

Electrak 205 Linear Actuator Repair Kits





Introduction

This manual contains detailed instructions covering the installation of all repair kits for Electrak™205 Linear actuators. Please follow all instructions for your kit(s) explicitly to ensure proper operation. Failure to follow these instructions can result in damage to property and personal injury or even death. The table of contents below describes each kit and its location in this manual.

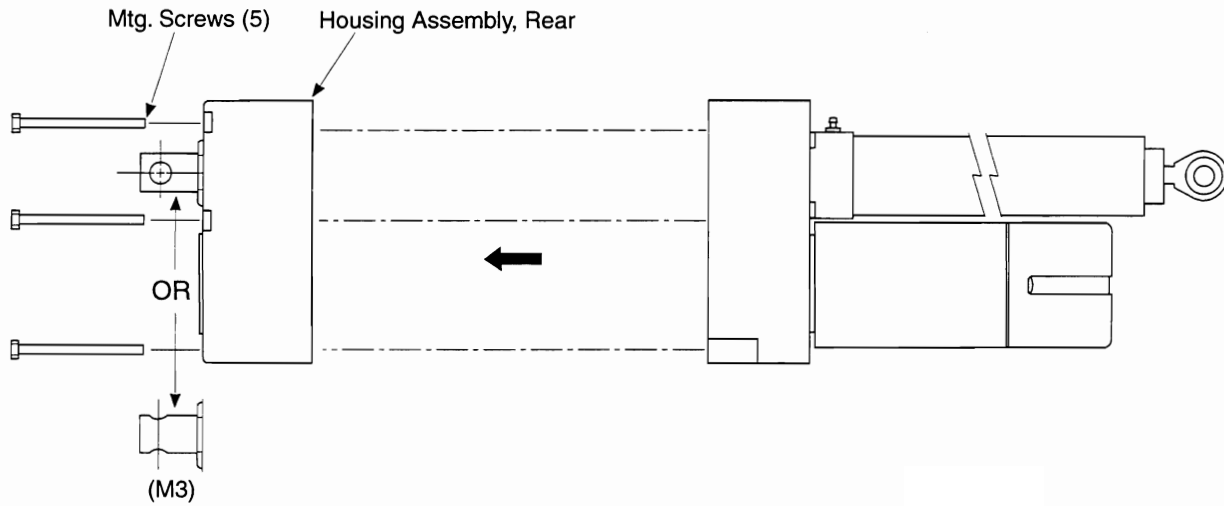
⚠WARNING Failure to follow these instructions can result in damage to property and personal injury or even death.

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Rear Housing Assembly Replacement

Tools Required: 5/16 Hex. Socket



Disassembly:

1. Remove five mounting screws holding rear housing assembly in place. **Save all screws.**
2. Remove rear housing. Gasket must remain in place on the rear housing.

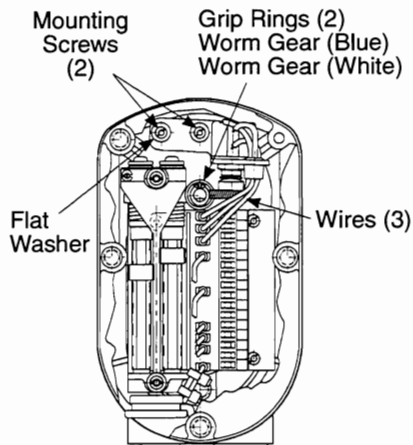
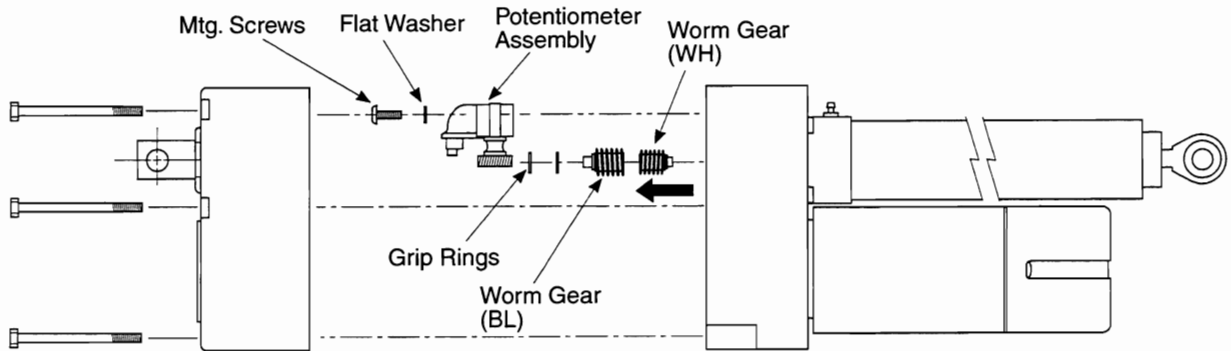
Assembly:

1. Install the new rear housing from the rear housing assembly replacement kit.
2. Replace the gasket with parts from the seal replacement kit. Remove the protective linear from the gasket and apply the adhesive side toward the rear housing.
3. Replace the new rear housing in position and reinstall saved screws.

Potentiometer Assembly Replacement Kit 9200-739-019

Tools Required: Torx T-9 Screwdriver, Grip Ring Pliers

Note: Potentiometers must be replaced every 250,000 to 800,000 cycles, depending on stroke length.



