□□□□2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□□□1 (standard specifications)>



The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo-motor Capacity	Model	L ^{*1}	LL ^{*1}	LM	LP ^{*1}	LR	KB1	KB2 ^{*1}	KB3	KL1	(KL1) ^{*2}	KL3	(KL3) ^{*2}	Approx. Mass [kg]
850 W	SGMGV-09A□A2□	195.0 (231.0)	137.0 (173.0)	101.0 (137.0)	36		83	125 (161)	— (115)		—	— (80)	—	5.5 (7.5)
	SGMXG-09A□A2□A□	193.0 (229.0)	135.0 (171.0)		34			123 (159)			138	— (81)	— (106)	
1.3 kW	SGMGV-13A□A2□	211.0 (247.0)	153.0 (189.0)	117.0 (153.0)	36	58	99	141 (177)	— (131)	104	—	— (80)	—	7.1 (9.0)
	SGMXG-13A□A2□A□	209.0 (245.0)	151.0 (187.0)		34			139 (175)			138	— (81)	— (106)	
1.8 kW	SGMGV-20A□A2□	229.0 (265.0)	171.0 (207.0)	135.0 (171.0)	36		117	159 (195)			—	— (80)	—	8.6 (11.0)
	SGMXG-20A□A2□A□	227.0 (263.0)	169.0 (205.0)		34			157 (193)			138	— (81)	— (106)	

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions		
		LA	LB	LC	LE	LG	LH	LZ	S	Q	
850 W	SGMGV-09A□A2□	145	110 ⁰ _{-0.035}	130	6	12	165	9	19 ⁰ _{-0.013}	40	
	SGMXG-09A□A2□A□								24 ⁰ _{-0.013}		
1.3 kW	SGMGV-13A□A2□								22 ⁰ _{-0.013}		
	SGMXG-13A□A2□A□										
1.8 kW	SGMGV-20A□A2□								24 ⁰ _{-0.013}		
	SGMXG-20A□A2□A□										

*1. In models that have a batteryless absolute encoder, the Σ-X series has L, LL, LP, and KB2 that are +8 mm than the values provided here. Refer to the following table for the values for individual models.

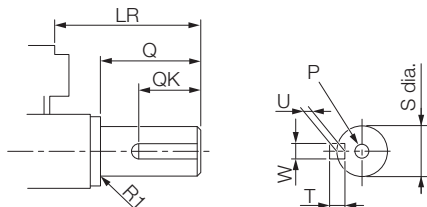
*2. These values are for the case where a flexible connector is connected with the SGMXG-.

Servomotor Capacity	Model	L	LL	LP	KB2
850 W	SGMXG-09AWA2□A□	201.0 (237.0)	143.0 (179.0)	42.0 (42.0)	131.0 (167.0)
1.3 kW	SGMXG-13AWA2□A□	217.0 (253.0)	159.0 (195.0)	42.0 (42.0)	147.0 (183.0)
1.8 kW	SGMXG-20AWA2□A□	235.0 (271.0)	177.0 (213.0)	42.0 (42.0)	165.0 (201.0)

Shaft End Specifications

- Straight with Key and Tap

	Model	LR	Q	QK	S	W	T	U	P	
	SGMGV-09A□A61	58	40	25	19 ⁰ _{-0.013}	5	5	3	M5 × 12L	
	SGMXG-09A□A61□□				24 ⁰ _{-0.013}	8	7	4		
	SGMGV-13A□A61	58	40	25	22 ⁰ _{-0.013}	6	6	3.5		
	SGMXG-13A□A61□□				24 ⁰ _{-0.013}	8	7	4		
	SGMGV-20A□A61	58	40	25	24 ⁰ _{-0.013}	8	7	4		
	SGMXG-20A□A61□□									
										

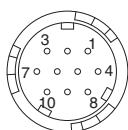


Connector Mounting Dimensions

◆ For Encoders

- Σ -V Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -V Series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug

(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X Series>

Receptacle: CMV1-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,

CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,

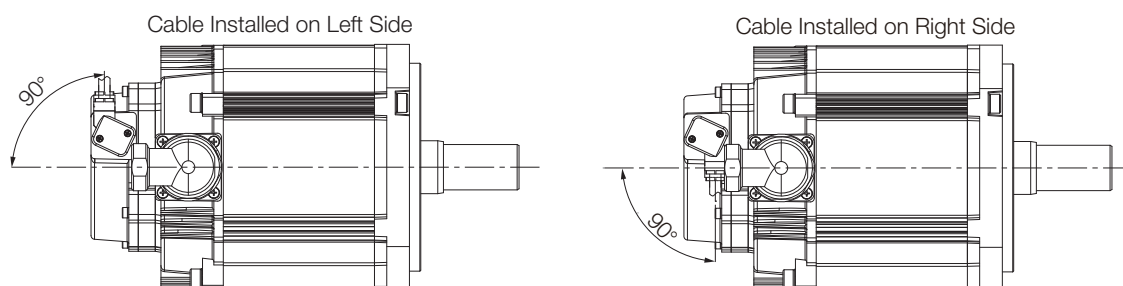
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug

(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

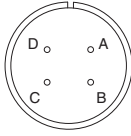
- Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

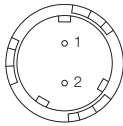
<Manufacturers>

Σ -V series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -V series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R2P-D

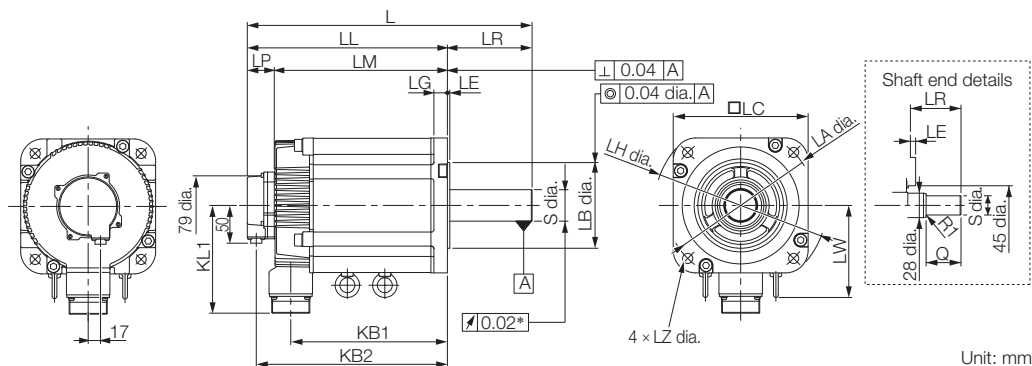
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

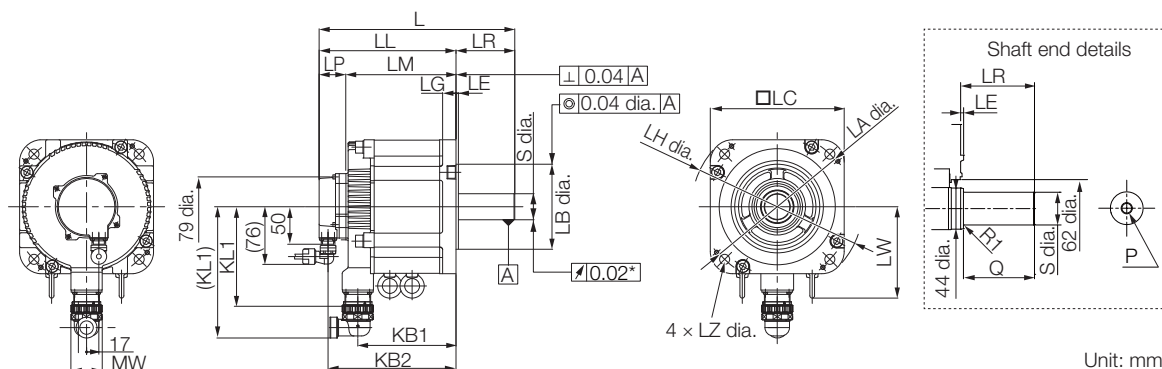
Manufacturer: DDK Ltd.

2.3.14 SGMGV-30 to -75 and SGMXG-30 to -75

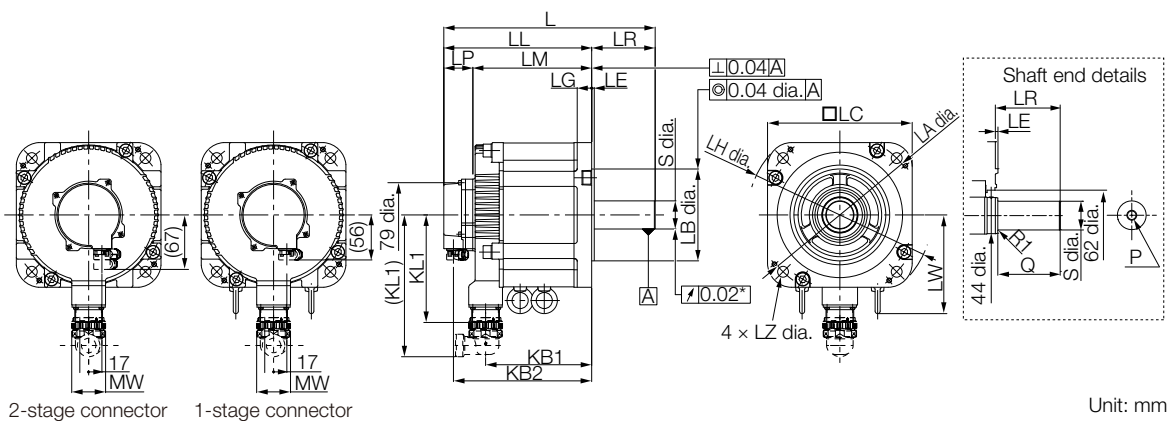
- Without Holding Brakes
<SGMGV>



<SGMXG-□□□□□□1□2 (Σ-7 compatible specifications)>



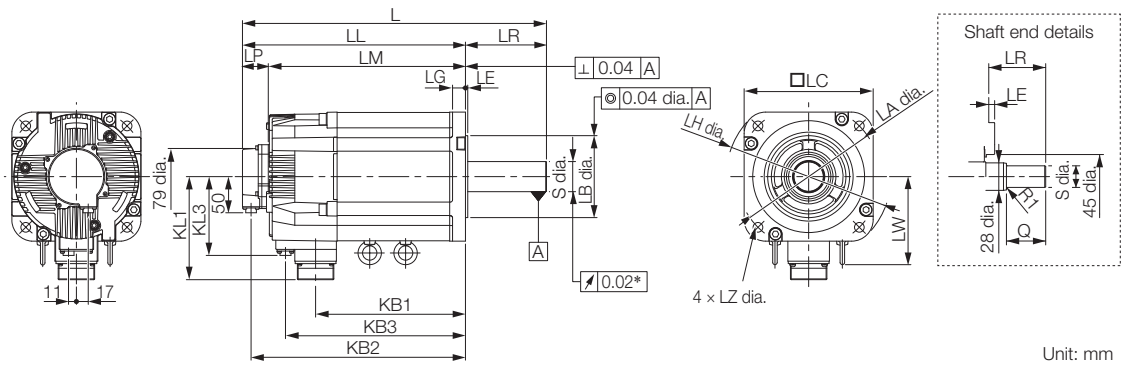
<SGMXG-□□□□□□1□1 (standard specifications)>



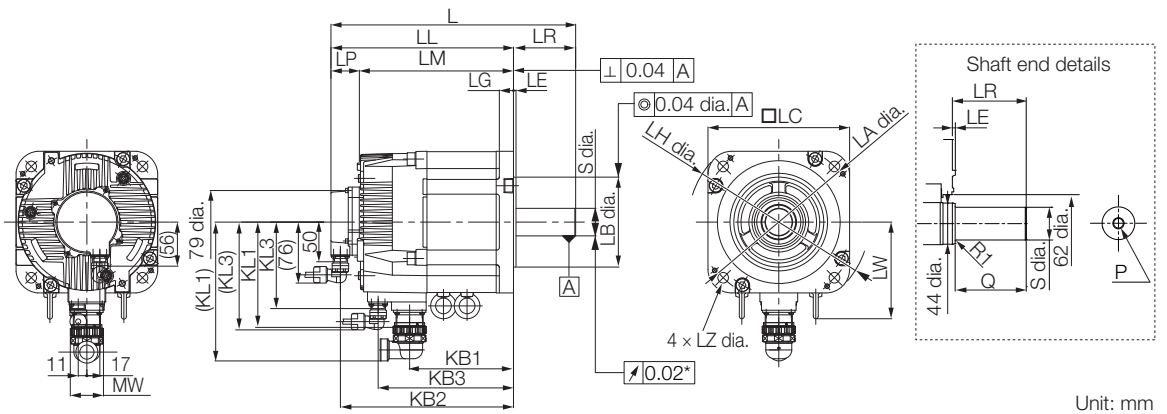
2-stage connector 1-stage connector

* This is 0.04 for the SGMGV-55, -75, SGMXG-55, or -75.

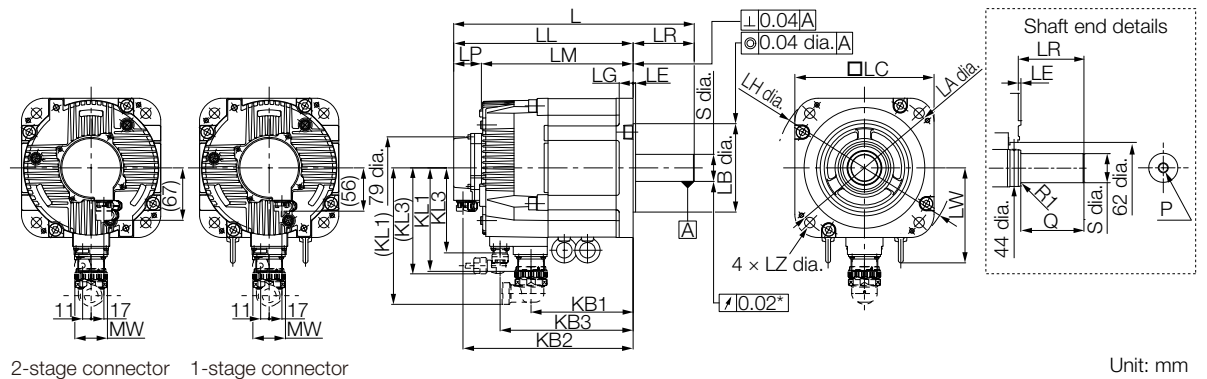
- With Holding Brakes
- <SGMGV>



<SGMXG-□□□□□□□□2 (Σ-7 compatible specifications)>



<SGMXG-□□□□□□□□1 (standard specifications)>



2-stage connector 1-stage connector

* This is 0.04 for the SGMGV-55, -75, SGMXG-55, or -75.

2.3 Servomotor External Dimensions and Installation Dimensions

2.3.14 SGMGV-30 to -75 and SGMXG-30 to -75

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for the shaft end of Σ -V series are for a straight shaft without key.

4. The values for the shaft end of Σ -X series are for a straight shaft without key and with tap.

Servo-motor Capacity	Model	L ^{*1}	LL ^{*1}	LM	LP ^{*1}	LR	KB1	KB2 ^{*1}	KB3	LW	KL1	(KL1) ^{*2}	KL3	(KL3) ^{*2}	MW	Approx. Mass [kg]
2.9 kW	SGMGV-30A□A2□	239 (287)	160 (208)	124 (172)	36	79	108	148 (196)	— (148)	—	134	—	— (110)	—	43	13.5 (19.5)
	SGMXG-30A□A8□A□	237 (287)	158 (208)	124 (174)	34			146 (196)	— (150)			177	— (111)	— (136)		
4.4 kW	SGMGV-44A□A2□	263 (311)	184 (232)	148 (196)	36		132	172 (220)	— (172)			—	— (110)	—		17.5 (23.5)
	SGMXG-44A□A8□A□	261 (311)	182 (232)	148 (198)	34			170 (220)	— (174)			177	— (111)	— (136)		
5.5 kW	SGMGV-55A□A2□	334 (378)	221 (265)	185 (229)	36	113	163	209 (253)	— (205)	123	144	—	— (110)	—	59	21.5 (27.5)
	SGMXG-55A□A8□A□	332 (376)	219 (263)		34			207 (251)	—		145	221	— (111)	— (136)		
7.5 kW	SGMGV-75A□A2□	380 (424)	267 (311)	231 (275)	36		209	255 (299)	— (251)		144	—	— (110)	—		29.5 (35.0)
	SGMXG-75A□A8□A□	378 (422)	265 (309)		34			253 (297)	—		145	221	— (111)	— (136)		

*1. In models that have a batteryless absolute encoder, the Σ -X series has L, LL, LP, and KB2 that are +8 mm than the values provided here. Refer to the following table for the values for individual models.

*2. These values are for the case where a flexible connector is connected with the SGMXG-.

Servo-motor Capacity	Model	Flange Dimensions							Shaft End Dimensions		
		LA	LB	LC	LE	LG	LH	LZ	S	Q	P
2.9 kW	SGMGV-30A□A2□	200	114.3 ⁰ _{-0.025}	180	3.2	18	230	13.5	35 ^{+0.01} ₀	76	—
	SGMXG-30A□A8□A□										M12 × 25L
4.4 kW	SGMGV-44A□A2□										—
	SGMXG-44A□A8□A□										M12 × 25L
5.5 kW	SGMGV-55A□A2□								42 ⁰ _{-0.016}	110	—
	SGMXG-55A□A8□A□										M16 × 32L
7.5 kW	SGMGV-75A□A2□										—
	SGMXG-75A□A8□A□										M16 × 32L

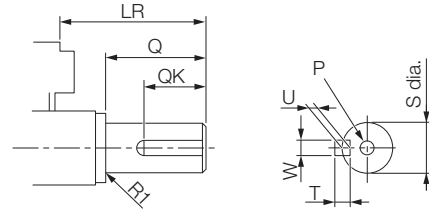
Servomotor Capacity	Model	L	LL	LP	KB2
2.9 kW	SGMXG-30A□A8□A□	245 (295)	166 (216)	42	154 (204)
4.4 kW	SGMXG-44A□A8□A□	269 (319)	190 (240)	42	178 (228)
5.5 kW	SGMXG-55A□A8□A□	340 (384)	227 (271)	42	215 (259)
7.5 kW	SGMXG-75A□A8□A□	386 (430)	273 (317)	42	261 (305)

Shaft End Specifications

The specifications of the shaft ends for the Σ -V series and Σ -X series are identical.

- Straight with Key and Tap

Model	LR	Q	QK	S	W	T	U	P
SGMGV-30A□A61	79	76	60	$35^{+0.01}_0$	10	8	5	M12 × 25L
SGMXG-30A□A61□□								M12 × 25L
SGMGV-44A□A61								
SGMXG-44A□A61□□								
SGMGV-55A□A61	113	110	90	$42^{0}_{-0.016}$	12			M16 × 32L
SGMXG-55A□A61□□								M16 × 32L
SGMGV-75A□A61								
SGMXG-75A□A61□□								

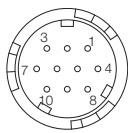


Connector Mounting Dimensions

◆ For Encoders

- Σ -V Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -V Series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X Series>

Receptacle: CMV1-R10P-D

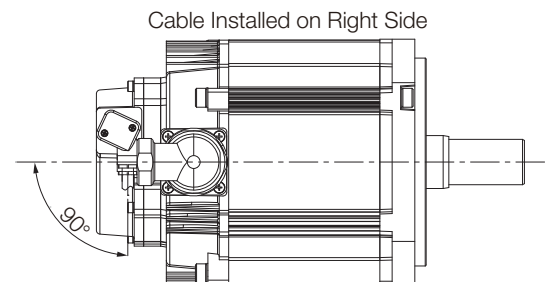
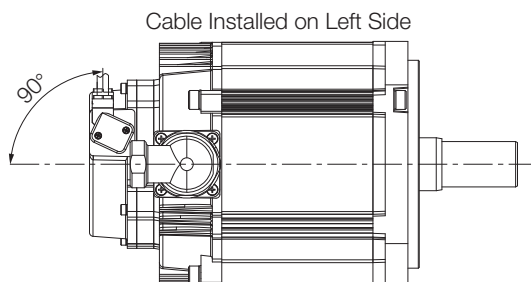
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

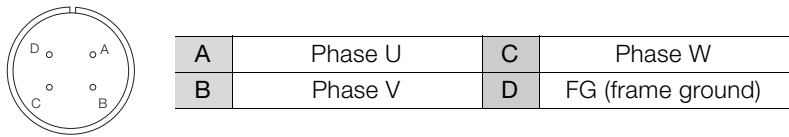
- Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

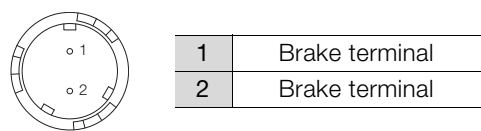
The specifications of the connectors for the Σ -V series and Σ -X series are identical.



<Manufacturers>
 Σ -V series: DDK Ltd.
 Σ -X series: Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



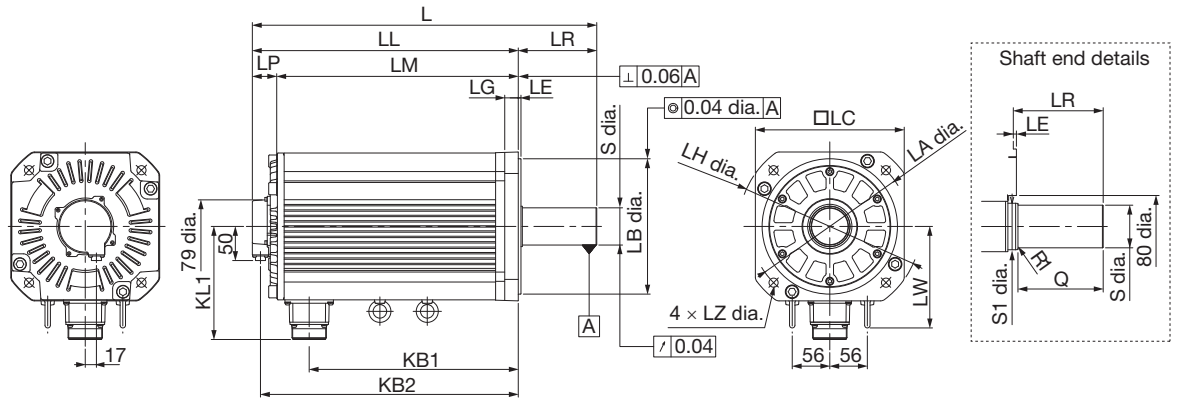
Note: There is no voltage polarity for the brake terminals.

< Σ -V series>
Receptacle: CM10-R2P-D
Applicable plug: Not provided by Yaskawa.
Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)
Manufacturer: DDK Ltd.

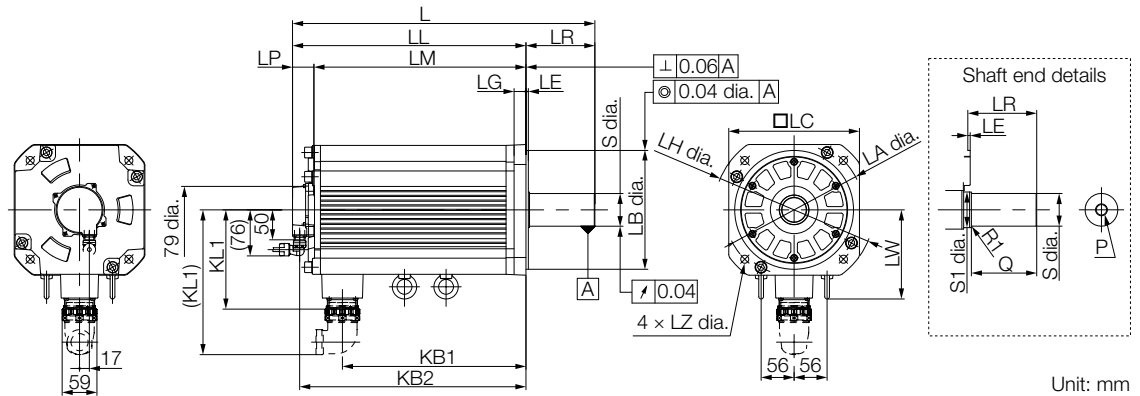
< Σ -X series>
Receptacle: CMV1-R2P-D
Applicable plug: Not provided by Yaskawa.
Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)
Manufacturer: DDK Ltd.

