



Innovation in Mobility

***RDO3000 Series
Internal Power
Swing Door Operator
With Auto Unlatch***

PRINT

Service Manual

This Ricon service manual is for use by qualified service technicians, and is not intended for use by non-professionals (do-it-yourselfers). The manual provides essential instructions and reference information, which supports qualified technicians in the correct installation and maintenance of Ricon products.

Qualified service technicians have the training and knowledge to perform maintenance work properly and safely. For the location of a Ricon authorized service technician in your area, call Ricon Product Support at 1-800-322-2884.

Customer Name:_____

Installing Dealer:_____

Date Installed:_____

Serial Number:_____

REVISION RECORD

REV	PAGES	DESCRIPTION OF CHANGE	ECR/ECO
32DDO30 2.A	All	New release.	
END OF LIST			

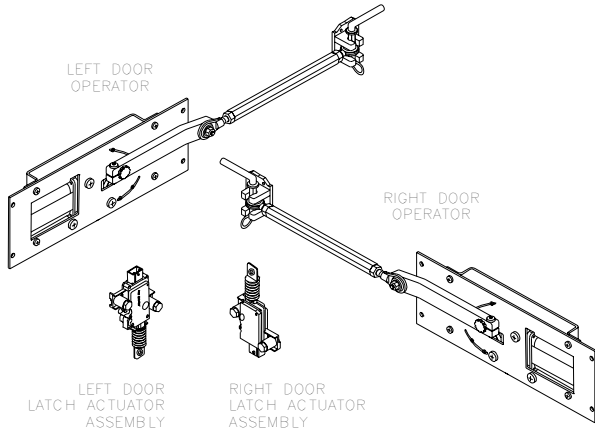
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I. INTRODUCTION

The RICON RDO3000 Series Internal Power Swing Door Operator electrically opens and closes swing-type van doors. They have been designed to operate in most full size vans, and provide up to 90° of motion for each door. The power door operators are installed within the doors behind the door panel. Adjustable rod ends provide smooth operation and a splined connection between the crank-arm and the motor output shafts maintain wobble-free operation. RDO3000 Series operators automatically unlatch vehicle doors as part of their operation.



The power door operator works with wheelchair lifts and ramps. Before the platform or ramp is extended from the vehicle, the power door operators automatically unlatch and open the vehicle doors. After the platform or ramp has been used and is stowed and retracted into the vehicle, the door operators automatically close the vehicle doors. Vehicle doors must be unlocked before using the power door operators. The door operators can be installed on two doors; however, for safety reasons the doors are operated one at a time. The door operators open the right door first, followed by the left; closing the doors reverses this sequence.

This manual contains installation and maintenance instructions for the power door operators, as well as a spare parts listing. The installation instructions must be followed exactly; no steps should be eliminated, nor should the product be modified. It is important to user safety that the installation is thorough and correct. Once the operators are installed, it is important that they be properly maintained by following the Ricon-recommended cleaning, lubrication, and inspection instructions.

If there are questions about this manual, or additional copies are needed, please contact Ricon Product Support at one of the following locations:

Ricon Corporation

7900 Nelson Road

Panorama City, CA 91402..... (818) 267-3000

Outside (818) Area Code (800) 322-2884

World Wide Website..... www.riconcorp.com

Ricon U.K. Ltd.

Littlemoss Business Park, Littlemoss Road

Droylsden, Manchester

United Kingdom, M43 7EF..... (+44) 161 301 6000

A. RICON ONE-YEAR LIMITED WARRANTY (refer to following page)

RICON CORPORATION ONE-YEAR LIMITED WARRANTY

Ricon Corporation (Ricon) warrants to original purchaser of this product that Ricon will repair or replace, at its option, any part that fails due to defective material or workmanship as follows:

- Repair or replace parts for a period of one year from date of purchase. A complete list of parts covered by this warranty can be obtained from a Ricon authorized dealer.

If You Need To Return a Product: Return this Ricon product to your installing dealer. Please give as much advance notice as possible and allow a reasonable amount of time for repairs.

If You Are Traveling: All Ricon authorized dealers honor this warranty. Consult a telephone directory or our Product Support department for the name of the nearest Ricon authorized dealer.

This Warranty Does Not Cover:

- Labor or service charges (these may be covered separately by the installing dealer).
- Malfunction or damage to product parts caused by accident, misuse, lack of proper maintenance, neglect, improper adjustment, modification, alteration, the mechanical condition of vehicle, road hazards, overloading, failure to follow operating instructions, or acts of Nature (i.e., weather, lightning, flood).

NOTE: Ricon recommends that this product be inspected by a Ricon authorized service technician at least once every six months, or sooner if necessary. Any required maintenance should be performed at that time.



WARNING!

THIS PRODUCT HAS BEEN DESIGNED AND MANUFACTURED TO EXACT SPECIFICATIONS. MODIFICATION OF THIS PRODUCT IN ANY RESPECT CAN BE DANGEROUS.

This Warranty is Void if:

- The product has been installed or maintained by someone other than an authorized Ricon service technician.
- The product has been modified or altered in any respect from its original design without written authorization by Ricon.

Ricon disclaims liability for any personal injury or property damage that results from operation of a Ricon product that has been modified from the original Ricon design. No person or company is authorized to change the design of this Ricon product without written authorization by Ricon.

Ricon's obligation under this warranty is exclusively limited to the repair or exchange of parts that fail within the applicable warranty period.

Ricon assumes no responsibility for expenses or damages, including incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply.

Important: The warranty registration card must be completed and returned to Ricon within 20 days after installation of this Ricon product for the warranty to be valid. The warranty is not transferable.

The warranty gives specific legal rights, and there may be other rights that vary from state to state.

B. SHIPMENT INFORMATION

Ricon does not sell directly to the user because of the specialized nature of this product. Instead, the product is distributed through a worldwide network of authorized Ricon dealers who perform the actual sale and installation.

- When the product is received, unpack the product and check for freight damage. Claims for any damage should be made to the carrier immediately.
- Be sure the installation kit contains all items listed on the kit packing list. Please report any missing items immediately to Ricon Product Support. Save packing list for future reference. The warranty and owner registration cards must be completed and returned to Ricon within 20 days for the warranty to be valid.

C. GENERAL SAFETY PRECAUTIONS

The following general safety precautions must be followed during installation, operation, service and maintenance:

- Under no circumstances should installation, maintenance, repair, and adjustments be attempted without the immediate presence of a person capable of rendering aid.
- An injury, no matter how slight, must be attended. Always administer first aid or seek medical attention immediately.
- Protective eye shields and appropriate clothing should be worn at all times.
- To avoid injury, always exercise caution when operating and be certain that hands, feet, legs, and clothing are not in the path of product movement.
- Batteries contain acid that can burn. If acid comes in contact with skin, flush affected area with water and wash with soap immediately.
- Always work in a properly ventilated area. Do not smoke or use an open flame near a battery.
- Do not place anything metallic on top of a battery.
- Check under vehicle before drilling to avoid drilling into frame, subframe members, wiring, hydraulic lines, fuel lines, fuel tank, etc.
- Read and thoroughly understand the operating instructions before attempting to operate.
- Inspect the product before each use. If an unsafe condition, unusual noises or movements exists, do not use the product until the problem is corrected.
- Keep others clear during operation.
- The product requires regular periodic maintenance. Ricon recommends a thorough inspection at least once every six months. The product must always be maintained at the highest level of performance.

