



Linear Actuator

Owner's Manual



! **WARNING:** Read carefully and understand all ASSEMBLY AND OPERATION INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Items #74365, #74280, #74281

READ & SAVE THESE INSTRUCTIONS

Thank you very much for choosing an Ironton™ linear actuator!

For future reference, please complete the owner's record below:

Serial Number/Lot Date Code: _____

Purchase Date: _____

Save the receipt, warranty, and this manual. It is important that you read the entire manual to become familiar with this linear actuator before you begin using it.

This linear actuator is designed for certain applications only. Northern Tool and Equipment is not responsible for issues arising from modification or improper use of this linear actuator such as an application for which it was not designed. We strongly recommend that this linear actuator not be modified and/or used for any application other than that for which it was designed.

For technical questions, please call **1-800-222-5381**.

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Intended Use

The Ironton Linear Actuator is ideal for raising and lowering lawn and garden equipment, tractors, ATV attachments, tailgates, truck covers, and more. The actuator pushes and pulls with equal force for consistently smooth and effective operation. An integrated travel limit switch prevents over extension.

Packaging Contents

- Linear Actuator
- Owner's Manual

Technical Specifications

Property	#74365 Specification	#74280 Specification	#74281 Specification
Stroke Length (in.)	3 15/16in.	7 7/8in.	11 13/16in.
Frame Material	Aluminum	Aluminum	Aluminum
Overall Dimensions LxWxH (in.)	14.57"x3.11"x5.24"	22.44"x3.11"x5.24"	30.31"x3.11"x5.24"
Gear Ratio	37:1	37:1	37:1
Static Load Capacity (lb.)	1300	1300	1300
Dynamic Load Capacity (lb.)	1100	1100	1100
Length Retracted (in.)	9 ^{7/16} in.	13 ^{3/8} in.	17 ^{5/16} in.
Length Extended (in.)	13.39in.	21.26in.	29.13 in
Power (volts)	12V	12V	12V
Linear Actuator Type	L type	L type	L type
Linear Actuator Weight (lb.)	3.53 lb.	3.97 lb.	4.41 lb.
Travel Speed	4 mm. per second	4 mm. per second	4 mm. per second

Important Safety Information

⚠WARNING

- Read and understand all instructions. Failure to follow all instructions may result in serious injury or property damage.
- The warnings, cautions, and instructions in this manual cannot cover all possible conditions or situations that could occur. Exercise common sense and caution when using this tool. Always be aware of the environment and ensure that the tool is used in a safe and responsible manner.
- Do not allow persons to operate or assemble the linear actuator until they have read this manual and have developed a thorough understanding of how it works.
- Do not modify this linear actuator in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the linear actuator. There are specific applications for which the linear actuator was designed.
- Use the right tool for the job. DO NOT attempt to force small equipment to do the work of larger industrial equipment. There are certain applications for which this equipment was designed. This linear actuator will be safer and do a better job at the capacity for which it was intended. DO NOT use this equipment for a purpose for which it was not intended.

- Industrial or commercial applications must follow OSHA requirements.

⚠️ WARNING

WORK AREA SAFETY

- Inspect the work area before each use. Keep work area clean, dry, free of clutter, and well-lit. Cluttered, wet, or dark work areas can result in injury. Using the linear actuator in confined work areas may put you dangerously close to cutting tools and rotating parts.
- Do not use the linear actuator where there is a risk of causing a fire or an explosion; e.g., in the presence of flammable liquids, gases, or dust. The linear actuator can create sparks, which may ignite the flammable liquids, gases, or dust.
- Keep children and bystanders away from the work area while operating the tool. Do not allow children to handle the linear actuator.

⚠️ WARNING

PERSONAL SAFETY

- Stay alert, watch what you are doing, and use common sense when operating the tool. Do not use the tool while you are tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating the tool may result in serious personal injury.
- Dress properly. Do not wear loose clothing, dangling objects, or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts. Air vents on the tool often cover moving parts and should be avoided.
- Wear the proper personal protective equipment when necessary. Use ANSI Z87.1 compliant safety goggles (not safety glasses) with side shields, or when needed, a face shield. Use a dust mask in dusty work conditions. Also use non-skid safety shoes, hardhat, gloves, dust collection systems, and hearing protection when appropriate. This applies to all persons in the work area.
- Do not overreach. Keep proper footing and balance at all times.

⚠️ CAUTION

LINEAR ACTUATOR USE AND CARE

- Do not force the linear actuator. Linear actuators are safer and do a better job when used in the manner for which they are designed. Plan your work, and use the correct linear actuator for the job.
- Check for damaged parts before each use. Carefully check that the linear actuator will operate properly and perform its intended function. Replace damaged or worn parts immediately. Never operate the linear actuator with a damaged part.
- Do not use a linear actuator with a malfunctioning switch. Any power tool that cannot be controlled with the power switch is dangerous and must be repaired by an authorized service representative before using.
- Disconnect the power/air supply from the linear actuator and place the switch in the locked or off

position before making any adjustments, changing accessories, or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.

