



Electric Steps

Equipped with a Permanent Magnet Motor and Control Unit

(For steps using control units 909506000, 909507000, or 909508000)



Table of Contents

- Warranty Information 2
- Step Identification Information 2
- Introduction 3
- Operating the Step 3
- Extending the Step for
 - Installation 4
- Installation - Mounting the Step and Retracting the Step 4
- Installation - Wiring the Step 5
- Installation - Door Switch 6
- Step Test Procedures 7
- General Service Notes 9
- Step Motor Parts Key 10
- Step Motor Assembly Diagram ... 11
- Instructions for the Step
 - Motor Assembly 12
- Maintenance and Lubrication 13



Single Steps

Double Steps

Triple Steps

Van Steps

Warranty

1. We warrant that the equipment is free from defects in material and workmanship under normal use and service. The provisions of this warranty shall not apply to any equipment that has been subject to misuse, negligence, alteration, accident, improper installation (such as the welding of the step to the vehicle frame or mounting brackets), normal deterioration due to wear, or has been repaired outside our place of business in any way as, in our reasonable judgement, to adversely affect its performance and reliability.
2. Our obligation under this warranty is limited to repairing or replacing, at our option, any product that is returned to our place of business and when in its examination shall disclose to our reasonable satisfaction that it is defective. The repair or replacement of the defective parts under this warranty will be made without charge for parts or labor. Shipping charges for returning parts to Kwikkee Products Company, Inc. ("Kwikkee") shall be the responsibility of the customer. Kwikkee will pay shipping charges when returning warrantable parts to the customer. Kwikkee will not accept C.O.D. shipments of any returned goods.
3. The warranty is effective as of the date of sale to the original purchaser and extends two years for parts and labor on step mechanisms and one year for step finish. Since it is the responsibility of the owner to verify the original purchase date, Kwikkee recommends that a bill of sale or sales receipt be kept for that purpose.
4. The duration of any implied warranty of merchantability or fitness for a particular purpose shall be limited in all respects to the duration of the limited warranty, and the warranty described above shall be in lieu of any other express warranty. Some states do not allow limitations on how long implied warranties last, so the above limitations may not apply to you. We neither assume or authorize any other persons to

assume any other liability in connection with our products.

5. The buyer's sole and exclusive remedy against the seller shall be for the repair or replacement of defective merchandise as provided above. No other remedy, including but not limited to, incidental or consequential damages for lost profits, lost sales, injury to property or any other incidental or consequential loss, shall be available to him. 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. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection there with.

6. Kwikkee will not, under any circumstances, reimburse the cost of warranty parts purchased from sources other than Kwikkee Products Company, Inc.
7. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Warranty Guidelines and Procedures

1. Replace only those parts that are actually defective. Motors, gear cases, gears, linkage assemblies, and control units are all replaceable as individual parts. If you exchange a complete assembly when only the replacement of an individual part is required, the non-defective parts will be returned and only the defective part will be credited to you or replaced.
2. Do not use conversion kits for warranty repairs. Conversion kits are intended for the conversion of older steps with field-wound motors to the newer permanent magnet motor system.
3. An Returned Goods Authorization (RGA) number must be obtained before any parts or claims are sent in. Call Kwikkee's Service Line at 1 (800) 736-9961 for an RGA number.
4. Our warranty does not cover travel time, mileage, or other incidental costs. It is limited solely to the replacement of defective parts under warranty.

For questions regarding these warranty procedures or technical assistance, call 1 (800) 736-9961.

SAVE WITH YOUR VEHICLE RECORDS

Step Identification Information

In the event that servicing the step becomes necessary, the information that you supply below will improve service response time. Please take a moment to record this information:

Step Serial #: _____

Step Series #: _____

Control Unit #: _____

Control Unit Serial #: _____

Year & Manufacturer of the recreation vehicle: _____

Date of Purchase: _____

The Step Series #, Serial #, and Control Unit #s are on the identification labels attached to the control unit and the underside of the step, near the motor. If the information on the labels is not available, the Step Motor Parts Key on page 10 contains information that will help you identify which step you have.

Introduction

This manual has been provided to assist you with the identification, operation, installation, and troubleshooting of any Kwikkee electric step manufactured after January 1999 that is equipped with a door switch, a power switch, control unit and a permanent magnet motor. It does not apply and should not be used as a reference to any other previous versions of a Kwikkee electric step.

The control unit is essentially a current sensor as well as a switching device. When the motor assembly moves the step tread to its extended position, or stops moving because of an obstruction such as a curb or the binding of a damaged or bent step frame, the motor

draws a larger amount of current. The control unit "senses" the larger current draw and shuts off power to the motor.

All control units are equipped with an "ignition override system". This system is designed so that the vehicle will not be driven with the step in the extended position. When the step is locked in the extended position, the door closed, and the ignition is turned on, the ignition override system will engage and the step will automatically retract.

The "Last Out" feature is another safety feature designed to extend the step when the door is opened for the first time after the vehicle ignition is turned off, even if

the power switch is turned off. When the ignition is switched on, the function of the power switch is disabled and the step will always extend when the door is opened and retract when the door is closed.

Some van steps use door switch only operation. When the door is opened the step extends and the step retracts when the door is closed.

NOTE: Follow the instructions in this manual carefully. Failure to do so may result in damage to the step control, the motor and/or the vehicle wiring. Such damage may also result in voiding the warranty.

Operating the Step

1. After the installation is complete and with the entrance door open, turn the power switch on.


NOTE: Some steps are not equipped with a power switch. They are activated only with a door switch.

2. Close the door. The step should retract and lock in the "up" position.
3. Open the door. The step should extend and lock in the "down" position with the understep light on.

NOTE: The understep light is not available on all step models.

4. If your step is equipped with a power switch, turn it off. The step should remain in the extended position with the understep light off when the door is closed. Turning off the power with the step retracted will hold the step in a retracted position as well.
5. With the power switch off, the step extended, and the entrance door closed, turn on the vehicle ignition. The ignition override system will go into effect and the step will automatically retract.

NOTE: If the yellow wire from the four-way connector is not connected to an ignition power source, the ignition safety system will be inoperative and the step will remain in the extended position. In this case, the power switch must be turned on for the step to retract.

 **WARNING: If the vehicle is driven with the step in the extended position, there is the possibility of causing major damage to both the step and the vehicle.**

6. Turn the vehicle ignition off and open the door. The step will extend and lock in the "down" position. This is the "Last Out" feature.
7. The "Last Out" feature is only operative the first time the door is opened after the vehicle ignition is turned off.

When the vehicle ignition is on, the step will always activate with the door movement, regardless of the power switch position.

NOTE: If the yellow wire from the four-way connector is not connected to an ignition power source, the "Last Out" feature will not operate.

**BE SAFE.
ALWAYS LOOK BEFORE YOU
STEP OUT OF YOUR VEHICLE.**



Kwikkee Products Company, Inc.
230 Davidson Avenue
Cottage Grove, Oregon 97424-9545
(541) 942-3888

www.kwikkee.com

Extending the Step for Installation

1. For easier installation, extend the step by placing it upside-down on its mounting surface.

WARNING: Making the wire connections detailed in this procedure will cause the step to quickly extend and retract. Keep hands and fingers clear of the step extension mechanism.

2. Connect the four-way connector from the control unit with the four-way connector/pigtail that has been included with the step. Figure 1.
3. Ground the control unit by attaching the long green ground wire from the control unit to the negative (-) terminal of a well charged 12 volt DC automotive battery. The step will not operate without a good ground connection.

NOTE: If it is necessary to use jumpers to connect the wire leads from the pigtail to the battery, a minimum of 10 gauge wire (8 gauge for wiring runs over 25 feet) is recommended for use as jumper wire.

4. Attach the red wire from the pigtail to the positive (+) terminal of the battery. Keeping hands and fingers clear from the step mechanism, touch the white wire from the pigtail to the positive (+) terminal to extend the step.
5. After the step has been extended, disconnect the red and white pigtail wires prior to disconnecting the green ground wire from the battery. This will keep the step in the extended position.