D. COMPONENT TERMINOLOGY

The references used throughout this manual are illustrated in **Figure 1-1** and defined in **Table 1-1**. Refer to **Chapter IV**, "Spare Parts", for more details.

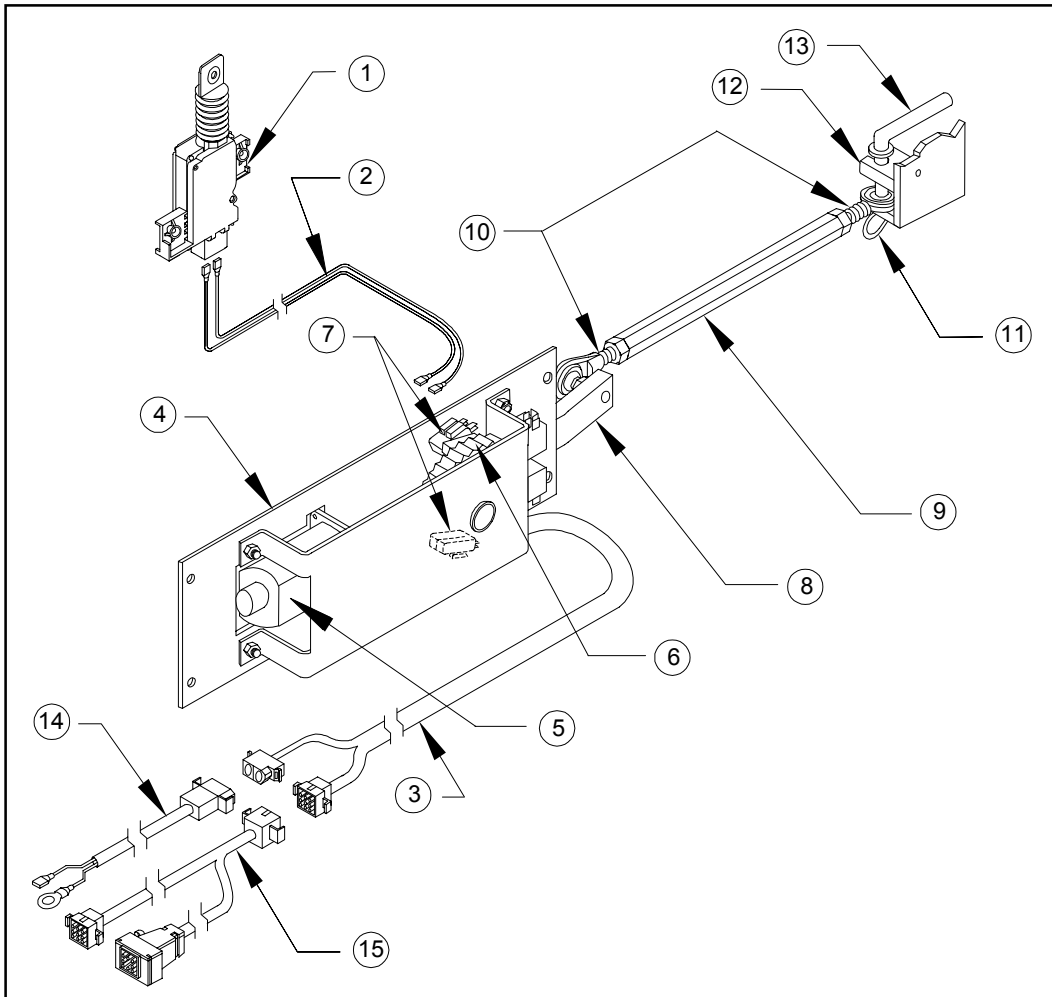


FIGURE 1-1: RD03000 SERIES INTERNAL POWER DOOR OPERATOR (RIGHT SIDE DOOR OPERATOR SHOWN IN OPEN POSITION; LEFT DOOR INSTALLATION OPPOSITE)

TABLE 1-1: RDO3000 SERIES COMPONENT TERMINOLOGY		
REF	NAME	DESCRIPTION
1	Door latch actuator	Unlatches vehicle door.
2	Actuator electrical wiring	Electrically connects door latch actuator to power door operator.
3	Door operator electrical harness	Electrically connects door operator to electrical crossover cable.
4	Main plate	Mounts the door operator assembly to the vehicle door.
5	Gearmotor	Electrically opens and closes the vehicle door.
6	Reduction gears	Link gearmotor to actuator arm.
7	Limit switches	Enable power door operators and door latch actuators; adjust power door operator "door open" and "door closed" positions.
8	Actuator arm	Rotates on gear reduction shaft.
9	Hex rod	Links actuator arm to clevis bracket.
10	Rod ends	Adjust length of the hex rod assembly.
11	Safety pin	Secures quick-release pin.
12	Clevis bracket	Anchors hex rod to vehicle chassis.

13	Quick release pin	Disconnects door operators in the event of power failure.
14	Main power cable	Connects power door operators to vehicle power supply.
15	Electrical crossover cable	Electrically connects power door operators to each other and lift or ramp.
END OF TABLE		

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II. INSTALLATION

This chapter provides instructions for installing the RICON RDO3000 Series Internal Power Swing Door Operator into full-size 1992 and later Ford vans. Custom installations are also possible in other types of vehicles. If a question arises that is not covered in this manual, or by the Installation Instructions provided with this product, contact Ricon Product Support for assistance.

! WARNING!

THIS PRODUCT MUST BE INSTALLED BY A TRAINED, AUTHORIZED RICON SERVICE TECHNICIAN.

NOTE: Installation Instructions specific to the vehicle's make/model are included in the kit supplied with the power door operators. Refer to **Table 2-1** to verify the kit number and the serial number of the operators.

TABLE 2-1: VEHICLE DOOR OPERATOR AND INSTALLATION KIT NUMBERS			
VEHICLE TYPE	DOOR LOCATION	OPERATOR MODEL	KIT NUMBER
1992 & Later Full Size Ford Van	Side	RDO3009	22604
1992 & Later Full Size Ford Van	Rear	RDO3012	22630
END OF TABLE			

NOTE: Refer to **Figure 2-1**. Verify the serial number of this product. Record the serial number in the space provided on page i.

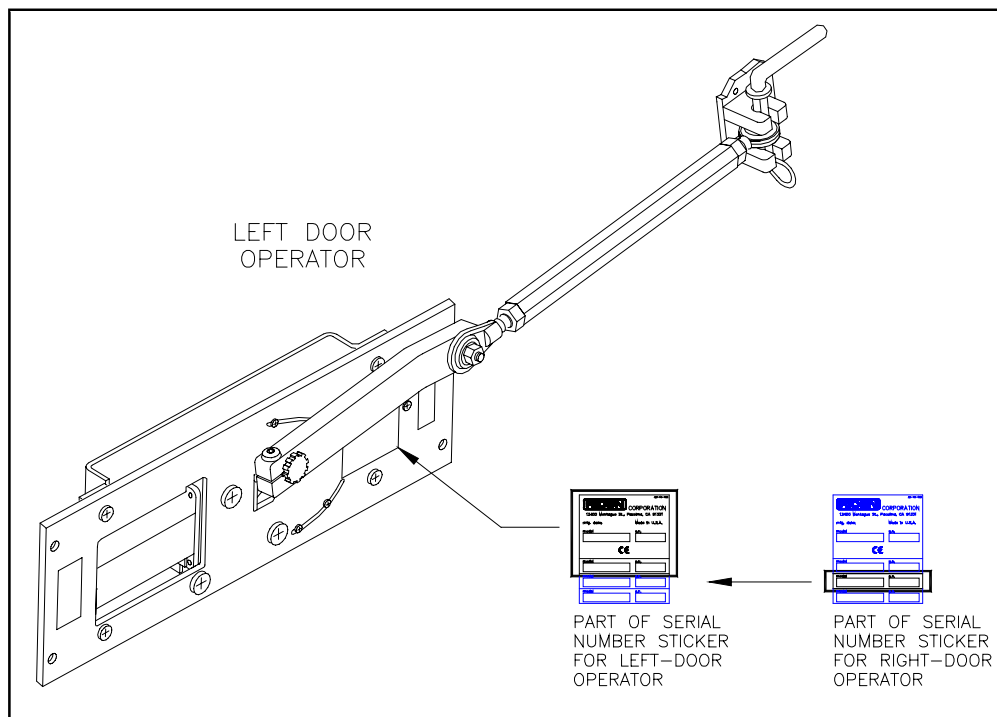


FIGURE 2-1: SERIAL NUMBER DECAL LOCATION (LEFT DOOR SHOWN; RIGHT DOOR DECAL LOCATION SIMILAR)

