



ORIGINAL INSTRUCTIONS

**Instruction Manual**  
**Electric Actuator / Rod Type**  
**Series LEYG**

Motor: AC servo motor (100-200 VAC)



The intended use of this Electrical Actuator is to convert an electrical input signal into mechanical motion.

**1 Safety Instructions**

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)<sup>(1)</sup>, and other safety regulations.

- <sup>(1)</sup> ISO 4414: Pneumatic fluid power - General rules relating to systems.
- ISO 4413: Hydraulic fluid power - General rules relating to systems.
- IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)
- ISO 10218-1: Manipulating industrial robots - Safety, etc.

- Refer to the product catalogue, Operation Manual and Handling Precautions for additional information.
- Keep this manual in a safe place for future reference.

<b>Caution</b>	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
<b>Warning</b>	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
<b>Danger</b>	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

**Warning**

- Always ensure compliance with relevant safety laws and standards.**  
All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

**2 Specifications**

Series LEYG - Motor: Step [servo 24 VDC]

Model		LEYG25 LEYG25D (Parallel/In-line)			LEYG32 (Parallel type)			LEYG32D (In-line type)			
Actuator	Stroke [mm] <sup>Note1)</sup>	30, 50, 100, 150, 200, 250, 300			30, 50, 100, 150, 200, 250, 300			30, 50, 100, 150, 200, 250, 300			
	Work load [kg]	Horizontal <sup>Note 2)</sup>	18	50	50	30	60	60	30	60	60
		Vertical	7	15	29	7	17	35	10	22	44
	Pushing force [N] <sup>Note3)</sup>	65 to 131 / 127 to 255 / 242 to 485			79 to 157 / 154 to 308 / 294 to 588			98 to 197 / 192 to 385 / 368 to 736			
	Maximum Speed [mm/s] <sup>Note4)</sup>	900 / 450 / 225			1200 / 600 / 300			1000 / 500 / 250			
	Pushing Speed [mm/s] <sup>Note5)</sup>	35 or less			30 or less						
	Acceleration / Deceleration [mm/s <sup>2</sup> ]	5000									
	Positioning repeatability [mm]	Basic type	±0.02								
		High precision	±0.01								
	Lost motion [mm] <sup>Note6)</sup>	Basic type	0.1 or less								
High precision		0.05 or less									
Lead [mm] (including pulley ratio)	12	6	3	20	10	5	16	8	4		
Impact resistance/vibration Resistance [m/s <sup>2</sup> ] <sup>Note7)</sup>	50 / 20										
Actuation type	Ball screw and Belt [1:1] / Ball screw			Ball screw and Belt [1.25:1]			Ball screw				
Guide type	Sliding bearing (LEYG#M), Ball bush bearing (LEYG#L)										
Operating temperature range [°C]	5 to 40										
Operating humidity range [%RH]	90 or less(No condensation)										
Regenerative option	May be required by speed and work load (Refer to catalogue)										
Motor output/size	100W / □40			200W / □60							
Type of Motor	AC servo motor (100 / 200 VAC)										
Encoder <sup>Note8)</sup>	Motor type S2-S3:Incremental 17-bit encoder (Resolution:131072 p/rev)										
	Motor type S6-S7:Absolute 18-bit encoder (Resolution:262144 p/rev)										
	Motor type T6-T7:Absolute 22-bit encoder (Resolution:4194304 p/rev)										
	Motor type V6-V7:Absolute 20-bit encoder (Resolution:1048576 p/rev)										
Maximum instantaneous power consumption [W] <sup>Note9)</sup>	445			724							
Type <sup>Note10)</sup>	Non magneting lock										
Lock unit	Holding force [N]	131	255	485	157	308	588	197	385	736	
	Power consumption [W] at 20 °C <sup>Note11)</sup>	6.3 / 5.5			7.9 / 6						
	Rated voltage[V]	24 VDC 0~10%									

**Product Weight [kg]**

Series	LEYG25M						LEYG25L								
	30	50	100	150	200	250	300	30	50	100	150	200	250	300	
Type of Motor	Incremental Encoder[S2]	1.80	1.99	2.31	2.73	3.07	3.41	3.67	1.81	2.02	2.26	2.69	2.95	3.27	3.51
	Absolute Encoder[S6]	1.86	2.05	2.37	2.79	3.13	3.47	3.73	1.87	2.08	2.32	2.75	3.01	3.33	3.57
	Absolute Encoder[T6]	1.80	2.00	2.40	2.80	3.10	3.50	3.70	1.90	2.10	2.30	2.70	3.00	3.30	3.60
	Absolute Encoder[V6]	1.70	1.90	2.20	2.60	3.00	3.30	3.60	1.70	1.90	2.20	2.60	2.90	3.20	3.40