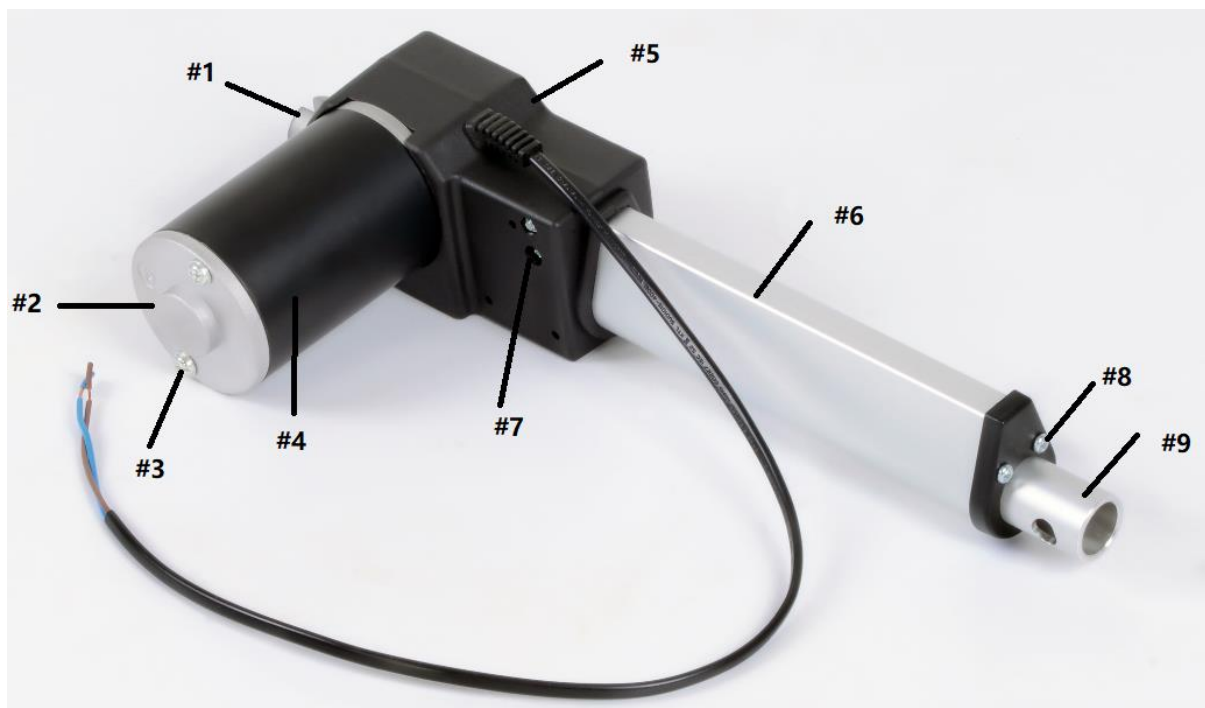
- Store the actuator when it is not in use. Store it in a dry, secure place out of the reach of children. Inspect the tool for good working condition prior to storage and before re-use.
- Use only accessories that are recommended by the manufacturer for use with your linear actuator. Accessories that may be suitable for one linear actuator may create a risk of injury when used with another tool. Never use an accessory that has a lower operating speed or operating pressure than the tool itself.

Specific Operation Warnings

⚠WARNING

- To prevent serious injury or property damage, read and understand the owner's manual before operating.
- Do not exceed the rated load capacity of 1,300 lbs.
- Test battery before operation to make sure the battery has adequate power to lift the linear actuator.
- Switch off the power before changing the direction. If you change the direction when the motor is running, the motor may be damaged.
- If the linear actuator is connected to the power source incorrectly, it may run exceeding its stroke, and may run in wrong direction.
- Do not open actuator manually. This can cause damage to the actuator.