Power door operator installation consists of the following steps, each of which are briefly explained in this chapter. Refer to the kit installation instructions for more detailed installation information.

- Mechanical installation of the power door operators, door latch actuators and related hardware.
- Electrical installation of the power door operator and door latch actuators.
- Adjustment of the power door operator “door open” and “door closed” positions.
- Final operational check for proper deployment and stowing.


A. MECHANICAL INSTALLATION

To install the power door operators, refer to the installation instructions. Perform the procedures carefully and in the order that they are presented. Detailed side-door installation instructions for the RDO3000 Series Power Door Installation Kit are contained in Ricon document number 32ii299, which is included in the installation kit. Detailed rear-door installation instructions are contained in Ricon document number 32ii303. Be certain that the installation instructions are followed exactly. Do not eliminate any steps or modify the product.

1. VEHICLE PREPARATION

Prepare the vehicle for installation:

- a. Safely park vehicle on a flat, level surface and turn engine off.

 WARNING!
<ul style="list-style-type: none">▪ WEAR PROTECTIVE CLOTHING AND EYE PROTECTION AT ALL TIMES. BATTERIES CONTAIN ACID THAT CAN BURN. IF ACID COMES INTO CONTACT WITH SKIN, IMMEDIATELY FLUSH AFFECTED AREA WITH WATER AND WASH WITH SOAP.▪ DO NOT SMOKE OR USE OPEN FLAME IN THE VICINITY OF BATTERY. WORK IN A PROPERLY VENTILATED AREA.▪ DO NOT PLACE ANYTHING METALLIC ON TOP OF BATTERY.

- b. At vehicle engine compartment, disconnect the cable from the positive battery terminal.
- c. The power door operators must be mounted directly to the metal doors of the vehicle. Remove door trim, carpet, plywood, molding, wall paneling or any other material that may interfere with the installation.
- d. Remove plastic moisture barriers from doors.
- e. Remove all doorstops and latches, where applicable, from the vehicle.
- f. Remove interior panels from door post.
- g. If installing in side door, remove stepwell cover from vehicle.
- h. Doors should open and close freely.

2. POWER DOOR OPERATOR INSTALLATION

Refer to the kit installation instructions for detailed installation information. Mechanical installation of the power door operators consists of the following steps:

- Installation of the door latch actuators. Note that for side-door installations, two actuators are required for the left vehicle door. All other installations require one actuator per door.
- Installation of the angle and clevis brackets.
- Installation of the power door operators and operator mounting plates.
- Installation of the hex-rod assemblies and actuator arms.

B. ELECTRICAL INSTALLATION

Figure 2-2 shows a typical rear-door electrical installation. Refer to the kit installation instructions for detailed installation information. Electrical installation of the power door operators consists of the following steps:

- Connection of the door latch actuators to the power door operators.
- Routing of the power door operator electrical harness assemblies.
- Installation of the interconnecting electrical crossover cable.
- Connection of the power door operators to the interconnecting crossover cable.
- Connection of the power door operators to the vehicle lift.

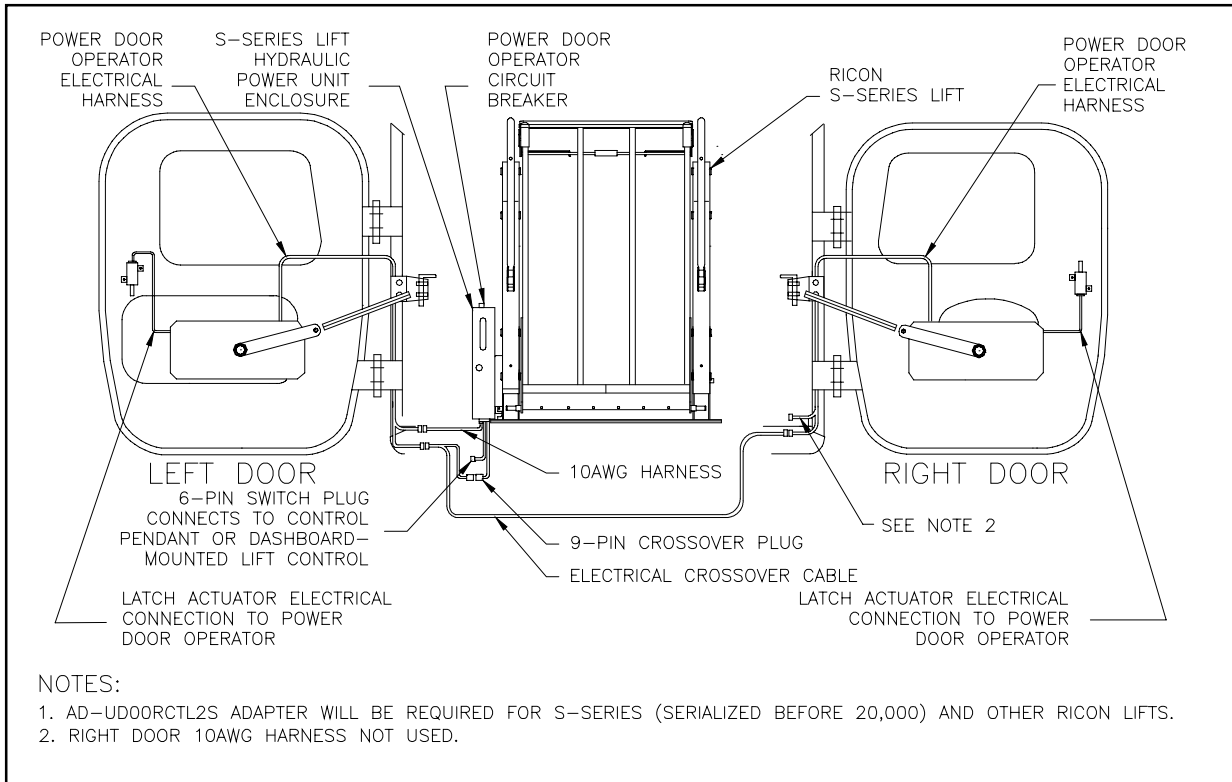


FIGURE 2-2: REAR POWER DOOR OPERATOR AND S-SERIES LIFT INTERCONNECT DIAGRAM

C. FINAL ADJUSTMENTS

The power door operators are shipped with the actuator arms in the open position. To make certain that the vehicle doors are opened and closed properly, you may need to adjust the actuator hex rod length and limit switches. If more than one power door operator is installed in the same vehicle, adjust the operators one at a time and repeat the procedure for the other operator. To adjust the power door operators, follow this procedure:

1. Refer to the kit installation instructions. Assemble hex rod assembly between the door operator actuator arm and clevis bracket.
2. Refer to **Figure 2-3**. With the actuator arm pointing inward INTO the door jamb (the "open" position), the door operator mechanical stop located on the spur gear should make contact with the main plate adjustable setscrew. If not, with the "open" limit switch mounting position centered between its adjustment slot, turn setscrew clockwise to decrease the "open" door travel limit, or counter-clockwise to increase the "open" door travel limit.