Disassembly:

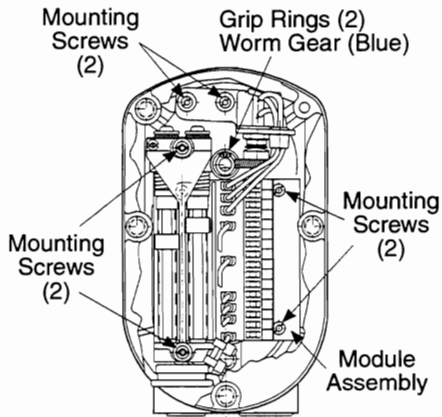
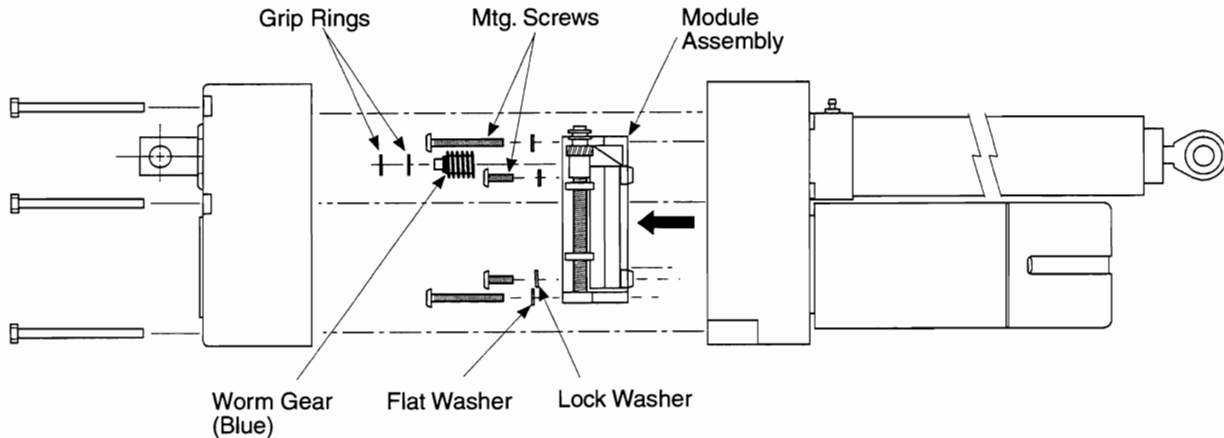
1. Remove rear housing, gasket, and five mounting screws, as described on page 1. **Save all parts.**
2. Remove the two mounting screws and washers securing the potentiometer assembly. **Save all parts.**
3. Remove three wires from the control board. Remove the potentiometer assembly.
4. Remove two snap rings from the end of the screw shaft.
5. Remove the two worm gears (blue & white) from the screw shaft. **Save the blue worm gear.**

Assembly:

1. Replace the white worm gear with the new one from the potentiometer assembly replacement kit. Reinstall the old blue worm gear on the end of the screw shaft. Position the gears correctly on the shaft.
2. Replace two snap rings on the screw shaft with new ones from the potentiometer assembly replacement kit. The rings must hold the gears securely in place.
3. Replace the potentiometer assembly, two screws, and washer from parts in the potentiometer assembly replacement kit. Place the washer over the slot in the bracket. Do not tighten yet.
4. Adjust: the potentiometer assembly for complete engagement of the white worm gears. Replace the mounting screws and manually rotate the gears to allow free movement with no binding. Tighten the two mounting screws to 10 lb.in. torque.
5. Adjust: With the actuator in full electrical retract (as determined by the limit switch), turn the potentiometer shaft clockwise until it stops. Then turn the shaft counterclockwise to 1000 ohms \pm 10% (as measured across the brown and brown/white wires) or one complete turn of the potentiometer shaft.
6. Reattach lead wires to the correct positions on the terminal board. (As identified on the board).
7. Replace the rear housing and gasket. Align the gasket properly before tightening the screws. Tighten the five mounting screws to 70 lb.in. torque.

Module Assembly Replacement

Tools Required: Torx T-15 Driver, Grip Ring Pliers



Model	Voltage	Part Number
ALP-12-XXB5-XXD	115VAC	9210-635-047
ALP-22-XXB5-XXD	230VAC	9210-635-048

Assembly:

1. Replace the blue gear on the screw shaft with the new one from the replacement kit.
2. Install two new grip rings from the replacement kit on the screw shaft to hold the gears securely in place.
3. Replace the module assembly with the new one from the replacement kit.
4. Adjust the module assembly to provide complete engagement between gears. Replace the mounting screws and manually rotate the gears to assure backlash is correct with **no binding**. Tighten the four screws to 15 lb.in. torque.
5. Attach wires to the terminals matching the wire colors (white to white, etc.)
6. If required, adjust the stroke retract cam (white gear) and the stroke extend cam (black gear) per the adjustment procedure described on page 2.
7. Replace cover, gasket, and five mounting screws. Tighten to 70 lb.in. torque. The gasket must be properly seated prior to tightening the screws.

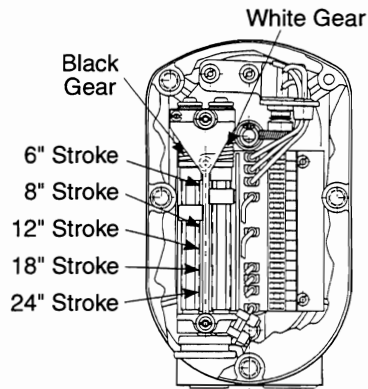
Disassembly

1. Disconnect actuator from power source.
2. Remove rear housing, gasket, and five mounting screws as described on page 1. **Save all parts.**
3. Remove three wires from the potentiometer assembly.
4. Remove all remaining wires from their terminals.
5. Remove two grip rings from the top of the screw shaft.
6. Remove the blue worm gear from the top of the screw shaft.
7. Remove the two screws and lock washers holding the circuit board and **save them**.
8. Remove the two screws and flat washers holding the module base and **save them**.
9. Remove the module assembly from housing.