Series	LEYG32M						LEYG32L								
	30	50	100	150	200	250	300	30	50	100	150	200	250	300	
Type of Motor	Incremental Encoder[S2]	3.24	3.50	4.05	4.80	5.35	5.83	6.28	3.24	3.51	3.90	4.64	5.06	5.56	5.96
	Absolute Encoder[S6]	3.18	3.44	3.99	4.74	5.29	5.77	6.22	3.18	3.45	3.84	4.58	5.00	5.50	5.90
	Absolute Encoder[T6]	3.20	3.40	4.00	4.70	5.30	5.70	6.20	3.20	3.40	3.80	4.60	5.00	5.50	5.90
	Absolute Encoder[V6]	3.10	3.40	4.00	4.70	5.30	5.70	6.20	3.10	3.40	3.80	4.50	5.00	5.50	5.90

**In-line Motor Type**

Series	LEYG25M						LEYG25L								
	30	50	100	150	200	250	300	30	50	100	150	200	250	300	
Type of Motor	Incremental Encoder[S2]	1.83	2.02	2.34	2.76	3.10	3.44	3.70	1.84	2.05	2.29	2.72	2.98	3.30	3.54
	Absolute Encoder[S6]	1.89	2.08	2.40	2.82	3.16	3.50	3.76	1.90	2.11	2.35	2.78	3.04	3.36	3.60
	Absolute Encoder[T6]	1.90	2.10	2.40	2.80	3.10	3.50	3.70	1.90	2.10	2.30	2.80	3.00	3.30	3.60
	Absolute Encoder[V6]	1.70	1.90	2.20	2.60	3.00	3.30	3.60	1.70	2.00	2.20	2.60	2.90	3.20	3.40

Series	LEYG32M						LEYG32L								
	30	50	100	150	200	250	300	30	50	100	150	200	250	300	
Type of Motor	Incremental Encoder[S2]	3.26	3.52	4.07	4.82	5.37	5.85	6.30	3.26	3.53	3.92	4.66	5.08	5.58	5.98
	Absolute Encoder[S6]	3.20	3.46	4.01	4.76	5.31	5.79	6.24	3.20	3.47	3.86	4.60	5.02	5.52	5.92
	Absolute Encoder[T6]	3.20	3.40	4.00	4.70	5.30	5.80	6.20	3.20	3.40	3.80	4.60	5.00	5.50	5.90
	Absolute Encoder[V6]	3.20	3.40	4.00	4.70	5.30	5.80	6.20	3.20	3.40	3.80	4.60	5.00	5.50	5.90

**2 Specifications (continued)**

**Additional Weight**

Size	25	32	
Lock	Incremental Encoder[S2]	0.20	0.40
	Absolute Encoder[S6]	0.30	0.66
	Absolute Encoder[T6]	0.30	0.70
	Absolute Encoder[V6]	0.30	0.60

- Note 1) Please consult with SMC for non-standard strokes produced to special order.
- Note 2) This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.
- Note 3) Thrust setting range when "pushing" operation in torque control mode, etc. Refer to the thrust conversion graph shown in the catalogue as a guide.  
Set value LEYG25#S/32#S: 15 to 30%  
Set value LEYG25#T/32#T: 12 to 24%  
Set value LEYG25#V/32#V: 45 to 90%
- Note 4) The allowable speed changes according to the stroke.
- Note 5) The allowable collision speed for collision with the workpiece with the torque control mode.
- Note 6) A reference value for correcting an error in reciprocal operation.
- Note 7) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and perpendicular direction to the lead screw (the test was performed with the actuator in the initial state).  
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz, when the actuator was tested in both an axial direction and a perpendicular direction to the lead screw (the test was performed with the actuator in the initial state).
- Note 8) When the motor type is "T6-T9", the resolution will change depending on the driver type.
- Note 9) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
- Note 10) Only when the motor option, "with lock", is selected.
- Note 11) For an actuator with lock, add the power consumption for the lock.

**Warning**

For special products which include a suffix of "-X#", "-D#", please refer to the customer drawing of that specific product.