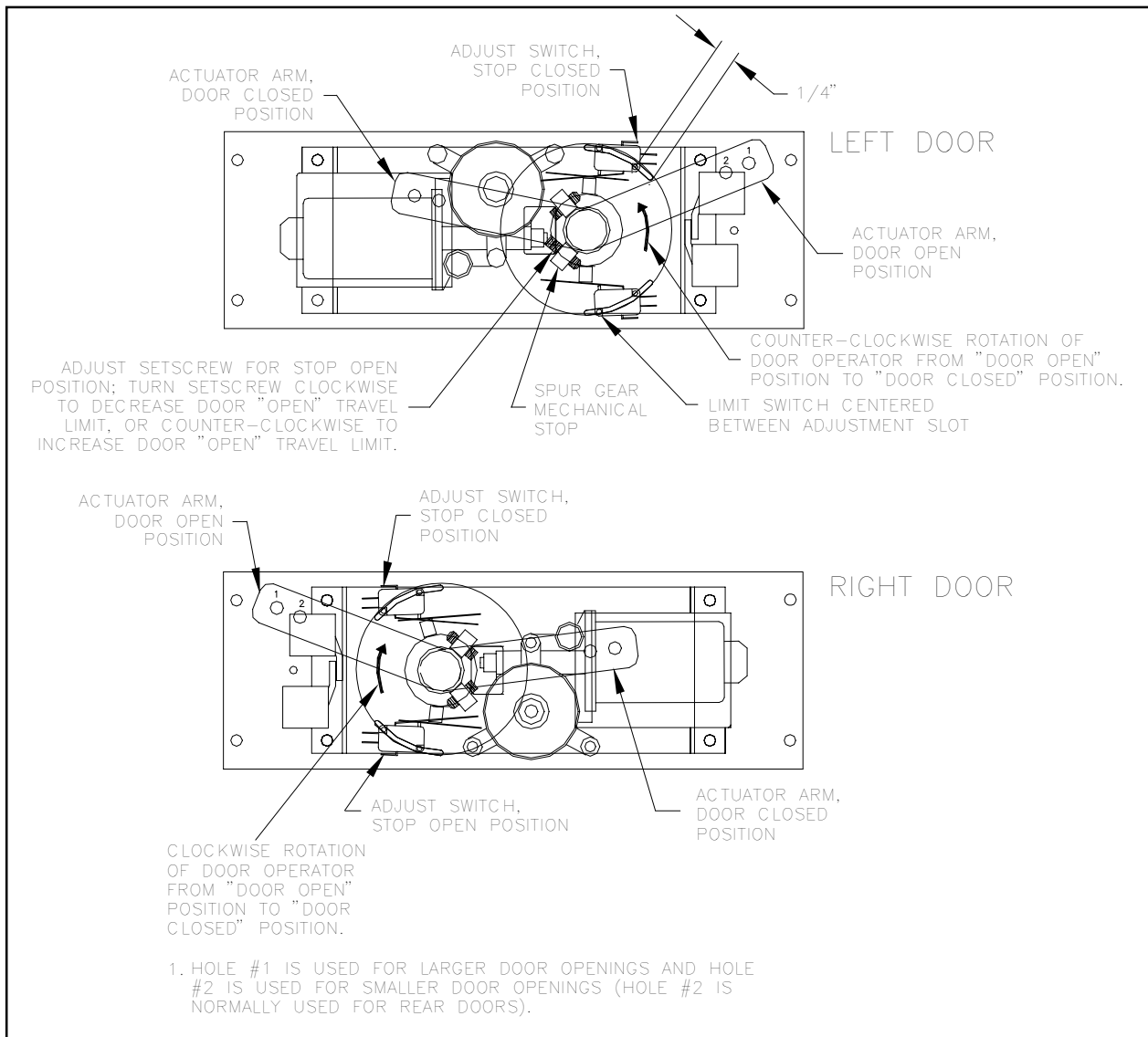


FIGURE 2-3: REAR DOOR OPERATOR ADJUSTMENTS

3. Deploy the platform or ramp with the control pendant. Verify proper "door open" position of the power door operator (the actuator arm is pointing inward INTO the door jamb as shown in **Figure 2-3**) and readjust set-screw as required. When open, the vehicle doors must allow the platform or ramp to deploy without interference of any kind.
4. Stow the platform or ramp with the control pendant. Verify proper "door closed" position of the power door operator (the actuator arm is pointing outward AWAY from door jamb as shown in **Figure 2-3**).
5. At the "closed" position, the limit switch should be tripped by the spur gear mechanical stop. If not, loosen the limit switch mounting screws and slide the switch up or down until it contacts the mechanical stop (the switch will "click"). The top limit switch mounting screw position should be approximately 1/4" from top of adjustment slot. Tighten mounting screws sufficiently to allow the switch to be adjusted.

6. Verify proper opening and closing by repeating the above steps.
7. Tighten limit switch mounting screws.
8. Refer to **Figure 2-4**. Adjust the length of the hex-rod assembly as required until the left door closes tightly. To adjust, loosen locknuts at ends of hex-rod, rotate the hex-rod, and then retighten the locknuts.

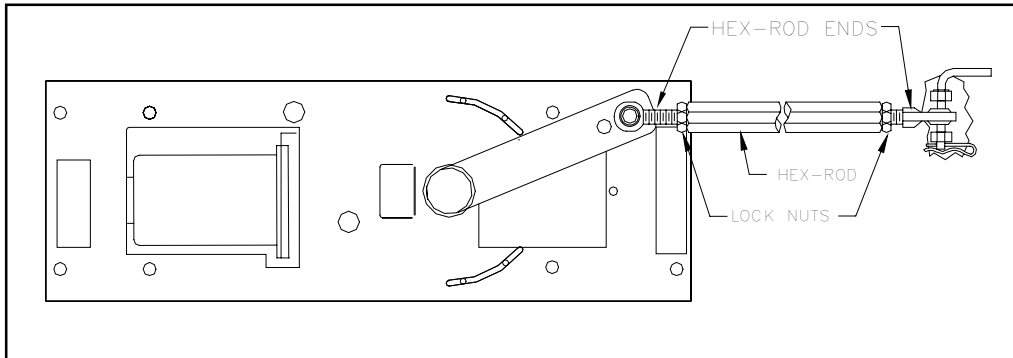


FIGURE 2-4: HEX ROD ADJUSTMENT (LEFT REAR DOOR SHOWN; RIGHT DOOR OPPOSITE)

9. Remove actuator arms from the operators. Leave hex-rod assemblies attached at clevis bracket assemblies.

D. INSTALLATION COMPLETION

NOTE: After installation, the vehicle doors must be unlocked before operating the power doors.