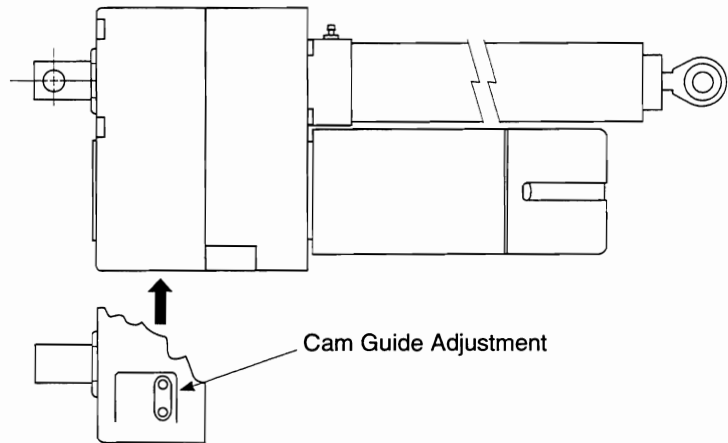
Stroke Cam Adjustment Procedure

Tool Required: Hollow Blade Screwdriver

The stroke cams are factory adjusted for standard stroke lengths of 4", 8", 12", 18", and 24". Other lengths can be set per customer requirement. When module replacement becomes necessary or adjustment is required, the following procedure should be followed to avoid possible damage to the motor and actuator.



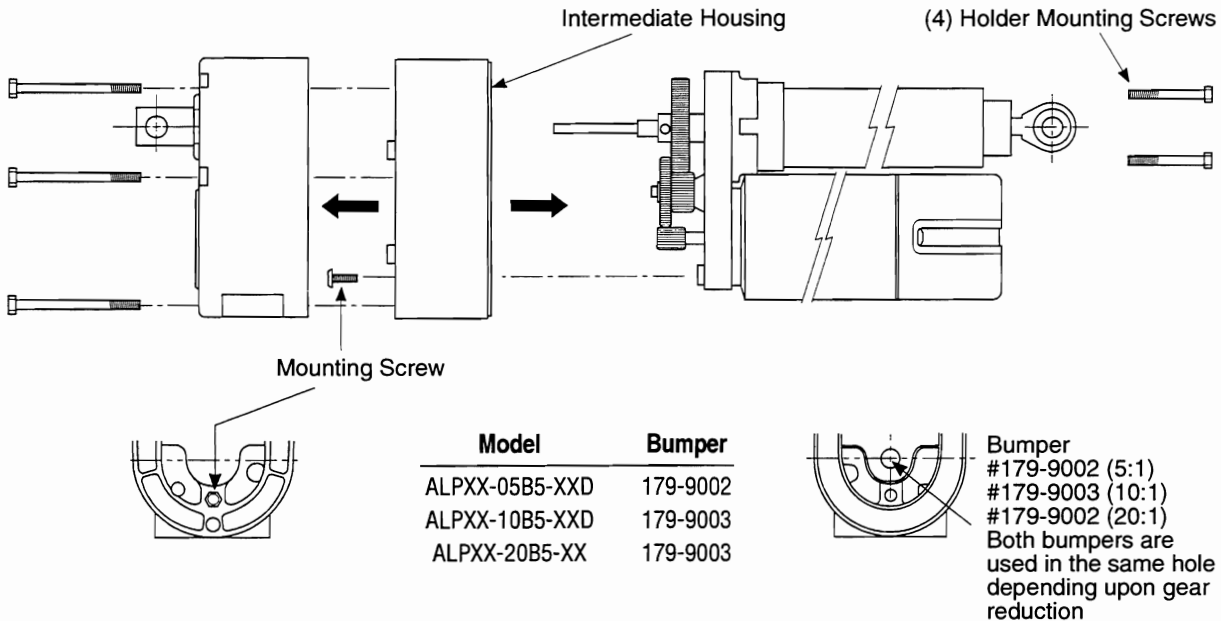
Indicators on the cam guide show approximate positionings of the retract cam and the extend cam for standard stroke lengths of 4", 8", 12", 18", and 24".



1. Disconnect the rod end of the extension tube. With power on, retract the actuator until it stops. Manually rotate the extension tube counterclockwise to the desired retracted position.
2. Adjust the retract cam (white gear) until an audible "click" from the limit switch is heard.
3. Connect the rod end to its mount and extend the actuator to the desired extended position.
4. Adjust the extend cam (black gear) until an audible "click" from the limit switch is heard.
5. Run the actuator to full extend and retract positions to check the cam settings. If further adjustment is required, repeat this procedure to obtain correct positioning.

Intermediate Housing Assembly Replacement #9200-536-042

Tools Required: 5/16" Hex. Socket



Disassembly:

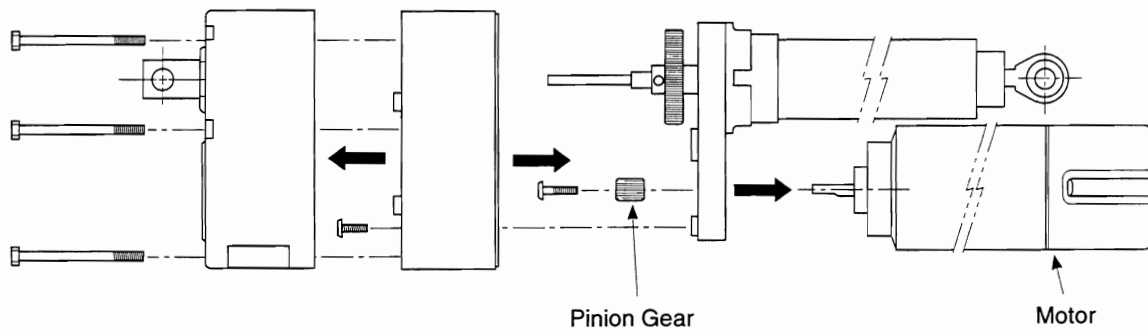
1. Remove rear housing, gasket, and five screws as described on page 1. **Save all parts.**
2. Remove potentiometer and module assemblies as described on pages 2 and 3. **Save all parts.**
3. Remove one mounting screw and **save it.**
4. From the front of the actuator, remove four holder mounting screws and **save them.**
5. Pull the intermediate housing free, allowing the wire harness to feed through the rear of the housing. The gasket must remain on the front housing.