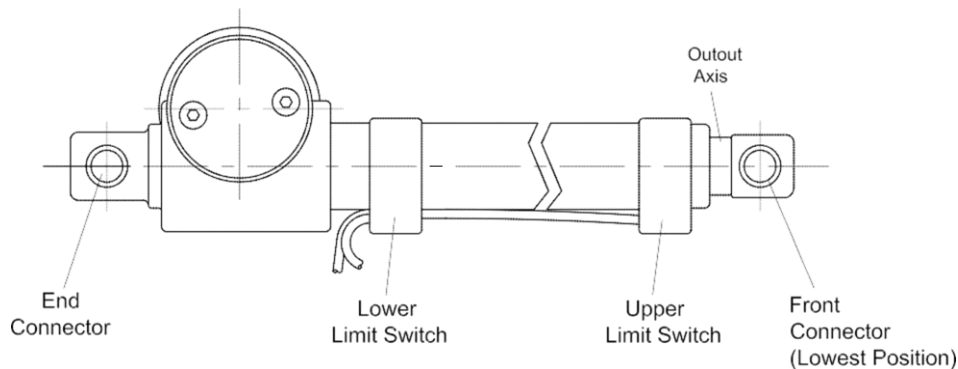
Main Parts of Actuator



Part#	Description	Quantity
1	Motor shell	1
2	Screw 4*16	3
3	Round tube	1
4	Tear drop type tube	1
5	Plastic cover	1
6	Fixed mount	1
7	Bottom cap of motor	1
8	Screw with washer M5	1
9	Coach bolt M4*7	1

Assembly Instructions

1. Ensure that the extension tube is in the "lowest position". The term "lowest position" refers to the position in which there is no further movement toward the DC motor while the actuator is powered on (refer to illustration below).



2. The front and end joints of the linear actuator should be mounted onto two fixed positions on the main chassis. Locations of these fixed positions should be chosen according to the stroke length of the linear actuator. Users must use caution to ensure that the two-way movement of the linear actuator is smooth and within the stroke length after it's installed onto the fixed positions. Ensure that obstacles do not exist along the travel path of the actuator.
3. After the fixed positions have been selected, install the fixtures onto these selected positions of the main chassis. These fixtures are used to attach the front and end joints of linear actuator to the chassis.
4. Assemble the front and end joints of the linear actuator onto the two fixtures using fixture bolts. Ensure that the fixture bolts are able to rotate freely after this step is completed, while ensuring that the fixture bolts will not drop off either during operating or resting period.
5. The chassis of linear actuator should be attached in the horizontal direction if it is going to be operated in this direction and likewise for vertical operation.
6. To extend the piston rod, connect blue wire to positive post (blue) and black wire to negative post (brown). To retract, connect blue wire to negative post (brown) and black wire to positive post (blue).
7. The operation of the linear actuator should be tested manually after the installation is completed. Users should use caution to ensure that:
 - The travel distance of the actuator matches the requirement of the structural design.
 - The up and low limit switches operate normally.
 - The motor should stop when the extension tube reaches up and low limit switch positions.

8. If the linear actuator fails to meet any of these conditions, repeat steps 2 to 4.
9. The entire installation is complete only if steps 1 to 6 are executed successfully.

Operating Instructions

Confirm that set-up matches the following image:

