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Product Manual 35024 (Revision A, 6/2017) Original Instructions



Electric Large Actuator (ELA) ELA Lifting Bracket Procedure

Installation and Operation Manual

Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment.



General Precautions Practice all plant and safety instructions and precautions.

Failure to follow instructions can cause personal injury and/or property damage.



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Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.



If the cover of this publication states "Translation of the Original Instructions" please note:

Translated Publications The original source of this publication may have been updated since this translation was made. Be sure to check manual 26455, Customer Publication Cross Reference and Revision Status & Distribution Restrictions, to verify whether this translation is up to date. Out-of-date translations are marked with ▲. Always compare with the original for technical specifications and for proper and safe installation and operation procedures.

Revisions— A bold, black line alongside the text identifies changes in this publication since the last revision.

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Warnings and Notices

Important Definitions



This is the safety alert symbol used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

- **DANGER** Indicates a hazardous situation, which if not avoided, will result in death or serious injury.
- **WARNING** Indicates a hazardous situation, which if not avoided, could result in death or serious injury.
- **CAUTION** Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury.
- NOTICE Indicates a hazard that could result in property damage only (including damage to the control).
- **IMPORTANT** Designates an operating tip or maintenance suggestion.



Personal Protective Equipment

- The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job at hand. Equipment that should be considered includes but is not limited to:
- Eye Protection
- Hearing Protection
- Hard Hat
- Gloves
- Safety Boots
- Respirator

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.



Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.

NOTICE Electrostatic Precautions	 Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts: Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control). Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards. Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices. To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules.
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Regulatory Compliance

For Regulatory Compliance information, refer to the product manual 26844

Safety Symbols

	Direct Current
\sim	Alternating Current
$\overline{\sim}$	Both Alternating and Direct Current
<u>A</u>	Caution, risk of electrical shock
\wedge	Caution, refer to accompanying documents
	Protective conductor terminal
\rightarrow	Frame or chassis terminal

Chapter 1. General Information

Introduction

For compliance and any additional information, please refer to manual B26844.

The ELA Lifting Bracket Procedure contains specifications for lifting hardware, safety information, recommended lifting orientations, and recommended hardware locations.

WARNING Carefully review the lifting diagram (Figures 1-1 through 1-3 and 2-1 and 2-11) for lift locations, weight, and center of gravity before moving the ELA. Do not lift or handle the actuator by electrical connections. The significant weight of the actuator poses a crushing hazard that could result in personal injury or death.



Woodward recommends the use of Lifting Kit 8935-1132 to safely orient and secure the actuators during installation. Contact Woodward for more information. Improper lifting could lead to actuator damage, bodily injury, or death.

The following instructions detail using the approved Woodward Lifting Kit 8935-1132 (NOT supplied with each ELA). Woodward recommends lifting the ELA by both of the lifting eyes shown in Figure 1-1. The lifting eyes are each secured by two fasteners and can be rearranged on the supplied lifting bracket to allow for lifting in different orientations. Threaded holes are provided in three locations on each lifting bracket. When reinstalling lifting eye bolts, torque to 20-24 N·m / 15-18 lbf-ft. See Figures 2-6 through 2-11 for suggested lifting orientations. Procedures for each suggested lifting orientation are located below.

Prior to lifting the ELA in either vertical or vertical inverted configuration, properly install the crossbar between the two lifting brackets. This step is imperative to ensure the actuator is lifted in a safe manner and potential crushing or warping of the actuator is avoided.

General Instructions

Lifting kits are shipped with (2) 17.50 X 2.50 X 1.00 Lifting Bars, (4) .375-16 X 1.750 screws, (1) 9.25 X 2.00 X .500 Crossbar, (2) .500-13 X 1.250 screws, and (2) eyebolts (Grade 8 mounting bolts included). See Figure 1-1.



Figure 1-1. Lifting Kit

There are four different lifting orientations recommended by Woodward; Horizontal, Vertical Upright, Vertical inverted and lifting by the motor. These will be covered individually in Chapter 2.



PROTECT ELECTRICAL CONNECTORS. Electrical connector damage is the most common damage that occurs during lifting and installation of the ELA.

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Attach the lifting kit with the two 3/8 inch bolts to the location specified in Figure 1-2 below.



Figure 1-2. Lifting Bar Mounting Location

Figure 1-3 displays a properly installed lifting bar and two lifting eyes in the horizontal lift configuration.



Figure 1-3. Lifting Bar Properly Installed on ELA

Chapter 2. Lifting Procedures

Introduction

Woodward recommends lifting the ELA by no fewer than two of the lifting eyes shown in Figure 1-1. The lifting eyes are each secured by two fasteners and can be rearranged on the supplied lifting bracket to allow for lifting in different orientations. Threaded holes are provided in three locations on each lifting bracket. When reinstalling lifting eye bolts, torque to 20-24 N·m / 15-18 lbf-ft. See Figures 2-6 through 2-11 for suggested lifting orientations. Procedures for each suggested lifting orientation are located below.

Prior to lifting the ELA in either vertical or vertical inverted configuration, properly install the crossbar between the two lifting brackets. This step is imperative to ensure the actuator is lifted in a safe manner and potential crushing or warping of the actuator is avoided.