Assembly

1. Install the new intermediate housing from the replacement kit. Insert the appropriate bumper from the replacement kit in the proper position as shown.
2. Feed the harness through the rear of the intermediate housing and fasten the housing to the holder. Tighten four screws to 70 lb.in. torque. The gasket must be properly aligned before tightening screws.
3. Attach the single mounting screw and tighten it to 50 lb.in. torque.
4. Replace the potentiometer assembly and tighten the two mounting to 10 lb.in. torque. Replace the module assembly. Tighten the four mounting screws to 15 lb.in. torque.
5. Replace the rear housing and gasket. Tighten the five mounting screws to 70 lb.in. torque. The gasket must be properly aligned before tightening the screws.

Motor Assembly Replacement

Tool Required: Torx T-25, Driver



Model	Voltage	Part Number
ALP12-XXB5-XXD	115VAC	9210-635-047
ALP22-XXB5-XXD	230VAC	9210-635-048

Disassembly

1. Remove the rear housing, gasket and five screws and described on page 1. **Save all parts.**
2. Remove the potentiometer and module assemblies as described on pages 2 and 3. **Save all parts.**
3. Remove the intermediate housing as described on page 5. The gasket must remain in place on the front housing. **Save all parts.**
4. Remove the pinion gear and save it. Note its position on the shaft.
5. Remove two screws holding the motor to the front housing and save them. Pull the motor free, feeding the wire harness through the front housing. The seal must remain in place in the front housing.

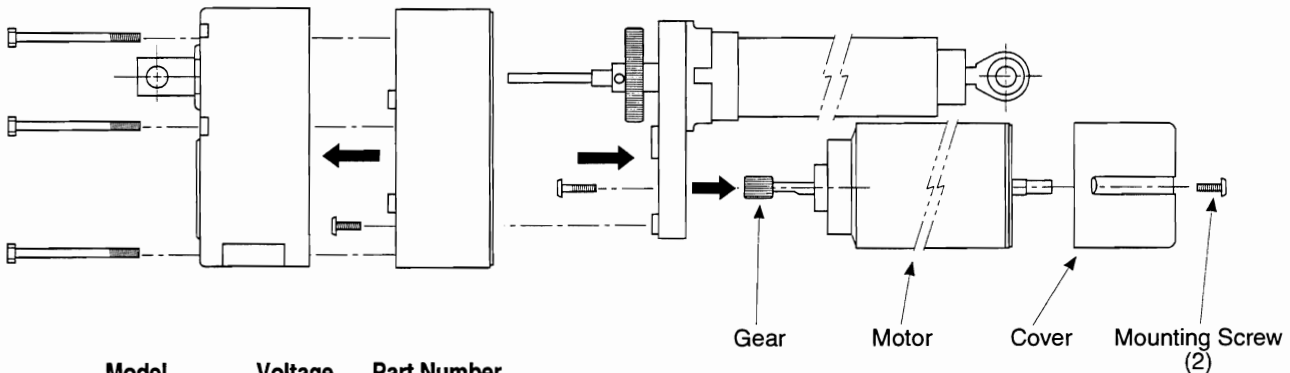
Assembly

1. Install the motor and pinion gear from the replacement kit. Feed the wire harness through the hole in the front housing and align gearing for proper engagement. Replace the two mounting screws and tighten to 50 lb.in. torque. Seat the seal properly before tightening the screws.
2. Replace the intermediate housing and one mounting screw. Tighten to 50 lb.in. torque. Seat the gasket properly before tightening the screw.
3. Replace the potentiometer assembly and tighten the two screws to 10 lb.in. torque. Replace the module assembly and tighten the four screws to 15 lb.in. torque.
4. Replace the rear housing and gasket. Tighten the five mounting screws to 70 lb.in. torque. Align the gasket properly before tightening screws.

Motor Assembly Replacement (w/o brake)

Tools Required: Torx T-25, Phillips, Driver

Note: Motor must be replaced every 375,000 to 1,000,000 cycles, depending on stroke length.



Model	Voltage	Part Number
ALP12-XXB5-XXD	115VAC	9210-635-050
ALP22-XXB5-XXD	230VAC	9210-635-051

Disassembly:

1. Remove the rear housing, gasket, and five mounting screws as described on page 1. **Save all parts.**
2. Remove potentiometer assembly and module assembly as described on pages 2 and 3. **Save all parts.**
3. Remove the intermediate housing as described on page 5. The gasket must remain in place on the front housing. **Save all parts.**
4. Remove the pinion gear and save it. Note the position of the gear on the shaft.
5. Remove two screws and the motor cover. **Save all parts.**
6. Remove two screws holding the motor to the front housing and save them. Pull the motor free, feeding the wire harness through the hole in the front housing. Be sure the motor seal remains in the front housing.

