JIECANG

JIECANG LINEAR ACTUATOR

USER MANUAL

Catalogue

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Preface

Dear User:
Thank you for choosing JIECANG products.
This user manual is not intended for end users, it is provided solely for reference by equipment or system manufacturers. The manual will guide you through the installation, operation, and maintenance of JIECANG products. The manufacturer of the end product is responsible for providing the corresponding user manual and conveying the relevant safety information contained herein to the end user.
JIECANG products undergo comprehensive functional and quality testing prior to shipment to ensure long-term reliable operation. If you encounter any issues during system use, please feel free to contact JIECANG.
System installation and usage modifications may impact operation and durability. Before powering on, verify all components are strictly connected according to the system diagram. If product damage results from incorrect connections, do not attempt repairs yourself. Return the product to JIECANG for servicing.
Do not modify the product without guidance from JIECANG professionals to prevent system malfunctions. This user manual is based on current technical knowledge. JIECANG continuously updates relevant technical information and reserves the right to make technical modifications.

Important Information

JIECANG products covered by this user manual are not classified as medical electrical equipment or systems, nor do they fall under the scope of the EU Medical Devices Directive or similar regulations in other countries. JIECANG products are intended solely as components for medical electrical equipment and require installation by the equipment manufacturer into applicable medical electrical equipment.
To meet the certification requirements of equipment manufacturers for medical electrical equipment or systems, JIECANG provides relevant certifications at the component level in accordance with IEC 60601-1 (Medical Electrical Equipment - Part 1: General Requirements for Basic Safety and Essential Performance).

Description of document indicator icons:

ICON	MEANING
WARNING	Failure to comply with the instructions in the warning may result in an accident.
NOTICE	Failure to follow the instructions in this notice may result in equipment damage or reduced service life.
NOTES	Other instructions not related to safety or product lifespan.

Declaration of Conformity

Underwriters Laboratories (UL LLC)
IEC/EN Safety Report

Model:	JC35B JC35DF-24 JC35DF-12 JC35G JC35EG JC35DN-12 JC35DN-24 JC35D4 JC35LX (X can be any alphanumeric symbol) JC35WX (X can be any alphanumeric symbol), JC35D-12, JC35D-24, JC35DSX-YY (X can be any alphanumeric symbol; YY can represent 12 or 24); JC35EX1-X2-X3-X4 (X1 can be M or N or A, X2 can be 2 or 3, X3 can be any alphabet or Number or blank, X4 can be 0 or Y); JC35WX -12 (X can be any alphanumeric symbol)
Device Description:	Actuator
Applicant:	ZHEJIANG JIECANG LINEAR MOTION TECHNOLOGY CO LTD No.2 Laisheng RD, Provincial High Tech ParkXinchang County Shaoxing ZHEJIANG 312500 CHINA
Manufacturer:	Same as Applicant
Manufacturing Facility(ies):	ZHEJIANG JIECANG LINEAR MOTION TECHNOLOGY CO LTD No.2 Laisheng RD, Provincial High Tech ParkXinchang County Shaoxing ZHEJIANG 312500 CHINA
Report No.:	E355312-D1001-1/A9/C2-Informative
Report (Re)Issue Date:	2018-8-28; 2019-05-31(A1/C0); 2021-12-24(A2/C0);2022-04-11(A3/C0); 2023-05-06(A4/C0); 2023-06-06(A4/C1);2023-07-24(A5/C1); 2024-02-02(A6/C1);2024-07-10(A7C1); 2024-08-30(A8/C1); 2024-09-09(A8/C2); 2025-03-31(A9C2)
Base Standard(s):	IEC 60601-1:2005, AMD1:2012, AMD2:2020
Additional Standards:	None
Report Types:	This report consists of the following report types: - Informative Report

