Kwikee®

Owner's Manual #880

Kwikee #1422257

Electric Steps

Equipped with a Permanent Magnet Motor

(For steps with Control Units 909506000, 909507000, or 909508000 and steps without Control Units)

Single Steps

Double Steps

Triple Steps

Van Steps

Table of Contents

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 Kwikee Products Company, Inc. ("Kwikee") shall be the responsibility of the customer. Kwikee will pay shipping charges when returning warrantable parts to the customer. Kwikee 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, Kwikee 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. Kwikee will not, under any circumstances, reimburse the cost of warranty parts purchased from sources other than Kwikee 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. A Returned Goods Authorization (RGA) number must be obtained before any parts or claims are sent in. Call Kwikee'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.

FILL OUT AND SAVE WITH VEHICLE RECORDS

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 #

Year & Manufacturer of the recreation vehicle

Date of Purchase

Complete the following only if your steps are equipped with Control Unit:

Control Unit #

Control Unit Serial #

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.

STEP IDENTIFICATION INFORMATION

INTRODUCTION

STEPS WITH CONTROL UNIT

This manual has been provided to assist you with the identification, operation, maintenance, and troubleshooting of any Kwikee electric step manufactured after January 2002 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 Kwikee 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.*

STEPS WITHOUT CONTROL UNIT

This manual has been provided to assist you with the identification, operation, maintenance, and troubleshooting of any Kwikee electric step equipped with the self-centering rocker switch manufactured after January 2002. It does not apply and should not be used as a reference to any other previous versions of a Kwikee electric step.

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

STEPS WITH CONTROL UNIT

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.

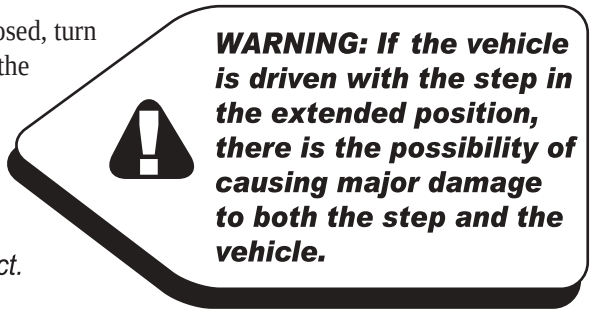
3. Open the door. The step should extend and lock in the "down" position with the understep light on.

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.*



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.

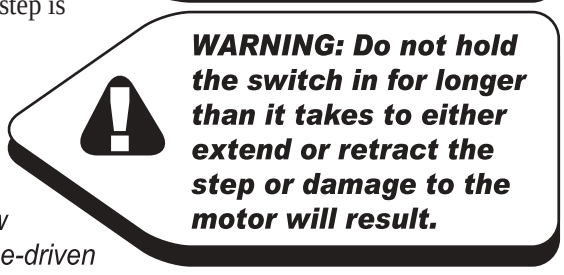
NOTE: *If the yellow wire from the four-way connector is not connected to an ignition power source, the "Last Out" feature will not operate.*

STEPS WITHOUT CONTROL UNIT

1. To extend the step, push and hold the bottom half of the rocker switch. Make sure the step is completely extended and locked in position before releasing the switch.

2. Push and hold the top of the rocker switch to retract the step. Be sure the step is completely retracted and locked in position before releasing the switch.

NOTE: *Always be sure that the step is fully retracted before traveling. If the step is left extended and strikes an obstruction while the vehicle is moving, major damage to both the step and the vehicle could result.*



NOTE: *The extend/retract function will be reversed if the red and yellow terminal connections are reversed or the step is equipped with a reverse-driven motor assembly (such as on the 37 and 42 Series steps).*