2.3.15 SGMGV-1A to -1E and SGMXG-1A to -1E

- Without Holding Brakes
<SGMGV>

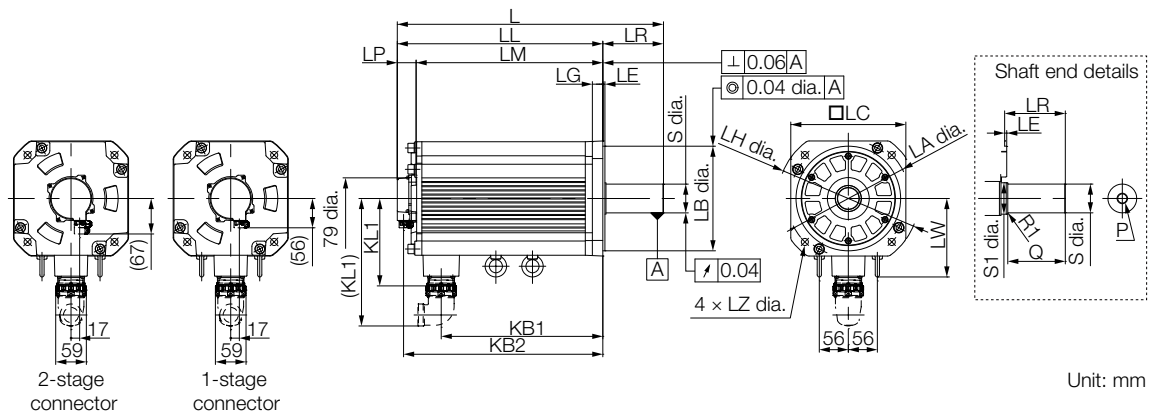


<SGMXG-□□□□□□1□2 (Σ-7 compatible specifications)>



Unit: mm

<SGMXG-□□□□□□1□1 (standard specifications)>



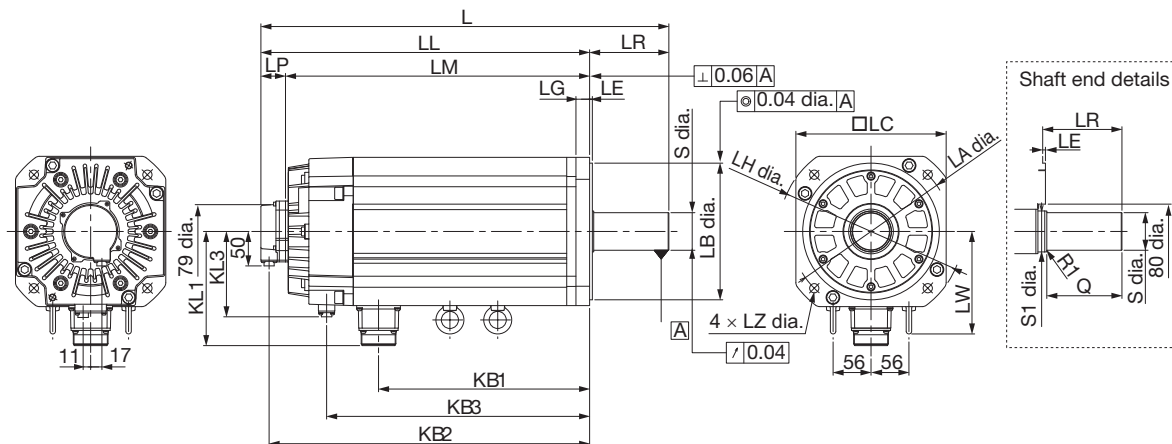
Unit: mm

2.3 Servomotor External Dimensions and Installation Dimensions

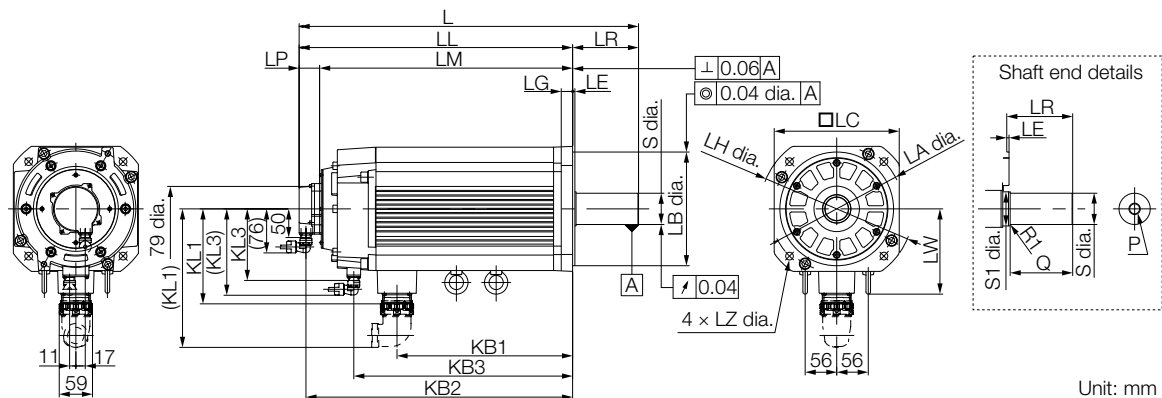
2.3.15 SGMGV-1A to -1E and SGMXG-1A to -1E

• With Holding Brakes

<SGMGV>

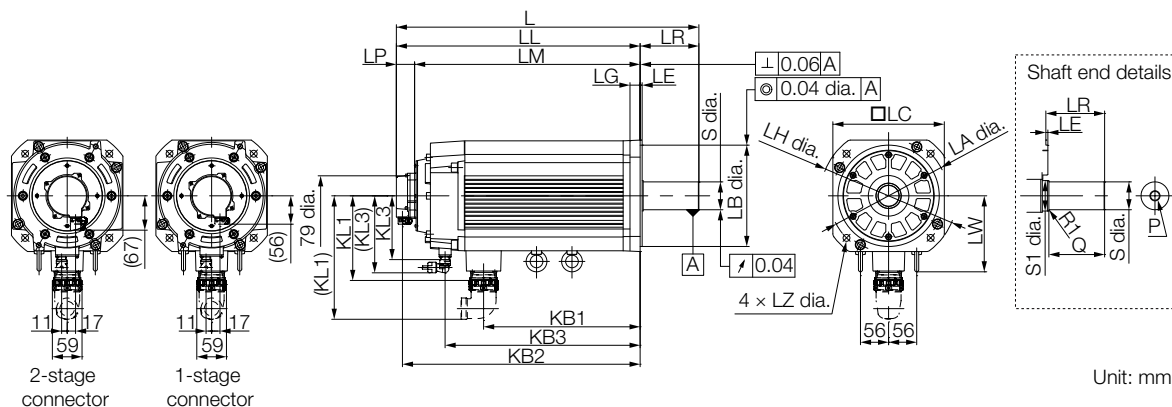


<SGMXG-□□□□□□C□2 (Σ-7 compatible specifications)>



Unit: mm

<SGMXG-□□□□□□C□1 (standard specifications)>



Unit: mm

2-stage connector
1-stage connector

The following table shows external dimensions and installation dimensions of servomotors.

Note: 1. The values in parentheses are for servomotors with holding brakes.

2. The dimensions are same for models with oil seals.

3. The values for a straight, without key specification are given.

Servo- motor Capacity	Model	L ^{*1}	LL ^{*1}	LM	LP ^{*1}	LR	KB1	KB2 ^{*1}	KB3	LW	KL1	(KL1) *2	KL3	(KL3) *2	Approx. Mass [kg]
11 kW	SGMGV-1AA□A2□	447 (498)	331 (382)	295 (346)	36	116	247	319 (370)	— (315)	150	168	—	— (125)	—	57 (65)
	SGMXG-1AA□A8□A□	445 (496)	329 (380)	295 (346)	34			317 (368)				245	— (126)	— (151)	
15 kW	SGMGV-1EA□A2□	509 (598)	393 (482)	357 (446)	36	116	309	381 (470)	— (385)	150	168	—	— (125)	—	67 (85)
	SGMXG-1EA□A8□A□	507 (596)	391 (480)	357 (446)	34			379 (468)				245	— (126)	— (151)	

Servo- motor Capacity	Model	Flange Dimensions							Shaft End Dimensions			
		LA	LB	LC	LE	LG	LH	LZ	S	S1	Q	P
11 kW	SGMGV-1AA□A2□	235	200 ⁰ _{-0.046}	220	4	20	270	13.5	42 ⁰ _{-0.016}	50	110	—
	SGMXG-1AA□A8□A□											M16 × 32L
15 kW	SGMGV-1EA□A2□								55 ^{+0.030} _{+0.011}	60		—
	SGMXG-1EA□A8□A□											M20 × 40L

*1. For Σ-X-series models that have a batteryless absolute encoder, L, LL, LP, and KB2 are 8 mm greater than the given value. Refer to the following section for the values for individual models.

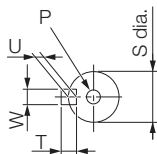
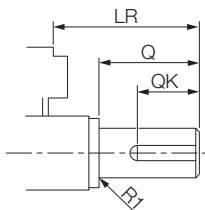
Servomotor Capacity	Model	L	LL	LP	KB2
11 kW	SGMXG-1AA□A8□A□	453 (504)	337 (388)	42 (42)	325 (376)
15 kW	SGMXG-1EA□A8□A□	515 (604)	399 (488)	42 (42)	387 (476)

*2. These values are for the case where a flexible connector is connected with the SGMXG-.

Shaft End Specifications

The specifications of the shaft ends for the Σ-V series and Σ-X series are identical.

- Straight with Key and Tap



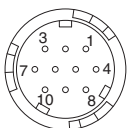
Model	LR	Q	QK	S	W	T	U	P
SGMGV-1AA□A61	116	110	90	42 ⁰ _{-0.016}	12	8	5	M16 × 32L
SGMXG-1AA□A61□□								
SGMGV-1EA□A61				55 ^{+0.030} _{+0.011}	16	10	6	M20 × 40L
SGMXG-1EA□A61□□								

Connector Mounting Dimensions

◆ For Encoders

• Σ -V Series and Σ -X Series (Σ -7 compatible specifications)

The specifications of the connectors for the Σ -V series and Σ -X series (Σ -7 compatible specifications) are identical.



1	PS	6*	BAT (+)
2	/PS	7	—
3	—	8	—
4	PS5V	9	PG0V
5	BAT (-)	10	FG (frame ground)

* A battery is required only for an absolute encoder.

< Σ -V series>

Receptacle: CM10-R10P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R10P-D

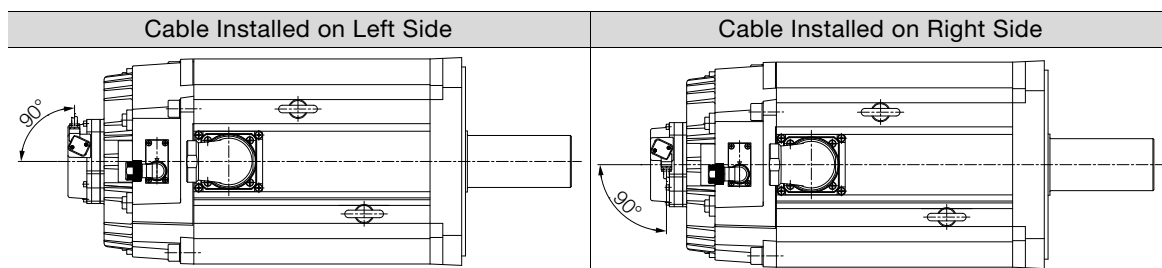
Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP10S-□-D for right-angle plug, CM10-SP10S-□-D for straight plug,
CMV1-AP10S-□-D for right-angle plug, CMV1-SP10S-□-D for straight plug,
CMV1S-AP10S-□-D for right-angle plug, CMV1S-SP10S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

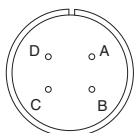
• Σ -X Series (standard specifications)

The following figures show the installation direction of the encoder cable.



◆ For Servomotors

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



A	Phase U	C	Phase W
B	Phase V	D	FG (frame ground)

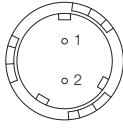
<Manufacturers>

Σ -V series: DDK Ltd.

Σ -X series: Japan Aviation Electronics Industry, Ltd.

◆ For Brakes

The specifications of the connectors for the Σ -V series and Σ -X series are identical.



1	Brake terminal
2	Brake terminal

Note: There is no voltage polarity for the brake terminals.

< Σ -V series>

Receptacle: CM10-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

< Σ -X series>

Receptacle: CMV1-R2P-D

Applicable plug: Not provided by Yaskawa.

Plug: CM10-AP2S-□-D for right-angle plug, CM10-SP2S-□-D for straight plug,
CMV1-AP2S-□-D for right-angle plug, CMV1-SP2S-□-D for straight plug,
CMV1S-AP2S-□-D for right-angle plug, CMV1S-SP2S-□-D for straight plug
(□ depends on the applicable cable size.)

Manufacturer: DDK Ltd.

Specifications of SERVOPACK

3

This chapter describes model numbers, compatibility of connector terminals, external dimensions, and installation dimensions of SERVOPACKs.

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3.1

SERVOPACK Model Comparison Charts

Check the Σ -X-series SERVOPACK model that will replace the Σ -V-series SERVOPACK model that is being used.

SGDV -

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(1) (2) (3) (4)

SGDXS -

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(1) (2) (3) (4)

No.	Item		SGDV-	SGDXS-
(1)	Maximum applicable motor capacity	Three-phase, 200 VAC	0.05 kW	R70 ^{*1}
			0.1 kW	R90 ^{*1}
			0.2 kW	1R6 ^{*1}
			0.4 kW	2R8 ^{*1}
			0.5 kW	3R8
			0.75 kW	5R5 ^{*1}
			1.0 kW	7R6
			1.5 kW	120 ^{*2}
			2.0 kW	180
			3.0 kW	200
			5.0 kW	330
			6.0 kW	470
			7.5 kW	550
			11 kW	590
			15 kW	780
(2)	Voltage	200 VAC	A	
		100 VAC	F	–
(3)	Interface ^{*2}	Analog voltage/pulse train references	01	00
		MECHATROLINK-III communications reference	21	20
		MECHATROLINK-4 communications reference	–	40
		MECHATROLINK-4/III communications references ^{*3}	–	40
(4)	Design revision order	Standard	A	
			B ^{*4}	–

*1. These models can be used with either a single-phase or three-phase input.

*2. The models with a single-phase, 200-VAC power supply input (SGDV-120A□□A008, SGDXS-120A□□A0008) are available as a hardware option specification.

*3. The same SERVOPACKs are used for both rotary servomotors and linear servomotors.

*4. The Σ -X-series SERVOPACK can switch between use of MECHATROLINK-4 communications and MECHATROLINK-III communications. If the DIP switch (S3) is set to ON, MECHATROLINK-4 is used for communication, and if it is set to OFF, MECHATROLINK-III is used for communication.

*5. The models where the design revision order is B are as follows.

- SGDV-R70A, -R90A, -1R6A, 2R8A

3.2

SERVOPACK Connector Terminal Compatibility

The pin assignments for the terminal blocks of the Σ -V series and Σ -X series are identical.

3.2.1

Terminal Symbols and Terminal Names

Three-Phase, 200-VAC Power Supply Input

• SGD V-

Terminal Symbols	Terminal Name	Specification	
L1, L2, L3	Main circuit power input terminals for AC power input	Three-phase, 200 VAC to 230 VAC, -15% to +10%, 50 Hz/60 Hz	
L1C, L2C	Control main circuit terminals	AC input	Single-phase, 200 VAC to 230 VAC, -15% to +10%, 50 Hz/60 Hz
B1/⊕, B2	Regenerative resistor terminals	SGDV-R70A, -R90A, -1R6A, -2R8A If the regenerative capacity is insufficient, connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
		SGDV-3R8A, -5R5A, -7R6A, -120A, -180A, -200A, -300A If the internal regenerative resistor is insufficient, remove the lead or short bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
		SGDV-470A, -550A Connect a regenerative resistor unit between B1/⊕ and B2. Obtain a regenerative resistor unit separately. These models do not have a B3 terminal.	
⊖1, ⊖2	DC reactor terminals for power supply harmonic suppression	These terminals are used to connect a DC reactor for harmonic suppression.	

3.2.1 Terminal Symbols and Terminal Names

• SGDXS-

Terminal Symbols	Terminal Name	Specification	
L1, L2, L3	Main circuit power input terminals for AC power input	Three-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
L1C, L2C	Control main circuit terminals	AC input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz
		DC input	L1C: 270 VDC to 324 VDC, -15% to +10%, L2C: 0 VDC or L2C: 270 VDC to 324 VDC, -15% to +10%, L1C: 0 VDC
B1/⊕, B2	Regenerative resistor terminals	SGDXS-R70A, -R90A, -1R6A, -2R8A If the regenerative capacity is insufficient, connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
		SGDXS-3R8A, -5R5A, -7R6A, -120A, -180A, -200A, 300A If the internal regenerative resistor is insufficient, remove the lead or short bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
		SGDXS-470A, -550A Connect a regenerative resistor unit between B1/⊕ and B2. Obtain a regenerative resistor unit separately. These models do not have a B3 terminal.	
⊖1, ⊖2	DC reactor terminals for power supply harmonic suppression	These terminals are used to connect a DC reactor for harmonic suppression.	
⊖	–	None. (Do not connect anything to this terminal.) Note: The following SERVOPACKs do not have a ⊖ terminal: SGD?S-330A to -550A.	

Single-Phase, 200-VAC Power Supply Input

• SGDVS-

Terminal Symbols	Terminal Name	Specification	
L1, L2	Main circuit power input terminals for AC power input	Single-phase, 200 VAC to 230 VAC, -15% to +10%, 50 Hz/60 Hz	
L1C, L2C	Control main circuit terminals	AC input	Single-phase, 200 VAC to 230 VAC, -15% to +10%, 50 Hz/60 Hz
B1/⊕, B2, B3	Regenerative resistor terminals	SGDV-R70A, -R90A, -1R6A, -2R8A If the regenerative capacity is insufficient, connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
		SGDV-5R5A, -120A□□□008 If the internal regenerative resistor is insufficient, remove the lead or short bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
⊖1, ⊖2	DC reactor terminals for power supply harmonic suppression	These terminals are used to connect a DC reactor for harmonic suppression.	

A single-phase, 200-VAC power supply input can be used with the following SERVOPACK models.

- SGDV-R70A, -R90A, -1R6A, -2R8A, -5R5A

• SGDXS-

Terminal Symbols	Terminal Name	Specification	
L1, L2	Main circuit power input terminals for AC power input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
L1C, L2C	Control main circuit terminals	AC input	Single-phase, 200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz
		DC input	L1C: 270 VDC to 324 VDC, -15% to +10%, L2C: 0 VDC or L2C: 270 VDC to 324 VDC, -15% to +10%, L1C: 0 VDC
B1/⊕, B2, B3	Regenerative resistor terminals	• SGDXS-R70A, -R90A, -1R6A, -2R8A If the regenerative capacity is insufficient, connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately. • SGDXS-5R5A, -120A□□□008 If the internal regenerative resistor is insufficient, remove the lead or short bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. The external regenerative resistor is not included. Obtain it separately.	
⊖1, ⊖2	DC reactor terminals for power supply harmonic suppression	These terminals are used to connect a DC reactor for harmonic suppression.	
L3, ⊖	–	None. (Do not connect anything to these terminals.)	

A single-phase, 200-VAC power supply input can be used with the following SERVOPACK models.

- SGDXS-R70A, -R90A, -1R6A, -2R8A, -5R5A

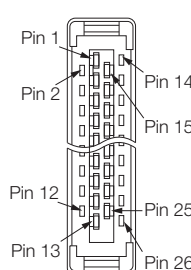
3.2.2 I/O Signal Connector (CN1) Pin Layout

SGDV-□□□□01/05 type, SGDXS-□□□□00A

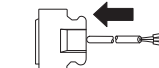
The above view is from the direction of the following arrow without the connector shell attached.	2	SG	Signal Ground	1	SG	Signal Ground	27	/SO2+ (/TGON+)	General-Purpose Sequence Output 2	26	/SO1- (/V-CMP-)	General-Purpose Sequence Output 1
	4	SEN	Absolute Data Request Input (SEN)	3	PL1	Open-Collector Power Output for Reference Pulses	29	/SO3+ (/S-RDY+)	General-Purpose Sequence Output 3	28	/SO2- (/TGON-)	General-Purpose Sequence Output 2
	6	SG	Signal Ground	5	V-REF	Speed Reference Input	31	ALM+	Servo Alarm Output	30	/SO3- (/S-RDY-)	General-Purpose Sequence Output 3
	8	/PULS	Pulse Reference Input	7	PULS	Pulse Reference Input	33	PAO	Encoder Divided Pulse Output, Phase A	32	ALM-	Servo Alarm Output
	10	SG	Signal Ground	9	T-REF	Torque Reference Input	35	PBO	Encoder Divided Pulse Output, Phase B	34	/PAO	Encoder Divided Pulse Output, Phase A
	12	/SIGN	Sign Reference Input	11	SIGN	Sign Reference Input	37	ALO1	Alarm Code Output	36	/PBO	Encoder Divided Pulse Output, Phase B
	14	/CLR	Position Deviation Clear Input	13	PL2	Open-Collector Power Output for Reference Pulses	39	ALO3	Alarm Code Output	38	ALO2	Alarm Code Output
	16	—	—	15	CLR	Position Deviation Clear Input	41	/SI3 (/P-CON)	General-Purpose Sequence Input 3	40	/SI0 (/S-ON)	General-Purpose Sequence Input 0
	18	PL3	Open-Collector Power Output for Reference Pulses	17	—	—	43	/SI2 (N-OT)	General-Purpose Sequence Input 2	42	/SI1 (P-OT)	General-Purpose Sequence Input 1
	20	/PCO	Encoder Divided Pulse Output, Phase C	19	PCO	Encoder Divided Pulse Output, Phase C	45	/SI5 (/P-CL)	General-Purpose Sequence Input 5	44	/SI4 (/ALM-RST)	General-Purpose Sequence Input 4
	22	BAT-	Battery for Absolute Encoder (-)	21	BAT+	Battery for Absolute Encoder (+)	47	+24VIN	Sequence Input Signal Power Supply Input	46	/SI6 (/N-CL)	General-Purpose Sequence Input 6
	24	—	—	23	—	—	49	/PSO	Absolute Encoder Position Output	48	PSO	Absolute Encoder Position Output
				25	/SO1+ (/V-CMP+)	General-Purpose Sequence Output 1				50	TH	Overheat Protection Input

Note: The bolded box area cannot be used in the Σ -V series.

SGDV-□□□□21/25 type, SGDXS-□□□□20/40A



The above view is from the direction of the following arrow without the connector shell attached.



2	/SO1- (/BK-)	General-Purpose Sequence Output 1	1	/SO1+ (/BK+)	General-Purpose Sequence Output 1	15	BAT-	Battery for absolute encoder (-)	14	BAT+	Battery for Absolute Encoder (+)
4	ALM-	Servo Alarm Output	3	ALM+	Servo Alarm Output	17	PAO	Encoder Divided Pulse Output, Phase A	16	SG	Signal Ground
6	+24VIN	Sequence Input Signal Power Supply Input	5	TH	Overheat Protection Input	19	PBO	Encoder Divided Pulse Output, Phase B	18	/PAO	Encoder Divided Pulse Output, Phase A
8	/SI2 (N-OT)	General-Purpose Sequence Input 2	7	/SI1 (P-OT)	General-Purpose Sequence Input 1	21	PCO	Encoder Divided Pulse Output, Phase C	20	/PBO	Encoder Divided Pulse Output, Phase B
10	/SI4 (/ EXT1)	General-Purpose Sequence Input 4	9	/SI3 (/DEC)	General-Purpose Sequence Input 3	23	/SO2+	General-Purpose Sequence Output 2	22	/PCO	Encoder Divided Pulse Output, Phase C
12	/SI6 (/ EXT3)	General-Purpose Sequence Input 6	11	/SI5 (/ EXT2)	General-Purpose Sequence Input 5	25	/SO3+	General-Purpose Sequence Output 3	24	/SO2-	General-Purpose Sequence Output 2
			13	/SI0	General-Purpose Sequence Input 0				26	/SO3-	General-Purpose Sequence Output 3

Note: The bolded box area cannot be used in the Σ -V series.

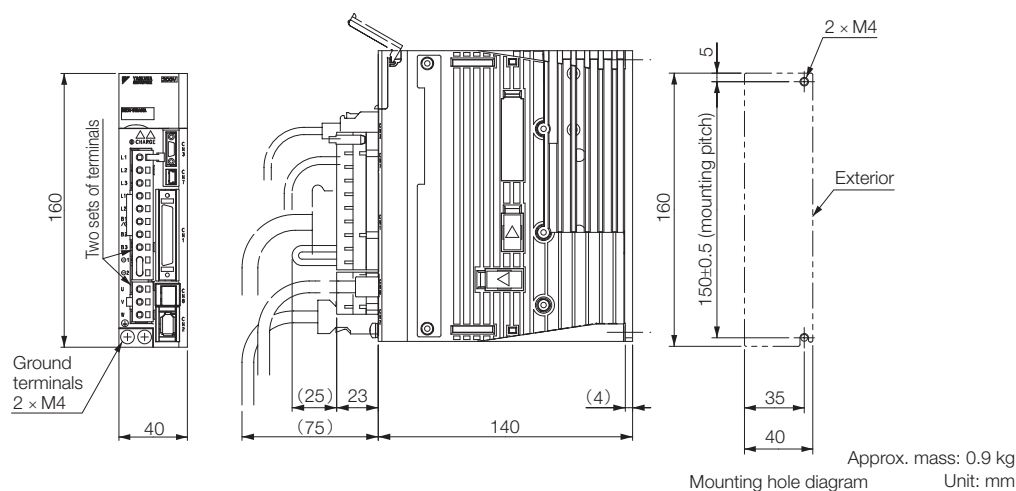
3.3 SERVOPACK External Dimensions and Installation Dimensions

3.3.1 SGDVS-R70A, R90A, 1R6A and SGDXS-R70A, -R90A, -1R6A

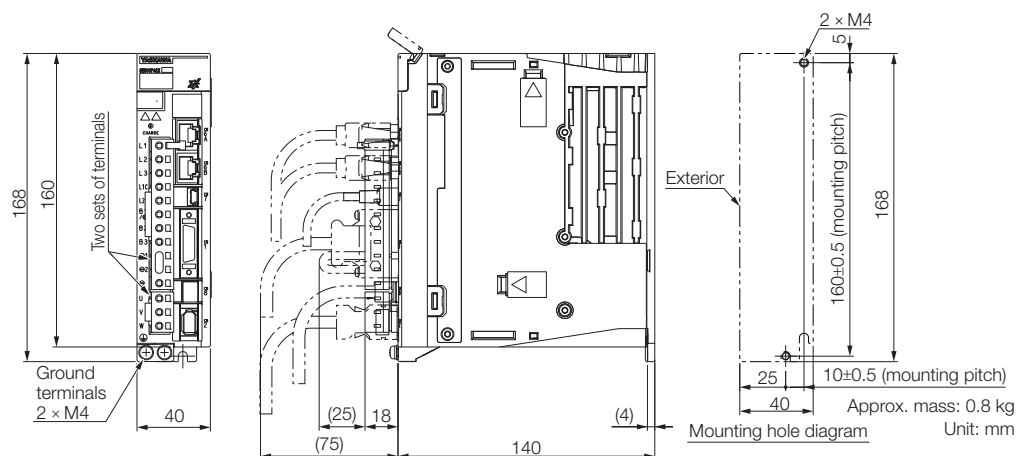
The Σ -V-series dimensional drawings show a typical example of the analog voltage/pulse train references, and the Σ -X-series dimensional drawings show a typical example of the MECHATROLINK-4/III communications references.