1. Verify that all door operator decals are properly located and affixed as shown in **Figure 4-1**.
2. If power door operators are installed in side doors, reinstall stepwell cover.
3. Reinstall all door stops and latches, where applicable.
4. Reinstall plastic moisture barriers on doors.
5. Use door flange washer to cover the interior panel exit holes for the actuator arms. Reinstall door interior panels, and then reinstall actuator arms on door operators.
6. Reinstall door trim, carpet, plywood, molding, wall paneling or any other material that was removed.
7. Ensure that vehicle doors are unlocked and perform several cycles of operation with the control pendant. During each cycle, check for the following conditions:
 - Operation must be smooth and free of wobble or hesitation.
 - When opening the vehicle doors, each latch actuator must unlatch its vehicle door. The right door must open first, followed by the left door.
 - When open, each vehicle door must provide sufficient clearance for the platform or ramp to deploy. The doors must not interfere with platform or ramp deployment in any way.
 - When closing the vehicle doors, the left door must close and latch first, followed by the right door.
 - The door operators must hold the vehicle doors firmly closed after each cycle of operation.

If you observe unusual movements or noise during any cycle of operation, stop the cycle immediately. Check that the power door operators are installed as specified in the installation instructions. Refer to the Maintenance chapter for detailed troubleshooting information.

E. CUSTOMER ORIENTATION

IMPORTANT
- Customer Orientation -

Ricon Sales/Service Personnel must review the Warranty and Operator Manual with the customer to be certain they understand safe operation of the equipment. Instruct the customer to follow the operating instructions without exception.

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III. MAINTENANCE

Regular maintenance of the RICON RDO3000 Series Internal Power Swing Door Operator is required to provide optimum performance. During the Ricon warranty period, maintenance inspections must be performed by an authorized Ricon service technician at least once every six months, or sooner with depending on usage and climate. Heavy use or use in a severe climate requires more frequent maintenance than light usage or mild climate. After the warranty period, maintenance inspections are recommended at the same time intervals.

 **WARNING!**

THIS RICON PRODUCT IS HIGHLY SPECIALIZED. MAINTENANCE AND REPAIRS MUST BE PERFORMED BY A RICON AUTHORIZED SERVICE TECHNICIAN USING RICON REPLACEMENT PARTS. MODIFYING OR FAILING TO PROPERLY MAINTAIN THIS PRODUCT WILL VOID THE WARRANTY, AND MAY RESULT IN UNSAFE OPERATING CONDITIONS. AFTER THE WARRANTY PERIOD, RICON RECOMMENDS THAT TROUBLESHOOTING BE CONTINUED BY AN AUTHORIZED SERVICE TECHNICIAN.

A. MAINTENANCE SCHEDULE

TABLE 3-1: SIX-MONTH MAINTENANCE CHECK	
INSPECTION AREA	ACTION
Rod ends and hex rod.	Clean, tighten and lubricate with light oil.
Door motion for complete travel.	Adjust, as needed.
All fasteners for tightness.	Tighten, as needed.
Electrical crossover harness for interference with moving parts.	Reroute and secure, as needed.
Manual operation of power door operators.	Verify proper operation.
THE FOLLOWING AREAS REQUIRE REMOVAL OF THE DOOR PANELS	
Door operator decals for legibility and wear.	Replace decals, as required.
Spur gear and bushings for signs of wear.	Replace, if needed.
Wiring and limit switches for secure connections and tie-down.	Secure, as needed.
END OF TABLE	

B. TROUBLESHOOTING GUIDE

The troubleshooting guide is designed to provide a logical starting point to locate general problems that could occur with the power door operators. The guide assumes that the vehicle battery is fully charged and the battery connections are clean and tight.



WARNING!

THE TROUBLESHOOTING GUIDE DOES NOT INCORPORATE ROUTINE SAFETY PRECAUTIONS OR PRELIMINARY PROCEDURES. A TRAINED, RICON AUTHORIZED SERVICE TECHNICIAN MUST PERFORM TROUBLESHOOTING. AFTER THE WARRANTY PERIOD, RICON RECOMMENDS THAT TROUBLESHOOTING BE CONTINUED BY AN AUTHORIZED SERVICE TECHNICIAN.

TABLE 3-2: TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE		REMEDY
DOORS DO NOT OPEN	Door operators do not run and doors do not open	Power door operator circuit breaker "tripped".	Reset circuit breaker.
		Platform or ramp main circuit breaker "tripped".	
		Wiring short circuit or open.	Repair.
		Circuit breaker defective.	Replace.
		Loose or broken ground or electrical connections.	Repair.
	Circuit breakers have not tripped and wiring is sound, but doors do not operate	Vehicle doors are locked.	Unlock vehicle doors.
		DOOR OPEN ENABLE limit switch at right door defective or requires adjustment.	Adjust or replace limit switch.
		Right door operator motor or relays defective.	Replace.
		Right door operator motor mechanical linkage defective.	Replace.
	Door operators run, but doors do not open	ACTUATOR ENABLE limit switch at right door defective or requires adjustment.	Adjust or replace actuator enable switch.
Right door latch actuator inoperative or has defective linkage.		Replace latch actuator assembly or repair linkage.	
DOORS DO NOT OPERATE PROPERLY	Left door does not open	DOOR OPEN ENABLE limit switch at right door defective or requires adjustment.	Adjust/replace.
		ACTUATOR ENABLE limit switch at left door defective or requires adjustment.	Adjust or replace actuator enable switch.
		Left door operator motor or relays defective.	Replace.
		Loose or faulty wiring connection.	Tighten/repair.
		Left door latch actuator defective or mechanical linkage is defective.	Replace latch actuator assembly or repair linkage.

DOORS DO NOT OPERATE PROPERLY (CONT.)	Left door does not close	Left door operator motor or relays defective.	Replace or repair.
		Left door operator motor mechanical linkage defective.	Replace or repair.
		Right door operator motor mechanical linkage defective.	Replace or repair.
		Loose or faulty ground connection.	Tighten/repair.
	Right door does not close	DOOR CLOSE ENABLE limit switch at left door defective or requires adjustment.	Adjust or replace limit switch.
		Right door operator motor or relays defective.	Replace or repair.
		Loose or faulty ground connection.	Tighten/repair.
DOOR OPERATOR SEQUENCE REVERSED	Doors open when pendant or dashboard-mounted STOW button is pressed	Right door motor actuator arm is installed 180° out of position.	Reverse actuator arm installation.
OPERATOR MOTOR RUNS CONTINUOUSLY		DOOR OPEN ENABLE limit switch defective or requires adjustment.	Adjust or replace limit switch.
END OF TABLE			

C. ELECTRICAL WIRING DIAGRAM

1. DIAGRAM LEGEND

a. Wire Color Codes

TABLE 3-3: WIRE COLOR CODES			
CODE	COLOR	CODE	COLOR
Bk	Black	R	Red
Bl	Blue	Vi	Violet
Br	Brown	Vi/bk	Violet w/ black
Gn	Green	W	White
Gn/bk	Green w/ black	W/o	White w/ orange
O	Orange	Y	Yellow
O/bk	Orange w/ black	Y/bk	Yellow w/ black
END OF TABLE			

b. Electrical Connectors

Refer to **Figure 3-1**. The standard electrical connectors used by Ricon are Molex .062" series. These connectors have terminal numbers molded into the back. Use these numbers and wire colors to identify wires.

