Doc. No. LES*-OMZ0039

Operation Manual

PRODUCT NAME

Electric Actuator
Slide table／High Precision Type
High performance Battery-less absolute encoder

MODEL / Series / Product Number

LESYH Series

LESYH(8,16,25)*G

In-line motor Type

Motor Parallel Type

Controllers
JXC□1 Series

#This manual describes the dedicated terms for “LESY*G”.
Refer to the manual of LESY series about other details.
#Refer to the manual relevant to the controller being used for full operating instructions.

SMC Corporation

Contents

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)*1) , and other safety regulations.

*1) 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: Manipulating industrial robots -Safety.
etc.

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

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.

The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.

This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly.

The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1.The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

2.When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.

3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.

3. An application which could have negative effects on people, property, or animals requiring special safety analysis.

4.Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Safety Instructions

⚠ Caution

The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.

If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.

If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1.The warranty period of the product is 1 year in service or 1.5 years after the product is delivered,whichever is first.□2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

□□2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. **The use of SMC products with production equipment for the manufacture of weapons of mass destruction(WMD) or any other weapon is strictly prohibited.**
2. **The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulation of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.**

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.

Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

1. Specification

1．1 High performance Battery-less absolute encoder

LESYH*(D,R,L)G*

	Model		LESYH 8*GA	LESYH 8*GB	LESYH 8*GC	LESYH 16*GA	LESYH 16*GB	LESYH 25*GA	LESYH 25*GB
actuator specification	Stroke[mm]		50,75			50,100		50,100,150	
	Max.work load[kg] note1)note3)	Horizontal	2			8		12	
		Vertical	1.5	3	6	6	12	10	20
	Pushing Force		18~36	37~74	69~138	70~140	135~270	197~395	382~765
	Speed[mm/s] note1)note3)		20~800	10~400	5~200	20～800	10～400	20～800	10～400
	Pushing speed[mm/s]		20~30	10~30	5~30	20～30	10～30	20～30	10～30
	Max.acceleration/ deceleration[mm/s^2]	Horizontal	10000						
		Vertical	5000						
	Position repeatability [mm]		±0.01						
	Lost motion [mm] note4)		0.1 or less						
	Screw Lead [mm]		10	5	2.5	12	6	16	8
	Impact / Vibration resistance [m/s^2] note5)		50/20						
	Actuation type		Ball screw (In-Line) Ball screw + Belt (Parallel)						
	Guide type		Linear guide(circulating type)						
	Operating temperature [℃]		5～40						
	Operating humidity [%RH]		90 or less(no condensation)						
Electrical	Motor size		□28			□42		□56	
	Motor type		Step motor（servo / 24 VDC）						
	Encoder (angular displacement sensor)		Battery-less absolute (4096 pulses / rotation)						
	Rated Voltage [V]		DC24±10%						
	Instantaneous power consumption [W] note6)		Max.116			Max.126		Max.222	
Lock	Lock Type	note7)	Non magnetizing lock						
	Holding force [N]		20	39	78	78	157	108	216
	Power consumption [W] note8)		2.9			5			
	Rated Voltage [V]		24 VDC±10%						

Note 1) Speed varies according to the work load.
The duty ratio is 40% or less.Check the “Speed–Work Load Graph" as a Guide in the catalogue.
Furthermore, if the cable length exceeds 5 m, then the speed and work load may decrease by up to 10% for each additional 5 m.

Note 2) Pushing Force accuracy is ±20%.

Note 3) The speed and force may change depending on the cable length, load and mounting conditions. If the cable length exceeds 5 m then the speed will decrease by up to 10% for each 5 m (at 15 m it is reduced by up to 20%).

Note 4) A reference value for correcting an error in reciprocal operation.

Note 5) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both axial and perpendicular direction to the lead screw (the test was performed with the actuator in the initialized state).
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz, when the actuator was tested in both an axial and perpendicular direction to the lead screw.
(The test was performed with the actuator in the initialized state).

Note 6) Maximum instantaneous power consumption (including the controller) is when the actuator is operating. This value can be used for the power supply selection.

Note 7) For models including lock only.

Note 8) For an actuator with lock, add the power consumption for the lock.