**3 Installation**

**3.1 Installation**

**Warning**

- Do not install the product unless the safety instructions have been read and understood.
- Do not use the product in excess of its allowable specification as listed in Section 2.
- Ensure the product is sized correctly and is suitable for the application.
- Do not operate the product by fixing the piston rod and moving the actuator body.
- When installing, inspecting or performing maintenance on the product, be sure to turn off the power supplies. Then, lock it so it cannot be tampered with while work is happening.

**3.2 Environment**

**Warning**

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.
- Prevent foreign particles from entering the product.

**3 Installation (continued)**

**3.3 Mounting**

**Warning**

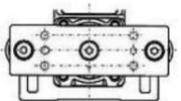
- Observe the required tightening torque for screws. Unless stated otherwise, tighten the screws to the recommended torque for mounting the product.
- Do not make any alterations to the product. Alterations made to this product may lead to a loss of durability and damage to the product, which can lead to injury and damage to other equipment and machinery. Do not scratch or dent the sliding parts of the table or mounting face etc., by striking or holding them with other objects. The components are manufactured to precise tolerances, so that even a slight deformation may cause faulty operation or seizure.
- Do not use the product until it has been verified that the equipment can be operated correctly. After mounting or repair, connect the power supply to the product and perform appropriate functional inspections to check it is mounted correctly.
- Do not use the product until it has been verified that the equipment can be operated correctly. After mounting or repair, connect the power supply to the product and perform appropriate functional inspections to check it is mounted correctly.
- Allow sufficient space for maintenance and inspection.

**Caution**

- When mounting the product, use screws with adequate length and tighten them to the recommended torque.**  
Tightening with larger torque than the specified range may cause malfunction while the tightening with smaller torque can allow the displacement of actuator position. In extreme conditions the actuator could become detached from its mounting position.

**Work fixed / Plate tapped type**

Model	Screw	Max. tightening torque [Nm]	Max. thread length [mm]
LEYG25	M6 x 1.0	5.2	11
LEYG32	M6 x 1.0	5.2	12

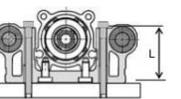


**Tighten the product mounting screws to the specified torque.**

Tightening to a torque over the specified range can cause operation failure, and insufficient torque can cause displacing or dropping of the attachment.

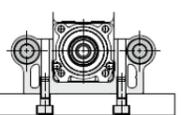
**Body fixed / Top mounting**

Model	Screw	Max. tightening torque [Nm]	Max. thread depth [mm]
LEYG25	M5 x 0.8	3.0	12
LEYG32	M6 x 1.0	5.2	12



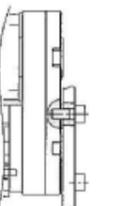
**Body fixed / Bottom mounting**

Model	Screw	Max. tightening torque [Nm]	Max. thread depth [mm]
LEYG25	M5 x 0.8	3.0	8
LEYG32	M6 x 1.0	5.2	10



**Mounting / Head side tapped style**

Model	Screw	Max. tightening torque [Nm]	Max. thread depth [mm]
LEYG25	M5 x 0.8	3.0	40.3
LEYG32	M6 x 1.0	5.2	50.3



### 3 Installation (continued)

#### 3.4 Lubrication

##### Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, refer to catalogue for details.
- The recommended grease is lithium grade No.2

Applied Region	Grease Pack Number	Weight [g]
Piston rod Guide	GR-S-010	10
	GR-S-020	20

- For products which include a "25A-" prefix the recommended grease is low condensation grease.

Applied Region	Grease Pack Number	Weight [g]
Piston rod Guide	GR-D-010	10

### 4 Wiring

#### 4.1 Wiring

##### Warning

- Adjustment, mounting or wiring changes should not be carried out before disconnecting the power supply to the product. Electric shock, malfunction and damage can result.
- Do not disassemble the cables.
- Use only specified cables.
- Use only specified cables otherwise there may be risk of fire and damage.
- Do not connect or disconnect the wires, cables and connectors when the power is turned on.