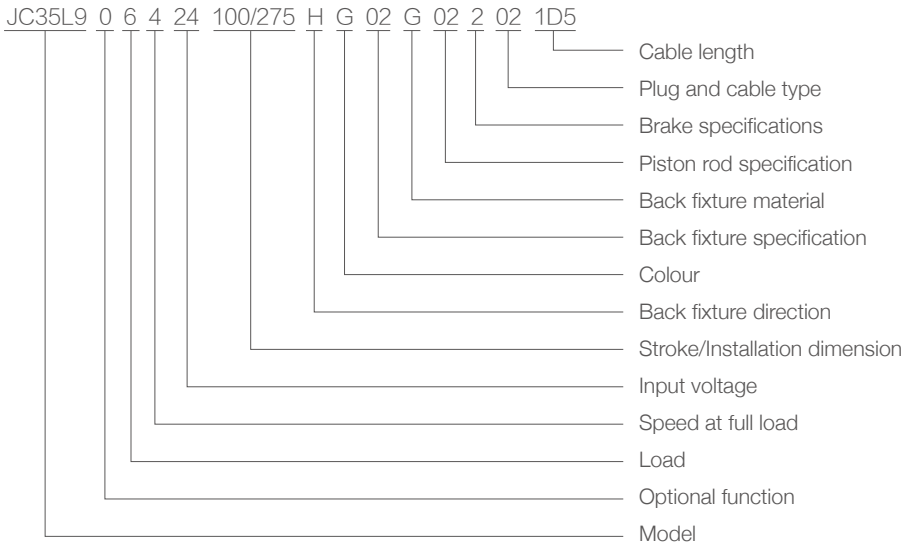
This report covers the Safety evaluation of the referenced model(s) according to the standard(s) specified above.

1. To Know the Actuator

1.1 Actuator Principle

An electric actuator is a power-driven device that utilizes electrical energy to rotate a motor, thereby generating torque and rotational speed. Through a gearbox, the motor's torque is amplified and its rotational speed is reduced. Subsequently, a lead screw and nut convert the rotational motion into linear reciprocating motion.

1.2 Actuator Ordering Key Example



2. Optional Function Description

2.1 Optional Function List

CODE	OPTIONAL FUNCTION
0	No optional function
Q	Front quick release
P	Only push
S	With safety nut
R	Reed switch feedback
Y	Dual hall sensors feedback
H	Hand crank
X	Manual lowering+Only push protection+Safety nut
D	Potentiometer feedback

2.2 Optional Function Description

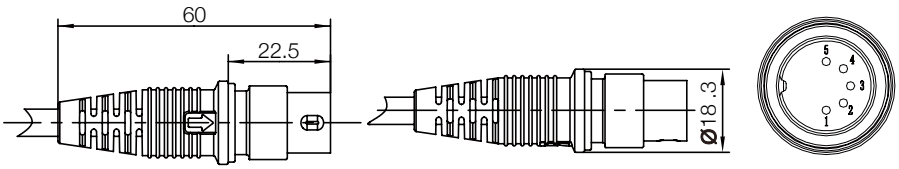
2.2.1 Hall Sensor Feedback Definition

Function: JIECANG control box reads the pulse signals output by the Hall-sensor within actuator. Through specific programming, it determines the operational status and current position of the actuator.
Application Scenarios: Customers require high-precision positioning such as single-unit fixed-point operation or synchronized motion of multiple units.
We recommend using JIECANG products with Hall sensors in conjunction with JIECANG system. If you need to integrate with your own system, we provide dual Hall sensor definitions. For Hall sensor specifications, please refer to the diagram below:

5 Pin DIN connector (with Hall sensor)

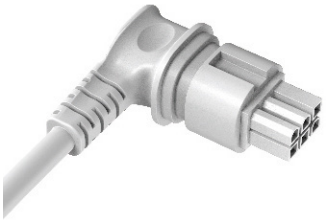
Pin	Color	Functions
1	Red	5V
2	Brown	power with positive voltage, actuator going down
3	Black	GND
4	Blue	power with positive voltage, actuator going up
5	Yellow	Hall sensor signal 1
Outer Circle	Orange	Hall sensor signal 2