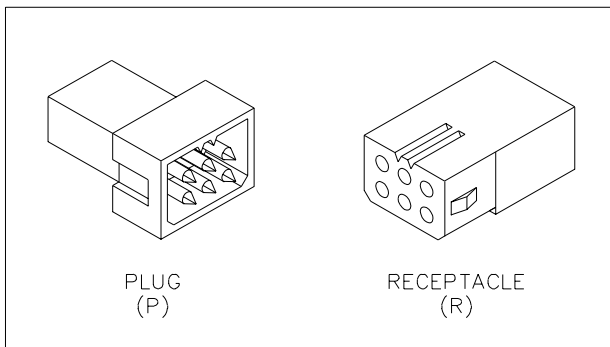


FIGURE 3-1: MOLEX CONNECTORS

c. Wiring Diagram Labels

12V	12 Volts – Circuit current rating is also given
DC	DOOR CLOSE – Command from lift or ramp to close doors
DCL	DOOR CLOSE LEFT – Signal to close left door
DCR	DOOR CLOSE RIGHT – Signal to close right door
DO	DOOR OPEN – Command from lift or ramp to open doors
DOE	DOOR OPEN ENABLE – Used in sequenced systems only
DOL	DOOR OPEN LEFT – Signal to open left door
DOR	DOOR OPEN RIGHT – Signal to open right door
GND	GROUND
OUT	Out signal to lift or ramp
OUTA	Out Attempt (checks door first) – Non sequenced
SDA	SYSTEM DEPLOY ATTEMPT – DO followed by OUT

d. Electrical Symbols

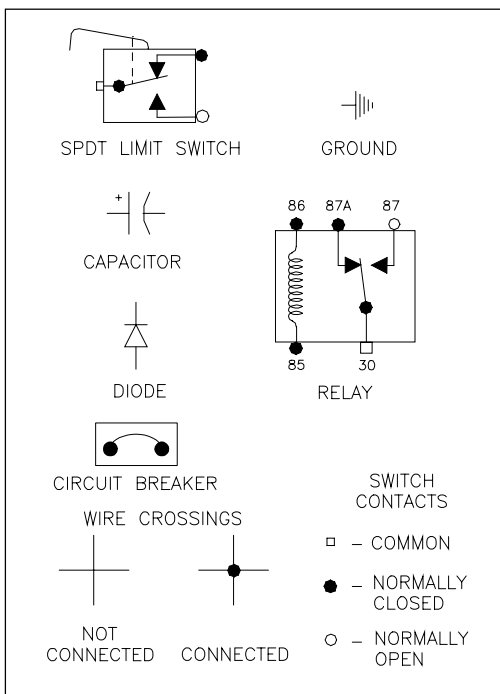


FIGURE 3-2: DIAGRAM SYMBOLS

2. DOOR OPERATOR LIMIT SWITCH STATE

Refer to **Figure 3-3**. The limit switch actuation diagram shows the state of all limit switches as the doors go from fully closed to fully open. The solid (—) line indicates the normally closed circuit is active, while the two thin lines (≡) indicate the normally open circuit is active. The dotted lines (••••) are used to show the switch states beyond the normal travel boundaries of the door. This is useful in showing the operation of switches that change state at the boundary point.

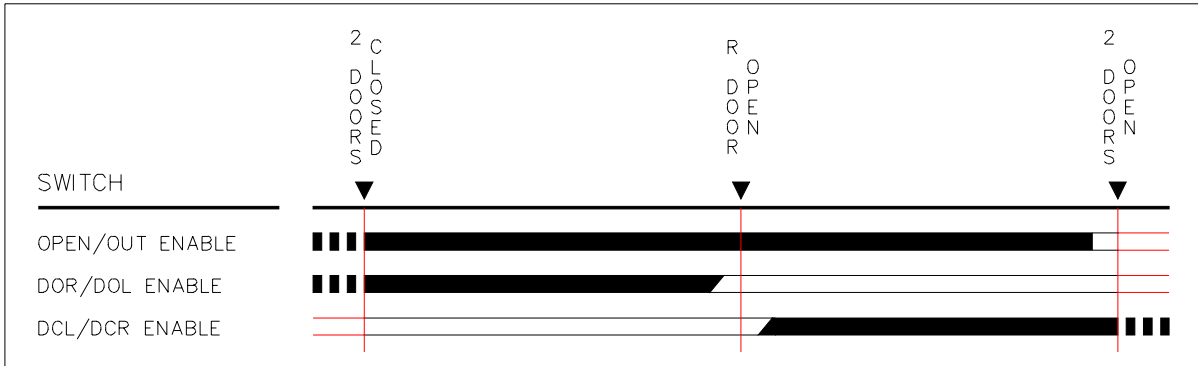


FIGURE 3-3: LIMIT SWITCH STATE CHART

3. WIRING DIAGRAM

Refer to **Figure 3-4** on the following page for the door operator electrical wiring diagram.