NOTICE

PROTECT ELECTRICAL CONNECTORS. Electrical connector damage is the most common damage to the ELA that occurs during lifting and installation of the ELA.

If installing straps on any other location, observe the center of gravity noted in Figures 2-2 through 2-5.

After lifting is complete, remove both lifting brackets and fasteners and store for later use. When reinstalling lifting brackets, torque to 30–38 N·m / 22–28 lbf-ft.



Figure 2-1. Lifting Orientations Using the Supplied Lift Points and Brackets





Figure 2-2. ELA 80 Dimensions





Figure 2-3. ELA 80 Motor Dimensions







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Horizontal Lift

A horizontal lift is accomplished by following the steps below:

- 1. Install one lifting bar to either side of the ELA
- Attaching a lifting eye to each end of the lifting bar (Figure 2-6) Attach the lifting device to the lifting eyes (Figure 2-6) 2.
- 3.
- 4. Lift the ELA (Figure 2-7)



Figure 2-6. Lifting Bar in Horizontal Lift Configuration



Figure 2-7. Lifting Device Attached for Horizontal Lift





Figure 2-8. ELA Horizontal Lift



Vertical Upright Lift

A vertical upright lift is accomplished by following the steps below:

- 1. Install one lifting bar to both sides of the ELA
- 2. Install the crossbar between the two lifting bars
- 3. Attaching a lifting eye bar at the end attachment point of each lifting bar furthest away from the base of the ELA
- 4. Attach the lifting device to the lifting eyes
- 5. Lift the ELA



Figure 2-9. Vertical Upright Lift

Vertical Inverted Lift

A vertical inverted lift is accomplished by following the steps below:

- 1. Install one lifting bar to both sides of the ELA
- Install the crossbar between the two lifting bars.
 Attaching a lifting eye bar at the center attachment point of each lifting bar
- 4. Attach the lifting device to the lifting eyes
- 5. Lift the ELA



Figure 2-10. Vertical Inverted Lift



Motor Lift

A vertical inverted lift is accomplished by following the steps below:

- 1. Install one lifting strap or cable around the motor of the ELA
- 2. Lift the ELA



Figure 2-11. Motor Lift

After lifting is complete, remove both lifting brackets, crossbar and fasteners and store for later use. When reinstalling lifting brackets, torque to 30-38 N·m / 22-28 lbf-ft.

Note: Remove lifting bars prior to installing control unit.

Chapter 3. Product Support and Service Options

Product Support Options

If you are experiencing problems with the installation, or unsatisfactory performance of a Woodward product, the following options are available:

- Consult the troubleshooting guide in the manual.
- Contact the manufacturer or packager of your system.
- Contact the Woodward Full Service Distributor serving your area.
- Contact Woodward technical assistance (see "How to Contact Woodward" later in this chapter) and discuss your problem. In many cases, your problem can be resolved over the phone. If not, you can select which course of action to pursue based on the available services listed in this chapter.

OEM or Packager Support: Many Woodward controls and control devices are installed into the equipment system and programmed by an Original Equipment Manufacturer (OEM) or Equipment Packager at their factory. In some cases, the programming is password-protected by the OEM or packager, and they are the best source for product service and support. Warranty service for Woodward products shipped with an equipment system should also be handled through the OEM or Packager. Please review your equipment system documentation for details.

Woodward Business Partner Support: Woodward works with and supports a global network of independent business partners whose mission is to serve the users of Woodward controls, as described here:

- A **Full Service Distributor** has the primary responsibility for sales, service, system integration solutions, technical desk support, and aftermarket marketing of standard Woodward products within a specific geographic area and market segment.
- An Authorized Independent Service Facility (AISF) provides authorized service that includes repairs, repair parts, and warranty service on Woodward's behalf. Service (not new unit sales) is an AISF's primary mission.
- A **Recognized Turbine Retrofitter (RTR)** is an independent company that does both steam and gas turbine control retrofits and upgrades globally, and can provide the full line of Woodward systems and components for the retrofits and overhauls, long term service contracts, emergency repairs, etc.

A current list of Woodward Business Partners is available at www.woodward.com/directory.

Product Service Options

The following factory options for servicing Woodward products are available through your local Full-Service Distributor or the OEM or Packager of the equipment system, based on the standard Woodward Product and Service Warranty (5-01-1205) that is in effect at the time the product is originally shipped from Woodward or a service is performed:

- Replacement/Exchange (24-hour service)
- Flat Rate Repair
- Flat Rate Remanufacture

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Replacement/Exchange: Replacement/Exchange is a premium program designed for the user who is in need of immediate service. It allows you to request and receive a like-new replacement unit in minimum time (usually within 24 hours of the request), providing a suitable unit is available at the time of the request, thereby minimizing costly downtime. This is a flat-rate program and includes the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205).

This option allows you to call your Full-Service Distributor in the event of an unexpected outage, or in advance of a scheduled outage, to request a replacement control unit. If the unit is available at the time of the call, it can usually be shipped out within 24 hours. You replace your field control unit with the like-new replacement and return the field unit to the Full-Service Distributor.