ATTENTION: For van steps equipped for door switch only operation, connect the green ground wire from the control unit and the brown wire from the pigtail to the negative (-) terminal of the battery. Attach the red wire from the pigtail to the positive (+) terminal of the battery. Remove the brown wire from the battery and the step will extend.

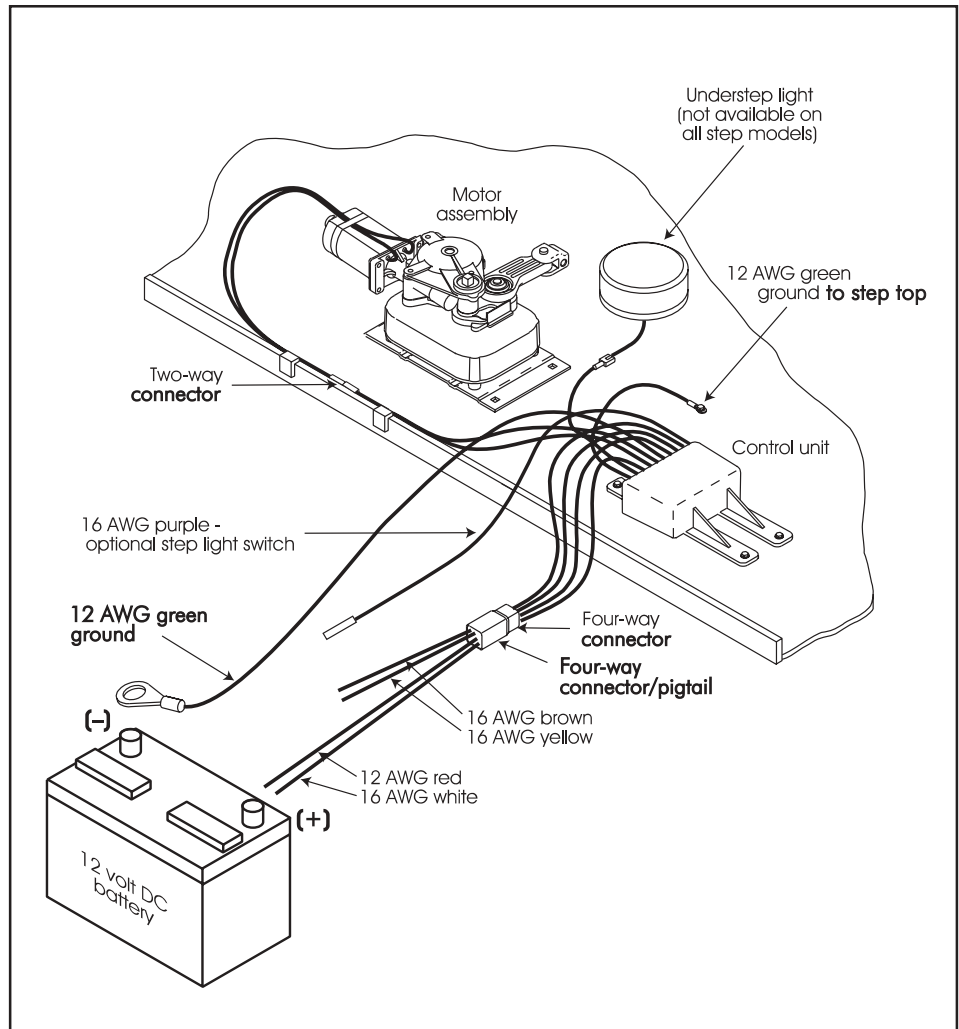


Figure 1 - Extending the step for installation

Installation - Mounting the Step and Retracting the Step

With 5/16-18 (minimum) bolts, lock washers, and nuts, mount the step using a minimum of four of the holes located in the top of the step frame.

NOTE: Welding the electric step directly to the chassis frame or mounting bracket can distort the frame and severely damage the control unit. This damage will not be covered under the warranty.

1. Ground the control unit by attaching the long green ground wire from the control unit to the negative (-) terminal of a well charged 12 volt DC automotive battery. The step will not operate without a good ground connection.

2. Attach the red and white pigtail wires to the positive (+) terminal of the battery.
3. Keeping hands and fingers clear from the step mechanism, touch the brown wire from the four-way connector/pigtail to the negative (-) terminal of the 12 volt battery. While holding the brown wire to the battery, remove the red and white wires from the battery to keep the step retracted.

Note: For van step mounting instructions refer to the Van Step Mounting Bracket Instruction Sheet included with the step.

Installation - Wiring the Step

Kwikee recommends wiring the step to the vehicle battery instead of the "house" battery due to potential interference from other circuits. When in doubt call Kwikee's service department at 1(800) 736-9961.

Step controls require grounding prior to installation of the positive 12 volt connections.

All Circuits noted as requiring fuses must be fused. Fuses should be located as close as practical to the power source in order to provide maximum protection to the wiring circuits. Failure to provide required fuses may void warranty.

NOTE: Prior to connecting any wiring, disconnect the vehicle's power source at the battery.

1. Ground the control unit by attaching the long green ground wire from the control unit to the chassis (see figure 2 for all wiring details). For Van Step wiring, follow the wiring schematic illustrated in figure 3.

NOTE: A good ground connection is required for proper step operation. To insure a good ground connection (metal-to-metal), scrape any paint and/or undercoating from the ground wire/vehicle chassis connection.

2. Determine the switch configuration for the step that is being installed. The step will be controlled by a normally open magnetic door switch.
3. Once preliminary preparations are finished for the door switch installation (See Figure 4), connect the brown wire lead from the vehicle half of the four-way connector to one of the terminals or wire leads from the door switch. Use a minimum of 16 gauge wire.

NOTE: Do not pull this lead tight. Leave some slack to avoid damaging the switch.

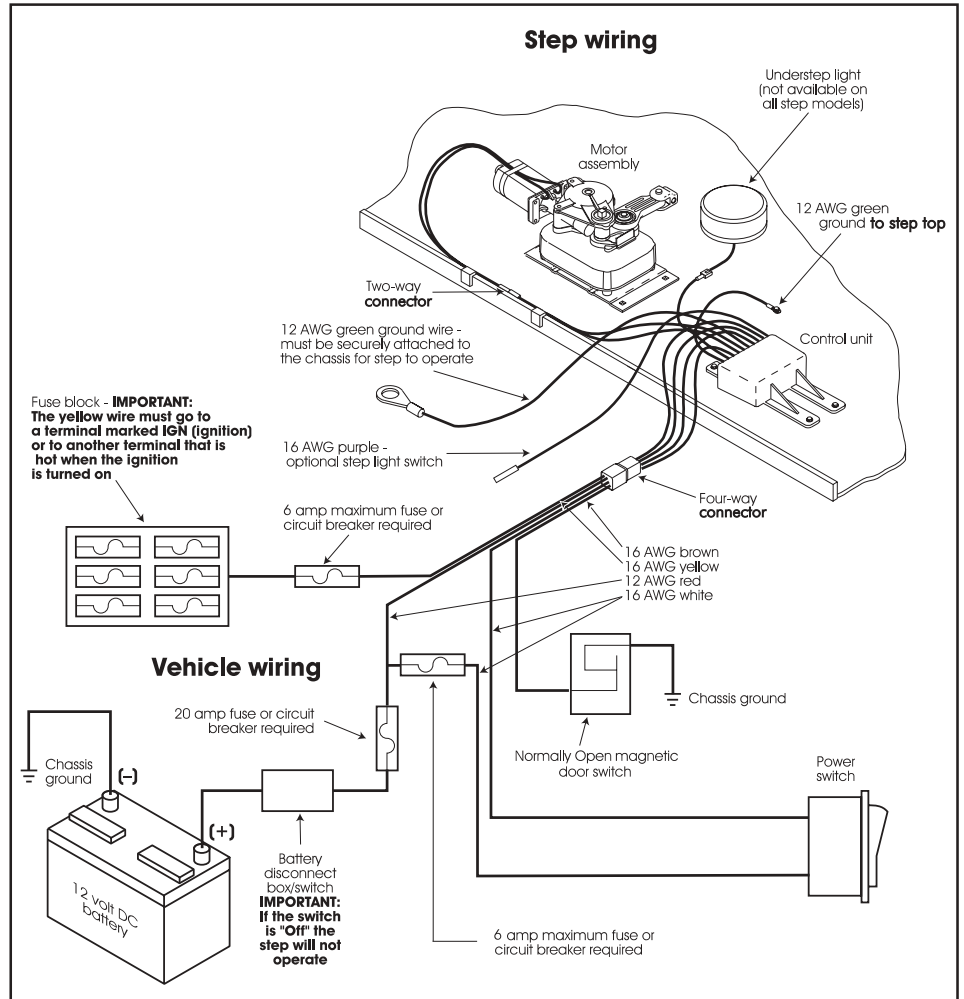


Figure 2 - Step Wiring Diagram (For Van Step wiring kits order part #7541000)