Base-mounted SERVOPACKs

- SGDVS-R70A, -R90A, -1R6A

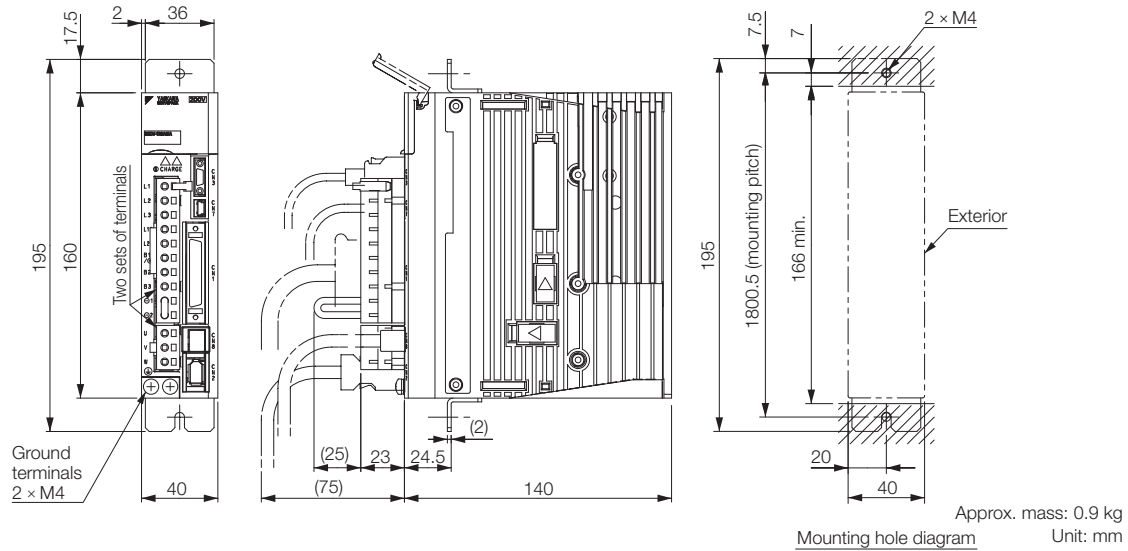


- SGDXS-R70A, -R90A, -1R6A

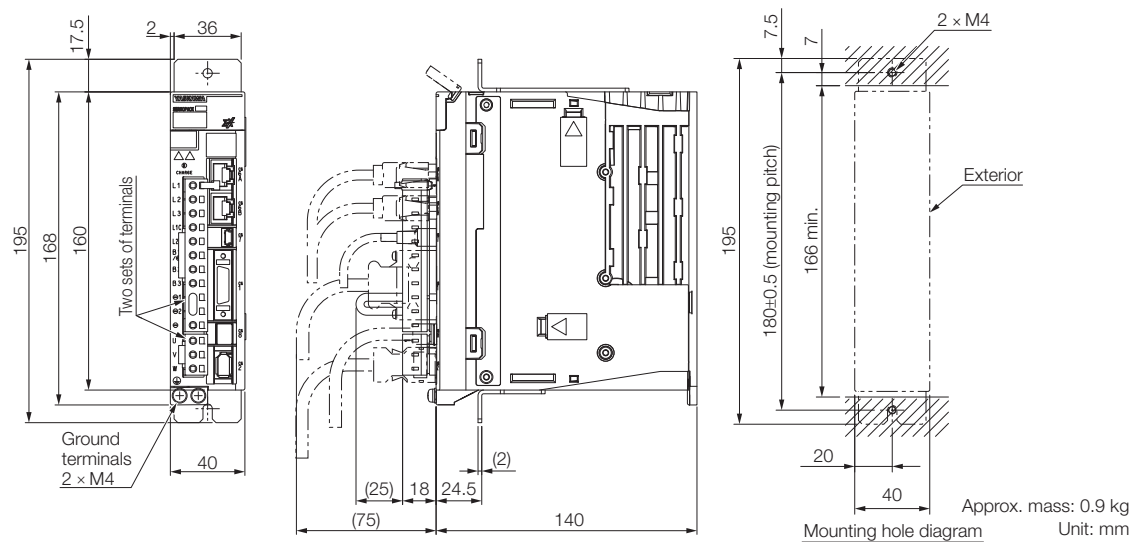


Rack-mounted SERVOPACKs

- SGDVS-R70A, -R90A, -1R6A



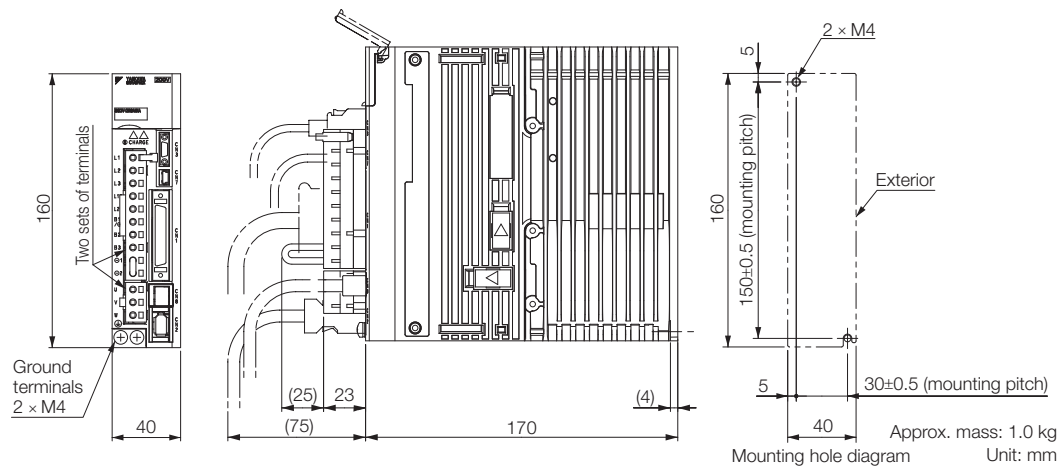
- SGDXS-R70A, -R90A, -1R6A



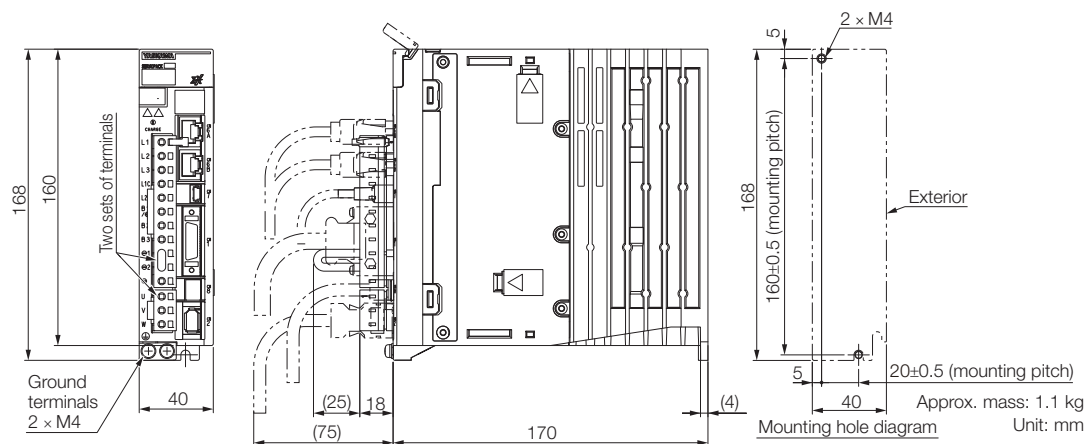
3.3.2 SGDV-2R8A and SGDXS-2R8A

Base-mounted SERVOPACKs

• SGDV-2R8A

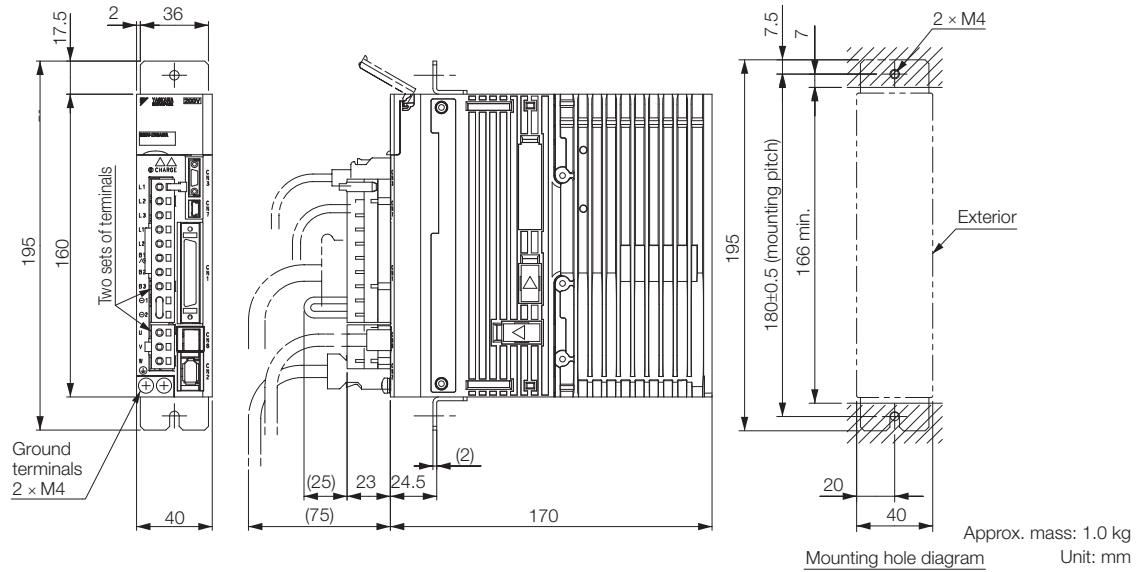


• SGDXS-2R8A

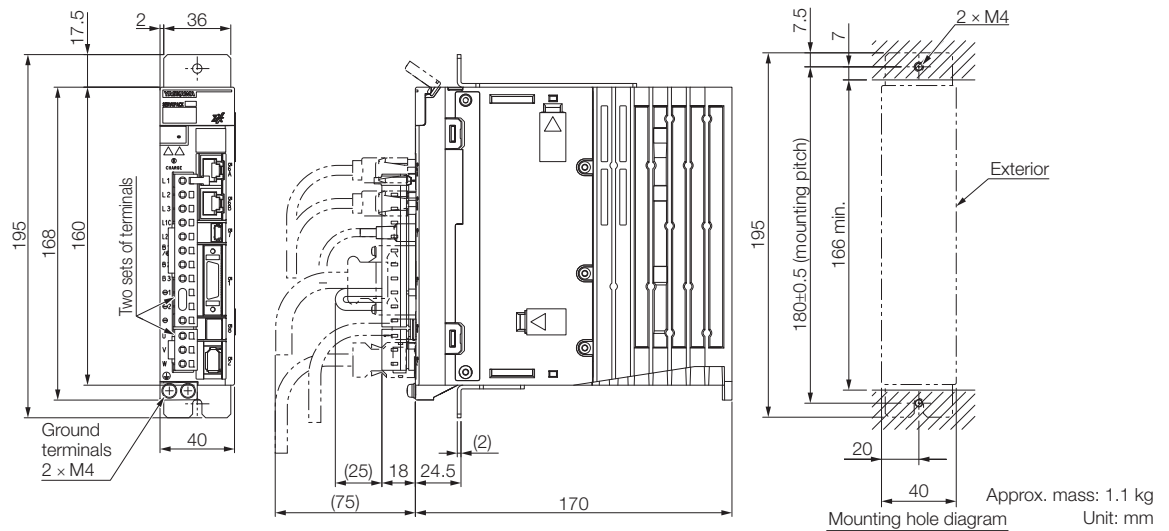


Rack-mounted SERVOPACKs

• SGDV-2R8A



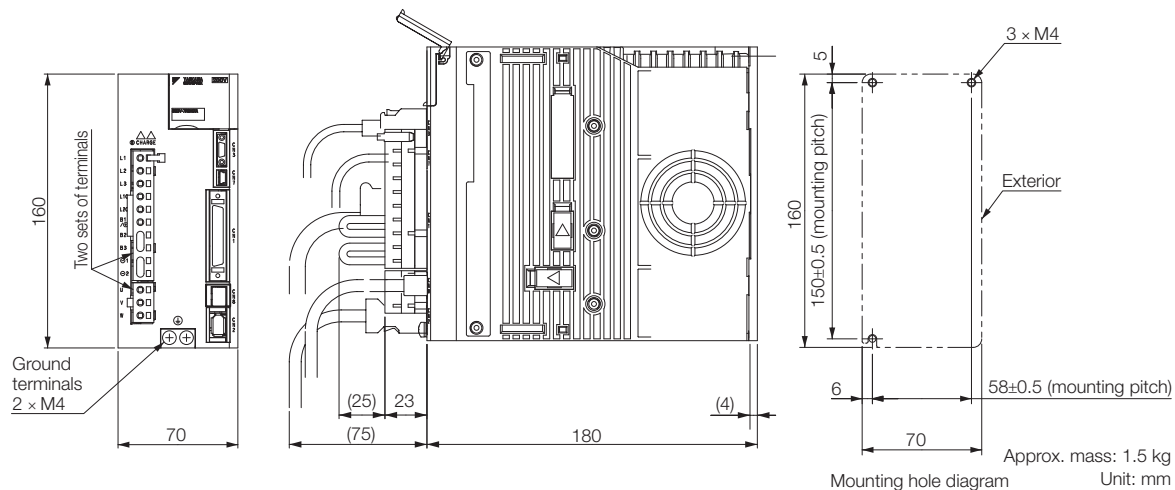
• SGDXS-2R8A



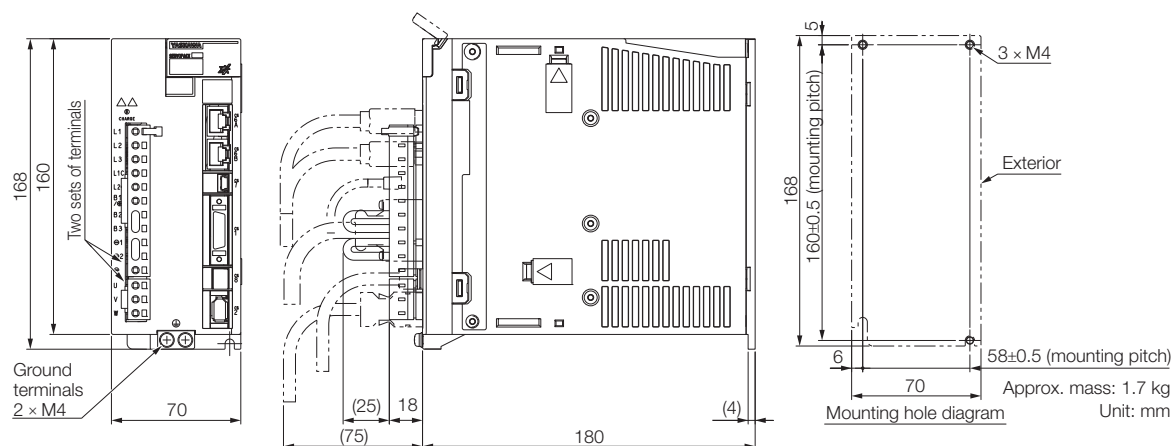
3.3.3 SGDVS-3R8A and SGDXS-3R8A

Base-mounted SERVOPACKs

• SGDVS-3R8A

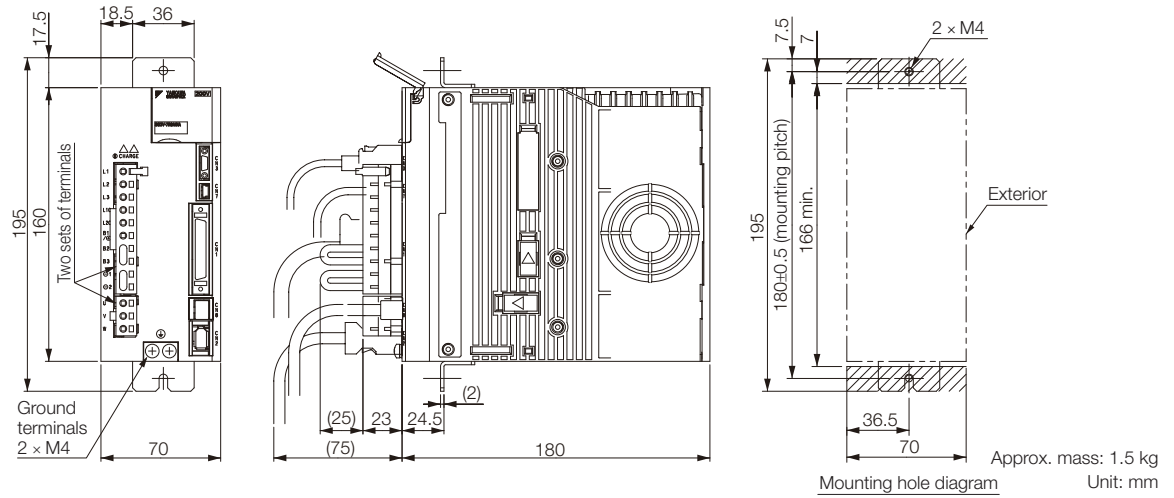


• SGDXS-3R8A

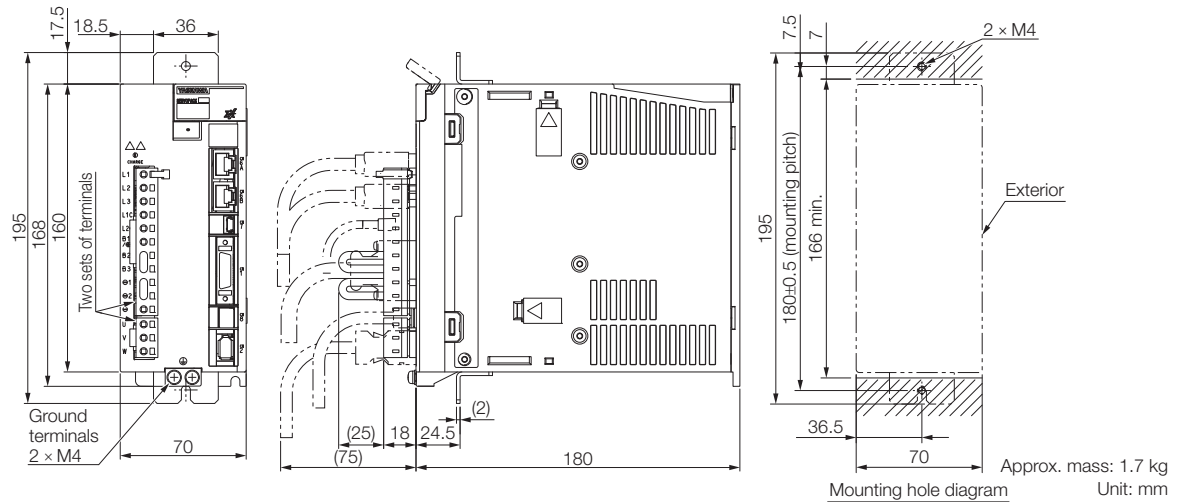


Rack-mounted SERVOPACKs

• SGDV-3R8A



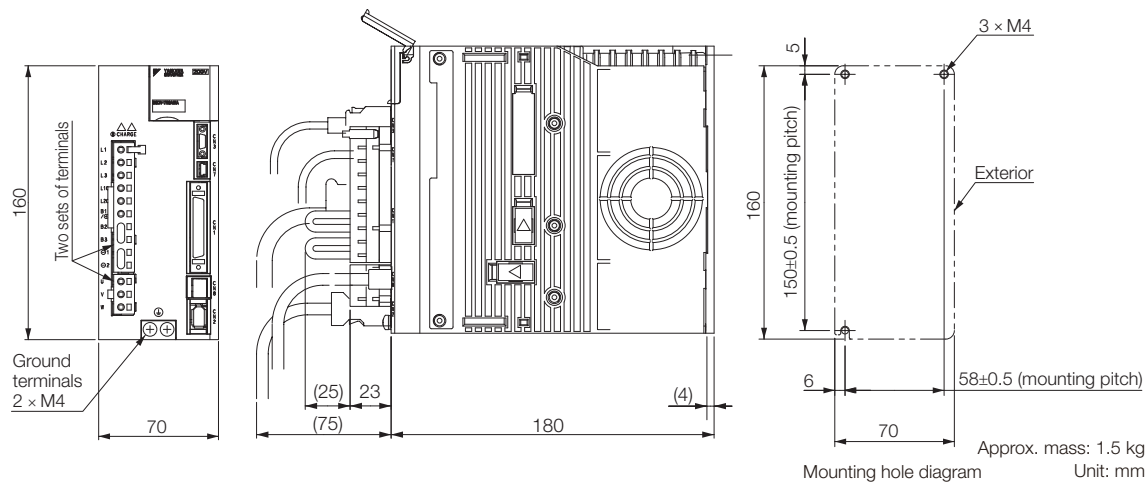
• SGDXS-3R8A



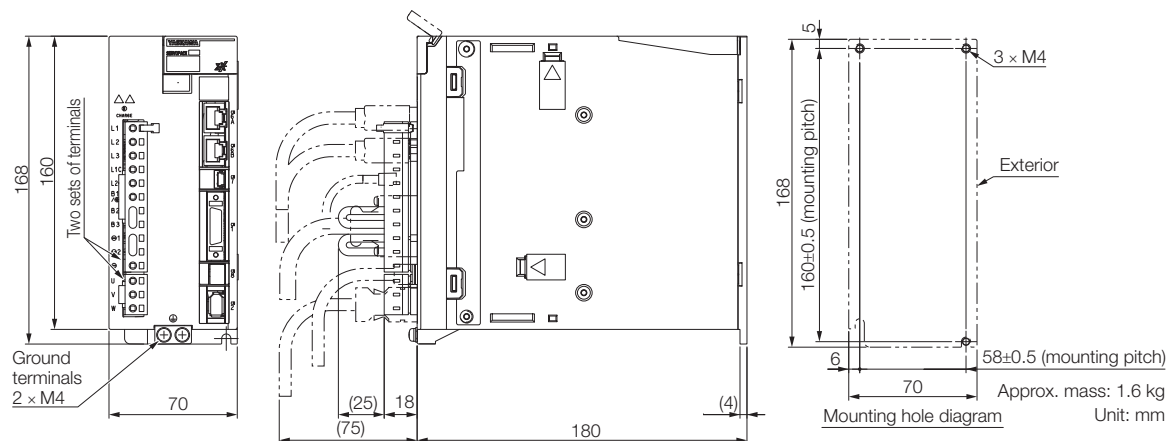
3.3.4 SGD5-5R5A, -7R6A and SGD5S-3R8A, -7R6A