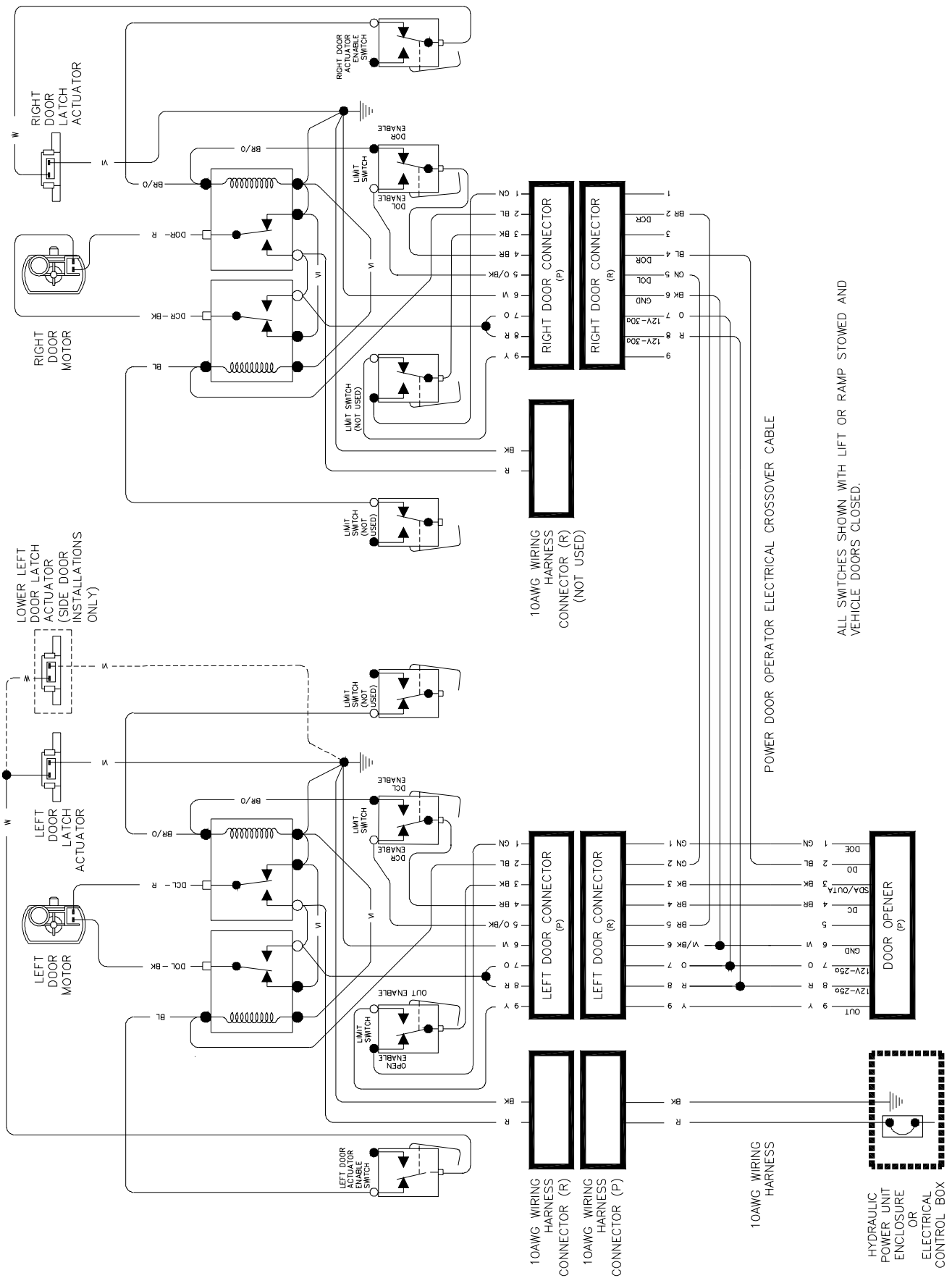


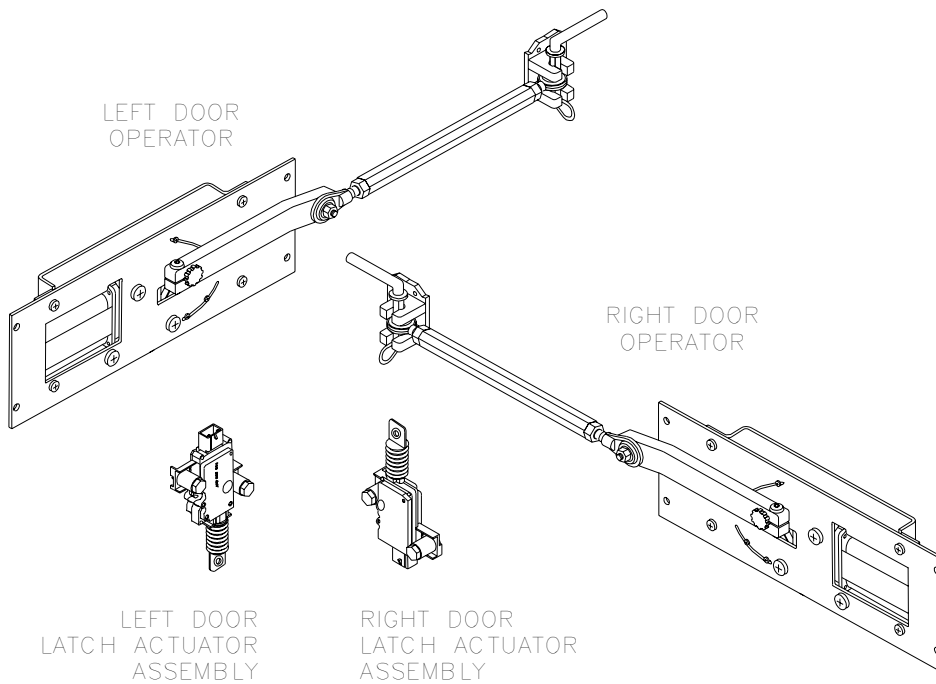
FIGURE 3-4: RD03000 SERIES POWER DOOR OPERATOR ELECTRICAL WIRING DIAGRAM

IV. SPARE PARTS

This chapter contains parts diagrams and lists for the RICON RDO3000 Series Internal Power Swing Door Operator. The parts diagram is an exploded view of the operator, with components referenced by numbers. The accompanying parts list has the part reference number, description, quantity used, and the Ricon stock number. To order a part, locate the part on the drawing and note the reference number. The accompanying parts list will have the reference number and the stock number of the desired part. Refer to installation kit packing list for parts not shown here.

NOTE:

- Most items that are described as “kits” contain a single part (plus hardware). Therefore, you need to order more than one kit if the part is used more than once on the assembly shown.
- Small, inexpensive hardware items are supplied in a minimum quantity of ten and are packaged in a bag. A single bag may provide more parts than you need, or you may need multiple bags when working on a large assembly. The QTY/ASSY column indicates how many individual parts are used on the assembly shown; you will need to determine the number of bags required for your task.