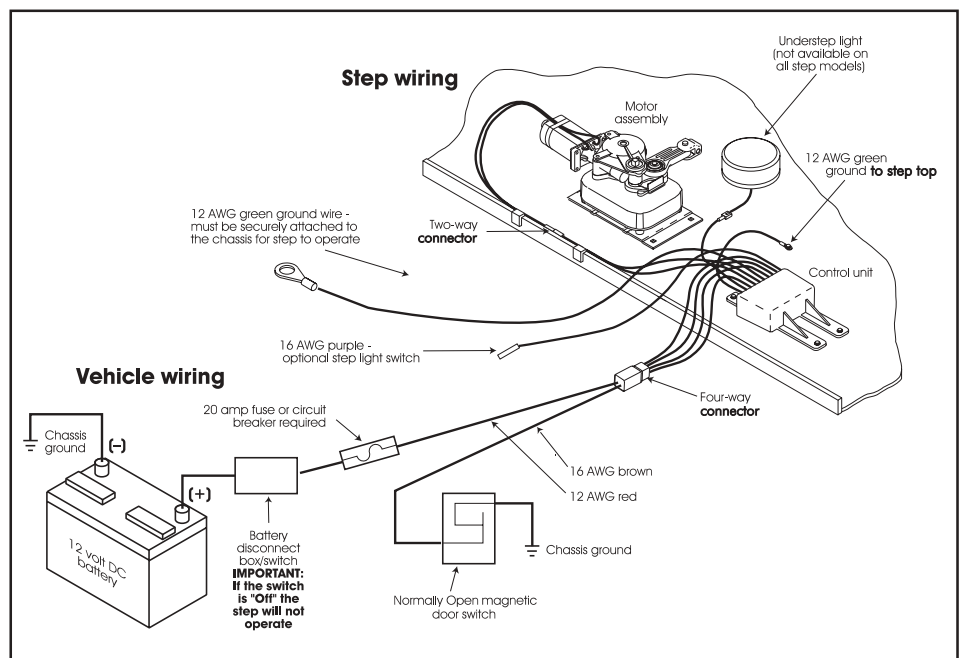


Figure 3 - Step Wiring Diagram: Van steps with door switch only operation (For Van Step wiring kits order part #7540000)

4. Connect a 16 gauge (minimum) wire from the remaining door switch terminal or wire lead to the chassis ground. A good ground connection is necessary to insure proper step operation. Attach using a machine screw, external or internal-tooth lock washer, and a nut. Place the external or internal-tooth lock washer between the cable and the vehicle chassis. Scrape any paint clear at this connection point to insure a good ground.

5. Locate and cut a hole to mount the power switch.

NOTE: There must be enough room behind the switch to connect the wires to the switch terminals. A rocker type switch is available and may be used if desired.

If the rocker switch is supplied by Kwikkee, the power switch may be mounted as is by cutting a 1 9/16" x 7/8" hole for the switch to snap into.

NOTE: This hole must be very accurate. The switch may also be mounted using a bezel. Cut a 1 1/8" x 1 3/4" hole to mount the switch using the bezel.

NOTE: Do not install the power switch completely until all wiring to the switch is in place.

6. Connect the white wire from the four-way connector to one of the terminals on the power switch. Use 16 gauge wire minimum.

7. Connect the yellow wire lead from the four-way connector to the vehicle fuse block. The yellow wire must go to a terminal marked IGN (ignition) or to another terminal that is hot only when the ignition is turned on. A 6 amp maximum fuse or circuit breaker is required in the yellow wire. Use 16 gauge wire minimum.

8. Connect a 16 gauge minimum wire from the other power switch terminal to the red 12 gauge power wire. A 6 amp maximum fuse or circuit breaker attached as close as possible to the red power wire is required in this line. The wire must be

connected to the red power wire anywhere between the four-way connector and the 20 amp fuse or circuit breaker discussed in Step 9.

9. Connect the red power wire from the four-way connector to the 12 volt DC vehicle battery through a 20 amp fuse or circuit breaker which is designated for step use only.

WARNING: Do not connect this wire to any other circuit that runs other functions. The circuit must be dedicated to step use

only. Failure to do so will cause severe damage to the control unit, and will not be covered under warranty. Use 12 gauge wire minimum.

10. OPTIONAL: Step Light Switch Connection- Attach the 16 gauge purple wire from the control unit to the switched lead of the porch light.

11. Wrap any exposed connection with shrink wrap or electrical tape to protect them from the weather. Mount the power switch. Reconnect the battery.

Door Switch Installation

NOTE: It is recommended that the switch be installed on the latch side of the door. However, hinge-side installation is acceptable.

1. Some experimentation with the switch position may be necessary to achieve proper step operation. The step should begin to extend when the door is opened between one and four inches. Position the magnetic switch in the door jamb. Locate the magnet opposite the switch.

2. Check for ample clearance in the door frame for the door switch body. Do not force the door switch into its mounting position. Wiring to the switch should come up through the hollow door frame. After wiring is completed, mount the switch to the door jamb.
3. Install the magnet in the door, opposite the switch. Vertical placement of the magnet is critical to door switch operation. See Figure 4.

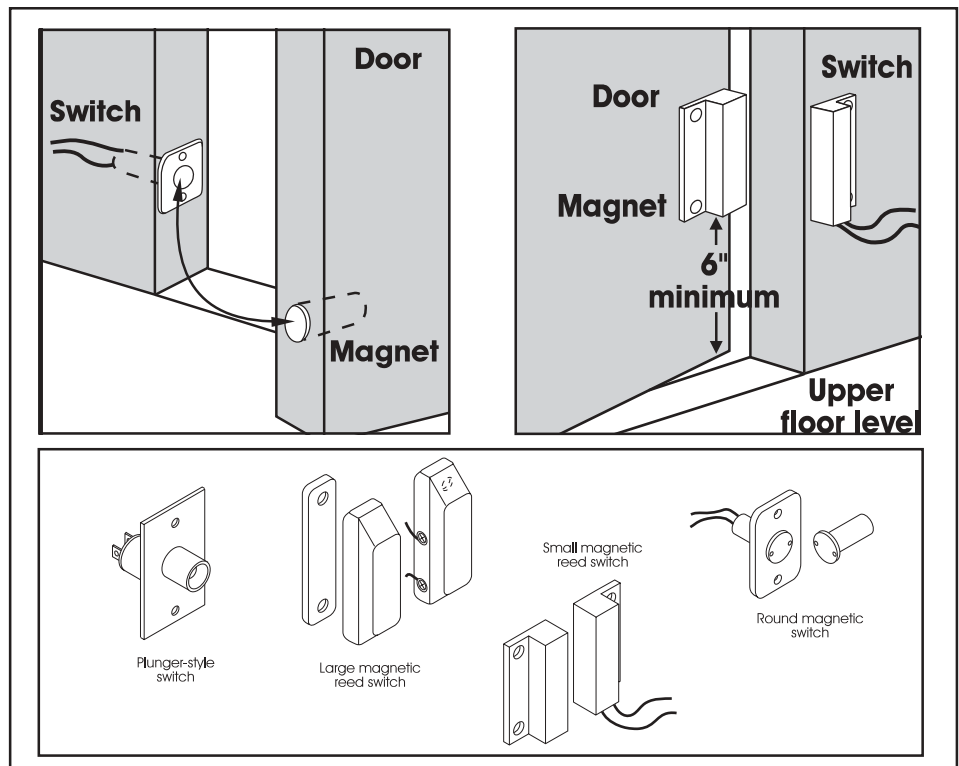


Figure 4 - Door switch installation

Step Test Procedures

These Step Test Procedures have been provided to troubleshoot and test all of the KwikEE automatic electric step functions. They are designed to initially check the step's basic functions separately from the RV wiring to determine whether or not the step is malfunctioning. The following procedures test the various components of the step until the source of the malfunction is located. Using these procedures will shorten and reduce the time spent troubleshooting.