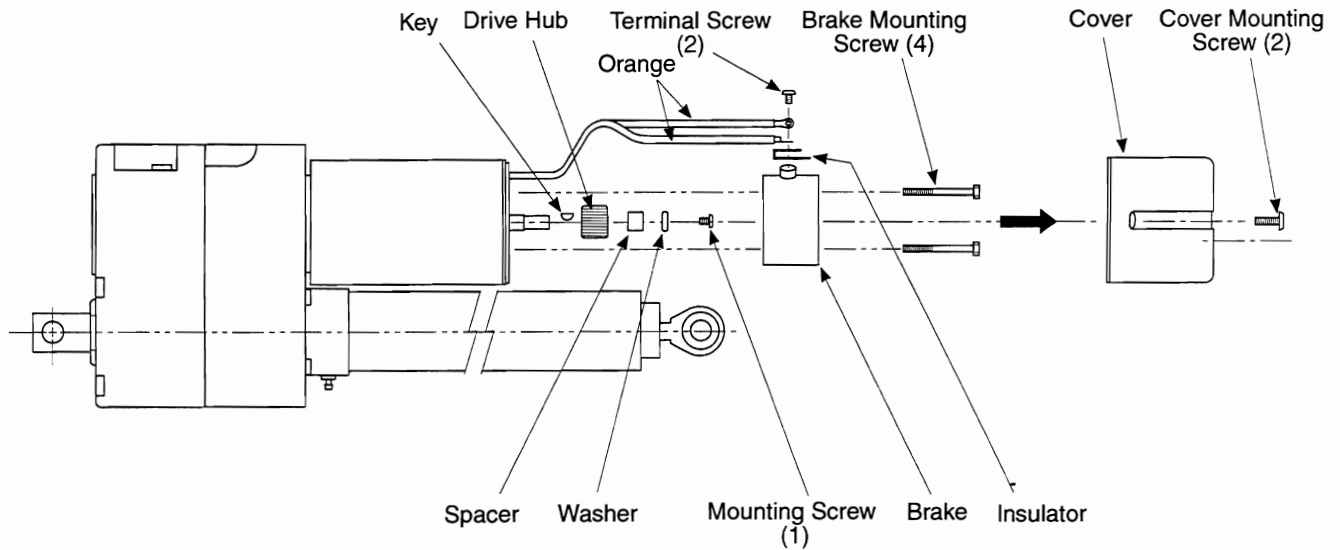
Assembly:

1. Install the new motor from the replacement kit. Feed the wire harness through the hole in the front housing. Replace the pinion gear in its proper position on the motor shaft and align gearing. For the 5:1 pinion, the shelf is down and the pinion is flush with the shaft. Change the bumper. For the 10:1 or 20:1 pinion, the shelf is up and not flush with the shaft. Change the bumper. Replace two mounting screws and tighten to 50 lb.in. torque. Seat the seal properly before tightening the screws.
2. Replace the cover with two screws and tighten screws to 35 lb.in. torque.
3. Replace the intermediate housing and one mounting screw, and tighten to 50 lb.in. torque. Align the gasket properly before tightening the screw.
4. Replace the potentiometer assembly and tighten the two mounting screws to 10 lb.in. torque. Replace the module assembly and tighten four screws to 15 lb.in. torque.
5. Replace the rear housing and gasket. Tighten the five mounting screws to 70 lb.in. torque. Align the gasket properly before tightening the screws.

ER Brake Assembly Replacement #9200-170-006

Tools Required: Phillips, T-15 Torx Driver

Note: ER brake must be replaced every 500,000 cycles



Disassembly:

1. Disconnect from power source
2. Remove two screws and the motor cover. **Save all parts.**
3. Remove the two terminal screws, insulator, and orange wires from the ER brake. **Save all parts.**
4. Remove four ER brake mounting screws and **save.**
5. Remove the ER brake and **save it.**
6. Remove one mounting screw, washer, spacer, drive hub, and woodruff key. **Save all parts.**

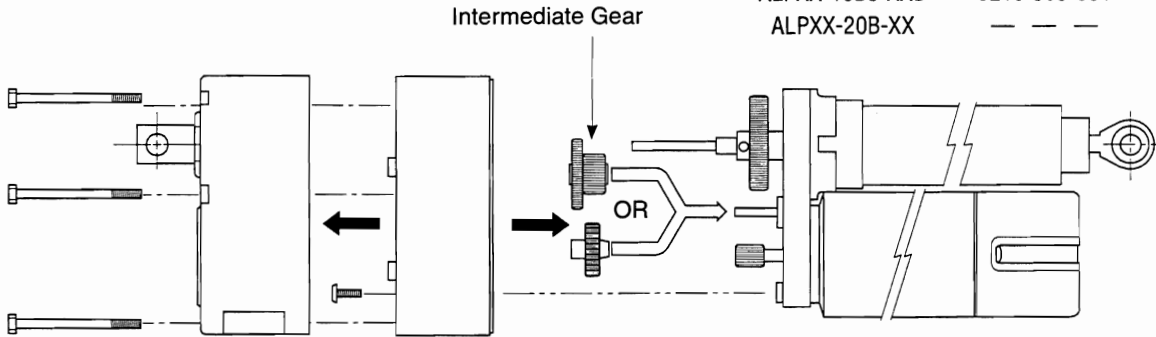
Assembly:

1. Install the new woodruff key from the replacement kit into keyway on the motor. Install the new drive hub from the replacement kit onto the motor shaft. The key slot must align with the woodruff key.
2. Install the spacer, washer, and mounting screw from the replacement kit. Tighten the drive hub set screw to 8 lb.in. torque.
3. Install the new ER brake and four mounting screws from the replacement kit and tighten the screws to 25 lb.in. torque.
4. Install the new insulator from the replacement kit. Install the two new screws from the replacement kit and attach the wires over the insulator to terminals on ER brake. Tighten screws to 10 lb.in. torque.
5. Replace the motor cover and two screws, tightening them to 8 lb.in. torque.