##### Caution

- Wire the connector correctly and securely. Check the connector for polarity and do not apply any voltage to the terminals other than those specified in the Operation Manual.
- Take appropriate measures against noise. Noise in a signal line may cause malfunction. As a countermeasure separate the high voltage and low voltage cables, and shorten the wiring lengths, etc.
- Do not route input/output wires and cables together with power or high voltage cables. The product can malfunction due to noise interference and surge voltage from power and high voltage cables close to the signal line. Route the wires of the product separately from power or high voltage cables.
- Take care that actuator movement does not catch cables.
- Operate with all wires and cables secured.
- Avoid bending cables at sharp angles where they enter the product.
- Avoid twisting, folding, rotating or applying an external force to the cable. Risk of electric shock, wire breakage, contact failure and loss of control of the product can result.
- Select "Robotic cables" in applications where cables are moving repeatedly (encoder/ motor/ lock).
- Refer to the relevant operation manual for the bending life of the cable.
- Confirm correct insulation. Poor insulation of wires, cables, connectors, terminals etc. can cause interference with other circuits. Also there is the possibility that excessive voltage or current may be applied to the product causing damage.
- Refer to the auto switch references in "Best Pneumatics" when an auto switch is to be used

#### 4.2 Actuator Ground connection

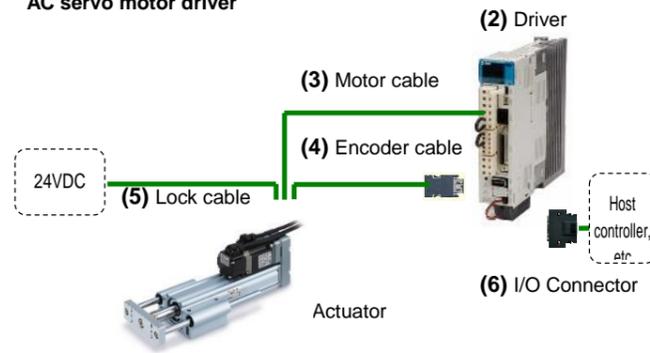
##### Caution

- The Actuator must be connected to ground to shield the actuator from electrical noise. The screw and cable with crimping terminal and toothed washer should be prepared separately by the user.

### 4 Wiring (continued)

#### 4.3 Wiring of Actuator to Controller

AC servo motor driver



##### Warning

Use only specified cables otherwise there may be risk of fire and damage

### 5 How to Order

- For standard products, refer to the catalogue on the SMC website (URL: <https://www.smcworld.com>) for the how to order information.

### 6 Outline Dimensions

- For standard products, refer to the catalogue on the SMC website (URL: <https://www.smcworld.com>) for outline dimensions.

### 7 Maintenance

#### 7.1 General Maintenance

##### Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly electricity and compressed air can be dangerous.
- Maintenance of electromechanical and pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the power has been discharged and the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical or pneumatic connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.
- Incorrect handling can cause an injury, damage or malfunction of the equipment and machinery, so ensure that the procedure for the task is followed.
- Always allow sufficient space around the product to complete any maintenance and inspection.

### 7 Maintenance (continued)

#### 7.2 Periodical Maintenance

- Maintenance should be performed according to the table below:

	Appearance Check	Belt Check
Inspection before daily operation	✓	
Inspection every six months*	✓	✓
Inspection every 1,000 km*	✓	✓
Inspection every 5 million cycles*	✓	✓

\*whichever of these occurs first.

- Following any maintenance, always perform a system check. Do not use the product if any error occurs, as safety cannot be assured if caused by any un-intentional malfunction.

#### 7.3 Appearance Check

- The following items should be visually monitored to ensure that the actuator remains in good condition and there are no concerns flagged;
  - Loose Screws,
  - Abnormal level of dust or dirt,
  - Visual flaws / faults,
  - Cable connections,
  - Abnormal noises or vibrations.

#### 7.4 Belt Check

- If one of the 6 conditions below are seen, do not continue operating the actuator, contact SMC immediately.
  - **Tooth shaped canvas is worn out.** Canvas fibre becomes "fuzzy", rubber is removed, and the fibre gains a white colour. The lines of fibre become very unclear.



- **Peeling off or wearing of the side of the belt.** The corner of the belt becomes round and frayed, with threads beginning to stick out.

- **Belt is partially cut.** Belt is partially cut. Foreign matter could be caught in the teeth and cause flaws.



- **Vertical line of belt teeth.** Flaw which is made when the belt runs on the flange.
- **Rubber back of the belt is softened and sticky.**
- **Crack on the back of the belt.**



### 8 Limitations of Use

#### 8.1 Limited warranty and disclaimer/compliance requirements

- Refer to Handling Precautions for SMC Products.

### 9 Product disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

### 10 Contacts

Refer to [www.smcworld.com](http://www.smcworld.com) or [www.smc.eu](http://www.smc.eu) for your local distributor / importer.

## SMC Corporation

URL : <http://www.smcworld.com> (Global) <http://www.smceu.com> (Europe)  
 \*SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan  
 Specifications are subject to change without prior notice from the manufacturer.  
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