Product Weight [kg]

Model	Stroke [mm]				Lock weight
	50	75	100	150	
8	1.06	1.23			0.16
16	2.39		2.78		0.32
25	4.82		5.42	6.22	0.61

1. 2 How to order

Controller JXC* Series

L E S Y H [8] [D1] [G] [A] - [50] [ ] - [R1] [C5H73]

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Size

8
16
25

②Motor mounting position/Motor cover direction

Symbol	Motor mounting position	Motor cover direction
D1	In-line	Left side
D2		Right side
D3		Top side
D4		Bottom side
R	Right side parallel	-
L	Left side parallel	-

※For size 8

②Motor mounting position

D	In-line
R	Right side parallel
L	Left side parallel

※For size 16 and 25

③Motor type

Symbol	Motor	Interface	
G	Step motor with High Performance Battery-less absolute encoder (servo 24 VDC)	JXCEH JXC9H JXCPH	JXC5H JXC6H

④Lead [mm]

	Size		
	8	16	25
A	10	12	16
B	5	6	8
C	2.5	-	-

⑤Stroke [mm]

	Size		
	8	16	25
50	●	●	●
75	●	–	–
100	–	●	●
150	–	–	●

⑥Motor option

C	Without lock
W	With lock

⑦Actuator cable type / Length

Robotic cable [m]

Nil	Without cable
R1	1.5
R3	3
R5	5
R8	8
RA	10
RB	15
RC	20

⑧Controller

Nil	Without controller
C□H□□	With controller

C 5 H 7 3

Interface

(Communication protocol/Input/Output)

E	EtherCAT®
9	EtherNet/IP™
P	PROFINET
5	Parallel input (NPN)
6	Parallel input (PNP)

I/O cable

Symbol	Type	Applicable interface
Nil	Without accessory	-
1	I/O cable (1.5m)	Parallel input (NPN) Parallel input (PNP)
3	I/O cable (3m)	
5	I/O cable (5m)	

Mounting

7	Screw mounting
8	DIN rail

For single axis

⚠Coution

The actuator body and controller are sold as a package.

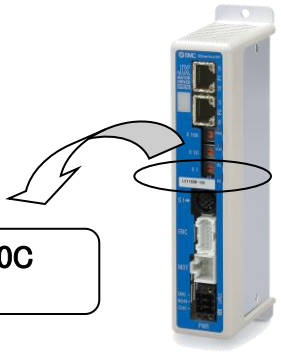
If when only the actuator is purchased separately, confirm that the combination of the controller, which you have and the actuator is compatible.

<Be sure to check the following before use.>

(1) Check that actuator label for model number. This matches the controller.

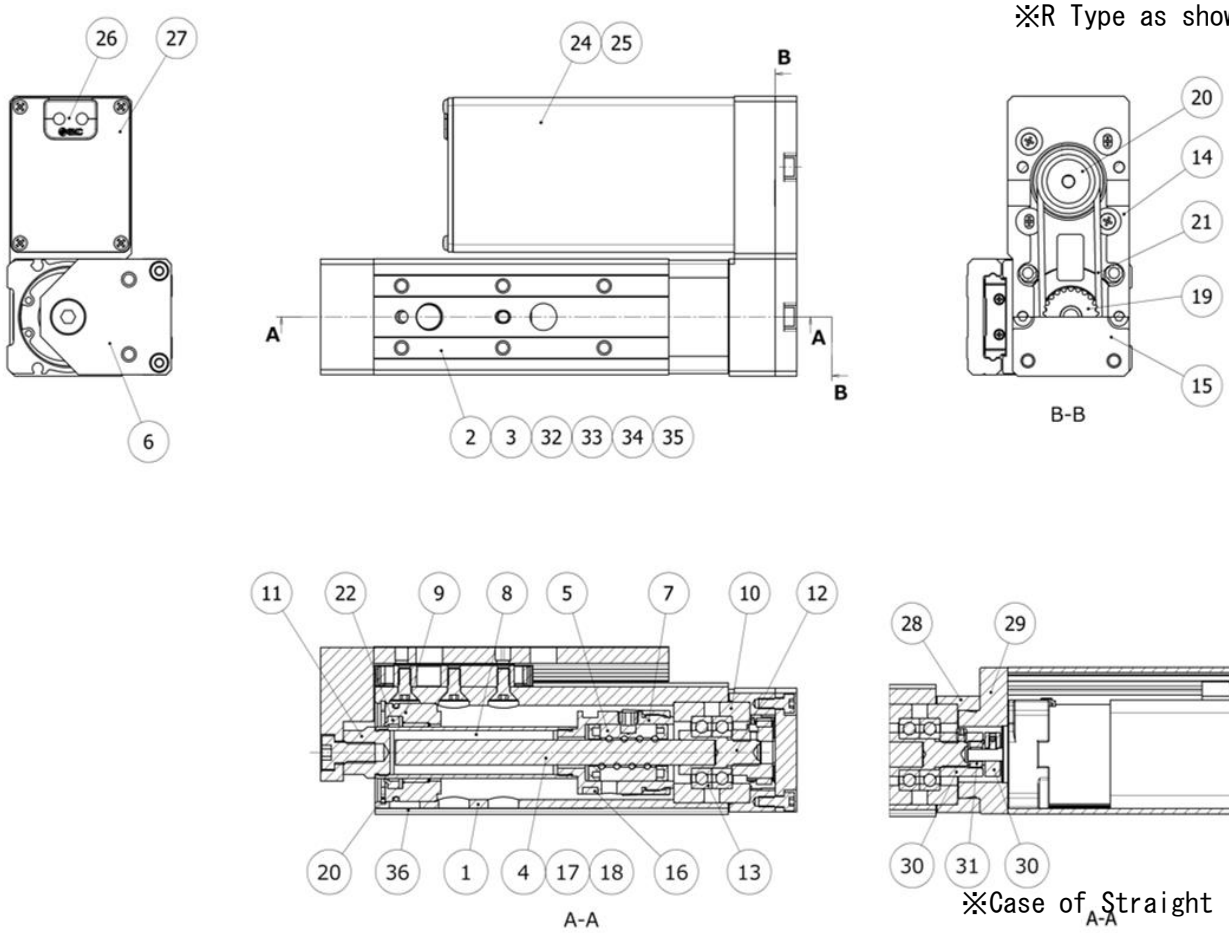
(1)