Some portions of the test procedures require additional equipment. This equipment includes: a voltmeter, a well charged 12 volt DC automotive battery, and a 4-way connector/pigtail (Part #909306000, available from KwikEE Products Company).



WARNING: 12 volt automotive batteries contain sulfuric acid which can cause severe burns. Avoid contact with the skin, eyes and clothing. 12 volt automotive batteries produce hydrogen gas which is explosive; keep cigarettes, open flames and sparks away from the battery at all times.

Read the entire procedure prior to testing. Should you need assistance in the course of performing these test procedures, feel free to contact KwikEE's toll free Service Line at 1 (800) 736-9961.

Testing the Step

IMPORTANT INSTALLER NOTES:

Be sure that all ground connections are securely fastened with good metal-to-metal contact. A good ground is required for proper step operation.

1. Inspect the step for visible damage that might restrict the step's operation.
2. Obtain a 4-way pigtail connector (part #909306000) from KwikEE.
3. Disconnect the 4-way connector on the underside of the step and connect the step-half of the connector with the

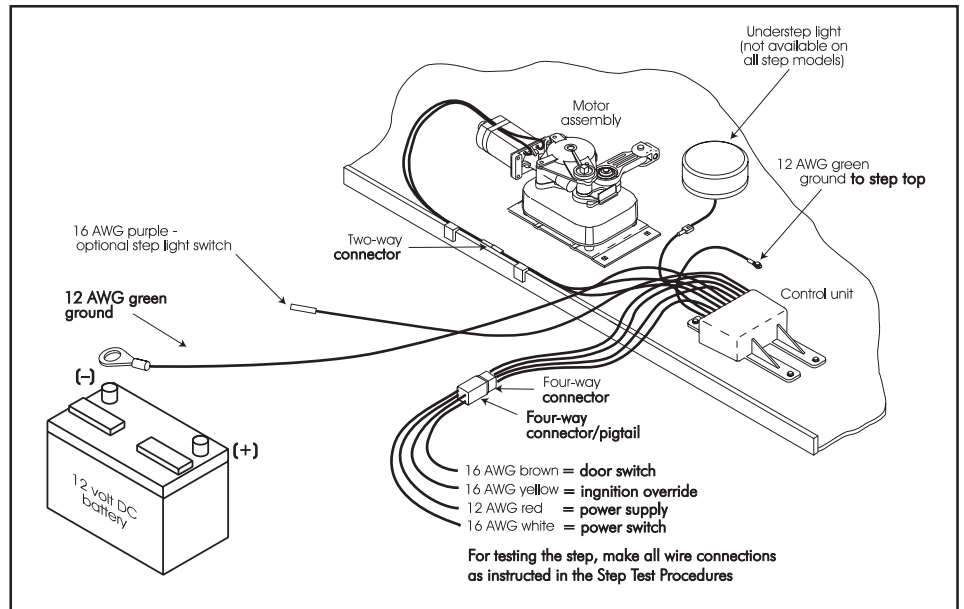


Figure 5 - Step Test Procedures wiring diagram

4. Set a fully charged 12 volt DC automotive battery beside the step.
ATTENTION: Do not allow the battery terminals to come in contact with the step. Complete a ground for the step tests by connecting a 10 gauge wire from the negative (-) post of the battery to the green ground wire from the control unit.
5. For the power supply, attach the red wire from the pigtail to the battery's positive (+) post.
6. With the power and ground connections complete, all functions of the control unit can be checked at the four wires of the pigtail. The brown wire is the door switch, the white wire is the power switch, and the yellow wire is the ignition override.
7. To extend the step, touch the white wire to the battery's positive (+) post. The step should extend and remain extended.
8. To retract the step, hold the white wire to the battery's positive (+) terminal and touch the brown wire to the negative (-) terminal.
9. To test the Ignition Override feature, extend the step as in Step 7. With the step extended, disconnect the white wire from the battery and attach the brown wire to the battery's negative (-) terminal. Next, touch the yellow wire to the battery's positive (+) terminal. The step should retract. Remove the brown wire and the step should extend.

To test the "Last Out" feature, touch the brown wire to the negative (-) terminal to retract the step. While holding the brown wire to the negative (-) terminal, remove the yellow from the positive (+) terminal. The Step will stay retracted. Now, remove the brown wire. The step should extend.
10. If any of the step functions *do not* work, the source of the malfunction is either in the control unit and/or the motor. Proceed to the "Testing the Motor" section.

If all of the step functions *do* work, the malfunction is either in the door switch, power switch, or the vehicle wiring. Proceed to "Testing the 4-way Connector" section.



WARNING: Keep all fingers, arms, and legs clear of the step mechanism while performing these tests.

Step Test Procedures

Testing the Motor

11. Disconnect the two-way connector between the step motor and the control unit.

Connect the motor's red wire to the positive (+) terminal of the battery and touch the motor's yellow wire to the negative (-) terminal of the battery to extend the step. To retract the step, reverse the connections. If the step extends and retracts during this test, the condition of the step motor is good.

NOTE: On steps with control unit #909507000 reverse the red and yellow wire connections to perform the aforementioned test.

WARNING: Do not leave the wires connected during this test once the step has cycled either in or out. Failure to remove the wires from the battery will burn out the motor voiding any warranty.

Testing the 4-way Connector

12. To check the main power source, connect a voltmeter between the red wire from the 4-way connector (vehicle half) and the ground terminal at the end of the control unit's green ground wire (see Figure 6). The reading should be a minimum of 12 volts DC.

If the voltage reading is low, there may be a loose or corroded connection at the battery, a low charge level on the battery itself, or a poor ground. If the voltage reading is zero (0) volts, check the step fuse/circuit breaker, all connections, and the condition of the wiring between the battery and the plug, including the ground connection at the chassis.