Base-mounted SERVOPACKs

- SGD5-5R5A, -7R6A

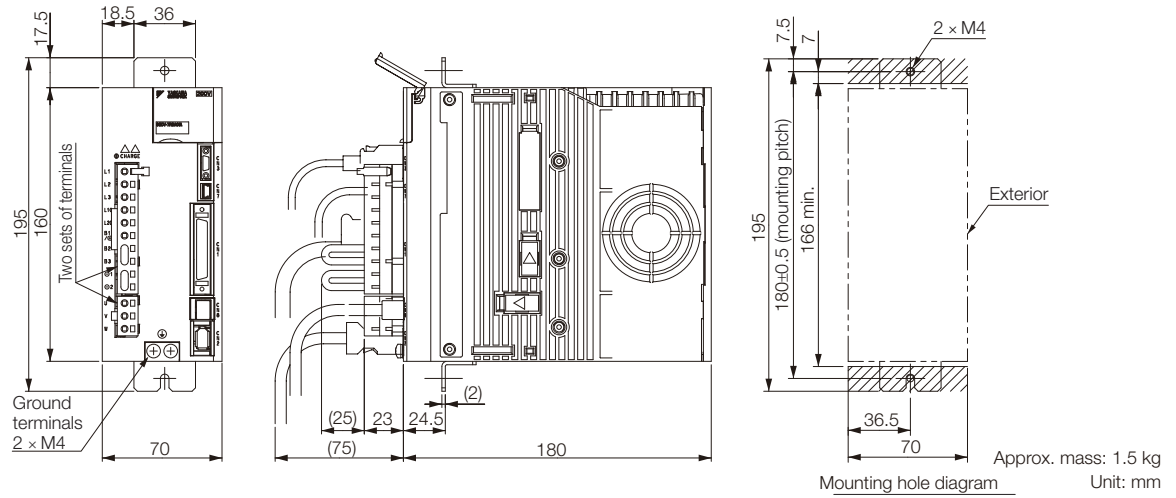


- SGD5S-5R5A, -7R6A

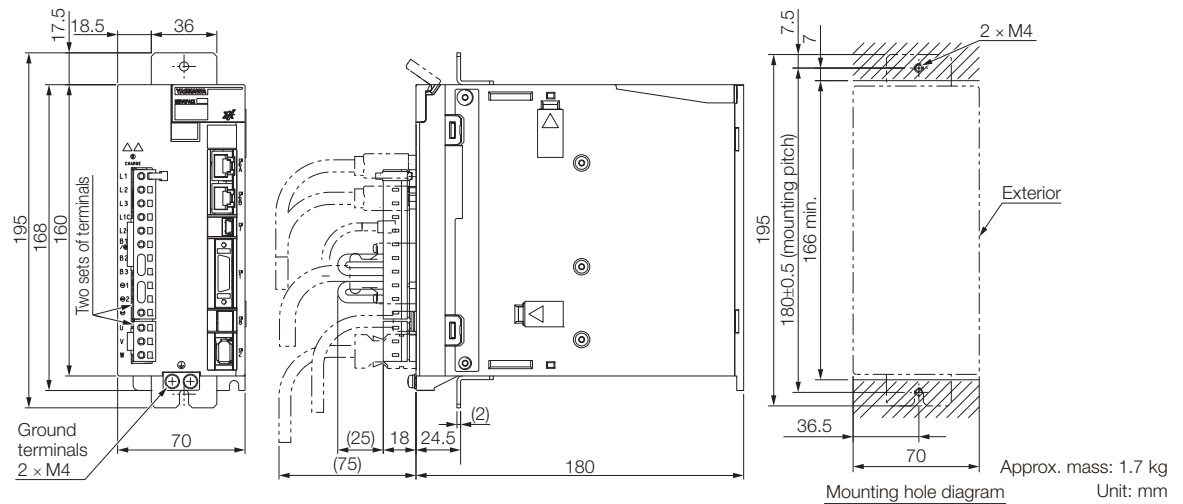


Rack-mounted SERVOPACKs

• SGD5-5R5A, -7R6A



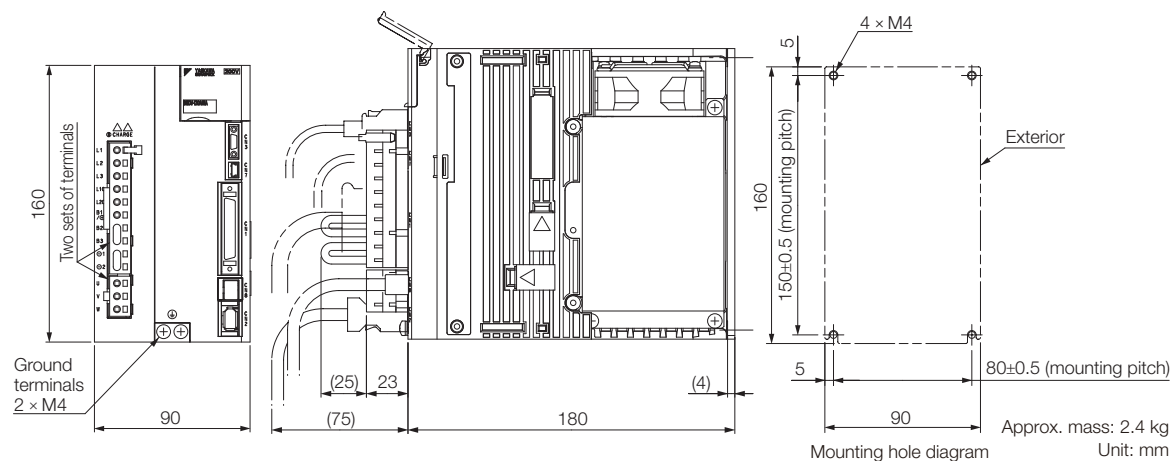
• SGD5S-5R5A, -7R6A



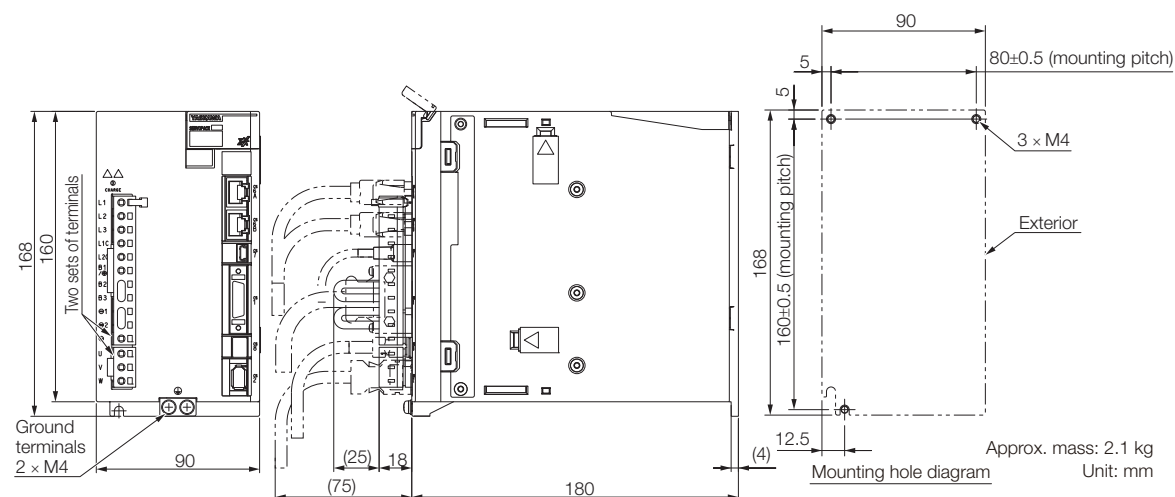
3.3.5 SGDVS-120A and SGDXS-120A

Base-mounted SERVOPACKs

• SGDVS-120A

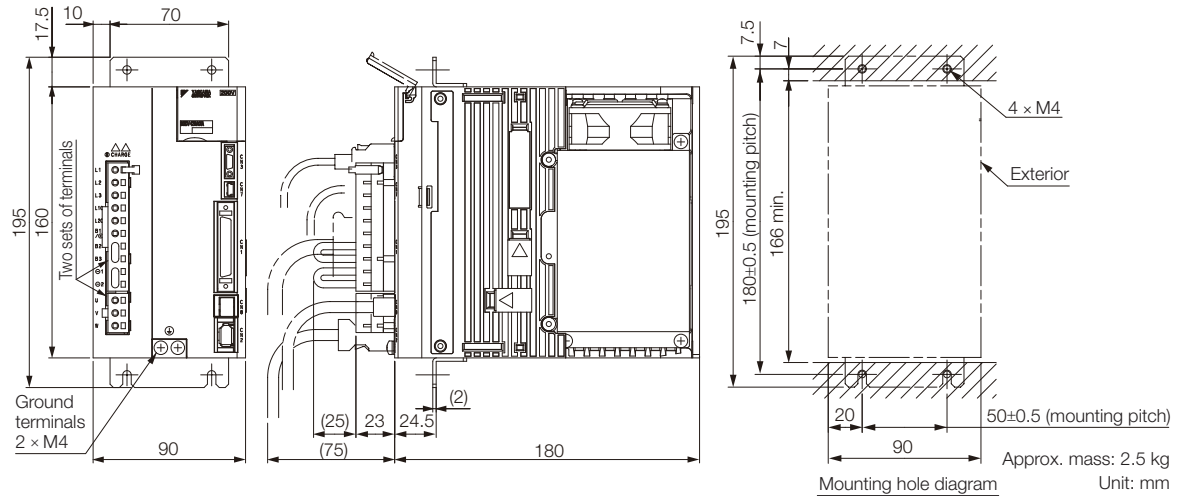


• SGDXS-120A

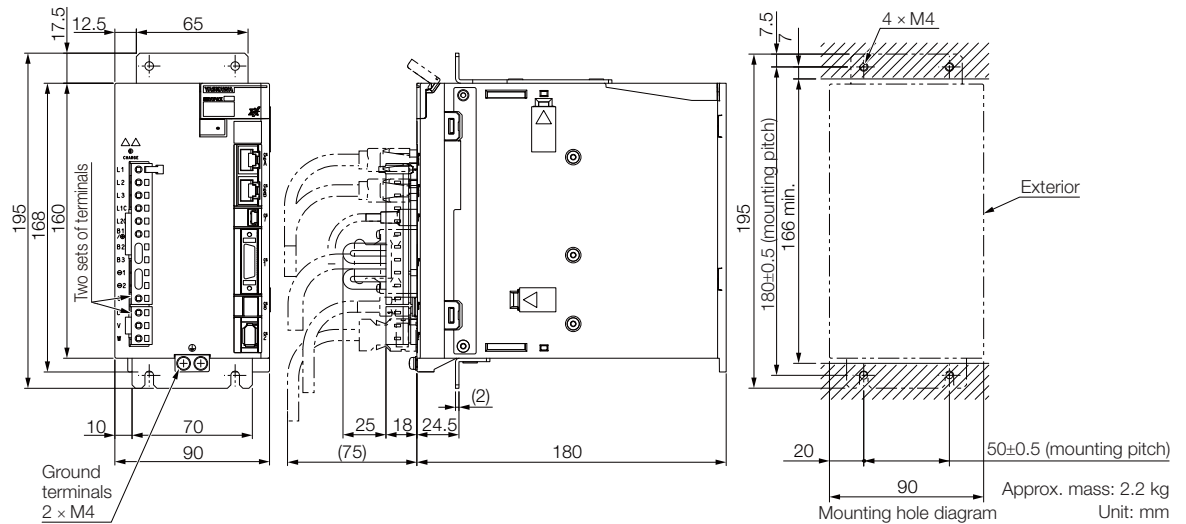


Rack-mounted SERVOPACKs

• SGDV-120A



• SGDXS-120A

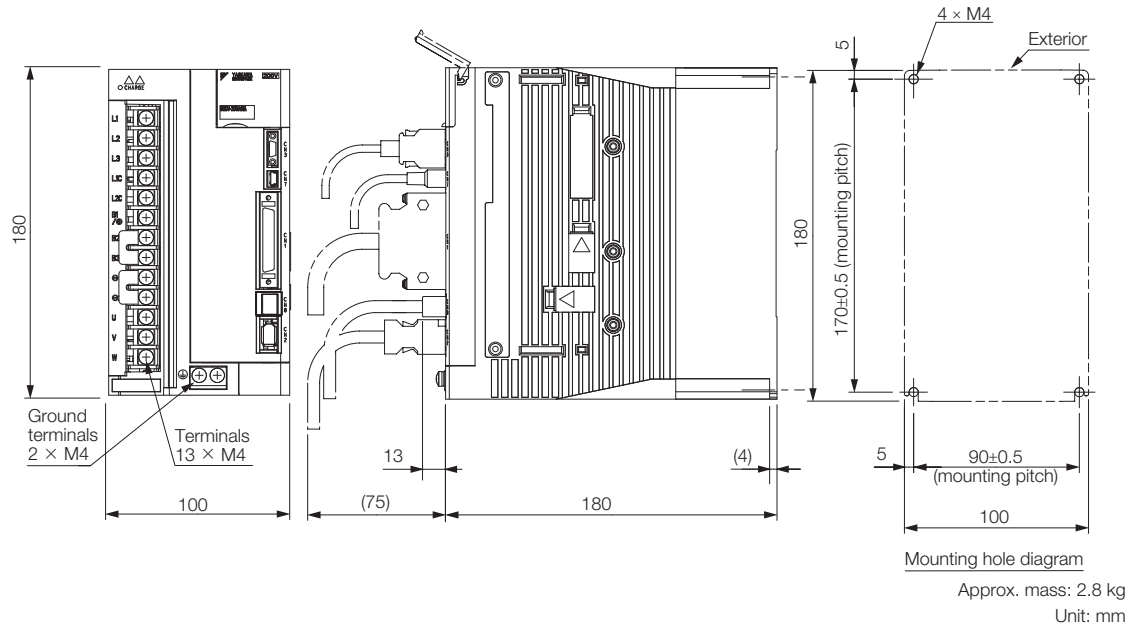


3.3.7 SGDVS-180A, -200A and SGDXS-180A, -200A

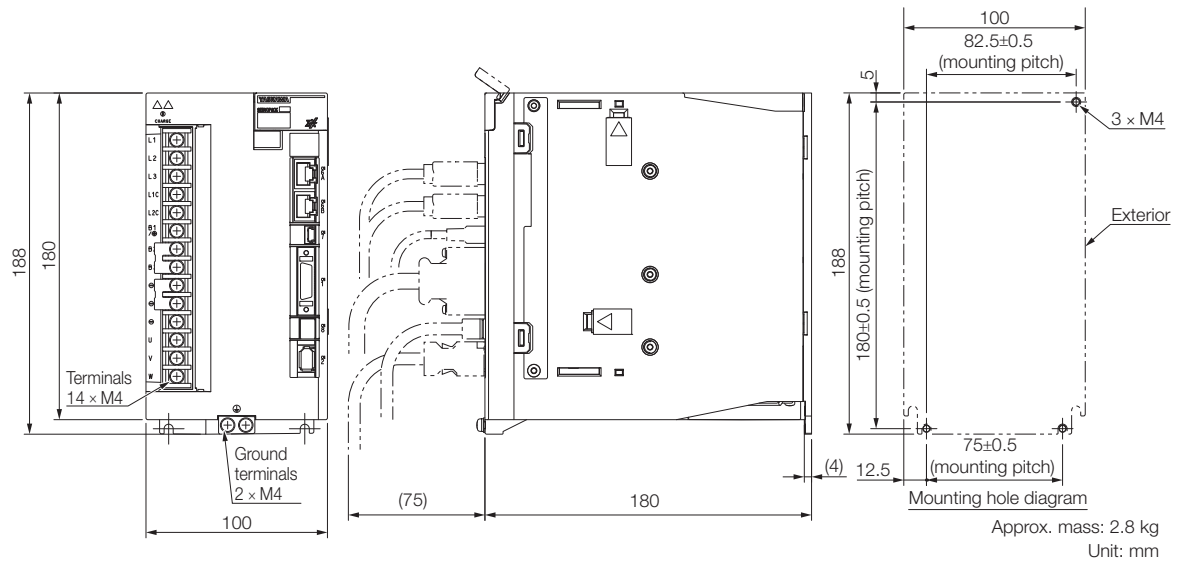
Base-mounted SERVOPACKs

Note: The figures show the product with the terminal cover removed.

- SGDVS-180A, -200A

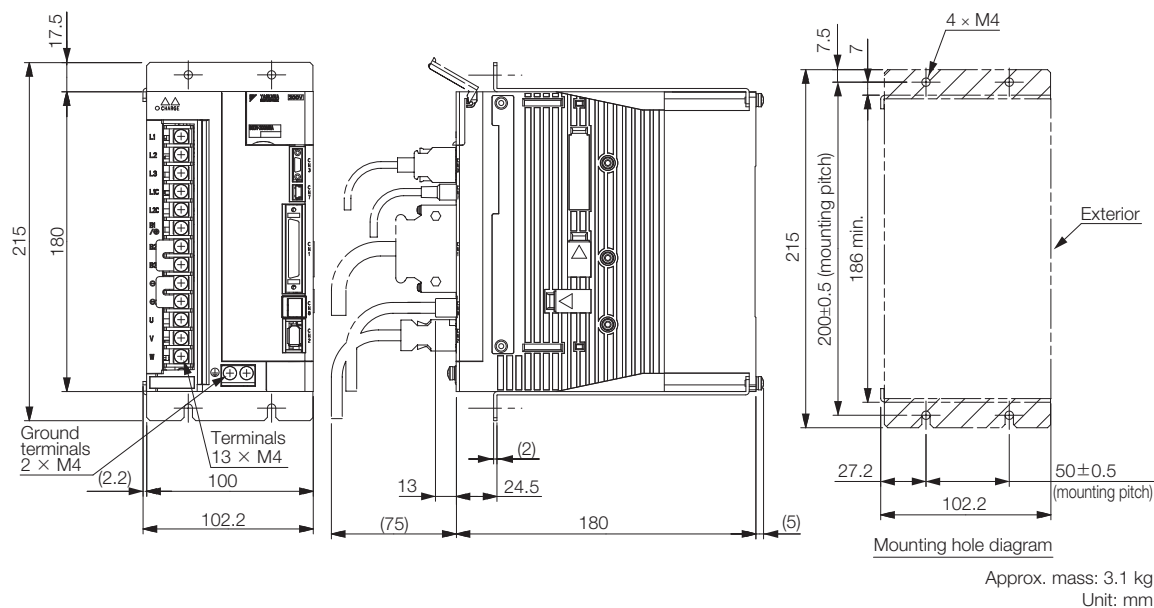


- SGDXS-180A, -200A

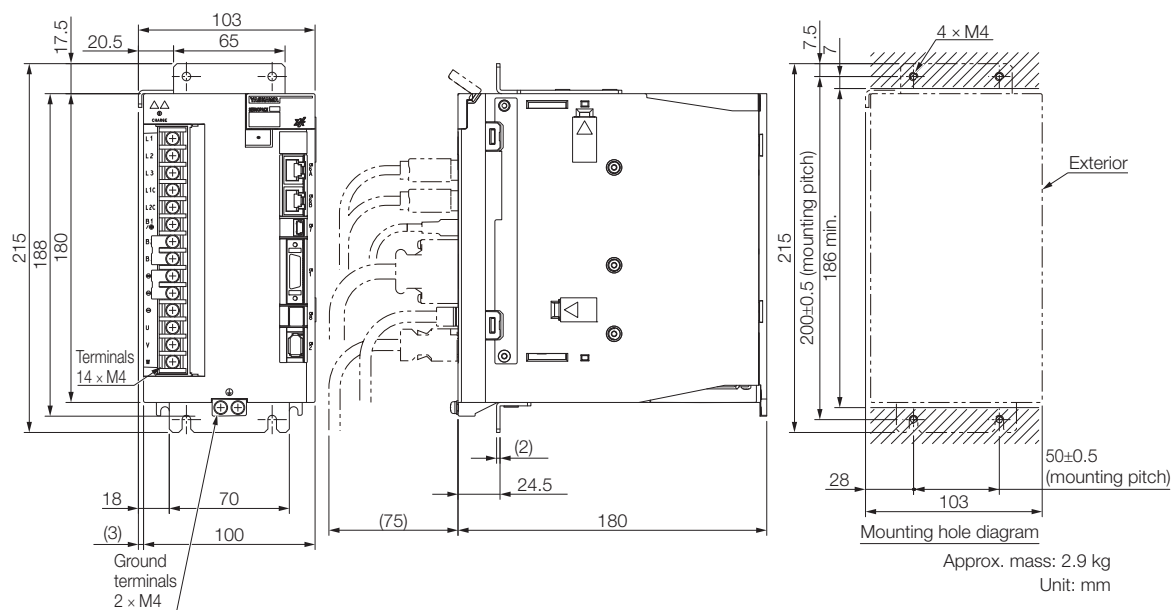


Note: The figures show the product with the terminal cover removed.

- SGDV-180A, -200A



- SGDXS-180A, -200A

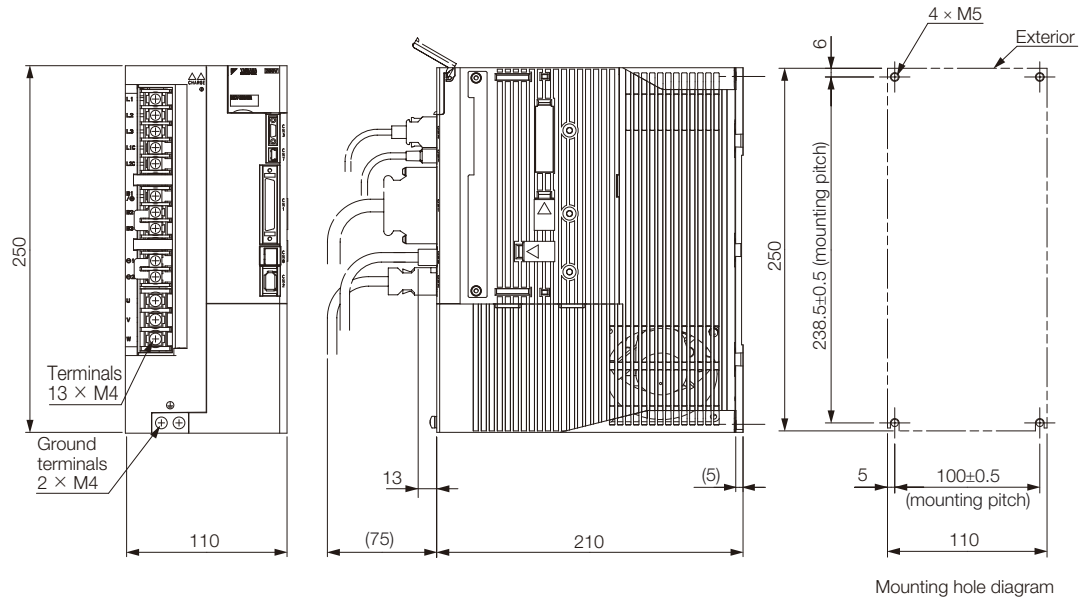


3.3.8 SGDV-330A and SGDXS-330A

Base-mounted SERVOPACKs

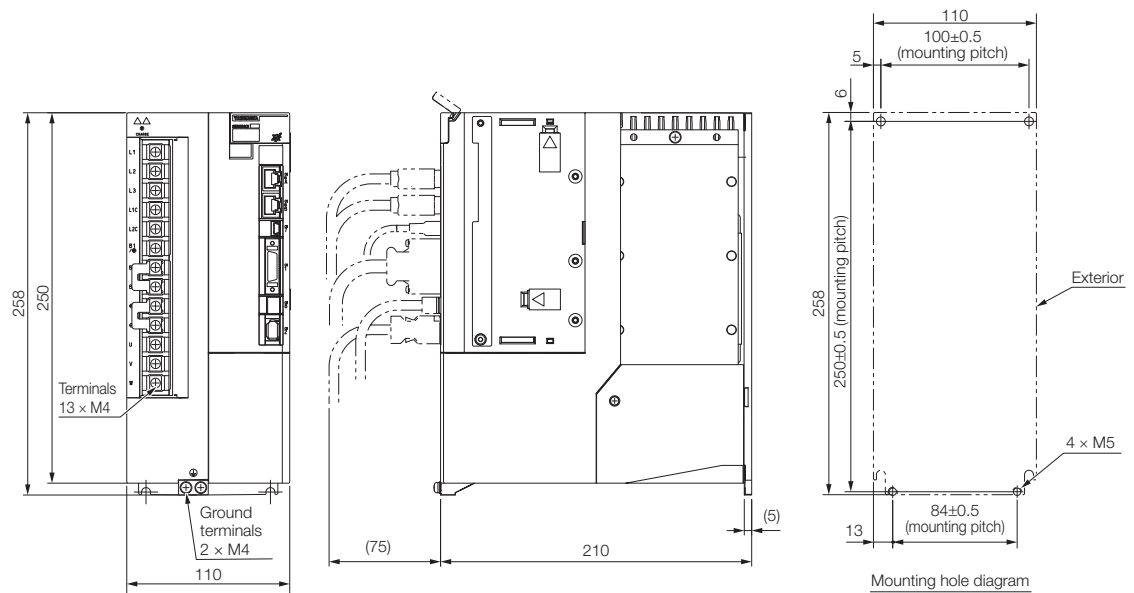
Note: The figures show the product with the terminal cover removed.