Intermediate Gear Replacement

Required: Mobil #28 Red Grease

Model	Part Number
ALPXX-05B5-XXD	9205-505-001
ALPXX-10B5-XXD	9210-505-001
ALPXX-20B-XX	— — —



Disassembly:

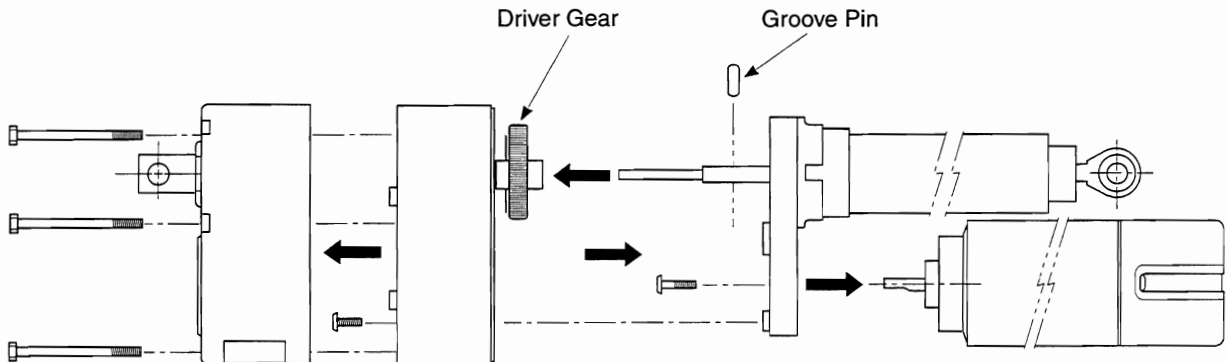
1. Remove the rear housing assembly, gasket, and five mounting screws as described on page 1. **Save all parts.**
2. Remove the potentiometer and module assemblies as described on pages 2 and 3. **Save all parts.**
3. Remove the intermediate housing assembly as described on page 5. The gasket must remain in place on the front housing. **Save all parts.**
4. Remove the intermediate gear from its shaft in the front housing. Note how the gear is positioned on the shaft.

Assembly:

1. Install the new intermediate gear on its shaft from the intermediate gear replacement kit. The new gear must be in position to properly engage all gearing. For 5:1 pinion, the shelf is down and the pinion is flush with the shaft. Change the bumper. For the 10:1 or 20:1 pinion, the shelf is up and not flush with the shaft. Change the bumper.
2. Spread grease over all four gears.
3. Replace the intermediate housing and tighten the single mounting screw to 50 lb.in. torque. Align the gasket properly before tightening the screw.
4. Replace the potentiometer assembly and tighten the two mounting screws to 10 lb.in. torque.
5. Replace the module assembly and tighten the four screws to 15 lb.in. torque.
6. Replace the rear housing and tighten the five screws to 70 lb.in. torque. Align the gasket properly before tightening the screws.

Driver Gear Replacement #9200-505-004

Required: 3/16" Punch, Hammer, #28 Mobil Grease



Disassembly:

1. Remove the rear housing, gasket, and five mounting screws as described on page 1. **Save all parts.**
2. Remove potentiometer and module assembly as described on pages 2 and 3. **Save all parts.**
3. Remove the intermediate housing assembly as described on page 5. **Save all parts.**
4. Remove the motor assembly as described on page 6. **Save all parts.**
5. Remove the intermediate gear assembly as described on page 9. **Save all parts.**
6. Remove the groove pin securing the driver gear to the screw shaft. Remove the gear from the screw shaft.

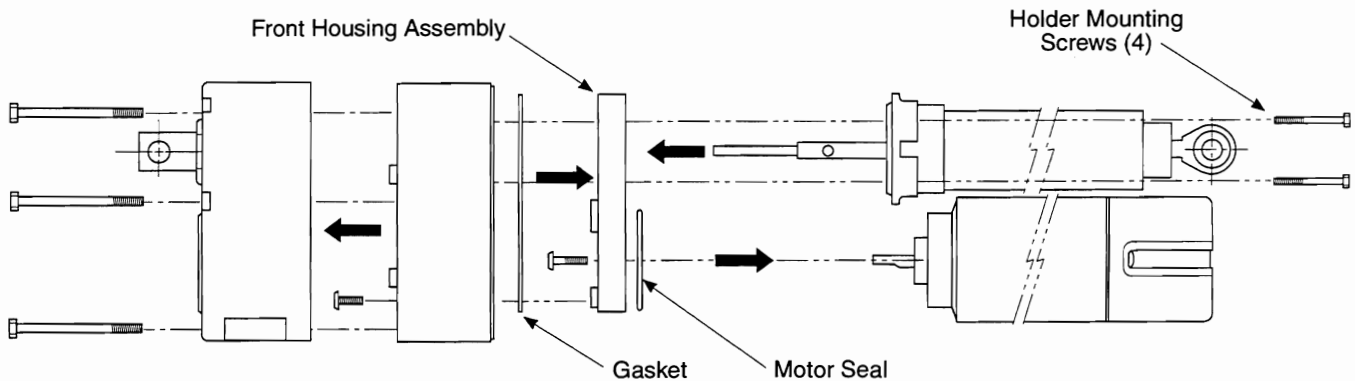
Assembly:

(Woodruff key and washer are not required)

1. Install the new driver gear from the replacement kit on the screw shaft. Align the hole in the gear with pin hole in the screw shaft.
2. Install the new groove pin from the replacement kit. The pin must be driven in to hold the new gear securely in place.
3. Replace the intermediate gear.
4. Replace the motor assembly and tighten the two mounting screws to 50 lb.in. torque. The motor seal must be properly aligned before tightening the screws.
5. Apply grease to the gearing, covering all four gears with grease.
6. Replace the intermediate housing and tighten all four holder mounting screws to 70 lb.in. torque. Tighten the single screw to 50 lb.in. torque. Align the gasket properly before tightening the screws.
7. Replace the module assembly and tighten the four mounting screws to 15 lb.in. torque.
8. Replace the potentiometer assembly and tighten its two mounting screws to 10 lb.in. torque.
9. Replace the rear housing and tighten its five mounting screws to 70 lb.in. torque. Align the gasket properly before tightening the screws.