13. To check the power switch, connect a voltmeter between the white wire from the 4-way connector (vehicle half) and the terminal at the end of the control unit's green ground wire (see Figure 7). The reading should be a minimum of 12 volts DC (the

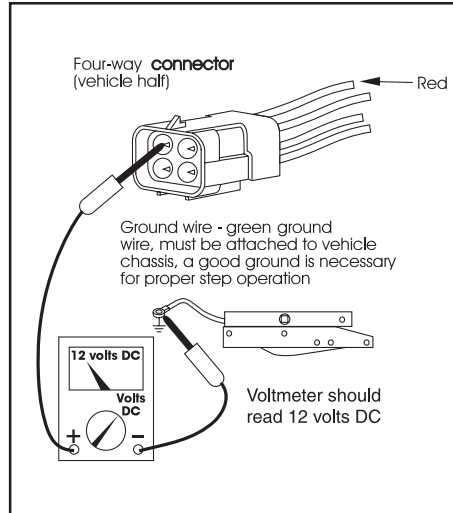


Figure 6 - Checking the main power source

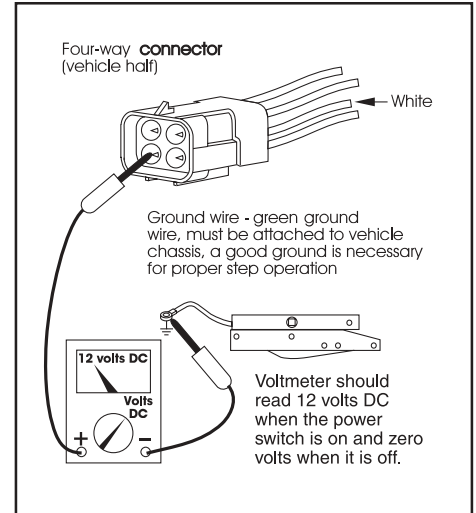


Figure 7 - Checking the power switch

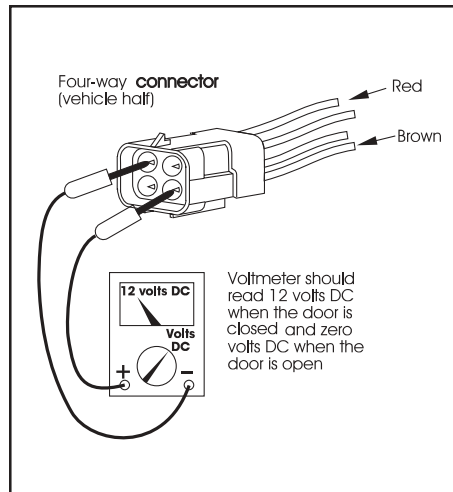


Figure 8 - Checking the door switch

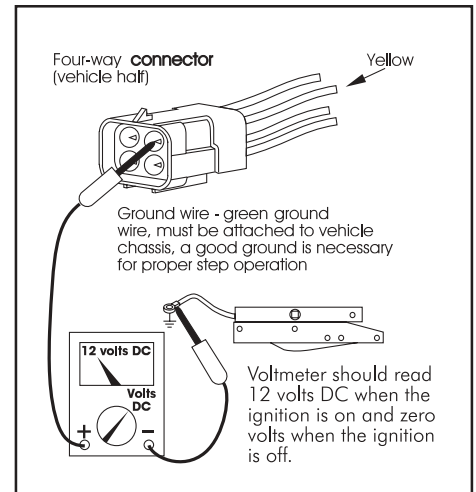


Figure 9 - Checking the ignition override system

same as in Step 12) when the switch is on, and zero (0) volts DC when the switch is off.

If the voltmeter reads zero (0) volts when the power switch is on, there is a problem in the power switch circuit.

Check the 6 amp in-line fuse, the power switch itself and the condition of the circuit's wiring and terminal connections.

14. To check the door switch, connect a voltmeter between the red wire from the 4-way connector (vehicle half) and the brown in the same connector (see Figure 8). The voltage should be a minimum of 12 volts DC

(the same as in step 12) when the door is closed and zero (0) volts when the door is open.

If the readings are incorrect, there is a problem with the switch. Check the door switch and the condition of the circuit's wiring and terminal connections.

15. To check the ignition override system, connect a voltmeter between the yellow wire from the 4-way connector (vehicle half) and the ground terminal on the end of the control unit's green ground wire (see Figure 9). The voltage reading should be approximately 12 volts DC when the ignition is on and zero (0) volts when the ignition is off.

Step Test Procedures

If the reading is zero when the ignition is on, check all terminal connections, wiring, and the vehicle's ignition fuse.

NOTE: The step wiring circuit must be independent. No other device (i.e. alarm systems, step well lights, etc.) can be connected to the step wiring circuit. Any device connected to the steps wiring can cause the step to malfunction and will void the warranty.

16. For steps equipped with door switch only operation: Connect the white jumper wire from the vehicle half of the four-way connector and the

ground terminal at the end of the control unit's green ground wire (figure 10).

NOTE: Be sure to use the terminal with only the white wire.

The reading should be a minimum of 12 volts DC. If not, the plug should be replaced.

If you have additional questions or need more assistance, contact Kwikiee's Service Representative at 1 (800) 736-9961.

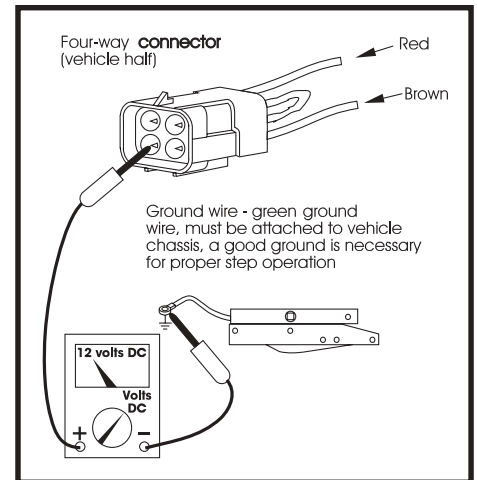


Figure 10 - Checking the connector

General Service Notes

If the power wire to the step is disconnected from its source and reconnected, a spark is common. This is caused by the momentary charging of the control unit and does not necessarily indicate the system is staying on, which would cause a drain on the battery. If battery drain is suspected, observe the understep light (if so equipped) while the step is extending. The power switch must be on for the understep light to operate.

To determine if a control unit is not shutting off, remove the four-way connector to the chassis and the two-way connector between the step motor and the control unit. Place a voltmeter between the red and yellow motor wires at the two-way connector from the control unit. Reconnect the four-way Connector. Turn the power switch on. If any voltage registers on the meter, the control unit is not shutting off and may be defective. When doing this test, switch the voltmeter leads back and forth between the red and yellow motor wires to be sure no voltage registers. If any voltage does register, disconnect the four-way connector to keep the step motor from overheating. If zero voltage is present, the control unit has shut off and is normal.

If the step does not work or operates erratically, such as extending part way and shutting off, the first item that should be checked is the vehicle's battery. Low

supply voltage may cause erratic operation of the step. Poor ground connections may also cause erratic operation of the step. Check battery voltage and condition. A battery in good condition and properly charged will have a no load voltage of approx. 12.6 volts. Check the voltage at the battery and at the four-way connector at the control unit. Insure that all battery and step control unit connections are clean and secure. Recharge or replace the battery as necessary and retest the step for proper operation.

The step may also operate erratically if the step is being operated directly from a converter, and the output from the converter is not adequate or properly filtered for clean DC voltage. The converter must be capable of producing a minimum of 30 amps for proper step operation.

If the ground to the control unit is lost, either between the step control unit and the vehicle chassis (the long green ground wire) or between the vehicle battery and the ground (negative battery cable) the step will not function. Make sure the battery terminals and all wire connections are clean and tight. Verify that all wires meet the minimum requirements specified in the wiring instructions.

These general service notes and the Step Test Procedures address the most common questions about Kwikiee electric

steps. Due to the number of variable conditions, you may experience symptoms other than those covered. Please feel free to contact the Customer Service Department at 1 (800) 736-9961 for further information or assistance.

Van Step:

If your step is equipped with a splash cover, the cover must be removed to access the motor assembly and control unit. If the step is locked in the retracted (up) position where the plastic cover cannot be removed, the step tread will have to be disassembled to access the plastic cover. To disassemble the tread, remove the (8) 1/4-20 x 1" long hex head bolts in the tread side rails connecting the tread and the sliding blocks to the side rail. This will allow the tread to be dropped out of the way to access the plastic cover. Reassemble the tread after removing the cover. Reinstall the cover after completing the test procedures and any necessary repairs. The step should be fully extended to reinstall the cover. Be sure that the four-way connector exits the notch in the plastic cover when reassembling.

Step Motor Parts Key

The motor assembly part numbers listed in the gray box below contain the motor, linkage, gears, and gear box for the corresponding step series number.