- SGDV-330A



Approx. mass: 4.6 kg
Unit: mm

- SGDXS-330A

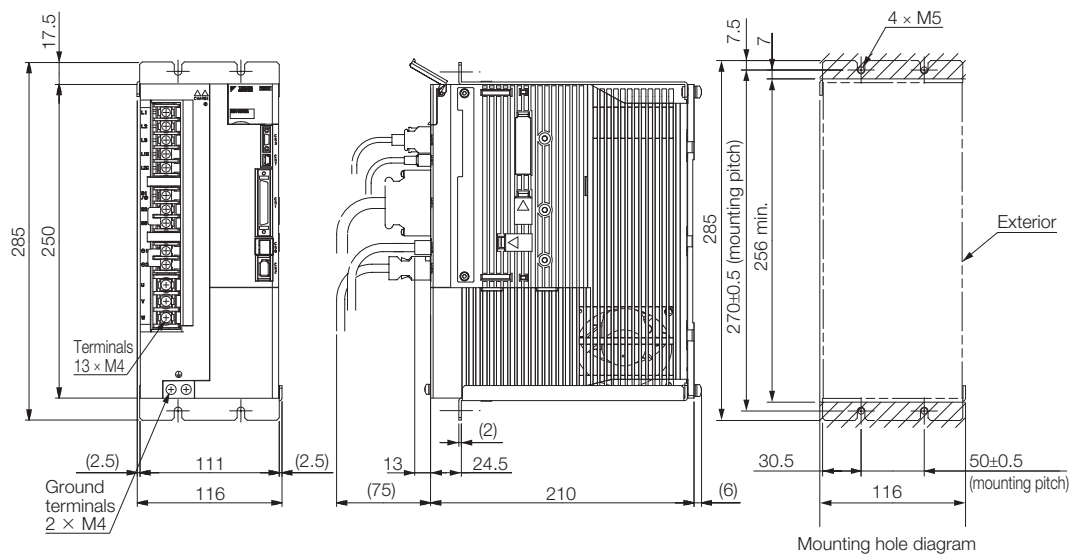


Approx. mass: 4.4 kg
Unit: mm

Rack-mounted SERVOPACKs

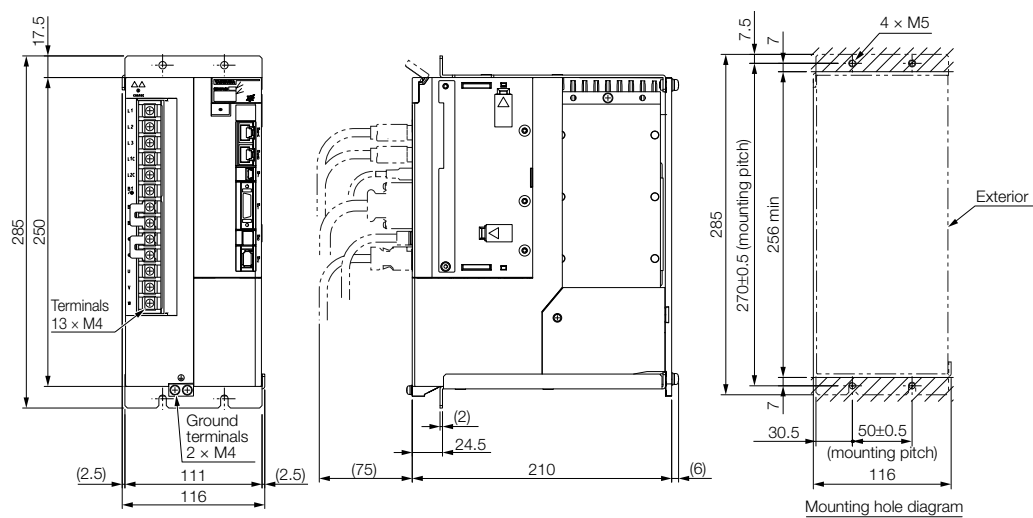
Note: The figures show the product with the terminal cover removed.

• SGDVS-330A



Approx. mass: 5.0 kg
Unit: mm

• SGDXS-330A



Approx. mass: 4.9 kg
Unit: mm

Base-mounted SERVOPACKs

-
- Technical drawing of the P1000 power supply showing front, side, and mounting hole views with dimensions.
- Front View Dimensions:**
- Overall height: 350
 - Overall width: 170
 - Terminal block height: 13
 - Terminal block width: (75)
 - Terminal block depth: 210
 - Terminal block pitch: 120±0.5 (mounting pitch)
 - Terminal block width: 170
 - Terminal block height: 335±0.5 (mounting pitch)
 - Terminal block pitch: 7.5
 - Terminal block pitch: 4 × M6
 - Terminal block pitch: 25
 - Terminal block pitch: 120±0.5 (mounting pitch)
 - Terminal block pitch: 170
- Side View Dimensions:**
- Overall height: 350
 - Overall width: 170
 - Terminal block height: 13
 - Terminal block width: (75)
 - Terminal block depth: 210
 - Terminal block pitch: 120±0.5 (mounting pitch)
 - Terminal block width: 170
 - Terminal block height: 335±0.5 (mounting pitch)
 - Terminal block pitch: 7.5
 - Terminal block pitch: 4 × M6
 - Terminal block pitch: 25
 - Terminal block pitch: 120±0.5 (mounting pitch)
 - Terminal block pitch: 170
- Mounting Hole Diagram:**
- Overall height: 350
 - Overall width: 170
 - Terminal block height: 13
 - Terminal block width: (75)
 - Terminal block depth: 210
 - Terminal block pitch: 120±0.5 (mounting pitch)
 - Terminal block width: 170
 - Terminal block height: 335±0.5 (mounting pitch)
 - Terminal block pitch: 7.5
 - Terminal block pitch: 4 × M6
 - Terminal block pitch: 25
 - Terminal block pitch: 120±0.5 (mounting pitch)
 - Terminal block pitch: 170

Technical drawings of the PDU unit showing front, side, and mounting hole views with dimensions.

Front View: Shows the unit's height as 315 mm and width as 170 mm. It includes labels for "Terminals 4 x M5", "Terminals 8 x M5", and "Ground terminals 2 x M5".

Side View: Shows the unit's depth as 210 mm. A dimension of (75) mm is indicated for the internal component area.

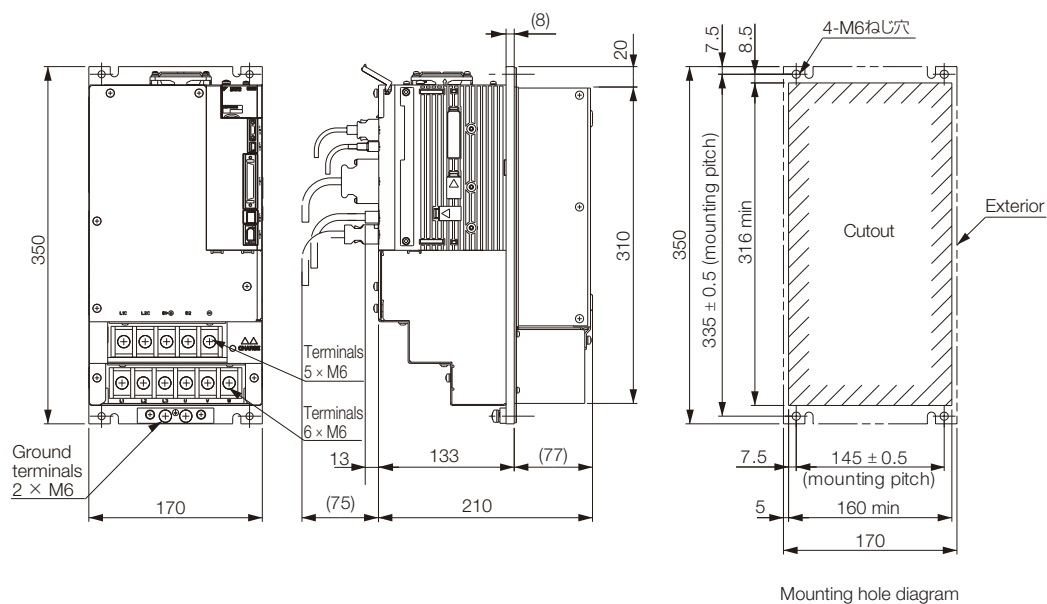
Mounting Hole Diagram: Shows the mounting hole layout with a total height of 315 mm and a total width of 170 mm. The mounting pitch is 142.5 mm. The distance from the top edge to the first mounting hole is 6 mm. The distance from the side edge to the first mounting hole is 14 mm. The label "4 x M6" indicates the mounting holes. The label "Exterior" points to the outer edge of the mounting plate.

Approx. mass: 9.0 kg
Unit: mm

Duct-ventilated SERVOPACK

• SGDV-470A, -550A

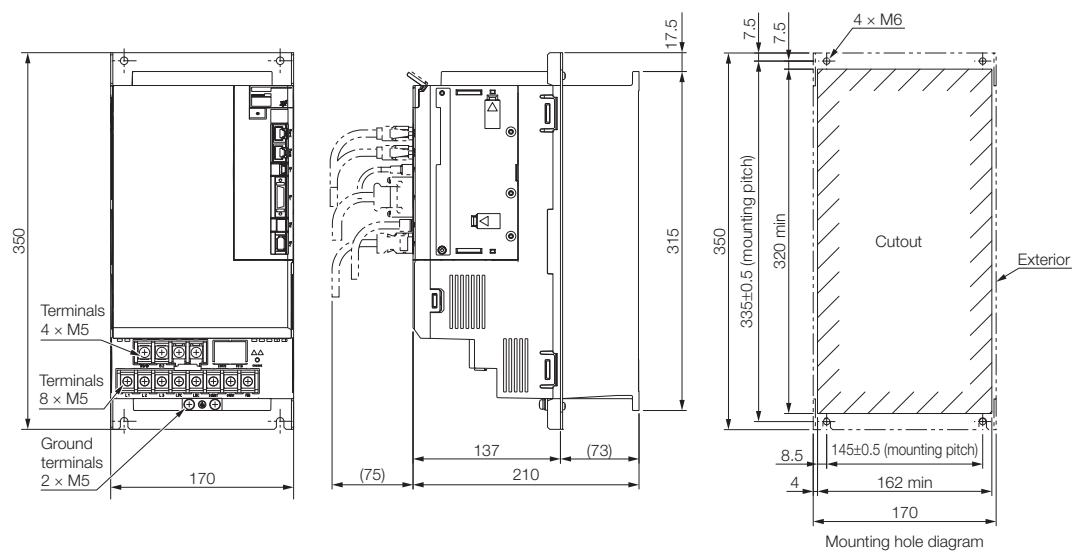
[Hardware Option Code: 001]



Approx. mass: 8.5 kg
Unit: mm

• SGDXS-470A, -550A

[Hardware Option Code: 0001]

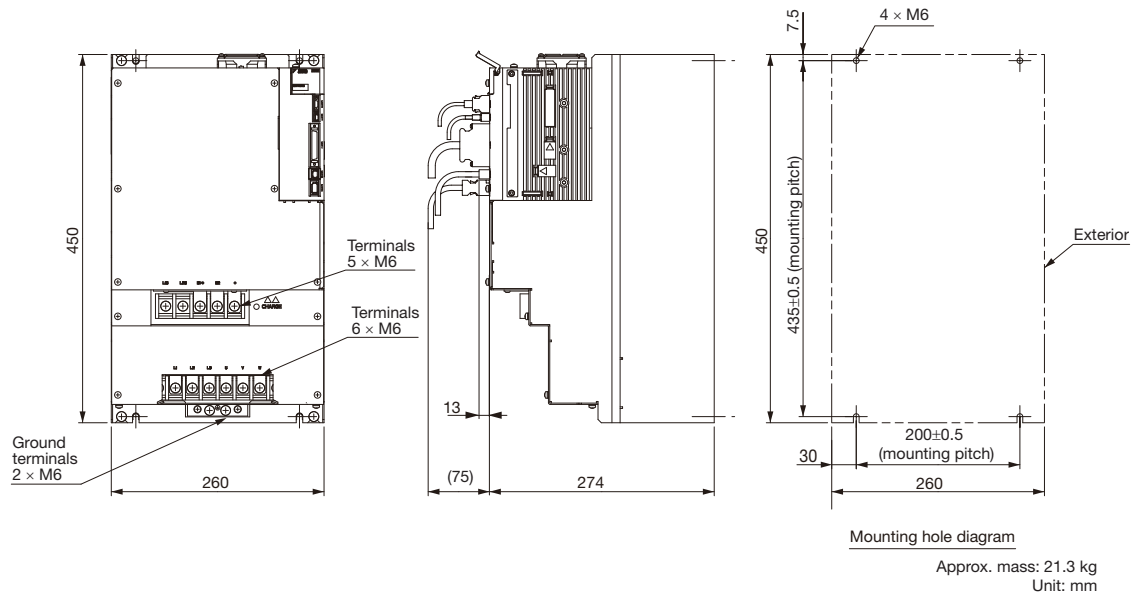


Approx. mass: 9.0 kg
Unit: mm

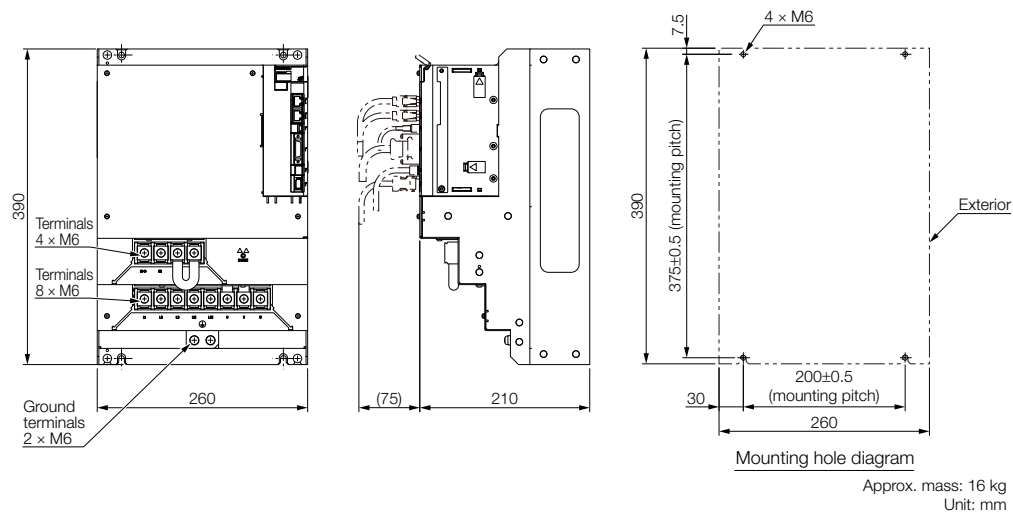
3.3.10 SGDV-590A, -780A and SGDXS-590A, -780A

Base-mounted SERVOPACKs

- SGDV-590A, -780A

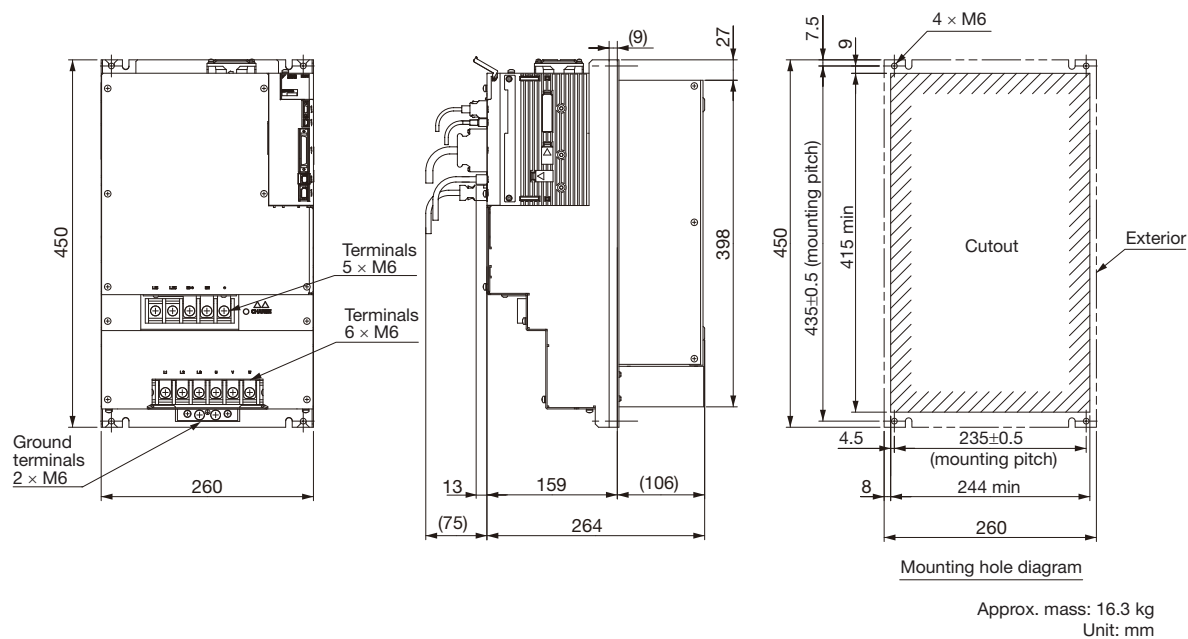


- SGDXS-590A, -780A

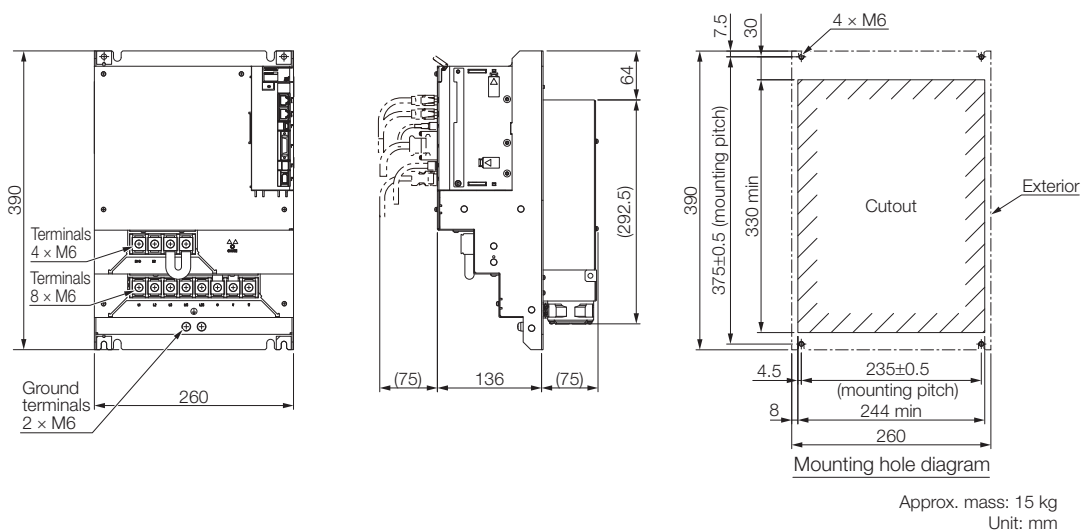


Duct-ventilated SERVOPACK

- SGDV-590A, -780A
[Hardware Option Code: 001]



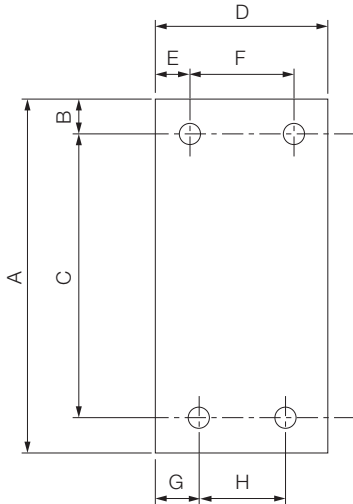
- SGDXS-590A, -780A
[Hardware Option Code: 001]



3.4

Mounting Hole Dimensions

If using a Σ -X-series SERVOPACK, you can also use the mounting holes that were used for the Σ -V-series SERVOPACK.

◆ Σ -X Series Mounting Hole Dimensions

SERVOPACK Model		Dimensions (mm)								Screw Size	Number of Screws
		A	B	C	D	E	F	G	H		
SGDXS-	R70A, R90A, 1R6A	168	5	160±0.5	40	35	—	25	—	M4	2
	2R8A	168	5	160±0.5	40	5	—	25	—	M4	2
	3R8A, 5R5A, 7R6A	168	5	160±0.5	70	6	58±0.5	64	—	M4	3
	120A, 120A□□□0008	168	5	160±0.5	90	5	80±0.5	12.5	—	M4	3
	180A, 200A	188	5	180±0.5	100	95	—	12.5	75±0.5	M4	3
	330A	258	6	250±0.5	110	5	100±0.5	13	84±0.5	M5	4
	470A, 550A	315	6	302.5±0.5	170	14	142±0.5	14	142±0.5	M6	4
	590A, 780A	390	7.5	375±0.5	260	30	200±0.5	30	200±0.5	M6	4

◆ Σ -V Series Compatible Mounting Hole Dimensions

SERVOPACK Model		Dimensions (mm)								Screw Size	Number of Screws
		A	B	C	D	E	F	G	H		
SGDV-	R70A, R90A, 1R6A	168	5	150±0.5	40	35	—	35	—	M4	2
	2R8A	168	5	150±0.5	40	5	—	35	—	M4	2
	3R8A, 5R5A, 7R6A	168	5	150±0.5	70	6	58±0.5	6	—	M4	3
	120A	168	5	150±0.5	90	5	80±0.5	5	—	M4	3
	180A, 200A	188	5	170±0.5	100	95	—	5	90±0.5	M4	3
	180A, 200A, 120A□□□008	188	5	170±0.5	100	95	—	5	90±0.5	M4	3
	330A	250	6	238.5±0.5	110	5	100±0.5	5	100±0.5	M5	4
	470A, 550A, 590A, 780A	A special attachment is required. Contact your Yaskawa representative for details.									

Specifications of Peripheral Devices

4

This chapter provides the specifications of peripheral devices.

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4.1 Servomotor Main Circuit Cable

4.1.1 SGMJV, SGMXJ

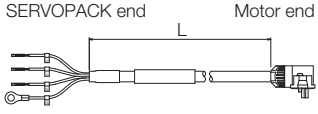
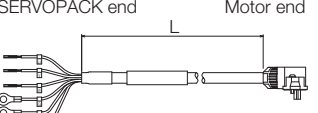
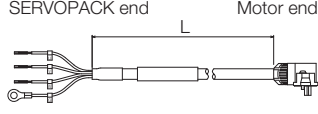
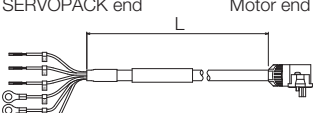
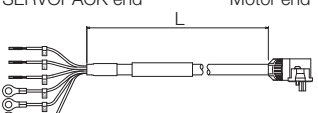
SGMJV

Servomotor Model	Name	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
SGMJV-A5 to -C2 (50 W to 150 W)	For servo-motors with-out holding brakes	JZSP-CSM01-□□-E	JZSP-CSM21-□□-E	
	For servo-motors with holding brakes	JZSP-CSM11-□□-E	JZSP-CSM31-□□-E	
SGMJV-02 to -06 (200 W to 600 W)	For servo-motors with-out holding brakes	JZSP-CSM02-□□-E	JZSP-CSM22-□□-E	
	For servo-motors with holding brakes	JZSP-CSM12-□□-E	JZSP-CSM32-□□-E	
SGMJV-08 (750 W)	For servo-motors with-out holding brakes	JZSP-CSM03-□□-E	JZSP-CSM23-□□-E	
	For servo-motors with holding brakes	JZSP-CSM13-□□-E	JZSP-CSM33-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

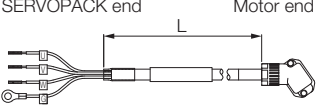
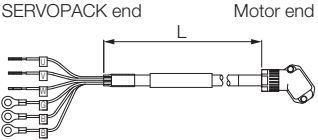
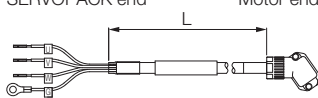
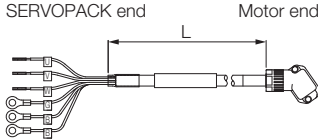
SGMXJ-□□□□□□□□2 (Σ-7 compatible specifications)

Servomotor Model	Name	Cable Direction	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXJ-A5 to -C2 (50 W to 150 W)	For servomotors without holding brakes	Load side	JZSP-C7M10F-□□-E	JZSP-C7M12F-□□-E	
		Non-load side	JZSP-C7M10G-□□-E	JZSP-C7M12G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M13F-□□-E	JZSP-C7M14F-□□-E	
		Non-load side	JZSP-C7M13G-□□-E	JZSP-C7M14G-□□-E	
SGMXJ-02 to -06 (200 W to 600 W)	For servomotors without holding brakes	Load side	JZSP-C7M20F-□□-E	JZSP-C7M22F-□□-E	
		Non-load side	JZSP-C7M20G-□□-E	JZSP-C7M22G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M23F-□□-E	JZSP-C7M24F-□□-E	
		Non-load side	JZSP-C7M23G-□□-E	JZSP-C7M24G-□□-E	
SGMXJ-08 (750 W)	For servomotors without holding brakes	Load side	JZSP-C7M30F-□□-E	JZSP-C7M32-□□-E	
		Non-load side	JZSP-C7M30G-□□-E	JZSP-C7M32G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M33F-□□-E	JZSP-C7M34F-□□-E	
		Non-load side	JZSP-C7M33G-□□-E	JZSP-C7M34G-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

SGMXJ-□□□□□□□□1 (standard specifications)

Servomotor Model	Name	Cable Direction	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXJ-A5 to -06 (50 W to 600 W)	For servomotors without holding brakes	Load side	JWSP-XMA5NS1-□□	JWSP-XMA5NF1-□□	
		Non-load side	JWSP-XMA5NS2-□□	JWSP-XMA5NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XMA5BS1-□□	JWSP-XMA5BF1-□□	
		Non-load side	JWSP-XMA5BS2-□□	JWSP-XMA5BF2-□□	
SGMXJ-08 (750 W)	For servomotors without holding brakes	Load side	JWSP-XM08NS1-□□	JWSP-XM08NF1-□□	
		Non-load side	JWSP-XM08NS2-□□	JWSP-XM08NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XM08BS1-□□	JWSP-XM08BF1-□□	
		Non-load side	JWSP-XM08BS2-□□	JWSP-XM08BF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

4.1.2 SGMV, SGMXA

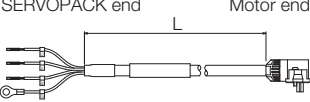
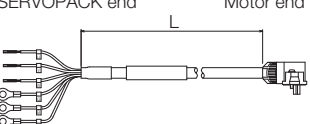
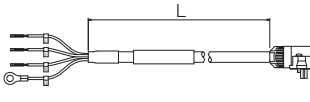
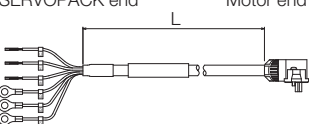
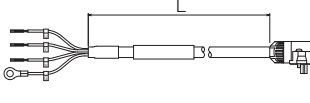
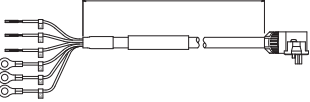
SGMV