LESYH16RGA-50C



1. 3 Construction

※R Type as shown



※Case of Straight

Conponent parts

No.	Description	Material	Remarks
1	**Body**	Aluminium alloy	Hard anodized
2	**Table**	Stainless	-
3	**Guide block**	Steel alloy	-
4	**Ball screw shaft**	Steel alloy	-
5	**Ball screw nut**	Resin/Steel alloy	-
6	**End plate**	Aluminium alloy	Hard anodized
7	**Piston**	Aluminium alloy	-
8	**Piston rod**	Stainless	Hard chrome planted
9	**Rod cover**	Aluminium alloy	-
10	**Bearing holder**	Aluminium alloy	-
11	**Socket**	Carbon steel	Electroless nickel pated
12	**Connect shaft**	Carbon steel	Electroless nickel pated
13	**Bearing**	-	-
14	**Reurn box**	Aluminium alloy	Electroless nickel pated
15	**Reurn plate**	Aluminium alloy	Electroless nickel pated
16	**Magnet**	-	
17	**Wear ring holder**	Stainless	Sise 25 , 150st only
18	**Wear ring**	Resin	Sise 25 , 150st only
19	**Screw holwer pulley**	Aluminium alloy	-
20	**Motor pulley**	Aluminium alloy	-
21	**Belt**	-	-
22	**Scraper**	NBR	-
23	**Type C retaining**	Spring steel	phospate coated
24	**Motor / Motor with lock**	-	-
25	**Motor cover**	Aluminium alloy	Hard chrome planted
26	**Grommet**	NBR	-
27	**Motor end cover**	Aluminium alloy	Hard chrome planted

No.	Description	Material	Remarks
28	**Motor block**	Aluminium alloy	Hard chrome planted
29	**Motor adapter**	Aluminium alloy	Hard chrome planted
30	**Hub**	Aluminium alloy	-
31	**Spider**	NBR	-
32	**Cover**	Resin	-
33	**Return guide**	Resin	-
34	**Scraper**	NBR	-
35	**Steel ball**	Special steel	-
36	**Masking tape**	-	-

2. Specific product precautions

This actuator uses a magnetic sensor in the motor section.
Therefore, it is affected by the magnetic field.
About precautions for installation of actuator, refer to [Specific precautions for Battery-less absolute encoder] that is described in the manual of used controller.

Revision history
1st printing Feb / 2022

SMC Corporation

4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021 JAPAN
Tel: + 81 3 5207 8249 Fax: +81 3 5298 5362
URL https://www.smcworld.com