Charges for the Replacement/Exchange service are based on a flat rate plus shipping expenses. You are invoiced the flat rate replacement/exchange charge plus a core charge at the time the replacement unit is shipped. If the core (field unit) is returned within 60 days, a credit for the core charge will be issued.

Flat Rate Repair: Flat Rate Repair is available for the majority of standard products in the field. This program offers you repair service for your products with the advantage of knowing in advance what the cost will be. All repair work carries the standard Woodward service warranty (Woodward Product and Service Warranty 5-01-1205) on replaced parts and labor.

Flat Rate Remanufacture: Flat Rate Remanufacture is very similar to the Flat Rate Repair option with the exception that the unit will be returned to you in "like-new" condition and carry with it the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205). This option is applicable to mechanical products only.

Returning Equipment for Repair

If a control (or any part of an electronic control) is to be returned for repair, please contact your Full-Service Distributor in advance to obtain Return Authorization and shipping instructions.

When shipping the item(s), attach a tag with the following information:

- Return authorization number
- Name and location where the control is installed
- Name and phone number of contact person
- Complete Woodward part number(s) and serial number(s)
- Description of the problem
- Instructions describing the desired type of repair

Packing a Control

Use the following materials when returning a complete control:

- Protective caps on any connectors
- Antistatic protective bags on all electronic modules
- Packing materials that will not damage the surface of the unit
- At least 100 mm (4 inches) of tightly packed, industry-approved packing material
- A packing carton with double walls
- A strong tape around the outside of the carton for increased strength



To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules.*

Replacement Parts

When ordering replacement parts for controls, include the following information:

- The part number(s) (XXXX-XXXX) that is on the enclosure nameplate
- The unit serial number, which is also on the nameplate

Engineering Services

Woodward offers various Engineering Services for our products. For these services, you can contact us by telephone, by email, or through the Woodward website.

- Technical Support
- Product Training
- Field Service

Technical Support is available from your equipment system supplier, your local Full-Service Distributor, or from many of Woodward's worldwide locations, depending upon the product and application. This service can assist you with technical questions or problem solving during the normal business hours of the Woodward location you contact. Emergency assistance is also available during non-business hours by phoning Woodward and stating the urgency of your problem.

Product Training is available as standard classes at many of our worldwide locations. We also offer customized classes, which can be tailored to your needs and can be held at one of our locations or at your site. This training, conducted by experienced personnel, will assure that you will be able to maintain system reliability and availability.

Field Service engineering on-site support is available, depending on the product and location, from many of our worldwide locations or from one of our Full-Service Distributors. The field engineers are experienced both on Woodward products as well as on much of the non-Woodward equipment with which our products interface.

For information on these services, please contact us via telephone, email us, or use our website: <u>www.woodward.com</u>.

Contacting Woodward's Support Organization

For the name of your nearest Woodward Full-Service Distributor or service facility, please consult our worldwide directory at <u>www.woodward.com/directory</u>, which also contains the most current product support and contact information.

You can also contact the Woodward Customer Service Department at one of the following Woodward facilities to obtain the address and phone number of the nearest facility at which you can obtain information and service.

Products Used in	Products Used in	Products Used in Industrial	
Electrical Power Systems	Engine Systems	Turbomachinery Systems	
Facility Phone Number	Facility Phone Number	Facility Phone Number	
Brazil+55 (19) 3708 4800	Brazil +55 (19) 3708 4800	Brazil +55 (19) 3708 4800	
China +86 (512) 6762 6727	China +86 (512) 6762 6727	China +86 (512) 6762 6727	
Germany:	Germany +49 (711) 78954-510	India+91 (124) 4399500	
Kempen +49 (0) 21 52 14 51	India+91 (124) 4399500	Japan+81 (43) 213-2191	
Stuttgart - +49 (711) 78954-510	Japan+81 (43) 213-2191	Korea+82 (51) 636-7080	
India+91 (124) 4399500	Korea+82 (51) 636-7080	The Netherlands+31 (23) 5661111	
Japan+81 (43) 213-2191	The Netherlands+31 (23) 5661111	Poland+48 12 295 13 00	
Korea+82 (51) 636-7080	United States+1 (970) 482-5811	United States+1 (970) 482-5811	
Poland+48 12 295 13 00			
United States+1 (970) 482-5811			



Technical Assistance

If you need to contact technical assistance, you will need to provide the following information. Please write it down here before contacting the Engine OEM, the Packager, a Woodward Business Partner, or the Woodward factory:

General	
Your Name	
Site Location	
Phone Number	
Fax Number	
Prime Mover Information	
Manufacturer	
Turbine Model Number	
Type of Fuel (gas, steam, etc.)	
Power Output Rating	
Application (power generation, marine, etc.)	
Control/Governor Information	
Control/Governor #1	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Control/Governor #2	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Control/Governor #3	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Symptoms	
Description	

If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call.



Revision History

Changes in Revision A—

• Customer specific nomenclature removed



We appreciate your comments about the content of our publications. Send comments to: <u>icinfo@woodward.com</u>

Please reference publication **35024**.





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