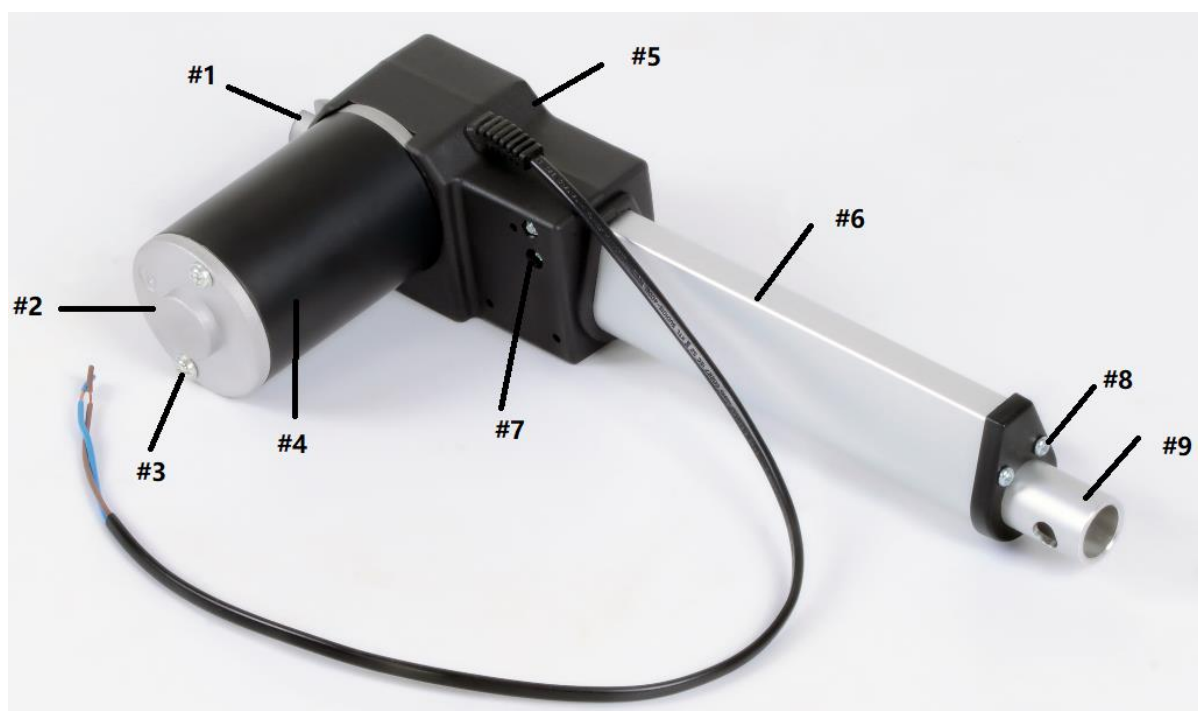


Maintenance

Maintain the linear actuator by adopting a program of conscientious repair and maintenance in accordance with the following recommended procedures. It is recommended that the general condition of any tool be examined before it is used. Keep your tool in good repair. Keep handles dry, clean, and free from oil and grease. The following chart is based on a normal operation schedule.

Maintenance Interval	Maintenance Point
Daily before operating	Make sure the surface of the actuator is free of bumps and smudges.
After the first 20 operating hours	
After the first 50 operating hours or every week	

Parts Diagram



Parts List

Part#	Description	Quantity
1	Motor shell	1
2	Screw 4*16	3
3	Round tube	1
4	Tear drop type tube	1
5	Plastic cover	1
6	Fixed Mount	1
7	Bottom cap of motor	1
8	Screw with washer M5	1
9	Coach bolt M4*7	1

Replacement Parts

- For replacement parts and technical questions, please call Customer Service at **1-800-222-5381**.
- Not all linear actuator components are available for replacement. The illustrations provided are a convenient reference to the location and position of parts in the assembly sequence.
- When ordering parts, the following information will be required: item description, item model number, item serial number/item lot date code, and the replacement part reference number.
- The distributor reserves the rights to make design changes and improvements to linear actuator lines and manuals without notice.

Limited Warranty

Northern Tool and Equipment Company, Inc. ("We" or "Us") warrants to the original purchaser only ("You" or "Your") that the Ironton linear actuator purchased will be free from material defects in both materials and workmanship, normal wear and tear excepted, for a period of **90 days** from date of purchase. The foregoing warranty is valid only if the installation and use of the linear actuator is strictly in accordance with linear actuator instructions. There are no other warranties, express or implied, including the warranty of merchantability or fitness for a particular purpose. If the linear actuator does not comply with this limited warranty, Your sole and exclusive remedy is that We will, at our sole option and within a commercially reasonable time, either replace the linear actuator or linear actuator component without charge to You or refund the purchase price (less shipping). This limited warranty is not transferable.

Limitations on the Warranty

This limited warranty does not cover: (a) normal wear and tear; (b) damage through abuse, neglect, misuse, or as a result of any accident or in any other manner; (c) damage from misapplication, overloading, or improper installation; (d) improper maintenance and repair; and (e) linear actuator alteration in any manner by anyone other than Us, with the sole exception of alterations made pursuant to linear actuator instructions and in a workmanlike manner.

Obligations of Purchaser

You must retain Your linear actuator purchase receipt to verify date of purchase and that You are the original purchaser. To make a warranty claim, contact Us at 1-800-222-5381, identify the linear actuator by make and model number, and follow the claim instructions that will be provided. The linear actuator and the purchase receipt must be provided to Us in order to process Your warranty claim. Any returned linear actuator that is replaced or refunded by Us becomes our property. You will be responsible for return shipping costs or costs related to Your return visit to a retail store.

Remedy Limits

Linear actuator replacement or a refund of the purchase price is Your sole remedy under this limited warranty or any other warranty related to the linear actuator. We shall not be liable for: service or labor charges or damage to Your property incurred in removing or replacing the linear actuator; any damages, including, without limitation, damages to tangible personal property or personal injury, related to Your improper use, installation, or maintenance of the linear actuator or linear actuator component; or any indirect, incidental or consequential damages of any kind for any reason.

Assumption of Risk

You acknowledge and agree that any use of the linear actuator for any purpose other than the specified use(s) stated in the linear actuator instructions is at Your own risk.

Governing Law

This limited warranty gives You specific legal rights, and You also may have other rights which vary from state to state. Some states do not allow limitations or exclusions on implied warranties or incidental or consequential damages, so the above limitations may not apply to You. This limited warranty is governed by the laws of the State of Minnesota, without regard to rules pertaining to conflicts of law. The state courts located in Dakota County, Minnesota shall have exclusive jurisdiction for any disputes relating to this warranty.



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