Front Housing Assembly Replacement

Required: Mobil #28 Grease



Model	Part Number
ALPXX-05B5-XXD	9205-536-003
ALPXX-10B5-XXD	9210-536-003

Disassembly:

1. Remove the rear housing, gasket, and five mounting screws as described on page 1. **Save all parts.**
2. Remove the potentiometer assembly and module assembly as described on pages 2 and 3. **Save all parts.**
3. Remove the intermediate housing assembly as described on page 5. **Save all parts.**
4. Remove the motor assembly as described on page 6. **Save all parts.**
5. Remove the intermediate gear assembly as described on page 9. **Save all parts.**
6. Remove the driver gear as described on page 10. **Save all parts.**
7. Remove the screw and cover tube assembly and pull the assembly from the front housing. The gasket must remain in place on the holder.

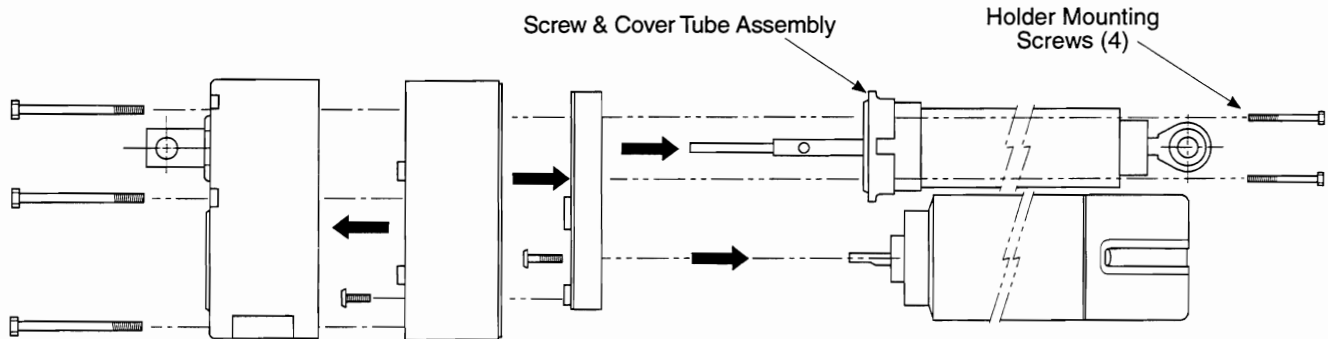
Assembly:

(Flat washer is not required)

1. Install the new front housing assembly from the replacement kit.
2. Install the new gasket from the seal replacement kit. Remove the protective liner from the gasket and apply the adhesive side of the gasket to the housing.
3. Install the new motor seal from the seal replacement kit. The seal must be seated in the housing and positioned properly.
4. Replace the screw assembly, leaving the four holder mounting screws off.
5. Replace the driver gear.
6. Replace the intermediate gear assembly.
7. Replace the motor assembly and tighten the two mounting screws to 50 lb.in. torque. Align the seal properly before tightening the screws.
8. Adjust the gearing for proper alignment. Apply grease, covering all the gears.
9. Replace the intermediate housing and push the four mounting screws through the holder and front housing. Tighten them to 70 lb.in. torque. Tighten the single screw to 50 lb.in. torque. Align gaskets properly before tightening the screws.
10. Replace the module assembly and tighten the four mountingscrews to 15 lb.in. torque.
11. Replace the potentiometer assembly and tighten the two mounting screws to 10 lb.in. torque.
12. Replace the rear housing and gasket, tighten the five mounting screws to 70 lb.in. torque after aligning the gasket.

Screw & Cover Tube Assembly Replacement

Required: Mobil #28 Grease



Stroke	Part Number
4"	9200-191-293
8"	9200-191-294
12"	9200-191-295
18"	9200-191-296
24"	9200-191-297

Disassembly:

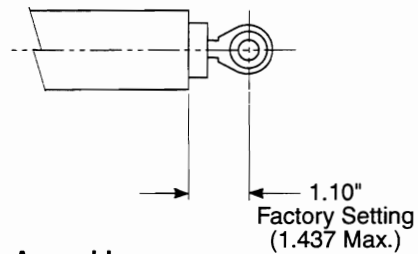
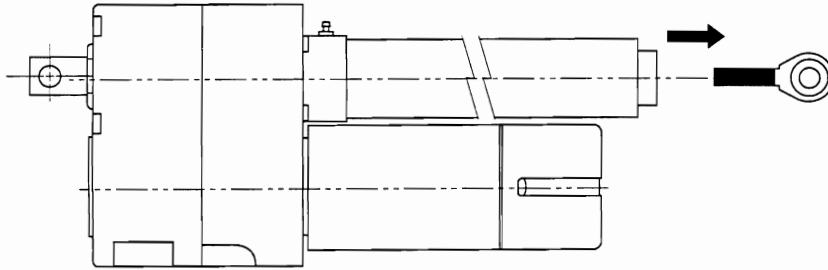
1. Remove the rear housing, gasket, and five mounting screws as described on page 1. **Save all parts.**
2. Remove the potentiometer and module assemblies as described on pages 2 and 3. **Save all parts.**
3. Remove the intermediate housing assembly as described on page 5. **Save all parts.**
4. Remove the motor assembly as described on page 7. **Save all parts.**
5. Remove the intermediate gear assembly as described on page 9. **Save all parts.**
6. Remove the driver gear as described on page 10. **Save all parts.**
7. Remove the screw & cover tube assembly and pull it from the front housing. The gasket is to remain in place on the front housing.

Assembly:

1. Install the new screw & cover tube assembly from the replacement kit. Leave the four mounting screws off.
2. Replace the driver gear.
3. Replace the intermediate gear assembly.
4. Replace the motor assembly. Install the two mounting screws and tighten them to 50 lb.in. torque. Align the gasket properly before tightening the screws.
5. Check for proper gear mesh. Cover all four gears with new grease.
6. Replace the intermediate housing. Install the four mounting screws through the holder into the front housing and tighten to 70 lb.in. torque. Tighten the single screw to 50 lb.in. torque. Align the gasket properly before tightening the screws.
7. Replace the module assembly. Install its four mountings and tighten them to 15 lb.in. torque.
8. Replace the potentiometer assembly. Tighten the two mounting screws to 10 lb.in. torque.
9. Replace the rear housing. Install the five mounting screws and tighten them to 70 lb.in. torque. Align the gasket properly before tightening the screws.