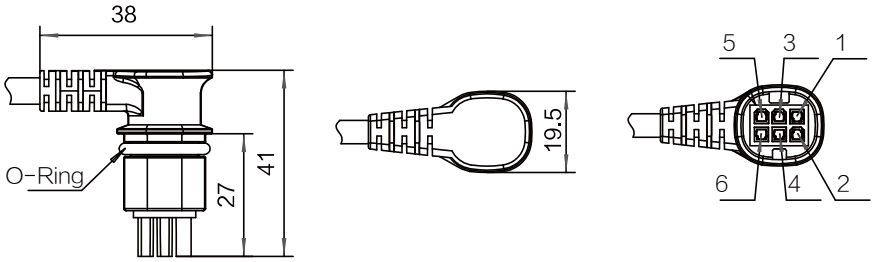




6 Pin Mini-Fit elbow connector

Pin	Color	Function
1	Orange	When not in the lower limit, it is connected with red
2	Brown	power with positive voltage, actuator going down
3	Black	When not in the upper limit, it is connected with yellow
4	Blue	power with positive voltage, actuator going up
5	Red	When not in the lower limit, it is connected with orange
6	Yellow	When not in the upper limit, it is connected with black





NOTICE

If you choose to use Hall sensor actuators with your own system, calculate the current stroke of the actuator using the following formula: Hall sensor count per millimeter = Hall sensor count / (gear ratio / 10) Each actuator you order has a fixed gear ratio. Please inquire with JIECANG for this value.

2.2.2 Quick Release Function Definition

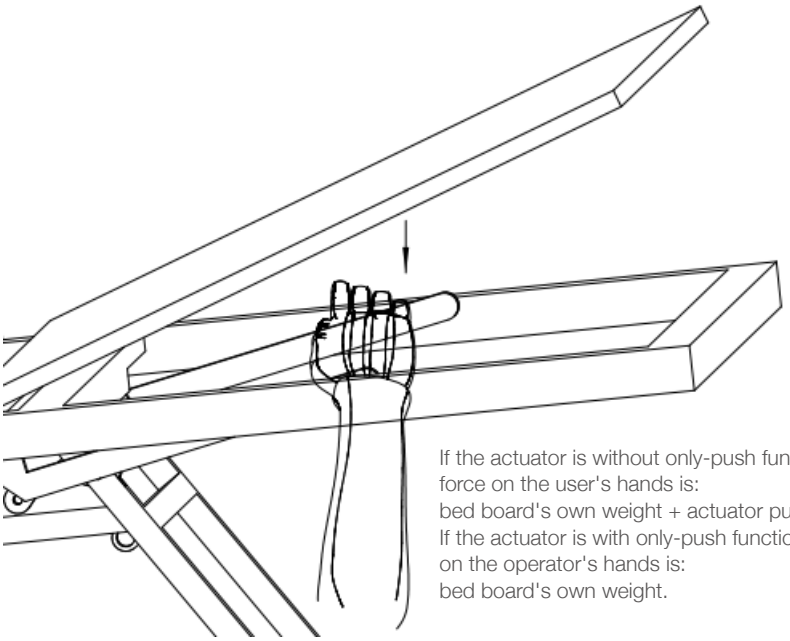
Function: The quick-release mechanism is primarily used on the backrest actuator of hospital beds. In critical situations where the patient requires immediate CPR (cardiopulmonary resuscitation), this feature enables the bed frame to rapidly lower and fully recline, facilitating prompt CPR administration.
Application Scenario: CPR bed. Devices requiring rapid lowering.

NOTICE

Minimum quick-Release force for actuators: On a dedicated test fixture, the quick-release force must be less than the specified value. Refer to the corresponding model's specification sheet for details. (This release force applies to the actuator, the actual force on the bed frame varies based on its structure and requires conversion.)

2.2.3 Only Push Function Definition

Function: Normal structural actuators exert a degree of pulling force when retracting. Upon encountering an obstruction, this may cause motor stalling or damage to the actuator. If the obstruction is a hand or foot, it could result in serious bodily injury. To prevent this issue, only-push actuators cease force application when encountering an obstruction and resume operation only after the obstruction is removed. The bed frame back-leg structure lacks a dedicated anti-pinch mechanism, therefore, customers are advised to equip back-leg actuators with only-push function as standard.
Application Scenario: Hospital bed backrest/legrest section, structures where there is a risk of human limbs becoming trapped.