Step Series #	Motor Assembly	Description of Step
22 Series Step	#909502000	double tread step; 24" wide tread; frame measures 10" tall in retracted position
23 Series Step	#909503000	triple tread step; 24" wide tread
26 Series Step	#909504000	single tread step; 24" wide tread; tread angled downward to front when retracted
27 Series Step	#909502000	double tread step; 24 1/2" wide tread
28 Series Step	#909501000	single tread step; 23 3/4" wide tread; frame measures 5 7/8" tall in retracted position
29 Series Step	#909501000	single tread step; 23 3/4" wide tread; tread is 9 1/8" deep; frame is 4 1/2" tall - retracted
30 Series Step	#909502000	single tread step; 36" wide tread
31 Series Step	#909501000	single tread step; 17 3/4" wide tread
32 Series Step	#909502000	double tread step; 24" wide tread; frame measures 7 1/8" tall in retracted position
33 Series Step	#909502000	single tread step; 28 1/8" wide tread
34 Series Step	#909502000	double tread step; 30" wide tread
35 Series Step	#909502000	single tread step; 24" wide tread; 17 1/2" deep from front of tread to back of ext. arms
36 Series Step	#909502000	single tread step; 30" wide tread; mounted to underside of step mounting surface
37 Series Step	#909501000	single tread step; 30" wide tread; mounted to an angled bracket at the back of step
38 Series Step	#909502000	single tread step; 24" wide tread; 20 1/2" deep from front of tread to back of ext. arms
39 Series Step	#909501000	single tread step; 23 3/4" wide tread; tread is 10 3/8" deep; frame is 4 1/2" tall - retracted
40 Series Step	#909502000	double tread step; 24" wide tread; frame measures 6 1/2" tall in retracted position
42 Series Step	#909505000	double tread step; 24 3/4" wide tread

When a complete motor assembly replacement isn't required, the Kwiikee step parts illustrated on the facing page can be order as part of a kit. It's as easy as one, two, three.

1. Identify the required replacement part on the facing page.

2. Find the corresponding part number in the far left column in the table below.

3. Cross reference the part number with the replacement kit number in the second row of the table.

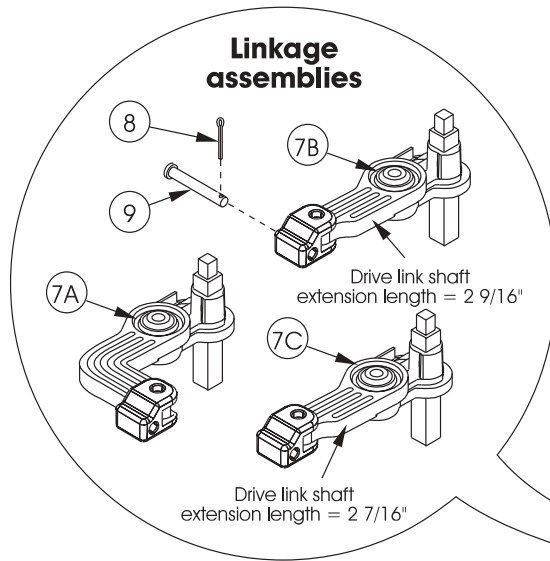
The shaded boxes below the Kit #s indicate all the parts in that kit

Part #	Descriptio	Kit#	Motor Assemblies*				Motors		Linkages			Gears & Gear Box				Hardware			
			909501	909502	909503	909504	909520	909521	909532	909533	909534	909524	909525	909526	909527	909530	909535	909536	905205
1	#10 x 1 3/4" self-tapping hex washer-head screw																		
2	Motor bearing bracket																		
3	Bearing																		
4A	Motor																		
4B	Motor (high torque - for use with 23 Series steps)																		
5	Adaptor gear																		
6	Adaptor gear shaft																		
7A	Linkage assy. (for motor assys. #909502 & #909503)																		
7B	Linkage assembly (for motor assembly #909501)																		
7C	Linkage assembly (for motor assembly #909504)																		
8	Cotter pin																		
9	Clevis pin																		
10	Gear case																		
11	Gear																		
12	Gear case cover																		
13	Motor mounting plate																		
14	1/4-20 x 1 1/4" tri-labial tread forming screw																		

*Motor assemblies are shipped assembled.

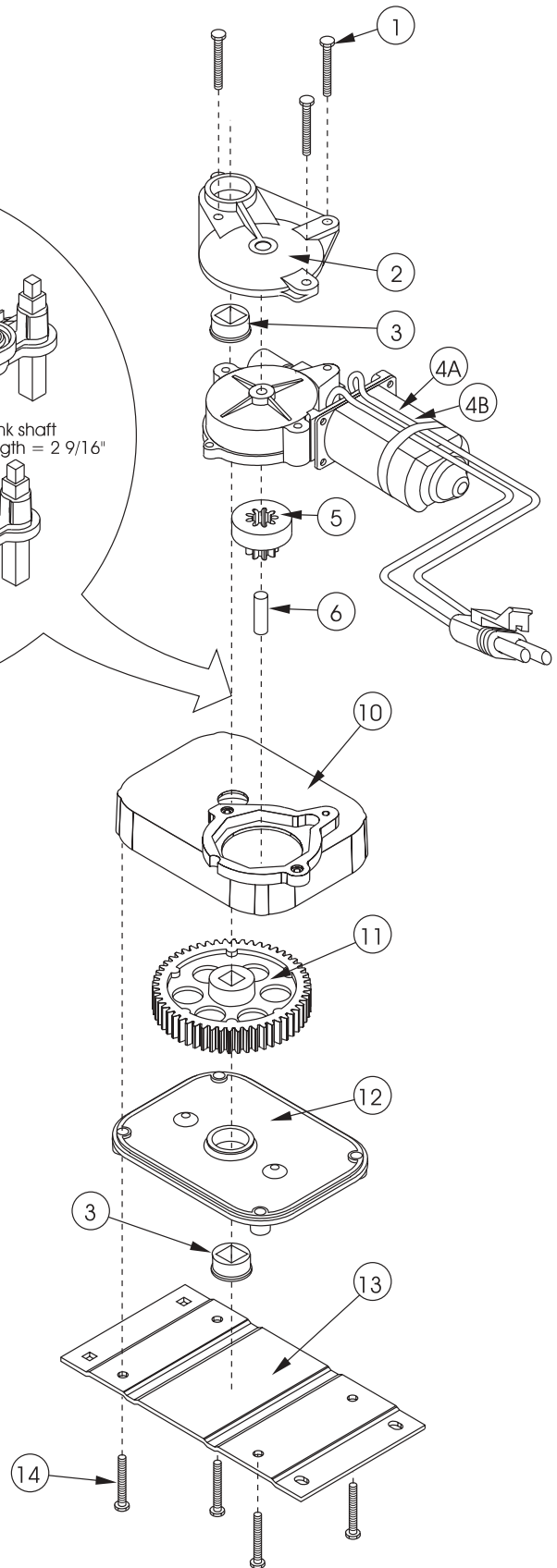
Step Motor Assembly Diagram

Parts shown in this illustration are only available in kit form and cannot be obtained individually; refer to the illustration below and use the Step Motor Parts Key on the preceding page to select the kit that contains the necessary part.



Part# Description

- 1 #10 x 1 3/4" self-tapping hex washer-head screw
- 2 Motor bearing bracket
- 3 Bearing
- 4A Motor
- 4B Motor (high torque - for use with 23 Series steps)
- 5 Adaptor gear
- 6 Adaptor gear shaft
- 7A Linkage assy. (for motor assys. #909502 & #909503)
- 7B Linkage assembly (for motor assembly #909501)
- 7C Linkage assembly (for motor assembly #909504)
- 8 Cotter pin
- 9 Clevis pin
- 10 Gear case
- 11 Gear
- 12 Gear case cover
- 13 Motor mounting plate
- 14 1/4-20 x 1 1/4" tri-lobal thread forming screw



Instructions for Step Motor Assembly

Instructions for removing the motor and gearbox from the step frame and disassembly of the motor gearbox.

Before attempting any motor assembly repair work, please read all of the following instructions:

Refer to the motor assembly exploded-view drawing for item numbers referenced in these instructions.