Servomotor Model	Name	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
SGMV-A5 to -C2 (50 W to 150 W)	For servomotors without holding brakes	JZSP-CSM01-□□-E	JZSP-CSM21-□□-E	
	For servomotors with holding brakes	JZSP-CSM11-□□-E	JZSP-CSM31-□□-E	
SGMV-02 to -06 (200 W to 550 W)	For servomotors without holding brakes	JZSP-CSM02-□□-E	JZSP-CSM22-□□-E	
	For servomotors with holding brakes	JZSP-CSM12-□□-E	JZSP-CSM32-□□-E	
SGMV-08 to -10 (750 W to 1.0 kW)	For servomotors without holding brakes	JZSP-CSM03-□□-E	JZSP-CSM23-□□-E	
	For servomotors with holding brakes	JZSP-CSM13-□□-E	JZSP-CSM33-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

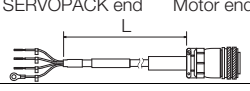
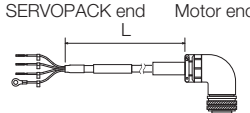
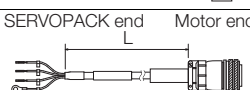
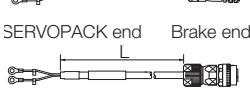
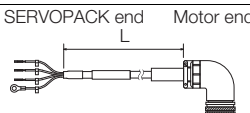
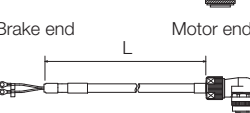
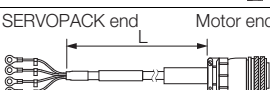
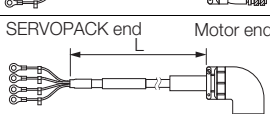
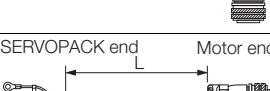
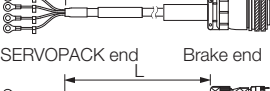
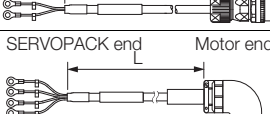
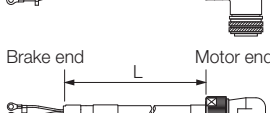
SGMXA-A5□□□□□2 to -10□□□□□2 (Σ -7 compatible specifications)

Servomotor Model	Name	Cable Direction	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXA-A5 to -C2 (50 W to 150 W)	For servomotors without holding brakes	Load side	JZSP-C7M10F-□□-E	JZSP-C7M12F-□□-E	
		Non-load side	JZSP-C7M10G-□□-E	JZSP-C7M12G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M13F-□□-E	JZSP-C7M14F-□□-E	
		Non-load side	JZSP-C7M13G-□□-E	JZSP-C7M14G-□□-E	
SGMXA-02 to -06 (200 W to 600 W)	For servomotors without holding brakes	Load side	JZSP-C7M20F-□□-E	JZSP-C7M22F-□□-E	
		Non-load side	JZSP-C7M20G-□□-E	JZSP-C7M22G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M23F-□□-E	JZSP-C7M24F-□□-E	
		Non-load side	JZSP-C7M23G-□□-E	JZSP-C7M24G-□□-E	
SGMXA-08 to -10 (750 W to 1.0 W)	For servomotors without holding brakes	Load side	JZSP-C7M30F-□□-E	JZSP-C7M32-□□-E	
		Non-load side	JZSP-C7M30G-□□-E	JZSP-C7M32G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M33F-□□-E	JZSP-C7M34F-□□-E	
		Non-load side	JZSP-C7M33G-□□-E	JZSP-C7M34G-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

SGMXA-15□□□□□□1 to -70□□□□□□1 (Σ-7 compatible specifications)

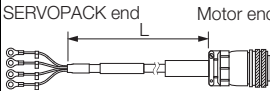
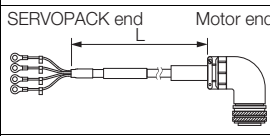
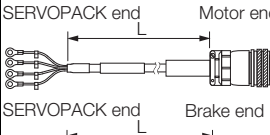
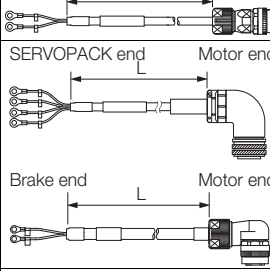
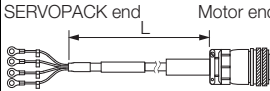
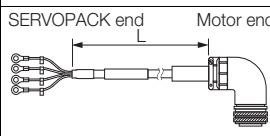
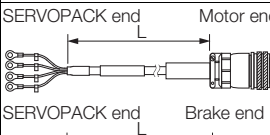
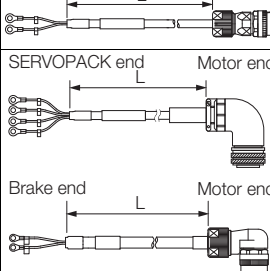
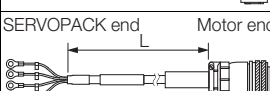
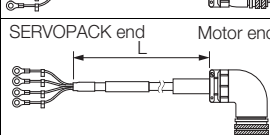
Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXA-15 (1.5 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM15NSS-□□	JWSP-XM15NFS-□□	
		Right-angle plug* ³	JWSP-XM15NSL-□□	JWSP-XM15NFL-□□	
	For servomotors with holding brakes (Set of two cables* ⁴)	Straight plug	JWSP-XM15BSS-□□	JWSP-XM15BFS-□□	 
		Right-angle plug* ³	JWSP-XM15BSL-□□	JWSP-XM15BFL-□□	 
SGMXA-20, -25 (2.0 kW, 2.5 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM20NSS-□□	JWSP-XM20NFS-□□	
		Right-angle plug* ³	JWSP-XM20NSL-□□	JWSP-XM20NFL-□□	
	For servomotors with holding brakes (Set of two cables* ⁴)	Straight plug	JWSP-XM20BSS-□□	JWSP-XM20BFS-□□	 
		Right-angle plug* ³	JWSP-XM20BSL-□□	JWSP-XM20BFL-□□	 

Continued on next page.

4.1 Servomotor Main Circuit Cable

4.1.2 SGMV, SGMXA

Continued from previous page.

Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXA-30 (3.0 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM30NSS-□□	JWSP-XM30NFS-□□	
		Right-angle plug* ³	JWSP-XM30NSL-□□	JWSP-XM30NFL-□□	
	For servomotors with holding brakes (Set of two cables* ⁴)	Straight plug	JWSP-XM30BSS-□□	JWSP-XM30BFS-□□	
		Right-angle plug* ³	JWSP-XM30BSL-□□	JWSP-XM30BFL-□□	
SGMXA-40, -50 (4.0 kW, 5.0 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM40NSS-□□	JWSP-XM40NFS-□□	
		Right-angle plug* ³	JWSP-XM40NSL-□□	JWSP-XM40NFL-□□	
	For servomotors with holding brakes (Set of two cables* ⁴)	Straight plug	JWSP-XM40BSS-□□	JWSP-XM40BFS-□□	
		Right-angle plug* ³	JWSP-XM40BSL-□□	JWSP-XM40BFL-□□	
SGMXA-70 (7.0 kW)	For servomotors without holding brakes	Straight plug	—	JWSP-XM70NFS-□□	
		Right-angle plug* ³	—	JWSP-XM70NFL-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20)

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

*3. The lead installation direction is away from the load. Consult your Yaskawa representative for other lead installation directions.

*4. This order number is for a set of two cables (main power supply cable and holding brake cable).

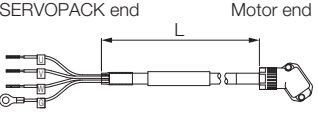
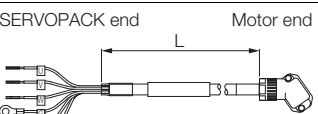
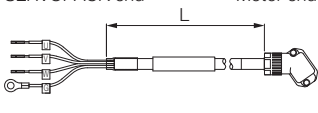
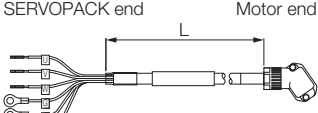
When you purchase them separately, the order numbers for main power supply cables are the same as for a servomotor without a holding brake.

The following order numbers are for a holding brake cable. These standard cables are flexible cables.

- Straight plug: JWSP-XB0FS-□□
- Right-angle plug: JWSP-XB0FL-□□

Note: If you need a cable with a length of 20 m to 50 m, consider the operating conditions and specify a suitable length.

SGM4A-A5□□□□□□1 to -10□□□□□□1 (standard specifications)

Servomotor Model	Name	Cable Direction	Order Number*1		Appearance
			Standard Cable	Flexible Cable*2	
SGM4A-A5 to -06 (50 W to 600 W)	For servomotors without holding brakes	Load side	JWSP-XMA5NS1-□□	JWSP-XMA5NF1-□□	
		Non-load side	JWSP-XMA5NS2-□□	JWSP-XMA5NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XMA5BS1-□□	JWSP-XMA5BF1-□□	
		Non-load side	JWSP-XMA5BS2-□□	JWSP-XMA5BF2-□□	
SGM4A-08 to -10 (750 W to 1.0 W)	For servomotors without holding brakes	Load side	JWSP-XM08NS1-□□	JWSP-XM08NF1-□□	
		Non-load side	JWSP-XM08NS2-□□	JWSP-XM08NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XM08BS1-□□	JWSP-XM08BF1-□□	
		Non-load side	JWSP-XM08BS2-□□	JWSP-XM08BF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

4.1.3 SGMSV, SGMXA

SGMSV-

Cables with connectors between the SERVOPACK and SGMSV servomotors are not provided. The customer is responsible for fabricating these cables.

Use the connectors specified by Yaskawa for these servomotors. Note that the connector to be selected varies depending on the application environment of the motor. Two types are available.

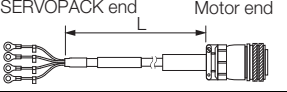
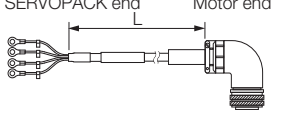
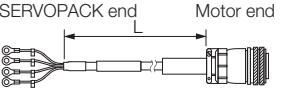
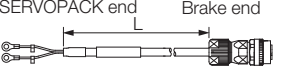
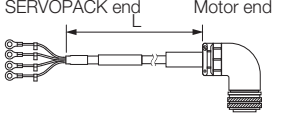
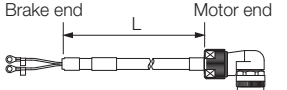
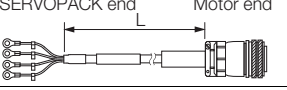
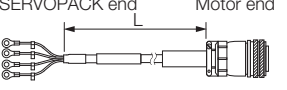
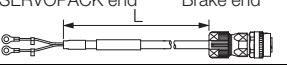
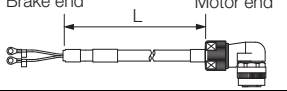
- Normal environment type (standard)
- Type compliant with an IP67 protective structure and European Safety Standards
Yaskawa does not specify what wiring materials to use. Use the appropriate wiring materials for the connectors.

SGMXA-15 to -70 (Σ -7 compatible specifications, standard specifications)

Servomotor Model	Name	Connector Specification	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
SGMXA-15 (1.5 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM15NSS-□□	JWSP-XM15NFS-□□	
		Right-angle plug ^{*3}	JWSP-XM15NSL-□□	JWSP-XM15NFL-□□	
	For servomotors with holding brakes (Set of two cables ^{*4})	Straight plug	JWSP-XM15BSS-□□	JWSP-XM15BFS-□□	
		Right-angle plug ^{*3}	JWSP-XM15BSL-□□	JWSP-XM15BFL-□□	

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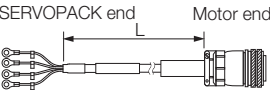
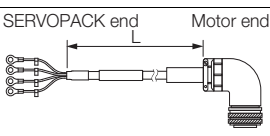
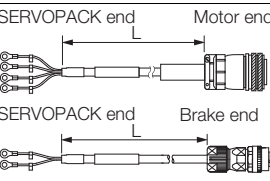
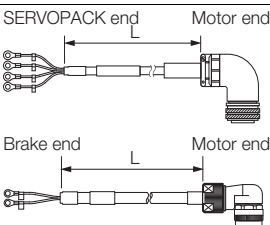
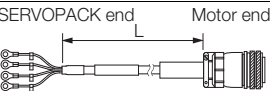
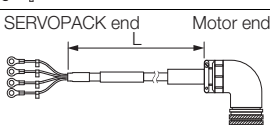
Servomotor Model	Name	Connector Specification	Order Number*1		Appearance
			Standard Cable	Flexible Cable*2	
SGMXA-20, -25 (2.0 kW, 2.5 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM20NSS-□□	JWSP-XM20NFS-□□	
		Right-angle plug*3	JWSP-XM20NSL-□□	JWSP-XM20NFL-□□	
	For servomotors with holding brakes (Set of two cables*4)	Straight plug	JWSP-XM20BSS-□□	JWSP-XM20BFS-□□	
					
		Right-angle plug*3	JWSP-XM20BSL-□□	JWSP-XM20BFL-□□	
					
SGMXA-30 (3.0 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM30NSS-□□	JWSP-XM30NFS-□□	
		Right-angle plug*3	JWSP-XM30NSL-□□	JWSP-XM30NFL-□□	
	For servomotors with holding brakes (Set of two cables*4)	Straight plug	JWSP-XM30BSS-□□	JWSP-XM30BFS-□□	
					
		Right-angle plug*3	JWSP-XM30BSL-□□	JWSP-XM30BFL-□□	
					

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4.1 Servomotor Main Circuit Cable

4.1.3 SGMSV, SGMXA

Continued from previous page.

Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXA-40, -50 (4.0 kW, 5.0 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM40NSS-□□	JWSP-XM40NFS-□□	
		Right-angle plug* ³	JWSP-XM40NSL-□□	JWSP-XM40NFL-□□	
	For servomotors with holding brakes (Set of two cables* ⁴)	Straight plug	JWSP-XM40BSS-□□	JWSP-XM40BFS-□□	
		Right-angle plug* ³	JWSP-XM40BSL-□□	JWSP-XM40BFL-□□	
SGMXA-70 (7.0 kW)	For servomotors without holding brakes	Straight plug	—	JWSP-XM70NFS-□□	
	Right-angle plug* ³	Right-angle plug* ³	—	JWSP-XM70NFL-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

*3. The lead installation direction is away from the load. Consult your Yaskawa representative for other lead installation directions.

*4. This order number is for a set of two cables (main power supply cable and holding brake cable).

When you purchase them separately, the order numbers for main power supply cables are the same as for a servomotor without a holding brake.

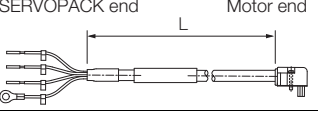
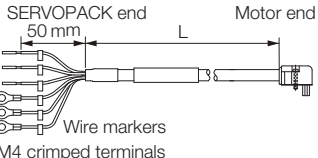
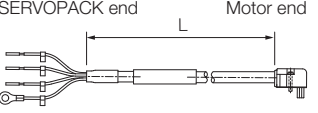
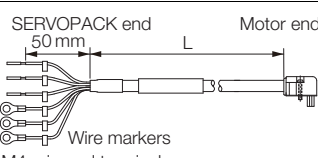
The following order numbers are for a holding brake cable. These standard cables are flexible cables.

- Straight plug: JWSP-XB0FS-□□
- Right-angle plug: JWSP-XB0FL-□□

Note: If you need a cable with a length of 20 m to 50 m, consider the operating conditions and specify a suitable length.

4.1.4 SGMPS, SGMXP

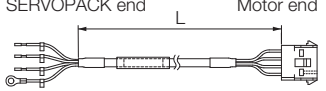
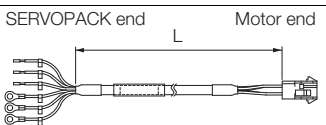
SGMPS

Servomotor Model	Name	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
SGMPS-01 (100 W)	For servomotors without holding brakes	JZSP-CSM01-□□-E	JZSP-CSM21-□□-E	
	For servomotors with holding brakes	JZSP-CSM11-□□-E	JZSP-CSM31-□□-E	
SGMPS-02, -04 (200 W, 400 W)	For servomotors without holding brakes	JZSP-CSM02-□□-E	JZSP-CSM22-□□-E	
	For servomotors with holding brakes	JZSP-CSM12-□□-E	JZSP-CSM32-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

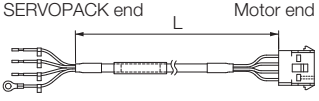
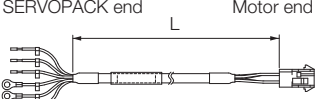
SGMPS-08, SGMXP-08

Servomotor Model	Name	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
SGMPS-08 SGMXP-08 (750 W)	For servomotors without holding brakes	JZSP-CMM00-□□-E	JZSP-CMM01-□□-E	
	For servomotors with holding brakes	JZSP-CMM10-□□-E	JZSP-CSM11-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

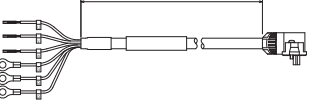
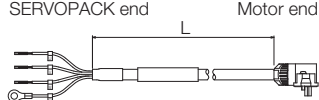
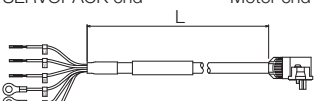
SGMPS-15, SGMXP-15

Servomotor Model	Name	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
SGMPS-15 SGMXP-15 (1.5 kW)	For servomotors without holding brakes	JZSP-CMM20-□□-E	—	
	For servomotors with holding brakes	JZSP-CMM30-□□-E	—	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

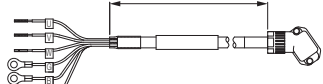
SGMXP-01□□□□□□2 to -04□□□□□□2 (Σ-7 compatible specifications)

Servomotor Model	Name	Cable Direction	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
SGMXP-01 (100 W)	For servomotors without holding brakes	Load side	JZSP-C7M10F-□□-E	JZSP-C7M12F-□□-E	
		Non-load side	JZSP-C7M10G-□□-E	JZSP-C7M12G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M13F-□□-E	JZSP-C7M14F-□□-E	
		Non-load side	JZSP-C7M13G-□□-E	JZSP-C7M14G-□□-E	
SGMXP-02 to -04 (200 W to 400 W)	For servomotors without holding brakes	Load side	JZSP-C7M20F-□□-E	JZSP-C7M22F-□□-E	
		Non-load side	JZSP-C7M20G-□□-E	JZSP-C7M22G-□□-E	
	For servomotors with holding brakes	Load side	JZSP-C7M23F-□□-E	JZSP-C7M24F-□□-E	
		Non-load side	JZSP-C7M23G-□□-E	JZSP-C7M24G-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

SGMXP-01□□□□□□1 to -04□□□□□□1 (standard specifications)

Servomotor Model	Name	Cable Direction	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
SGMXP-01 to -04 (100 W to 400 W)	For servomotors without holding brakes	Load side	JWSP-XMA5NS1-□□	JWSP-XMA5NF1-□□	
	Non-load side		JWSP-XMA5NS2-□□	JWSP-XMA5NF2-□□	
	For servomotors with holding brakes	Load side	JWSP-XMA5BS1-□□	JWSP-XMA5BF1-□□	
	Non-load side		JWSP-XMA5BS2-□□	JWSP-XMA5BF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

4.1.5 SGMGV, SGMXG

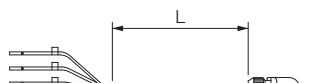
SGMGV-

Cables with connectors between the SERVOPACK and SGMGV servomotors are not provided. The customer is responsible for fabricating these cables.

Use the connectors specified by Yaskawa for these servomotors. (These connectors are compliant with the standards.) Note that the connector to be selected varies depending on the application environment of the motor. Two types are available.

- Normal environment type (standard)
- Type compliant with an IP67 protective structure and European Safety Standards
Yaskawa does not specify what wiring materials to use. Use the appropriate wiring materials for the connectors.

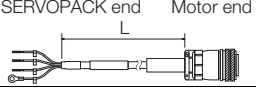
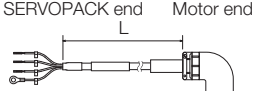
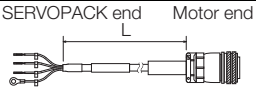
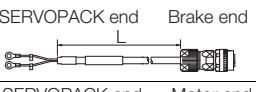
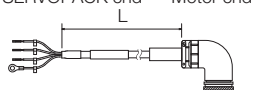
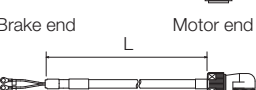
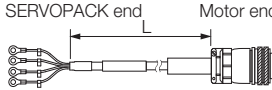
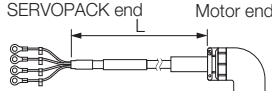
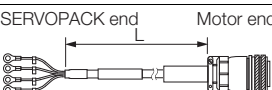
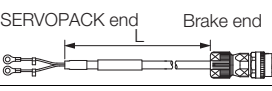
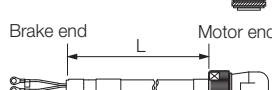
SGMXG-03, -05

Servomotor Model	Name	Order Number ^{*1, *2}	Appearance
SGM?G-03, -05 (300 W, 450 W)	For servomotors without holding brakes	JZSP-CVM21-□□-E	
	For servomotors with holding brakes	JZSP-CVM41-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

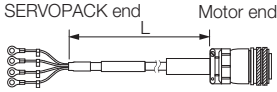
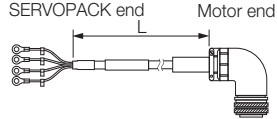
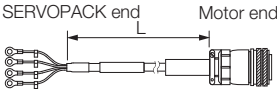
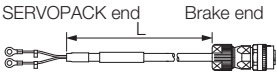
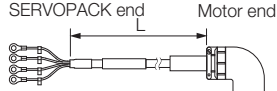
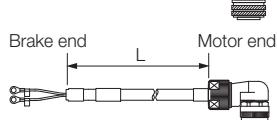
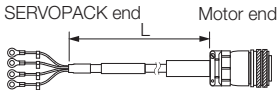
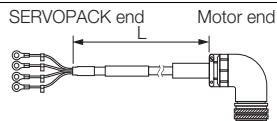
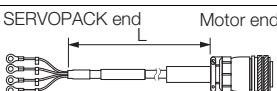
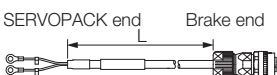
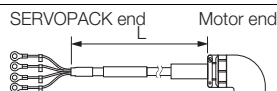
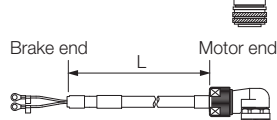
*2. These standard cables are flexible cables. The recommended bending radius (R) is 90 mm or larger.

SGMXG-09 to -1E

Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXG-09 to -13 (850 W to 1.3 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM15NSS-□□	JWSP-XM15NFS-□□	
		Right-angle plug	JWSP-XM15NSL-□□	JWSP-XM15NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM15BSS-□□	JWSP-XM15BFS-□□	
					
		Right-angle plug	JWSP-XM15BSL-□□	JWSP-XM15BFL-□□	
					
SGMXG-20 (1.8 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM20NSS-□□	JWSP-XM20NFS-□□	
		Right-angle plug	JWSP-XM20NSL-□□	JWSP-XM20NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM20BSS-□□	JWSP-XM20BFS-□□	
					
		Right-angle plug	JWSP-XM20BSL-□□	JWSP-XM20BFL-□□	
					

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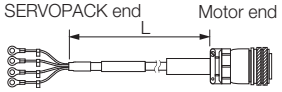
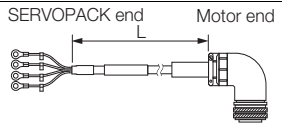
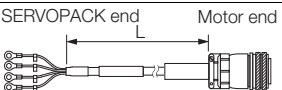
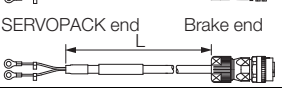
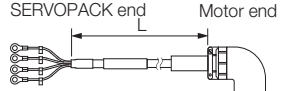
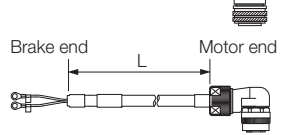
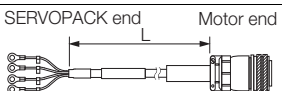
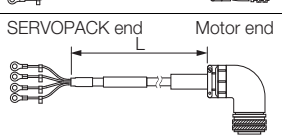
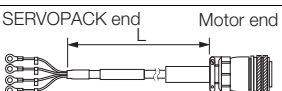
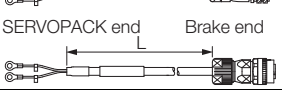
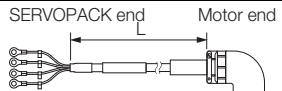
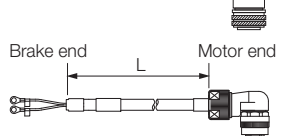
Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXG-30 (2.9 kW) (when used in combination with the SGDXS-200A)	For servomotors without holding brakes	Straight plug	JWSP-XM30NSS-□□	JWSP-XM30NFS-□□	
		Right-angle plug	JWSP-XM30NSL-□□	JWSP-XM30NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM30BSS-□□	JWSP-XM30BFS-□□	
					
		Right-angle plug	JWSP-XM30BSL-□□	JWSP-XM30BFL-□□	
					
SGMXG-30, -44 (2.9 kW, 4.4 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM40NSS-□□	JWSP-XM40NFS-□□	
		Right-angle plug	JWSP-XM40NSL-□□	JWSP-XM40NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM40BSS-□□	JWSP-XM40BFS-□□	
					
		Right-angle plug	JWSP-XM40BSL-□□	JWSP-XM40BFL-□□	
					

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4.1 Servomotor Main Circuit Cable

4.1.5 SGMGV, SGMXG

Continued from previous page.