If the actuator is without only-push function, the force on the user's hands is:
bed board's own weight + actuator pulling force.
If the actuator is with only-push function, the force on the operator's hands is:
bed board's own weight.

WARNING

Features an anti-pinch mechanism. Do not apply pulling force, including sudden downward impacts, as this may damage the product.

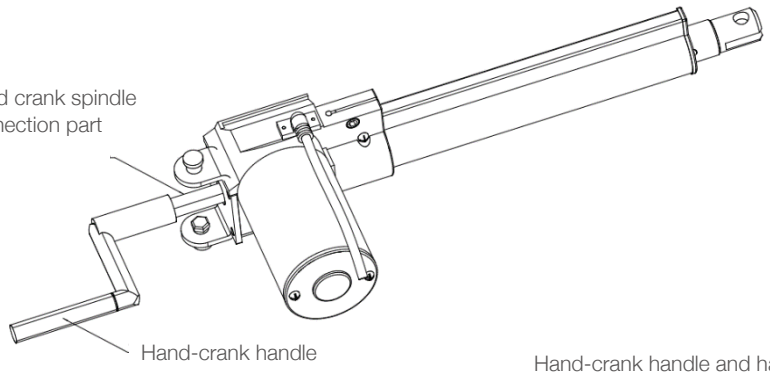
2.2.4 Safety Nut Function Definition

Function: The actuator equipped with a safety nut serves to support the inner tube should damage occur within the actuator's internal structure, preventing the inner tube from falling out suddenly. When internal damage occurs, the mechanism prevents the actuator from rising. Conversely, during motor reversal, it enables the actuator to descend to a safe position.
Application Scenario: Hospital bed

2.2.5 Hand Crank Function Definition

Function: The electric actuator is equipped with a hand crank as a precautionary measure. During operation, unexpected incidents may occur. With the hand crank installed, even in the event of a power outage, normal operation can still be ensured. Simply use the hand crank to adjust the position.

Application Scenario: Hand-crank handle and hand-crank actuator



Hand-crank handle and hand-crank actuator

NOTICE

Hand-crank actuators require a special control box. Please consult JICANG for detailed information before purchasing.

2.2.6 Reed Switch Feedback Function Definition

Function: Reed switches, also known as magnetic reed switches, require only two wires to be energized to function. Reed switch feedback can indicate the displacement of a actuator's movement, but its accuracy is limited. This is particularly true at higher speeds, where increased inertia leads to greater accuracy deviations.

Application Scenario: Dental chair,; Mechanisms with low precision requirements

2.2.7 Definition of Manual Lowering

Function: This function allows for the retraction of the actuators even during a power outage. Manually rotating the manual piston rod drives the inner tube connector and the inner tube to rotate and lowering (retracting) and moving the actuator to a safe position.

Application Scenario: Patient Lift

NOTICE

JIECANG products equipped with manual lowering come standard with anti-pinch function and a safety nut.

3. Actuator Installation Specifications

3.1 Piston Rod Installation Specifications

3.1.1 T-Type Hinge Bracket + Slotted Aluminum Alloy Piston Rod



Installation Instructions:

1.Before installation, please verify the installation dimensions of the T-type hinge bracket are qualified: □ ensure Plate A and Plate B are perpendicular to each other ② the mounting hole diameters are within specification ③ the thickness of Plate B is less than the slot of the piston rod.
2.During installation, please make sure the slot can pass smoothly through Plate B of the T-type hinge bracket without any interference.
3.If interference occurs between the piston rod and the T-type hinge bracket, it is strictly prohibited to use external objects to force the piston rod to fit with the bracket. This prevents the piston rod from cracking, which would affect the normal operation of the actuator.