1. To remove the motor from the step assembly the step needs to be partially or fully extended. If possible extend the step with the standard door switch operation.
2. Unplug the four-way connector from the control unit.
3. Remove the cotter pin (Item #8) from the clevis pin (Item #9) at the linkage assembly.
4. Remove the clevis pin (Item #9) from the cast "U" block in the end of the linkage assembly (Items #7a, 7b, or 7c). Note the direction the clevis pin goes into the cast block. If the step is in its locked position, the pin may have to be pried or driven out of the block. The step tread(s) should now swing freely, if not check for a bent step frame or jammed pivot point(s).
5. Motor removal: The motor may be removed without removing the gearbox (Item 4a or 4b) Disconnect the motor two-way connector. Remove the three screws (Item #1) along with the bearing bracket (Item #2).
6. Gear case removal: Unbolt the motor mounting plate (Item #13) from the step frame.
7. Remove the bearing (Item #3) and the linkage assembly (Items #7A, #7B or #7C) from the gear case (Item #10) along with the adaptor gear (Item #5) and shaft (Item #6).

8. Turn the gear case assembly over and remove the 4 screws (Item #14) from the gear case. Lift off the mounting plate (Item #13).
9. Remove the bearing (Item #3). Lift off the gear case cover (Item #12) and lift out the gear (Item #11), note which side of the gear goes up.

Reassembly and installation of the motor assembly (Part #909501, #909502, #909503, #909504) to the step frame.

Refer to the motor assembly exploded-view drawing on the previous page for the item numbers referenced in these instructions.

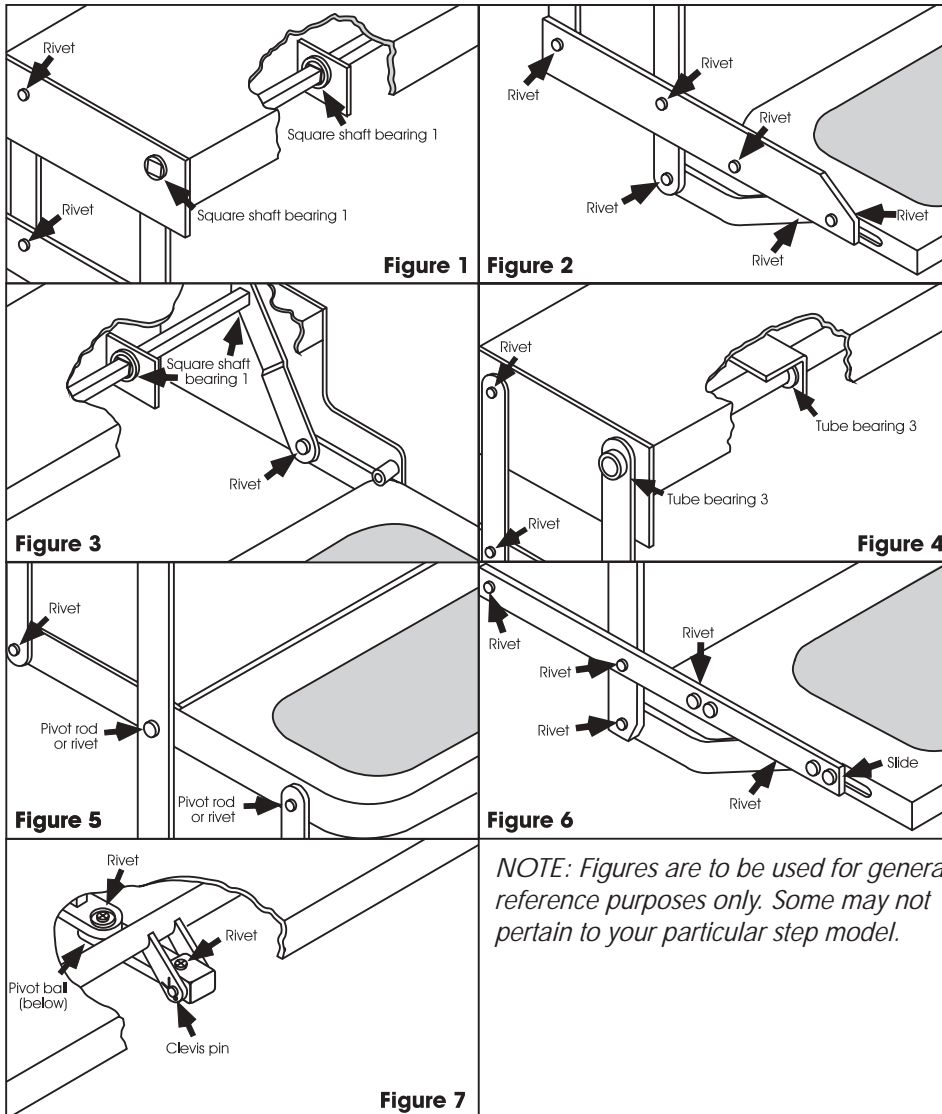
NOTE: In the following assembly be sure all bearing pockets and surfaces, gear teeth, and the gear hub socket that is in the gear case are well lubricated with a suitable grease. We recommend KwikLube™ Spray Grease.

1. Install the gear (Item #11) in the gear case (Item #10). Be sure the gear is reinstalled the same way it was removed (with the penny-sized depressions facing down).
2. Place the gear case cover (item #12) on the gear case. Set the bearing (Item #3) in the center hole of the gear case cover (the flange of the bearing should be up) and align the square hole in the bearing with the square hole in the gear.
3. Place the mounting plate (Item #13) on the gear case cover (the square holes in the mounting plate should be away from the motor) and install and tighten the 4 screws (Item #14).
4. Turn the motor assembly over and set it on the flat mounting plate (Item #13). Install the linkage assembly (Item #7A, #7B or #7C) into the gear case. Be sure the linkage assembly sets all the way into the gear and bearing or the bearing bracket (Item #2) will not set properly. The swivel ball-and-cast block

- should face the front of the motor assembly.
5. Place the bearing (Item #3) on the linkage assembly shaft. Place the flange of the bearing facing down.
6. Lubricate and set the adaptor gear (Item #5) and adaptor gear shaft (Item #6) in place and mesh them with the main gear.
7. Replace the motor (Items #4A or #4B) by aligning the motor and adaptor gear (Item #5) so they slide together. Align the screw holes and push the motor into the screw hole alignment pockets in the gear case.
8. Place the bearing bracket (Item #2) on the motor assembly and attach it with the three motor screws (Item #1). These screws must be very secure.
9. Reinstall the motor assembly on the step frame and tighten all mounting bolts. Be sure the motor assembly is positioned the same way the old one was prior to removal.
10. Install the clevis pin (Item #9) through the drive arms attached to the step frame and the cast block in the linkage assembly (Items #7A, #7B or #7C). Be sure to reinstall the clevis pin in the same direction it was removed. Install the cotter pin (Item #8) in the clevis pin.
11. Reconnect the two-way connector between the motor and the control unit. Reconnect the four-way connector between the control unit and the vehicle. Test the step functions.