Servomotor Model	Name	Connector Specification	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
SGMXG-55, -75 (5.5 kW, 7.5 kW)	For servomotors without holding brakes	Straight plug	JWSP-XM55NSS-□□	JWSP-XM55NFS-□□	
		Right-angle plug	JWSP-XM55NSL-□□	JWSP-XM55NFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	JWSP-XM55BSS-□□	JWSP-XM55BFS-□□	
					
		Right-angle plug	JWSP-XM55BSL-□□	JWSP-XM55BFL-□□	
					
SGMXG-1A, -1E (11 kW, 15 kW)	For servomotors without holding brakes	Straight plug	—	JWSP-XM1ANFS-□□	
		Right-angle plug	—	JWSP-XM1ANFL-□□	
	For servomotors with holding brakes (Set of two cables* ³)	Straight plug	—	JWSP-XM1ABFS-□□	
					
		Right-angle plug	—	JWSP-XM1ABFL-□□	
					

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 90 mm or larger.

*3. This order number is for a set of two cables (main power supply cable and holding brake cable). When you purchase them separately, the order numbers for main power supply cables are the same as for a servomotor without a holding brake.

The following order numbers are for a holding brake cable. These standard cables are flexible cables.

- Straight plug: JWSP-XB0FS-□□
- Right-angle plug: JWSP-XB0FL-□□

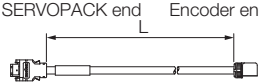
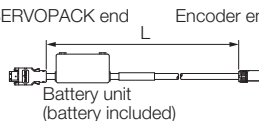
Note: If you need a cable with a length of 20 m to 50 m, consider the operating conditions and specify a suitable length.

4.2 Encoder Cable

4.2.1 SGMJV, SGMXJ

Encoder Cable of 20 m or Less

◆ SGMJV-

Name	Type	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
Cable with connectors on both ends	Without battery unit (for incremental encoder)	JZSP-CSP01-□□-E	JZSP-CSP21-□□-E	
	With battery unit (for absolute encoder)	JZSP-CSP05-□□-E	JZSP-CSP25-□□-E	

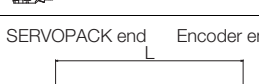
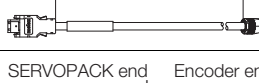
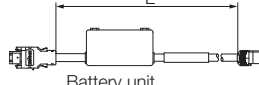
*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXJ-□□□□□□□□2 (Σ-7 compatible specifications)

Name	Cable Direction	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders	Load side	JZSP-C7PI0D-□□-E	JZSP-C7PI2D-□□-E	
	Non-load side	JZSP-C7PI0E-□□-E	JZSP-C7PI2E-□□-E	
For absolute encoder: with battery unit ^{*3}	Load side	JZSP-C7PA0D-□□-E	JZSP-C7PA2D-□□-E	
	Non-load side	JZSP-C7PA0E-□□-E	JZSP-C7PA2E-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

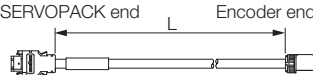
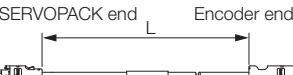
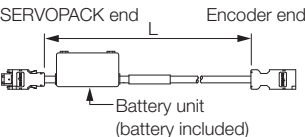
*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Relay Encoder Cables (Exceeding 20 m)

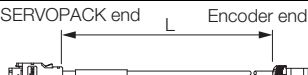
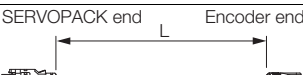
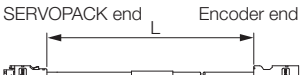
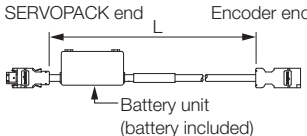
◆ SGMJV-

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders)	0.3	JZSP-CSP11-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*	0.3	JZSP-CSP12-E	

* In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXJ-□□□□□□□□2 (Σ-7 compatible specifications)

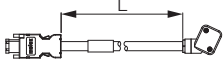
Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Cable installed toward load	0.3	JZSP-C7PRCD-E	
Relay encoder cable (for all types of encoders) Cable installed away from load	0.3	JZSP-C7PRCE-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*	0.3	JZSP-CSP12-E	

* In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXJ-□□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Load side	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	Non-load side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit* ³	Load side	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	Non-load side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

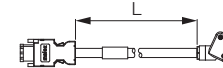
Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXJ-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number* ¹		Appearance
			Standard Cable	Flexible Cable* ²	
Encoder cable (with connectors on both ends)* ³	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	
	For absolute encoder: with battery unit* ⁴		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	
Encoder cable	Load side	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	
	Non-load side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

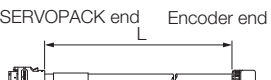
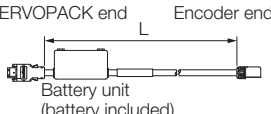
*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

4.2.2 SGMV, SGMXA

Encoder Cable of 20 m or Less

◆ SGMV-

Name	Type	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
Cable with connectors on both ends	Without battery unit (for incremental encoder)	JZSP-CSP01-□□-E	JZSP-CSP21-□□-E	
	With battery unit (for absolute encoder) ^{*3}	JZSP-CSP05-□□-E	JZSP-CSP25-□□-E	

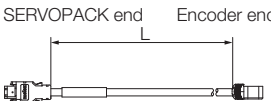
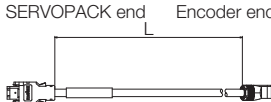
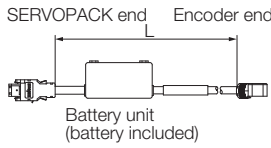
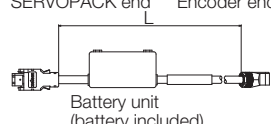
*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXA-A5□□□□□□2 to -10□□□□□□2 (Σ-7 compatible specifications)

Name	Cable Direction	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders	Load side	JZSP-C7PI0D-□□-E	JZSP-C7PI2D-□□-E	
	Non-load side	JZSP-C7PI0E-□□-E	JZSP-C7PI2E-□□-E	
For absolute encoder: with battery unit ^{*3}	Load side	JZSP-C7PA0D-□□-E	JZSP-C7PA2D-□□-E	
	Non-load side	JZSP-C7PA0E-□□-E	JZSP-C7PA2E-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

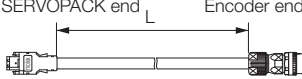
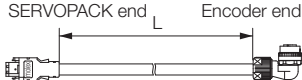
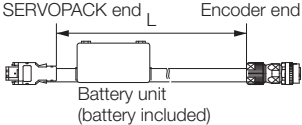
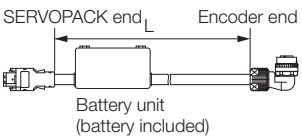
*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXA-15□□□□□□2 to -70□□□□□□2 (Σ -7 compatible specifications)

Information SGMXA-15 to -70 Σ -7 compatible specification servomotors can also use the cables for the SGM7G servomotor.

Name	Connector Specification	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Straight plug	JWSP-XPISS-□□	JWSP-XPIFS-□□	
	Right-angle plug* ⁴ , * ⁵	JWSP-XPISL-□□	JWSP-XPIFL-□□	
For absolute encoder: with battery unit* ³	Straight plug	JWSP-XPASS-□□	JWSP-XPAFS-□□	
	Right-angle plug* ⁴ , * ⁵	JWSP-XPASL-□□	JWSP-XPAFL-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

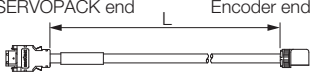
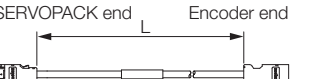
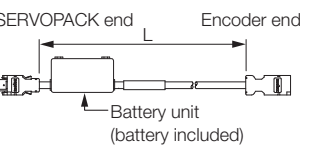
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

*4. The lead installation direction is away from the load. Consult your Yaskawa representative for other lead installation directions.

*5. An encoder cable with a right-angle plug cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable with a straight plug.

Relay Encoder Cables (Exceeding 20 m)

◆ SGMV-

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders)	0.3	JZSP-CSP11-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*	0.3	JZSP-CSP12-E	

* In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGM4A-A5□□□□□□2 to -10□□□□□□2 (Σ -7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Cable installed toward load	0.3	JZSP-C7PRCD-E	
Relay encoder cable (for all types of encoders) Cable installed away from load	0.3	JZSP-C7PRCE-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*	0.3	JZSP-CSP12-E	

* In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGM4A-15□□□□□□2 to -70□□□□□□2 (Σ -7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Straight plug	0.3	JZSP-CVP01-E	
Relay encoder cable (for all types of encoders) Right-angle plug *1, *2	0.3	JZSP-CVP02-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*3	0.3	JZSP-CSP12-E	

*1. The lead installation direction of the right-angle plug connector is the non-load side. Consult your Yaskawa representative for other lead installation directions.

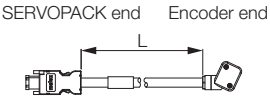
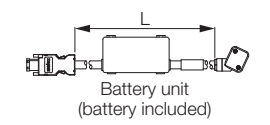
*2. An encoder cable with a right-angle plug cannot be used for the SGM4A-70 (7.0 kW). Use an encoder cable with a straight plug.

*3. In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXA-□□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side ^{*3}	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit ^{*4}	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side ^{*3}	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. An encoder cable installed toward the left side cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable installed toward the right side.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

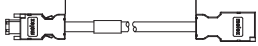
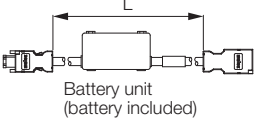
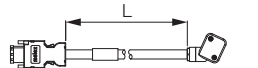
Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXA-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
Encoder cable (with connectors on both ends) ^{*3}	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	
	For absolute encoder: with battery unit ^{*4}		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	
Encoder cable	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side ^{*5}	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

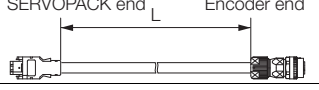
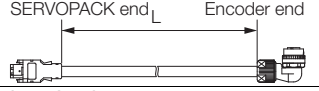
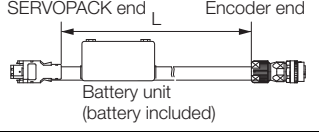
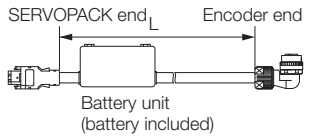
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

*5. An encoder cable installed toward the left side cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable installed toward the right side.

4.2.3 SGMSV, SGMXA

Encoder Cable of 20 m or Less

◆ SGMSV-

Name	Connector Specification	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
Without battery unit	Straight plug	JZSP-CVP01-□□-E	JZSP-CVP11-□□-E	
	Right-angle plug ^{*4}	JZSP-CVP02-□□-E	JZSP-CVP12-□□-E	
With battery unit ^{*3}	Straight plug	JZSP-CVP06-□□-E	JZSP-CVP26-□□-E	
	Right-angle plug ^{*4}	JZSP-CVP07-□□-E	JZSP-CVP27-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

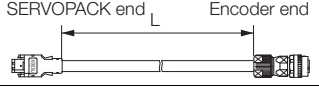
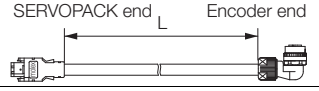
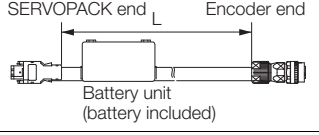
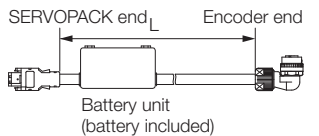
*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

*4. An encoder cable with a right-angle plug cannot be used for the SGMSV-70A (7.0 kW). Use an encoder cable with a straight plug.

◆ SGMXA-15□□□□□□2 to -70□□□□□□2 (Σ-7 compatible specifications)

Information SGMXA-15 to -70 Σ-7 compatible specification servomotors can also use the cables for the SGM7G servomotor.

Name	Connector Specification	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders	Straight plug	JWSP-XPISS-□□	JWSP-XPIFS-□□	
	Right-angle plug ^{*4, *5}	JWSP-XPISL-□□	JWSP-XPIFL-□□	
For absolute encoder: with battery unit ^{*3}	Straight plug	JWSP-XPASS-□□	JWSP-XPAFS-□□	
	Right-angle plug ^{*4, *5}	JWSP-XPASL-□□	JWSP-XPAFL-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

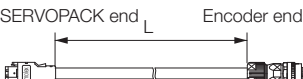
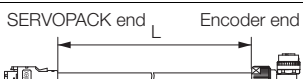
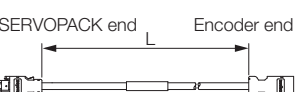
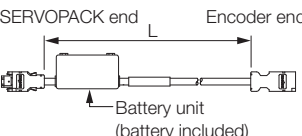
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

*4. The lead installation direction is away from the load. Consult your Yaskawa representative for other lead installation directions.

*5. An encoder cable with a right-angle plug cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable with a straight plug.

Relay Encoder Cables (Exceeding 20 m)

◆ SGMSV-15 to -70, SGMXA-15□□□□□□2 to -70□□□□□□2 (Σ-7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Straight plug	0.3	JZSP-CVP01-E	
Relay encoder cable (for all types of encoders) Right-angle plug*1, *2	0.3	JZSP-CVP02-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*3	0.3	JZSP-CSP12-E	

*1. The lead installation direction of the right-angle plug connector is the non-load side. Consult your Yaskawa representative for other lead installation directions.

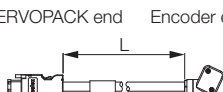
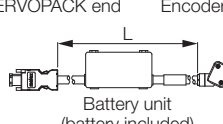
*2. An encoder cable with a right-angle plug cannot be used for the SGMSV-70 and SGMXA-70 (7.0 kW). Use an encoder cable with a straight plug.

*3. In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXA-□□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number*1		Appearance
		Standard Cable	Flexible Cable*2	
For batteryless absolute encoders	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side*3	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit*4	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side*3	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. An encoder cable installed toward the left side cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable installed toward the right side.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

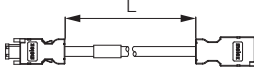
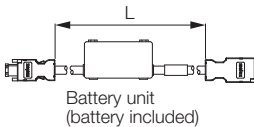
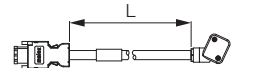
Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXA-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
Encoder cable (with connectors on both ends) ^{*3}	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	
	For absolute encoder: with battery unit ^{*4}		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	
Encoder cable	SGMXA-A5 to -10: load side SGMXA-15 to -50: left side ^{*5}	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	
	SGMXA-A5 to -10: non-load side SGMXA-15 to -50: right side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

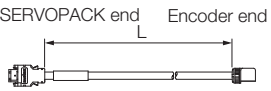
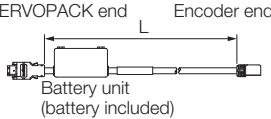
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

*5. An encoder cable installed toward the left side cannot be used for the SGMXA-70 (7.0 kW). Use an encoder cable installed toward the right side.

4.2.4 SGMPS, SGMXP

Encoder Cable of 20 m or Less

◆ SGMPS-01 to -04

Name	Type	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
Cable with connectors on both ends	Without battery unit (for incremental encoder)	JZSP-CSP01-□□-E	JZSP-CSP21-□□-E	
	With battery unit (for absolute encoder) ^{*3}	JZSP-CSP05-□□-E	JZSP-CSP25-□□-E	

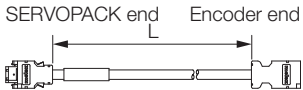
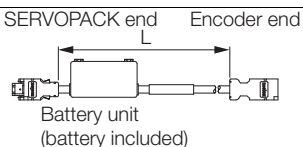
*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMPS-08, -15, SGMXP-08□□□□□□2, -15□□□□□□2 (Σ-7 compatible specifications)

Name	Order Number ^{*1}		Appearance
	Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders (for incremental encoders) Cable installed toward load	JZSP-CMP00-□□-E	JZSP-CMP10-□□-E	
For absolute encoder: with battery unit ^{*3} Cable installed toward load	JZSP-CSP19-□□-E	JZSP-CSP29-□□-E	

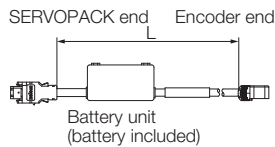
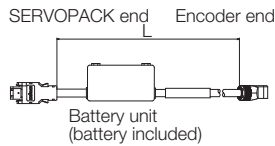
*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXP-01□□□□□□2 to -04□□□□□□2 (Σ-7 compatible specifications)

Name	Cable Direction	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Load side	JZSP-C7PI0D-□□-E	JZSP-C7PI2D-□□-E	
	Non-load side	JZSP-C7PI0E-□□-E	JZSP-C7PI2E-□□-E	
For absolute encoder: with battery unit* ³	Load side	JZSP-C7PA0D-□□-E	JZSP-C7PA2D-□□-E	
	Non-load side	JZSP-C7PA0E-□□-E	JZSP-C7PA2E-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

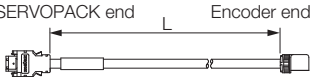
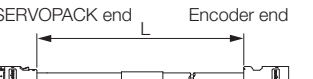
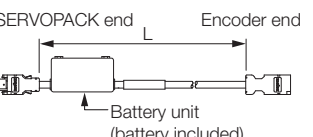
*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Relay Encoder Cables (Exceeding 20 m)

◆ SGMPS

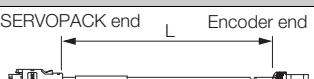
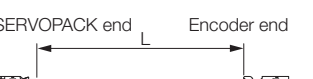
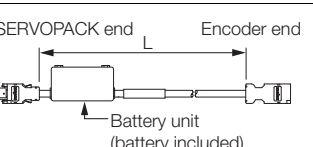
Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Cable installed toward load	0.3	JZSP-CSP11-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*2	0.3	JZSP-CSP12-E	

*1. An encoder cable installed toward the non-load side cannot be used for the SGMPS.

*2. In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXP-□□□□□□□□2 (Σ-7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Cable installed toward load	0.3	JZSP-C7PRCD-E	
Relay encoder cable (for all types of encoders) Cable installed away from load*1	0.3	JZSP-C7PRCE-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*2	0.3	JZSP-CSP12-E	

*1. An encoder cable installed toward the non-load side cannot be used for the SGM7P.

*2. In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXP-□□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number ^{*1}		Appearance
		Standard Cable	Flexible Cable ^{*2}	
For batteryless absolute encoders	Load side	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	Non-load side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit ^{*3}	Load side	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	Non-load side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXP-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
Encoder cable (with connectors on both ends) ^{*3}	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	
	For absolute encoder: with battery unit ^{*4}		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	
Encoder cable	Load side	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	
	Non-load side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

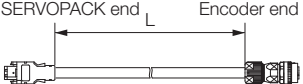
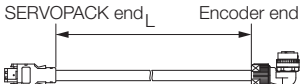
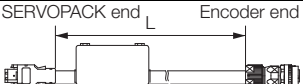
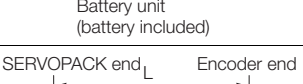
*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

4.2.5 SGMGV, SGMXG

Encoder Cable of 20 m or Less

◆ SGMGV-

Name	Connector Specification	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
Without battery unit	Straight plug	JZSP-CVP01-□□-E	JZSP-CVP11-□□-E	
	Right-angle plug	JZSP-CVP02-□□-E	JZSP-CVP12-□□-E	
With battery unit* ³	Straight plug	JZSP-CVP06-□□-E	JZSP-CVP26-□□-E	
	Right-angle plug	JZSP-CVP07-□□-E	JZSP-CVP27-□□-E	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

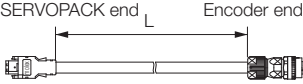
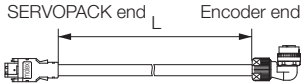
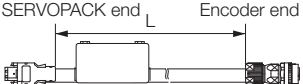
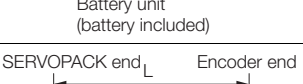
*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

◆ SGMXG-□□□□□□□□2 (Σ-7 compatible specifications)

Information The SGMXG servomotor can use the cables for the SGM7G servomotor.

Name	Connector Specification	Order Number* ¹		Appearance
		Standard Cable	Flexible Cable* ²	
For batteryless absolute encoders	Straight plug	JWSP-XPISS-□□	JWSP-XPIFS-□□	
	Right-angle plug* ³	JWSP-XPISL-□□	JWSP-XPIFL-□□	
For absolute encoder: with battery unit* ⁴	Straight plug	JWSP-XPASS-□□	JWSP-XPAFS-□□	
	Right-angle plug* ³	JWSP-XPASL-□□	JWSP-XPAFL-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

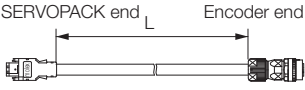
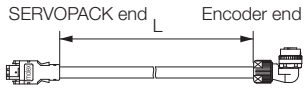
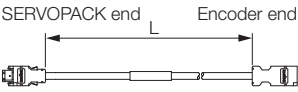
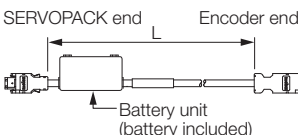
*3. The lead installation direction is away from the load. Consult your Yaskawa representative for other lead installation directions.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Relay Encoder Cables (Exceeding 20 m)

◆ SGMGV-, SGMXG-□□□□□□□2 (Σ-7 compatible specifications)

Name	Length (L) [m]	Order Number	Appearance
Relay encoder cable (for all types of encoders) Straight plug	0.3	JZSP-CVP01-E	
Relay encoder cable (for all types of encoders) Right-angle plug*1		JZSP-CVP02-E	
Relay encoder cable with connectors on both ends (for all types of encoders)	30	JZSP-UCMP00-30-E	
	40	JZSP-UCMP00-40-E	
	50	JZSP-UCMP00-50-E	
Relay encoder cable with connectors on both ends and battery unit*2	0.3	JZSP-CSP12-E	

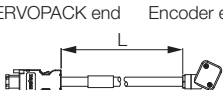
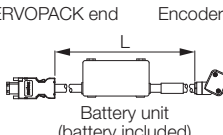
*1. The lead installation direction of the right-angle plug connector is the non-load side. Consult your Yaskawa representative for other lead installation directions.

*2. In the following cases, these cables are not required.

- When using a servomotor equipped with a batteryless absolute encoder.
- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

Encoder Cables (When Not Relaying the Encoder Cable)

◆ SGMXG-□□□□□□□1 (standard specifications)

Name	Cable Direction	Order Number*1		Appearance
		Standard Cable	Flexible Cable*2	
For batteryless absolute encoders	Left side	JWSP-XP2IS1-□□	JWSP-XP2IF1-□□	
	Right side	JWSP-XP2IS2-□□	JWSP-XP2IF2-□□	
For absolute encoder: with battery unit*3	Left side	JWSP-XP2AS1-□□	JWSP-XP2AF1-□□	
	Right side	JWSP-XP2AS2-□□	JWSP-XP2AF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (03/05/10/15/20/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

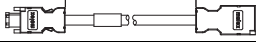
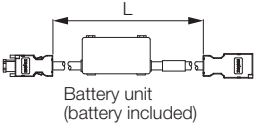
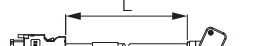
Note: Do not use these cables as relay cables.

Encoder Cables (When Relaying the Encoder Cable)

◆ SGMXG-□□□□□□□□1 (standard specifications)

When you will relay the encoder cable, use the following configuration.

Cables: 2 cables, cable relay point: 1 location, combined cable length: 50 m

Name	Type or Cable Direction	Length (L) [m]	Order Number ^{*1}		Appearance
			Standard Cable	Flexible Cable ^{*2}	
Encoder cable (with connectors on both ends) ^{*3}	For batteryless absolute encoders	0.3, 3, 5, 10, 15, 20, 25	JWSP-XP1IS0-□□	JWSP-XP1IF0-□□	SERVOPACK end Encoder end 
	For absolute encoder: with battery unit ^{*4}		JWSP-XP1AS0-□□	JWSP-XP1AF0-□□	SERVOPACK end Encoder end  Battery unit (battery included)
Encoder cable	Load side	0.3, 1, 3, 5, 10, 15, 20, 25, 30, 40, 50	JWSP-XP3IS1-□□	JWSP-XP3IF1-□□	SERVOPACK end Encoder end 
	Non-load side		JWSP-XP3IS2-□□	JWSP-XP3IF2-□□	

*1. Replace the boxes (□□) in the order number with the cable length (00P3/01/03/05/10/15/20/25/30/40/50).

*2. Use flexible cables for moving parts of machines, such as robots. The recommended bending radius (R) is 46 mm or larger.

*3. The JZSP-UCMP00-□□-E and JZSP-CSP12-E cables cannot be connected.

*4. In the following cases, use an encoder cable for batteryless absolute encoders.

- When connecting a battery to the host controller.
- When using an absolute encoder as an incremental encoder.