3.1.2 T-Type Hinge Bracket + Slotted Steel Piston Rod



Installation Instructions:

1.Before installation, please verify the installation dimensions of the T-type hinge bracket are qualified: □ ensure Plate A and Plate B are perpendicular to each other ② the mounting hole diameters are within specification ③ the thickness of Plate B is less than the slot of the piston rod.
2.During installation, please make sure the slot can pass smoothly through Plate B of the T-type hinge bracket without any interference.
3.If interference occurs between the piston rod and the T-type hinge bracket, it is strictly prohibited to use external objects to force the piston rod to fit with the bracket. This prevents the piston rod from cracking, which would affect the normal operation of the actuator.

3.1.3 U-Type Hinge Bracket + Solid Aluminum Alloy Piston Rod



Installation Instructions:

1.Before installation, please verify the installation dimensions of the U-type hinge bracket are qualified: □ ensure the mounting hole diameters are within specification ② the axes of the two mounting holes are aligned ③ width of the hinge bracket is greater than the width of the piston rod.
2.During installation, ensure the solid piston rod can pass smoothly through the U-type hinge bracket without any interference.
3.If interference occurs between the piston rod and the U-type hinge bracket, it is strictly prohibited to use external objects to force the piston rod to fit with the bracket. This prevents the piston rod or bushing from cracking, which would affect the normal operation of the actuator.

3.1.4 U-Type Hinge Bracket + Solid Steel Piston Rod



Installation Instructions:

1.Before installation, please verify the installation dimensions of the U-type hinge bracket are qualified: ① ensure the mounting hole diameters are within specification ② the axes of the two mounting holes are aligned ③ width of the hinge bracket is greater than the width of the piston rod.
2.During installation, ensure the solid piston rod can pass smoothly through the U-type hinge bracket without any interference.
3. If interference occurs between the piston rod and the U-type hinge bracket, it is strictly prohibited to use external objects to force the piston rod to fit with the bracket. This prevents the piston rod or bushing from cracking, which would affect the normal operation of the actuator.

3.1.5 U-Type Hinge Bracket + Solid Piston Rod with Bushing



Installation Instructions:

1.Before installation, please verify the installation dimensions of the U-type hinge bracket are qualified: □ ensure the mounting hole diameters are within specification ② the axes of the two mounting holes are aligned ③ width of the hinge bracket is greater than the width of the bushing.
2.During installation, ensure the bushing can pass smoothly through the U-type hinge bracket without any interference.
3. If interference occurs between the bushing and the U-type hinge bracket, it is strictly prohibited to use external objects to force the bushing to fit with the bracket. This prevents the bushing or inner tubes from cracking, which would affect the normal operation of the actuator.

3.2 Back Fixture Installation Specifications

3.2.1 T-Type Hinge Bracket + Slotted Aluminum Alloy Back Fixture



Installation Instructions:

1.Before installation, please verify the installation dimensions of the T-type hinge bracket are qualified: □ ensure Plate A and Plate B are perpendicular to each other ② the mounting hole diameters are within specification ③ the thickness of Plate B is less than the slot of the back fixture.
2.During installation, please make sure the slot can pass smoothly through Plate B of the T-type hinge bracket without any interference.
3.If interference occurs between the back fixture and the T-type hinge bracket, it is strictly prohibited to use external objects to force the back fixture to fit with the bracket. This prevents the back fixture from cracking, which would affect the normal operation of the actuator.

3.2.2 T-Type Hinge Bracket + Slotted Steel Back Fixture



Installation Instructions:

1. Before installation, please verify the installation dimensions of the T-type hinge bracket are qualified: ① ensure Plate A and Plate B are perpendicular to each other ② the mounting hole diameters are within specification ③ the thickness of Plate B is less than the slot of the back fixture.
2. During installation, please make sure the slot can pass smoothly through Plate B of the T-type hinge bracket without any interference.
3. If interference occurs between the back fixture and the T-type hinge bracket, it is strictly prohibited to use external objects to force the back fixture to fit with the bracket. This prevents the back fixture from cracking, which would affect the normal operation of the actuator.