Rod End Replacement #9400-757-001

Required: Heat Source



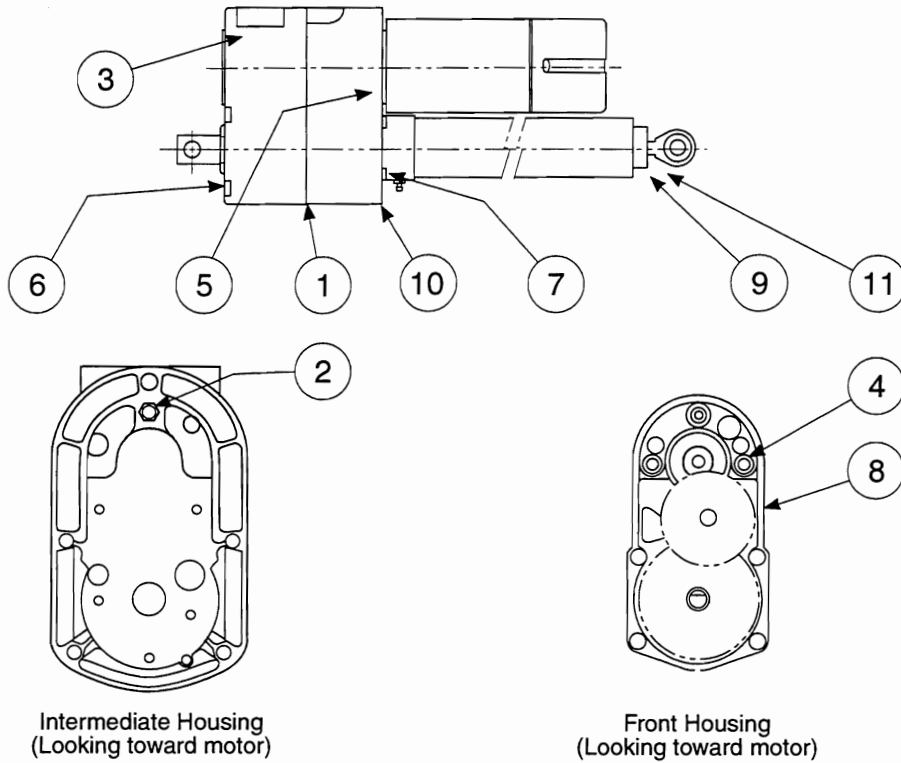
Disassembly:

1. Apply heat to the rod end to break down loctite on the thread. Note: Excessive heat can damage the seal. To prevent heat damage, extend the screw assembly out from the wiper assembly and apply heat to edge of the adapter.
2. Viewing the actuator from rod end, remove it by turning counterclockwise.

Assembly:

1. If necessary, clean the thread in the extension tube.
2. Install the new rod end from the rod end replacement kit. Viewing the actuator from the rod end, insert the new rod end by turning it clockwise at least 1.10" and not more than 1.437". Apply primer and loctite after cleaning. Allow to set for 24 hours before using.
3. The rod end has locking adhesive on the threads and the adhesive must cure for 24 hours before use.

Seal Replacement Kit #9200-795-003



Seals and fasteners should be replaced whenever an actuator is repaired or disassembled.

Seal replacement kit consists of:

Item	Qty.	Description
1	(1)	Intermediate Housing Gasket
2	(1)	Intermediate Housing Mounting Screw
3	(1)	Hole Plug
4	(2)	Motor Mounting Screws
5	(1)	Motor Seal
6	(5)	Rear Housing Mounting Screws
7	(4)	Holder Mounting Screws
8	(1)	Front Housing Gasket
9	(1)	Wiper Ring
10	(1)	Holder Gasket



WARRANTY

Thomson warrants that it will repair or replace (whichever it deems advisable) any product manufactured and sold by it which proves to be defective in material or workmanship within a period of one (1) year from the date of original purchase for consumer, commercial or industrial use.

This warranty extends only to the original purchaser and is not transferable or assignable without Danaher Motion's prior consent.

Warranty service can be obtained in the U.S.A. by returning any defective product, transportation charges prepaid, to the appropriate Thomson factory. Additional warranty information may be obtained by writing the Customer Service Department:

Thomson

45 Hazelwood Drive - Amherst, NY 14228
800-566-5274

A purchase receipt or other proof of original purchase will be required before warranty service is rendered. If found defective under the terms of this warranty, repair or replacement will be made, without charge, together with a refund for transportation costs. If found not to be defective, you will be notified and, without your consent, the item will be repaired or replaced and returned to you at your expense.

This warranty covers normal use and does not cover damage or defect which results from alteration, accident, neglect, or improper installation, operation, or maintenance. Some states do not allow limitation on how long an implied warrant lasts, so the above limitation may not apply to you.

Thomson's obligation under this warranty is limited to the repair or replacement of the defective product and in no event shall Danaher Motion be liable for consequential, indirect, or incidental damages of any kind incurred by reason of the manufacturer, sale or use of any defective product. Thomson neither assumes nor authorizes any other person to give any other warranty or to assume any other obligation or liability on its behalf.

WITH RESPECT TO CONSUMER USE OF THE PRODUCT, ANY IMPLIED WARRANTIES WHICH THE CONSUMER MAY HAVE ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL CONSUMER PURCHASE. WITH RESPECT TO COMMERCIAL AND INDUSTRIAL USES OF THE PRODUCT, THE FOREGOING WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.



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