4.3

Cables for Connecting SERVOPACKs

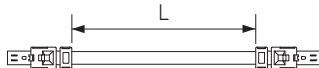
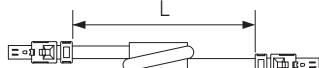
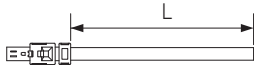
4.3.1

I/O Signal Cables

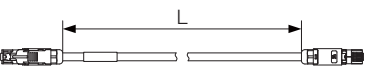
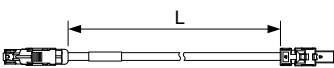
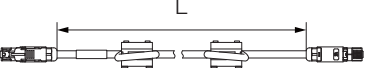
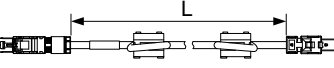
Model	Interface	Name	Length (L)	Order Number	Appearance
SGDV- SGDXS-	Analog voltage/ pulse train references	Connector kit (soldered)	–	JZSP-CSI9-1-E	
		Connector-terminal block converter unit (with cable)	0.5 m	JUSP-TA50PG-E	
			1 m	JUSP-TA50PG-1-E	
			2 m	JUSP-TA50PG-2-E	
		Cable with loose wires at one end (loose wires on peripheral device end)	1 m	JZSP-CSI01-1-E	
			2 m	JZSP-CSI01-2-E	
			3 m	JZSP-CSI01-3-E	
	MECHATROLIN K-4/III communi- cations references	Connector kit (soldered)	–	JZSP-CSI9-2-E	
		Connector-terminal block converter unit (with cable)	0.5 m	JUSP-TA26P-E	
			1 m	JUSP-TA26P-1-E	
			2 m	JUSP-TA26P-2-E	
		Cable with loose wires at one end (loose wires on peripheral device end)	1 m	JZSP-CSI02-1-E	
			2 m	JZSP-CSI02-2-E	
			3 m	JZSP-CSI02-3-E	

4.3.2 MECHATROLINK Communications Cables

Σ -V Series

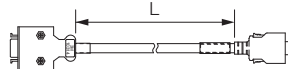
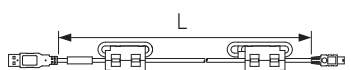
Interface	Name	Length (L)	Order Number	Appearance
MECHATROLINK-III communications reference	Cable with connectors on both ends	0.2 m	JEPMC-W6012-A2-E	
		0.5 m	JEPMC-W6012-A5-E	
		1 m	JEPMC-W6012-01-E	
		2 m	JEPMC-W6012-02-E	
		3 m	JEPMC-W6012-03-E	
		4 m	JEPMC-W6012-04-E	
		5 m	JEPMC-W6012-05-E	
		10 m	JEPMC-W6012-10-E	
		20 m	JEPMC-W6012-20-E	
		30 m	JEPMC-W6012-30-E	
		50 m	JEPMC-W6012-50-E	
	Cable with connectors on both ends (with ferrite cores)	10 m	JEPMC-W6013-10-E	
		20 m	JEPMC-W6013-20-E	
		30 m	JEPMC-W6013-30-E	
		50 m	JEPMC-W6013-50-E	
	Cable with loose wires at one end	0.5 m	JEPMC-W6014-A5-E	
		1 m	JEPMC-W6014-01-E	
		3 m	JEPMC-W6014-03-E	
		5 m	JEPMC-W6014-05-E	
		10 m	JEPMC-W6014-10-E	
		30 m	JEPMC-W6014-30-E	
		50 m	JEPMC-W6014-50-E	

Σ-X Series

Interface	Name		Length (L)	Order Number	Appearance
MECHATROLINK-4/III communications references	(without ferrite cores)	RJ-45 connectors on both ends	0.2 m	JZSP-CM3RRM0-00P2-E	
			0.5 m	JZSP-CM3RRM0-00P5-E	
			1 m	JZSP-CM3RRM0-01-E	
			2 m	JZSP-CM3RRM0-02-E	
			3 m	JZSP-CM3RRM0-03-E	
			4 m	JZSP-CM3RRM0-04-E	
			5 m	JZSP-CM3RRM0-05-E	
			10 m	JZSP-CM3RRM0-10-E	
			20 m	JZSP-CM3RR00-20-E	
			30 m	JZSP-CM3RR00-30-E	
		RJ-45 connector on one end Industrial mini I/O (IMI) connector on one end	0.2 m	JZSP-CM3RMM0-00P2-E	
			0.5 m	JZSP-CM3RMM0-00P5-E	
			1 m	JZSP-CM3RMM0-01-E	
			2 m	JZSP-CM3RMM0-02-E	
			3 m	JZSP-CM3RMM0-03-E	
			4 m	JZSP-CM3RMM0-04-E	
			5 m	JZSP-CM3RMM0-05-E	
			10 m	JZSP-CM3RMM0-10-E	
			20 m	JZSP-CM3RM00-20-E	
			30 m	JZSP-CM3RM00-30-E	
	(with ferrite cores)	RJ-45 connectors on both ends	0.3 m	JZSP-CM3RRM1-00P3-E	
			3 m	JZSP-CM3RRM1-03-E	
			10 m	JZSP-CM3RRM1-10-E	
			20 m	JZSP-CM3RR01-20-E	
			30 m	JZSP-CM3RR01-30-E	
			50 m	JZSP-CM3RR01-50-E	
		RJ-45 connector on one end Industrial mini I/O (IMI) connector on one end	0.3 m	JZSP-CM3RMM1-00P3-E	
			3 m	JZSP-CM3RMM1-03-E	
			10 m	JZSP-CM3RMM1-10-E	
			20 m	JZSP-CM3RM01-20-E	
			30 m	JZSP-CM3RM01-30-E	
			50 m	JZSP-CM3RM01-50-E	

4.3.3 Other Cables

The specifications of the other cables for the Σ -V series and Σ -X series are identical.

Name		Length (L)	Order Number	Appearance
Analog monitor cable		1 m	JZSP-CA01-E	
Digital operator conversion cable		0.3 m	JZSP-CVS05-A3-E* ¹	
			JZSP-CVS07-A3-E* ²	
Computer cable		2.5 m	JZSP-CVS06-02-E	
Safety function device cable	Cables with connectors* ³	1 m	JZSP-CVH03-01-E	
		3 m	JZSP-CVH03-03-E	
	Connector kit* ⁴	—	Contact Tyco Electronics Japan G.K. Product name: Industrial Mini I/O D-shape Type 1 Plug Connector Kit Model number: 2013595-1	

*1. This converter cable is required to use the Σ -III-series digital operator (JZSP-OP05A).

*2. This converter cable is required to prevent the cable from disconnecting from the digital operator.

*3. When using safety functions, connect this cable to the safety function devices.

When not using safety functions, connect the enclosed safety jumper connector (JZSP-CVH05-E) to the SERVOPACK.

*4. Use the connector kit when you make cables yourself.

4.4 Digital Operator

Model	Interface	Order Number
SGDV-	All	JUSP-OP05A-1-E
SGDXS-	Analog voltage/pulse train references	JUSP-OP05A-1-E JUSP-OP07A-E
	MECHATROLINK-4/III communications references	JUSP-OP07A-E

4.5 Noise Filters

Main Circuit Power Supply	SERVOPACK		Order Number		
	Maximum Applica- ble Motor Capacity [kW]	Model: SGDV-, SGDXS-	Σ-V	Σ-XS	
Single-phase, 200 VAC	0.05	R70A	FN2070-6-07	HF2010A-UPF	
	0.1	R90A			
	0.2	1R6A			
	0.4	2R8A	FN2070-10-07		
	0.75	5R5A	FN2070-16-07	HF2020A-UPF-2BB	
	1.5	120A	FN350-30-33	HF2030A-UPF-2BB	
Three-phase, 200 VAC	0.05	R70A	FN258L-7-07	HF3010C-SZC	
	0.1	R90A			
	0.2	1R6A			
	0.4	2R8A			
	0.5	3R8A			
	0.75	5R5A	FN258L-16-07	HF3020C-SZC	
	1.0	7R6A			
	1.5	120A	HF3020C-UQC		
	2.0	180A			
	3.0	200A	HF3030C-UQC	HF3030C-SZC	
	5.0	330A	HF3050C-UQC	HF3050C-SZC-47EDD	
	6.0	470A			
	7.5	550A	HF3060C-UQC	HF3060C-SZC	
	11	590A	HF3100C-UQB	HF3100C-SZC	
	15	780A			

Note: The Σ -V series is not available in an RoHS compliant model. Please check with the manufacturer when selecting RoHS compliant products.

4.6

DC Reactors

The specifications of the DC reactors for the Σ -V series and Σ -X series are identical.

Main Circuit Power Supply	SERVOPACK		Order Number	
	Maximum Applica- ble Motor Capacity [kW]	Model: SGDV-, SGDXS-	Σ -V	Σ -XS
Single-phase, 200 VAC	0.05	R70A	X5071	
	0.1	R90A		
	0.2	1R6A	X5070	
	0.4	2R8A	X5069	
	0.75	5R5A	X5079	
	1.5	120A	X5078	
Three-phase, 200 VAC	0.05	R70A	X5061	
	0.1	R90A		
	0.2	1R6A		
	0.4	2R8A		
	0.5	3R8A		
	0.75	5R5A		
	1.0	7R6A	X5060	
	1.5	120A		
	2.0	180A		
	3.0	200A	X5059	
	5.0	330A	X5068	
	6.0	470A	X008025	
	7.5	550A	X008026	
	11	590A	X008027	
	15	780A	X008028	

4.7 Magnetic Contactors

The specifications of the magnetic contactors for the Σ -V series and Σ -X series are identical.

Main Circuit Power Supply	SERVOPACK		Order Number	
	Maximum Applica- ble Motor Capacity [kW]	Model: SGDV-, SGDXS-	Σ -V	Σ -XS
Single-phase, 200 VAC	0.05	R70A	SC-03	
	0.1	R90A		
	0.2	1R6A		
	0.4	2R8A		
	0.75	5R5A	SC-4-1	
	1.5	120A	SC-5-1	
Three-phase, 200 VAC	0.05	R70A	SC-03	
	0.1	R90A		
	0.2	1R6A		
	0.4	2R8A		
	0.5	3R8A		
	0.75	5R5A	SC-4-1	
	1.0	7R6A		
	1.5	120A		
	2.0	180A	SC-5-1	
	3.0	200A		
	5.0	330A	SC-N1	
	6.0	470A		
	7.5	550A	SC-N2	
	11	590A	SC-N2S	
	15	780A	SC-N3	

4.8 Other Peripheral Devices

The specifications of the encoder cables and other peripheral devices for the Σ -V series and Σ -X series are identical.

Name	Model	Input Voltage
Surge absorber	LT-C12G801WS	Single-phase, 200 VAC
	LT-C32G801WS	Three-phase, 200 VAC
Battery	JZSP-BA01 (ER6V C3N or equivalent)	—
Battery unit	JUSP-BA01-E	
Brake power supply (24-VDC power supply)	Not provided by Yaskawa	
CN8 jumper connector	JZSP-CVH05-E	

Making Settings for Replacement

5

This chapter provides the settings used for replacement.

5.1	Converting Parameters	5-2
5.1.1	Introduction	5-2
5.1.2	Exporting Parameters	5-2
5.1.3	Parameter Converter	5-2
5.1.4	Importing Parameters	5-3
5.2	Parameter Settings	5-4
5.2.1	Setting Parameters for Encoder Usage Method	5-4
5.2.2	Setting Parameters for Encoder Resolution	5-4
5.2.3	Setting Parameters for Acceleration/Deceleration Time	5-6
5.3	Backward Compatibility Function	5-7
5.3.1	Setting the Communications Interface Compatibility Selection	5-7

5.1 Converting Parameters

5.1.1 Introduction

The import/export function and the parameter converter function of SigmaWin+ can be used to enable use of the parameters from the Σ -V-series SERVOPACK in the Σ -X-series SERVOPACK. The procedure for parameter conversion is as follows.

Procedure	Description	Reference
1	Export the parameters of the Σ -V-series SERVOPACK.	5.1.2 <i>Exporting Parameters</i> on page 5-2
2	Convert the exported parameters.	5.1.3 <i>Parameter Converter</i> on page 5-2
3	Import the exported parameters to the Σ -X-series SERVOPACK.	5.1.4 <i>Importing Parameters</i> on page 5-3



Use version 5.70 or later of SigmaWin+ to convert the parameters.

5.1.2 Exporting Parameters

The operation procedure for exporting SERVOPACK parameters is as follows.

1. Use SigmaWin+ to establish an online connection to the SERVOPACK that contains the parameters to be exported (Σ -V-series SERVOPACK before replacement).
2. Click the [Menu] button in SigmaWin+ to open the Menu window, and click [Edit Parameters].

The Edit Parameters window will be displayed.

3. Click [Export] - [Usrs (SERVOPACK file)].

The Export window will be displayed.

4. Set the storage location of the data to be exported, set the file name, and click the [Save] button.

The export process will be started.

5. Check that the export data is saved to the specified location.

This completes the operation. Proceed to the next step.

5.1.3 Parameter Converter

To convert the parameters of the Σ -V series, they must be converted to parameters of the Σ -7 series and then to parameters of the Σ -X series.

The operation procedure for converting the exported SERVOPACK parameters is as follows.

1. Click the [Menu] button in SigmaWin+ to open the Menu window, and click [Parameter Converter].

The Parameter Converter window will be displayed.

2. Click the [Browse] button under [Conversion source Previous series], select the parameter data to be exported, and click the [OK] button.

The conversion source data will be displayed in the Parameter Converter window.

3. Click the [Save] button for the conversion destination, specify the file name and file storage location, and click the [OK] button.

The conversion target file name will be displayed in the Parameter Converter window.

4. To save the conversion log, insert a check mark for [Save the log file (csv) at the same time].
5. Select the SERVOPACK model after replacement.
6. Enter information into the [Comments] box if necessary.
7. Click the [Convert] button.

The parameter conversion process will be started. Once the parameter conversion process is completed, the conversion results will be displayed in the Parameter Converter window.

8. Check the conversion results.

The points requiring special attention are highlighted. For details on the color-coded indicators, check the information at the top right of the window.

9. Click the [Complete] button.

10. Check that the converted results were saved to the specified location.

This completes the conversion of the parameters to the Σ -7 series.

Use the same procedure to convert to the parameters of the Σ -X series.

This completes the operation. Proceed to the next step.

5.1.4 Importing Parameters

The operation procedure for importing the converted parameters into the SERVOPACK after replacement is as follows.

1. Use SigmaWin+ to establish an online connection to the SERVOPACK after replacement (Σ -X-series SERVOPACK).
2. Click the [Menu] button in SigmaWin+ to open the Menu window, and click [Edit Parameters].

The Edit Parameters window will be displayed.

3. Correct the parameter setting values if necessary.
Refer to the following sections for details.

 5.1.3 Parameter Converter on page 5-2: Step 8

 5.2 Parameter Settings on page 5-4

4. Click [Import] - [Usrs (SERVOPACK file)].

The Import window will be displayed.

5. Set the storage location of the data to be imported, set the file name, and click the [Save] button.

The message dialog box will be displayed.

6. Check the information, and click the [Yes] button.

The parameter import process to the SERVOPACK will be started.

This completes the operation.

5.2 Parameter Settings

5.2.1 Setting Parameters for Encoder Usage Method

Absolute encoders only are available for the Σ -X-series servomotors.

And so, if you use a servomotor with an incremental encoder in the Σ -V series and the following settings are used, A.810 (Encoder Backup Alarm) will occur.

Pn002 to n.□0□□ (Use the encoder according to encoder specifications.)

In this case, change to the following setting. (This is not changed by the parameter converter function.)

Pn002 to n.□1□□ (Use the encoder as an incremental encoder.)

5.2.2 Setting Parameters for Encoder Resolution

Introduction

The encoder resolutions of the servomotors for the Σ -V/ Σ -X series are different.

- Σ -V series: 13 bits, 17 bits, 20 bits
- Σ -X series: 26 bits

And so, when the old servomotor is replaced with a new one, the parameter settings for the electronic gear ratio or encoder bit count must be changed.

The parameters that are set vary depending on the usage method of the servomotor after replacement as shown below.

Usage Method of Servomotor After Replacement	Required Parameter Settings After Replacement	Reference
Use at encoder resolution of servomotor after replacement	Pn20E (Electronic Gear Ratio (Numerator)) Pn210 (Electronic Gear Ratio (Denominator))	<i>Setting Pn20E and Pn210 (Electronic Gear Ratio) on page 5-5</i>
Use at same encoder resolution as servomotor before replacement	Pn21D (Encoder Resolution Setting)	<i>Setting Pn21D (Encoder Resolution Setting) on page 5-5</i>

Setting Pn20E and Pn210 (Electronic Gear Ratio)

If the encoder resolution of the servomotor changes before and after replacement, Pn20E and Pn210 (electronic gear ratio) must be set.

To use the same settings for the reference unit as before replacement, change the electronic gear ratio as shown below.

Encoder Resolution of Servomotor Before Replacement	Electronic Gear Ratio After Replacement Setting of (Pn20E/ Pn210)	Electronic Gear Ratio After Replacement Setting example of (Pn20E/ Pn210)*
13 bits	8192 x Electronic gear ratio before replacement	Pn20E = 8192, Pn210 = 1
17 bits	512 x Electronic gear ratio before replacement	Pn20E = 512, Pn210 = 1
20 bits	64 x Electronic gear ratio before replacement	Pn20E = 64, Pn210 = 1

* This is an example when the electronic gear ratio before replacement was set to 1:1 (Pn20E = 1, Pn210 = 1).

If the reference unit is changed from the value before replacement, set the values calculated by the following formula for Pn20E and Pn210. If the machine reduction gear ratio between the servomotor shaft and the load is given as n/m, where n is the number of load shaft rotations per m servomotor shaft rotations, the settings for the electronic gear ratio can be calculated as follows:

$$\text{Electronic gear ratio } \frac{B}{A} = \frac{Pn20E}{Pn210} = \frac{\text{Encoder resolution}}{\text{Travel distance per load shaft revolution (reference units)}} \times \frac{m}{n}$$



Set the electronic gear ratio within the following range.

$0.001 \leq \text{Electronic gear ratio} \leq 64000$

If the electronic gear ratio is outside of this range, an A.040 alarm (Parameter Setting Error) will occur.

Setting Pn21D (Encoder Resolution Setting)

To use the encoder resolution of the servomotor before replacement, Pn21D (encoder resolution setting) must be set.

First set Pn21D to n.□□□1 (enable encoder resolution compatibility), and then set the encoder resolution in Pn21D = n.□□X□.

Parameter		Description	When Enabled	Classification
Pn21D	n.□□□0 (default setting)	Disable encoder resolution compatibility.	After restart	Setup
	n.□□□1	Enable encoder resolution compatibility.		

Parameter		Description	When Enabled	Classification
Pn21D	n.□□4□	Operate as 20-bit encoder.	After restart	Setup
	n.□□6□	Operate as 22-bit encoder.		
	n.□□8□ (default setting)	Operate as 24-bit encoder.		
	n.□□A□	Operate as 26-bit encoder.		

Information

When Pn21D (encoder resolution setting) is set, Pn20E and Pn210 (electronic gear ratio) do not need to be changed from the values set before replacement.

5.2.3 Setting Parameters for Acceleration/Deceleration Time



If the parameter setting value is used without changing it, the load ratio could increase.

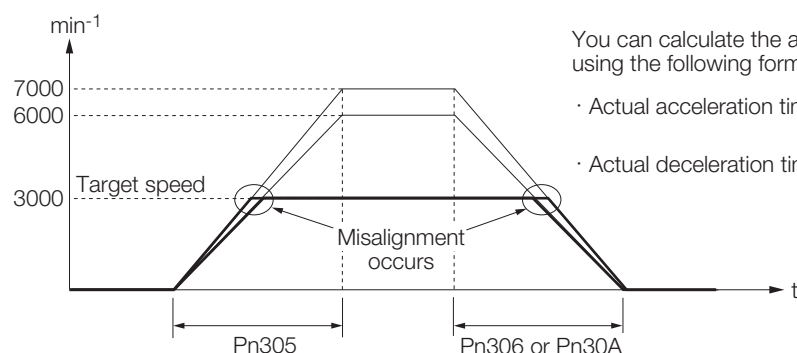
The maximum speed of the servomotor is different between Σ -V-series servomotors and Σ -X-series servomotors.

The maximum speed of the Σ -V-series servomotor is 6000 min^{-1} , and the maximum speed of the Σ -X-series servomotor is 7000 min^{-1} .

The following parameters are related to the maximum servomotor speed.

Consequently, in order to have the same acceleration and deceleration slope as before replacement, the setting values of the parameters must be changed.

Pn305 (Soft Start Acceleration Time)	The time required for the servomotor to accelerate from a stopped state to the maximum motor speed
Pn306 (Soft Start Deceleration Time)	The time to decelerate the servomotor from the maximum motor speed
Pn30A (Deceleration Time for Servo OFF and Forced Stops)	The time to decelerate the servomotor from the maximum motor speed



You can calculate the actual acceleration/deceleration times using the following formulas.

$$\cdot \text{Actual acceleration time} = \frac{\text{Target speed}}{\text{Maximum speed}} \times \text{Pn305}$$

$$\cdot \text{Actual deceleration time} = \frac{\text{Target speed}}{\text{Maximum speed}} \times \text{Pn306 or Pn30A}$$

Change the values by using the conversion formula below.

$$\text{Pn305 } (\Sigma\text{-X value}) = \text{Pn305 } (\Sigma\text{-V value}) \times \frac{7}{6}$$

$$\text{Pn306 } (\Sigma\text{-X value}) = \text{Pn306 } (\Sigma\text{-V value}) \times \frac{7}{6}$$

$$\text{Pn30A } (\Sigma\text{-X value}) = \text{Pn30A } (\Sigma\text{-V value}) \times \frac{7}{6}$$

5.3

Backward Compatibility Function

5.3.1

Setting the Communications Interface Compatibility Selection

An existing servo system's Σ -V-series SERVOPACKs can be easily replaced with Σ -X-series SERVOPACKs by setting the Communications Interface Compatibility Selection.

If MECHATROLINK communication is used for the communication between a host device and a SERVOPACK, a Σ -X-series SERVOPACK can be treated like a Σ -V-series SERVOPACK.

	Parameter	Description	When Enabled	Classification
Pn040	n.□□□0 (default setting)	Perform Sigma-X communications.	After restart	Setup
	n.□□□1	Perform Sigma-V communications. (Σ -XW SERVOPACK is a reserved parameter.) (Reserved parameter when using the MECHATROLINK-4 communications reference.)		



Important

The setting Pn040 = n.□□□X (Communications Interface Compatibility Selection) does not constitute a guarantee of performance compatibility. Before using the setting, be sure to evaluate its performance in the equipment.

When using the backward compatibility function, the device code of the device ID read by the ID_RD command in MECHATROLINK communications is displayed as Σ -V series device code: 02200000H.

Operation Check After Replacement

6

This chapter describes the operation checks after replacement.

6.1 Flow of Operation Checks After Replacement . . 6-2

6.1 Flow of Operation Checks After Replacement

Step	Item	Description
1	Power ON	Turn on the power, and check that the SERVOPACK is powered on and that there are no problems with signal input from peripheral devices.
2	Test operation	Use the jog operation function to check the rotation direction of the motor without connecting the servomotor to the machine. Next, connect the servomotor to the machine, and issue an operation command from the host reference device to check the movement of the machine.
3	Gain adjustment	Perform gain adjustment as needed to optimize machine movement.
4	Full operation	In position control mode, perform the origin return operation if necessary.
5	Stopped	Quit the command, and stop operation. Also, check the conditions that lead to the servomotor coming to a stop.

Appendix

7

7.1 Checksheet for Replacing the Σ -V series with the Σ -X series . . 7-2

7.1

Checksheet for Replacing the Σ -V series with the Σ -X series

Classification	Item	Check Point	Check
Motor	Check of main unit mounting position	Check the mounting dimensions between the motor being used and the machine. Centering location diameter, mounting hole pitch, mounting hole diameter, shaft diameter, shaft shape (straight, key, center tap, taper), etc.	
	Check of specifications	Check that the motor currently being used is not a customer-specific type. If the motor is a special type, check the specifications in the delivery specifications.	
SERVOPACK (main unit)	Check of main unit mounting position	Check the dimensions (W, H, D) and mounting hole positions of the SERVOPACK that is being used.	
	Check of specifications	Check the delivery specifications of the SERVOPACK that is being used to make sure that it does not have NP, shapes, or processing (special treatment, etc.) specially designed for the customer.	
	Check of safety signal input	Check if the SERVOPACK that is being used is using the safety signal input. The SGDXW does not have a safety input. Support is planned as an option, but the connector will be facing downward.	
	Check of option specifications	Check if the SERVOPACK that is being used is using an option module. Reference options cannot be replaced. Also, the SGDXW does not support option modules.	
	Single-phase AC power supply input	- To use with a single-phase AC power supply input, connect the main circuit power supply cable to L1 and L2. - To use with a single-phase 200 V power supply input, change the parameter [Application Function Selections B] to enable support. (Pn00B.2 = 1)	
	DC power supply input	- Depending on the model, a protective fuse and an inrush current prevention circuit must be added between the DC power supply and the SERVOPACK. If this applies to your model, contact your Yaskawa representative. - To use with a DC power supply input, change the parameter [Application Function Selections 1] to enable support. (Pn001.0 = 1) Note: Connect the main circuit DC power supply after changing the parameters.	
SERVOPACK (software)	Check for any dedicated software	- Check whether the software of the SERVOPACK that is being used is standard software by checking the version number. If you are unsure whether the software is standard software, please contact Yaskawa and provide the version number that you found. - The software version can be checked using the product information readout function in the SigmaWin+ PC support software or the utility function Fn012 of the digital operator or the built-in panel operator.	
	Check of parameters	Check the parameters of the SERVOPACK that is being used. SigmaWin+ has a parameter converter function that converts parameters for the Σ -V series to those for the Σ -X series. Because the Σ -X-series motor has an improved encoder resolution, the electronic gear ratio setting must be changed.	

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