3.2.3 U-Type Hinge Bracket + Solid Steel Piston Rod



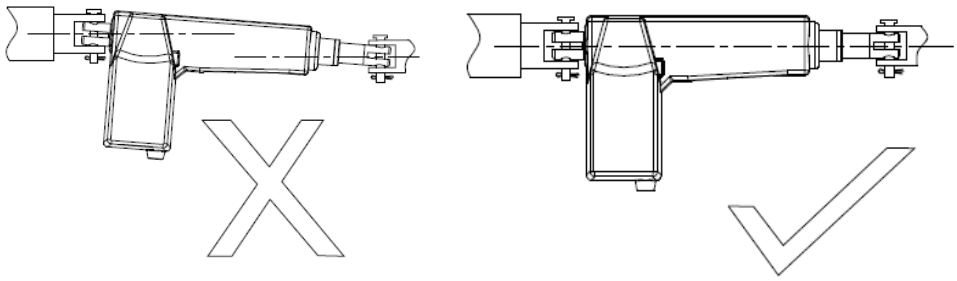
Installation Instructions:

1.Before installation, please verify the installation dimensions of the U-type hinge bracket are qualified: ① ensure the mounting hole diameters are within specification ② the axes of the two mounting holes are aligned ③ width of the hinge bracket is greater than the width of the back fixture.
2.During installation, ensure the back fixture can pass smoothly through the U-type hinge bracket without any interference.
3.If interference occurs between the back fixture and the U-type hinge bracket, it is strictly prohibited to use external objects to force the back fixture to fit with the bracket. This prevents the back fixture or structure from cracking, which would affect the normal operation of the actuator.

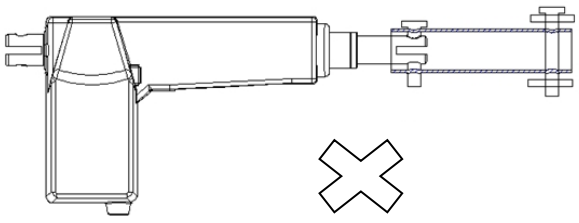
4. Actuator Installation Specifications

4.1 Actuator to Frame Installation Specifications

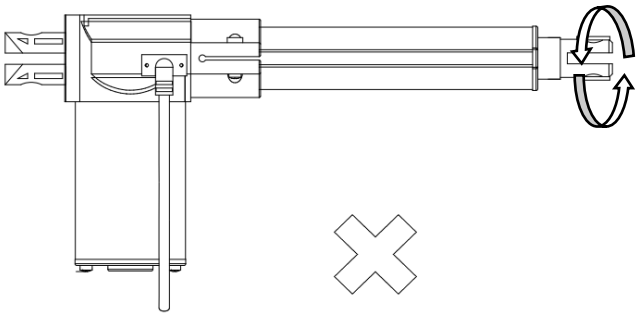
4.1.1 The clamps on the bed frame that interface with the actuator's piston rod and back fixture must maintain proper alignment. Failure to ensure straightness may cause the actuator to jam.



4.1.2 Do not manually alter the actuator's structure. For example: Unscrewing the inner tube to increase the installation dimension, or screwing it in to decrease it.



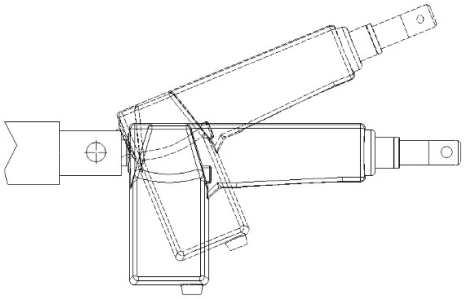
If extending the inner tube via a sleeve, ensure positive positioning. The outer diameter of the piston rod must have a tight fit with the inner wall of the extension sleeve to prevent an angular between the actuator and the sleeve during operation.



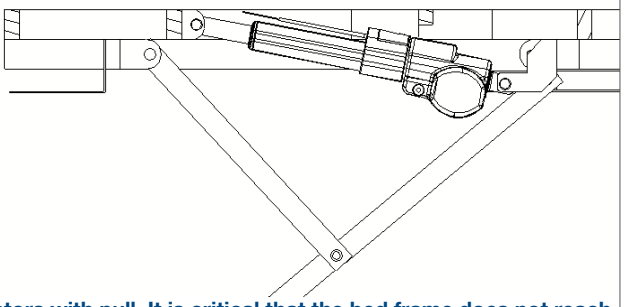
Manually unscrewing or screwing in the inner tube is strictly prohibited.