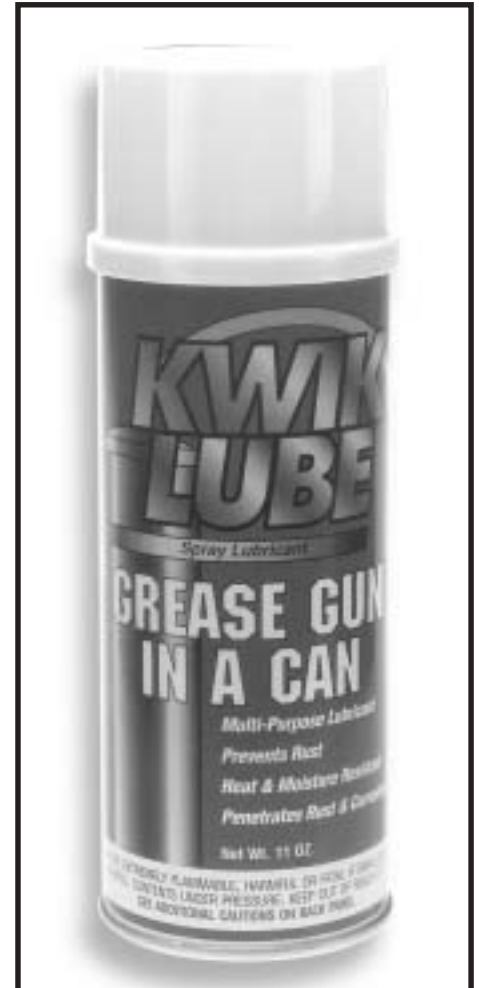
Maintenance and Lubrication

Clean all mud, salt, and road grime from the step before lubricating. Lubricate all moving parts (bearings, pivot points, slides, clevis pin, and drive linkage ball) every 30 days with a good quality moisture and heat resistant penetrating grease. KwikLube™ Spray Grease is specially formulated to lubricate Kwiee Electric Steps and is recommended for lubricating all moving parts. Refer to the figures below for lubrication locations. NOTE: Silicone lubricants and WD-40 are not recommended as they have a tendency to evaporate and dry the mating surfaces which leave them vulnerable to the elements.



NOTE: Figures are to be used for general reference purposes only. Some may not pertain to your particular step model.

1. Figures 1 & 3 - square shaft bearing - lubricate around outside and under head of bearing.
2. Figure 4 - on step models equipped with plastic cover, this cover will have to be removed to lubricate center bearings. Lubricate bearings under cover every 90 days.
3. Figure 4 - Lubricate around the bushing-in-bushings.
4. Maintain clean, dry electrical connections at the two-way and four-way connectors and any butt connections leading from the four-connector to the vehicle. A small dab of di-electric grease at the connections and replacing corroded butt connections with heat shrink type crimp style automotive connectors will help maintain a good electrical source for the step.



KwikLube™ is a unique aerosol grease that has hundreds of automotive, household, and industrial uses in addition to lubricating Kwiee Electric Steps. It sprays on and into hard to reach places. KwikLube™ changes from a penetrating fluid to a tough, protective grease in a matter of minutes! The cured film is impervious to moisture and can withstand temperatures above 400° F (204° C). This formulation also contains additives to prevent rust and reduce wear.

Ask for Kwik Lube at your local RV Dealer

Maintenance and Lubrication

Adjusting the stops on 27, 32, 34, 35, 36, 38, and 40 Series Steps

The 27, 32, 34, 35, 36, 38, and 40 Series steps are fitted with adjustable cam stops on the step frame which help lock the step in the out position, creating a firm stepping platform while relieving load bearing stress on the motor and drive linkage. The stops are adjusted at the factory but may become loose during shipping, installation and/or normal use. The following procedure outlines the proper method for adjusting the cam stops.

WARNING: When the cam stops are out of adjustment the step may feel loose or "mushey" when stepped on. If the cam stops are not properly adjusted the step may not extend to its full and locked out position. Using a step with loose or out of adjustment cam stops may cause damage to the motor assembly or drive linkage. A broken drive linkage will allow the step to move freely in and out creating an unsafe stepping platform.

TO ADJUST THE STOPS:

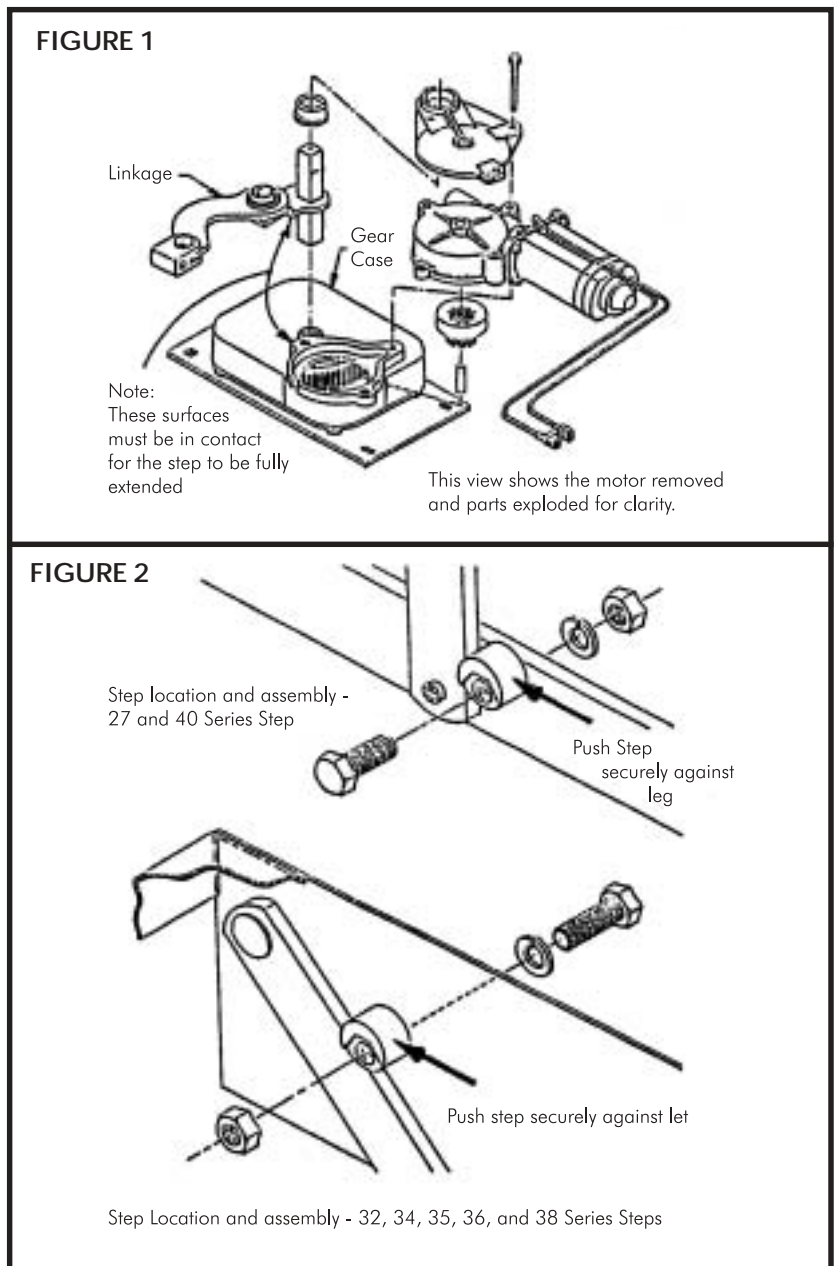
The stops are located under the step top on 32, 36, and 38 Series Steps, and on the bottom tread side rail on 27 and 40 Series Steps. There is one stop on each side of the step.

CAUTION: WHEN WORKING UNDER THE STEP, BE SURE THAT THE STEP CANNOT BE ACTIVATED OR THERE IS A DANGER OF GETTING CAUGHT IN THE STEP MECHANISM.

1. Loosen the stops so they move freely.
2. Retract the step.

CAUTION: BE SURE THAT NOTHING CAN GET CAUGHT IN THE STEP MECHANISM.

3. Extend the step fully to its locked extended position (see **Figure 1**, right, top). Be sure that the motor assembly linkage rests against the gear case as illustrated in the figure.
4. Using 2, 1/2" wrenches, loosen the cam stop nut with one wrench and rotate the cam stop with the other wrench. Once the stop is pushing against the leg and taken all the play out of the step frame, tighten the cam stop nut so it won't back off. Be sure that both stops are tightened and that they rest securely against the leg.
5. Retract and fully extend the step. Check the motor assembly to be sure that it is locked all the way out, and that both stops are securely against the legs.
6. Push on the front edge of the step tread. If the step seems loose, repeat the cam stop adjustment procedures.



Full Page LB 2000 Advertisement