PRODUCT MODEL AND KIT NUMBERS	
PRODUCT NUMBER	RDO3009, RDO3012
DOCUMENTATION KIT NUMBER	22605

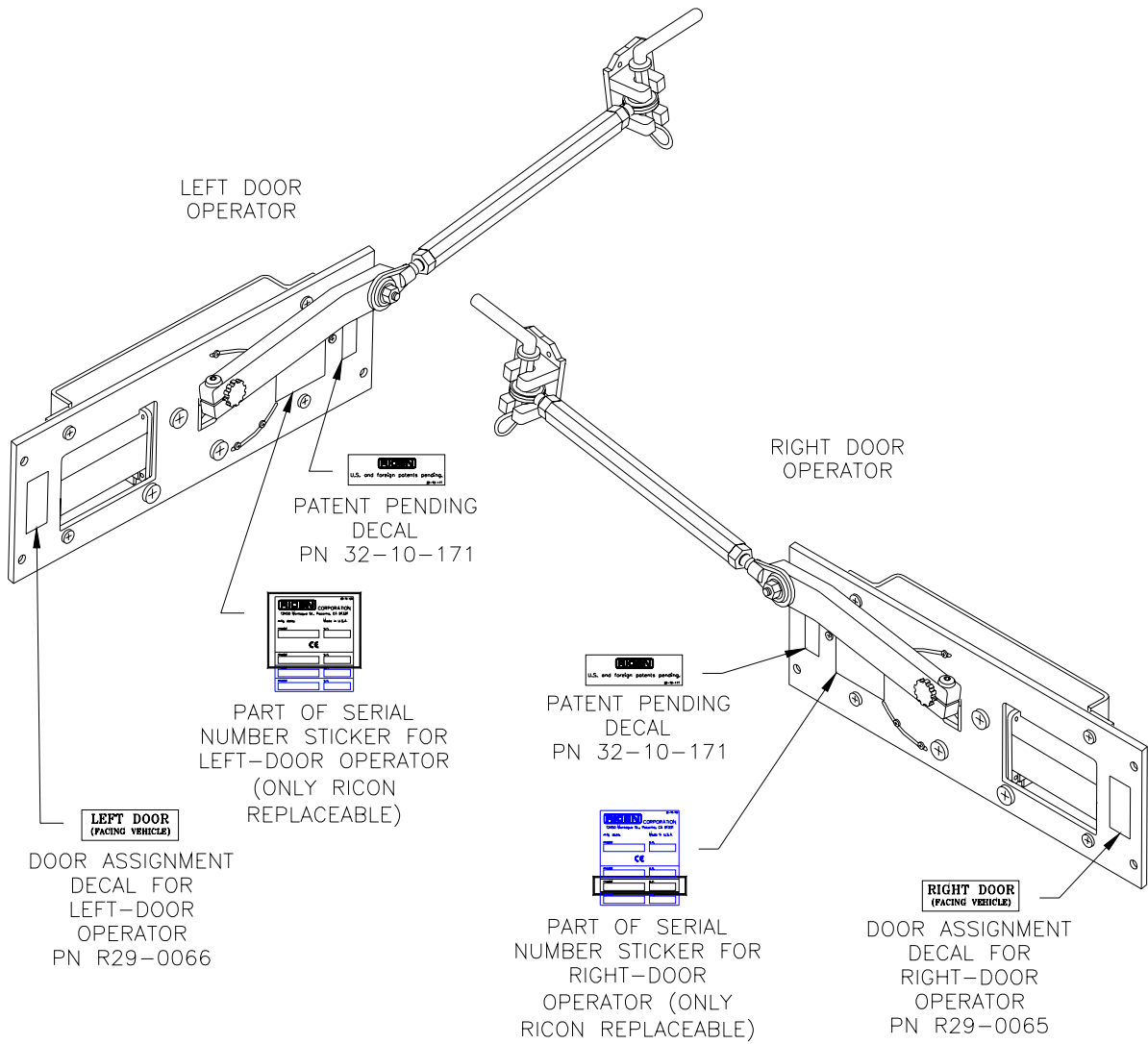


FIGURE 4-1: DECAL LOCATIONS AND PART NUMBERS

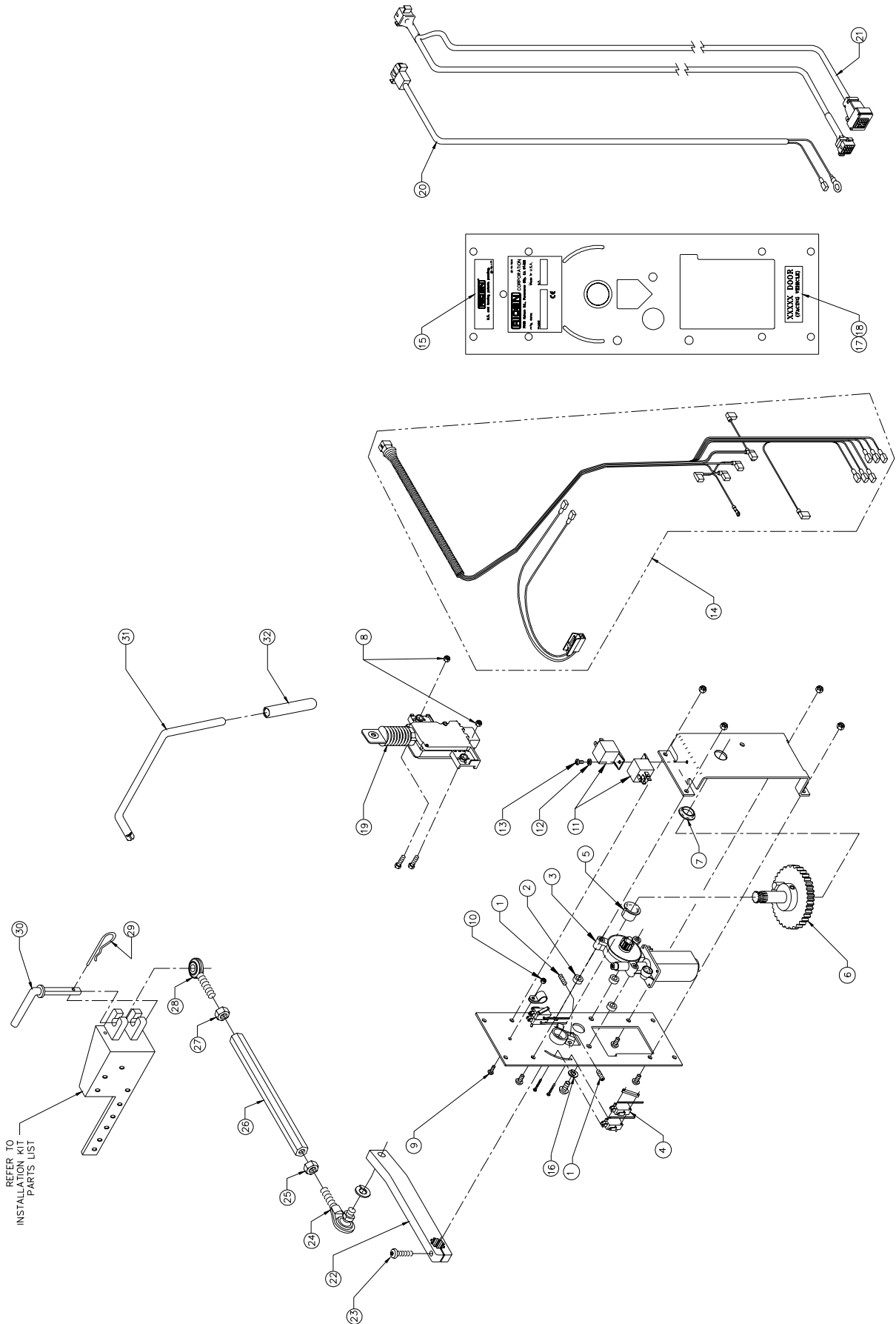


FIGURE 4-2: RDO3000 SERIES POWER DOOR OPERATOR (LEFT AND RIGHT)

**TABLE 4-1: POWER DOOR OPERATOR
RDO3000 SERIES
SERIAL No's. 290001 – PRESENT**

REF	DESCRIPTION	QTY/ASSY	PART NO.
1	SCREW, HSS, ¼-20 X 1 NYLOC	2	27508*
2	SPACER, MOUNTING MOTOR	3	R29-0009
3	MOTOR, DELCO PH3 MODIFIED	1	V2-ES-040
4	SWITCH, LIMIT, SINGLE POLE	4	26434
5	BUSHING, ¾ DIA X ¾	1	25383
6	SPUR GEAR ASSY	1	22607
7	BEARING, ¾ ID X ¼ L	1	25386
8	NUT, ESN, ¼-20	2	28308
9	SCREW, PHP, 10-24 X ½ (BAG OF TEN)	1	13304*
10	NUT, ESN, 10-24 (BAG OF TEN)	1	13382*
11	RELAY, 12V COIL 40A	2	28-36-405
12	WASHER, SPLIT, #10 (BAG OF TEN)	1	15941*
13	SCREW, PHP, 10-24 X 3/8 (BAG OF TEN)	1	15944*
14	HARNES, MAIN, DOOR OPERATOR WITH LATCHES	1	22615
15	DECAL, PATENT # PENDING	1	32-10-171
16	WASHER, SPLIT, 5/16 (BAG OF TEN)	3	13384*
17	DECAL, RIGHT DOOR ASSIGNMENT	1	R29-0065
18	DECAL, LEFT DOOR ASSIGNMENT	1	R29-0066
19	ACTUATOR, DOOR LATCH	1	17664
20	HARNES, 10AWG, LIFT TO DOOR OPERATOR	1	17800
21	CROSS-OVER CABLE, DOOR OPERATOR	1	01606
22	ARM, SPLINE, DOOR ACTUATOR, FORD 1992 AND LATER	1	22235
23	SCREW, BHS, ¼ X 20 X 1 (BAG OF TEN)	1	15958*
24	ROD END, MODIFIED	1	01673
25	NUT, HEX 3/8-24 (BAG OF TEN)	1	19710*
26	HEX ROD, 14.00 INCH	1	01708
27	NUT, HEX, 3/8-24 LEFT HAND THREAD (BAG OF TEN)	1	14417*
28	ROD END (M) LEFT HAND THREAD	1	25501
29	PIN, SAFETY, QUICK RELEASE	1	25548
30	PIN, QUICK RELEASE	1	01640
31	TOOL, DOOR RELEASE	1	22609
32	GRIP, TOOL, DOOR RELEASE	1	22619

END OF TABLE

PARTS MARKED WITH AN ASTERISK (*) ARE PACKAGED IN A BAG OF TEN. A SINGLE BAG MAY PROVIDE MORE PARTS THAN YOU NEED.