4.1.3 Installation Sequence and Interference Check.

First, install the back fixture of the actuator. After installation, manually cycle the actuator through its entire range of motion and there must be no interference throughout the motion



No interference throughout the motion.



For actuators with pull, It is critical that the bed frame does not reach its mechanical end stop before the actuator has fully retracted.

NOTICE

The actuator has built-in limit switches. The stopping of the actuator must NOT rely on the bed frame end stop. The bed frame design should incorporate a reasonable amount of free travel (empty stroke) for the actuator.

WARNING

For actuators with pull, avoid the common installation errors listed above, especially the scenario where the bed frame bottoms out before the actuator does. Failure to do so can lead to product damage and, in severe cases, may cause the bed panel to drop unexpectedly.

4.2 Precautions

4.2.1 After installation, perform a test with the matched control box to ensure no interference during the actuator's movement.
4.2.2 During the test run, verify that the stroke and installation dimension match the physical setup. When extending to the highest point, the bed frame must not reach its top limit before the actuator stops. **When retracting to the lowest point, avoid situations where the bed frame is suspended or has bottomed out, while an actuator with pull could potentially continue to retract further.**

5. Actuator Usage

1.Duty Cycle: Operation must adhere to the duty cycle specified on the actuator's product label. Overuse is prohibited. For example, a 10% duty cycle means 2 minutes of use followed by 18 minutes of pause.
2.Actuators must not be used for repeated dynamic push-pull actions that induce additional stress, which can lead to damage such as cracked components or deformed plastic parts.
3.Individuals with impaired intellectual abilities or mental health conditions must not use the device unsupervised. Children must be monitored to ensure safety.
4.Do not operate the actuators while the medical bed is being moved, disassembled, or reassembled.
5.For actuators with remote control functionality, please avoid electromagnetic interference from the environment.
6.Actuator products must not be exposed to strong solvents, alkaline liquids, or similar substances.
7.If abnormalities occur in the actuator, such as unusual operation, noise, or odor, immediately stop operation, turn off the power, reduce the load, and only proceed with troubleshooting after confirming personal safety

6. Warnings and Recommendations

1.Do not exceed the rated load or current to avoid damaging the actuator or control box.
2.Pay attention to the cables for the actuator and its matched control box to prevent pinching or damage during operation.
3.Perform regular inspections of the actuator and carry out timely maintenance and servicing.

7. Maintenance Notice

If repair is required for a JIECANG product within the warranty period, please contact sales person to ship back for handling.

8. Disposal

JEICANG products or components can be scrapped. We recommend disassembling our products as much as possible and sorting the disassembled parts for recycling or waste disposal according to their material. JEICANG products or components must be disposed of in accordance with the applicable environmental regulations of the respective country/region.

9. Disclaimer

The user must determine the suitability of JIECANG products for the intended application and under specific conditions. JEICANG is committed to providing the most current product information. However, as JIECANG's products are continuously improved, changes may be made to them without prior notice. Consequently, JEICANG cannot guarantee the accuracy or authenticity of the product information. While JIECANG will make every effort to meet order requirements, it cannot guarantee the delivery capability of any specific product for the reasons stated above. Therefore, JIECANG reserves the right to discontinue the sale of any product listed on its website, in product catalogs, or other JEICANG written materials. All sales activities must be conducted according to the requirements of the "JIECANG Standard Terms and Conditions of Sale and Delivery." For a copy of the relevant documents, please contact JIECANG.

Revision History

Version	Contents	Date
V1	Initial Version	20220114
V2	Make Supplement	20250929



TECHNOLOGY DRIVES INTELLIGENT LIFE

ZHEJIANG JIECANG LINEAR MOTION TECHNOLOGY Co.,Ltd.

Global Linear Actuator Industry Listed Company
China | America | Germany | Austria | Hungary | Singapore | Malaysia | Japan | Singapore

Stock Code: 603583.SH