MAINTENANCE

FIGURE 1

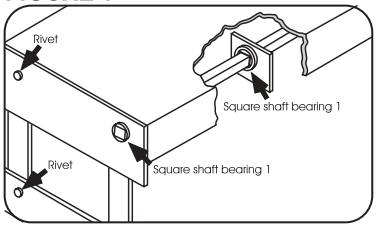


FIGURE 2

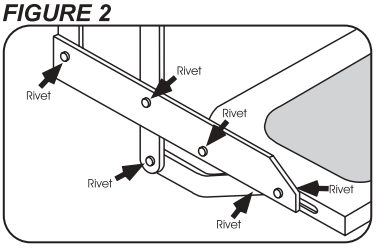


FIGURE 3

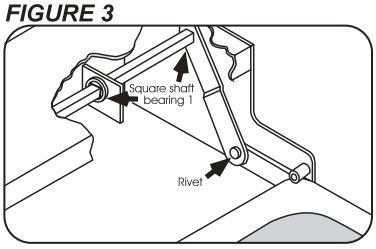


FIGURE 4

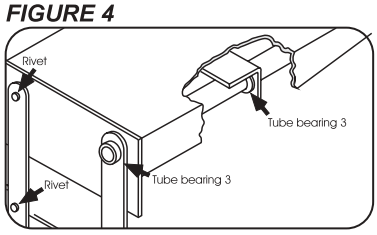


FIGURE 5

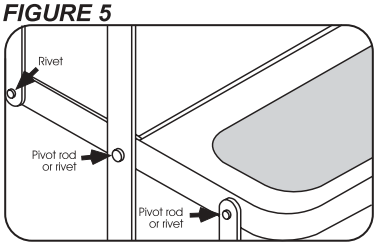


FIGURE 6

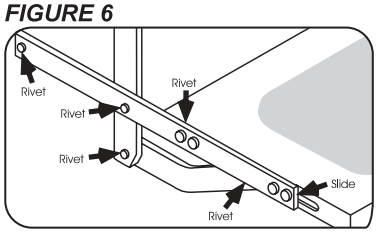
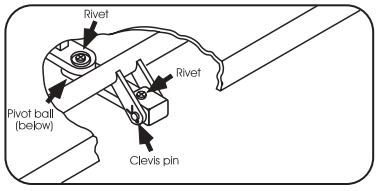


FIGURE 7



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 Kwikee 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 and 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.

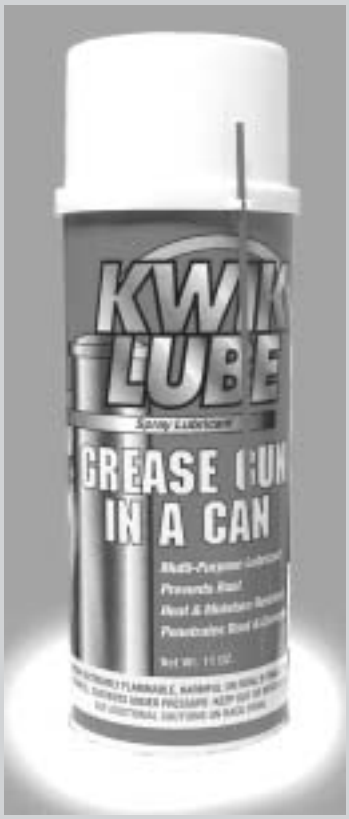
4. Maintain clean, dry electrical connections at the two-way and four-way connectors and any butt connections leading from the four-connector to the vehicle. A small dab of di-electric grease at the connections and replacing corroded butt connections with heat shrink type crimp style automotive connectors 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 Kwikee Electric Steps.

KwikLube sprays on (and into) places that are hard to reach. Then it changes from a penetrating fluid to a ***tough, protective grease*** in a matter of minutes!

The cured ***KwikLube*** 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 your local RV Dealer for KwikLube



ADJUSTING THE CAM STOPS

24, 25, 27, 32, 34, 35, 36, 38, and 40 Series Steps

Kwikee steps are fitted with adjustable cam stops on the step frame that help lock the step in the "out" position, creating a firm stepping platform and relieving load-bearing stress on the motor and drive linkage. The cam is adjusted at the factory but due to the rigors of shipping, installation, and normal use the cam may fall out of adjustment and need to be tightened.

The cam stops are located under the step top on the 32, 36, and 38 Series Steps, and on the bottom tread side rail on the 24, 25, 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 and that nothing can get caught in the step mechanism.

1. Loosen the stops so they move freely and retract the step.

2. Extend the step fully to its locked extended position (see ***Figure 8***). Be sure that the motor assembly linkage rests against the gear case as illustrated in Figure 1. Repeat if needed until the motor assembly locks in the extended position.

WARNING: **When the cam stops are out of adjustment, the step may feel loose or "mushy" when stepped on. If the cam stops are not properly adjusted the step may not extend fully to the locked-out position. Using a step with loose or out-of-adjustment cam stops may cause damage to the motor assembly and/or the drive linkage.**

CAUTION: Be sure that nothing can get caught in the step

3. Push the stops against the leg and tighten securely (see ***Figure 9***). Be sure that both stops are tightened and that they rest securely against the leg.

4. 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 secure against the legs. Repeat the above procedures if needed to properly adjust the stops.

5. Push on the front edge of the step tread. If the step seems loose, repeat the above procedures. The stops may not be properly adjusted so that they rest tightly against the leg.

FIGURE 8: This view shows motor removed and parts exploded for clarity only. These parts need not be disassembled to adjust cam stops.

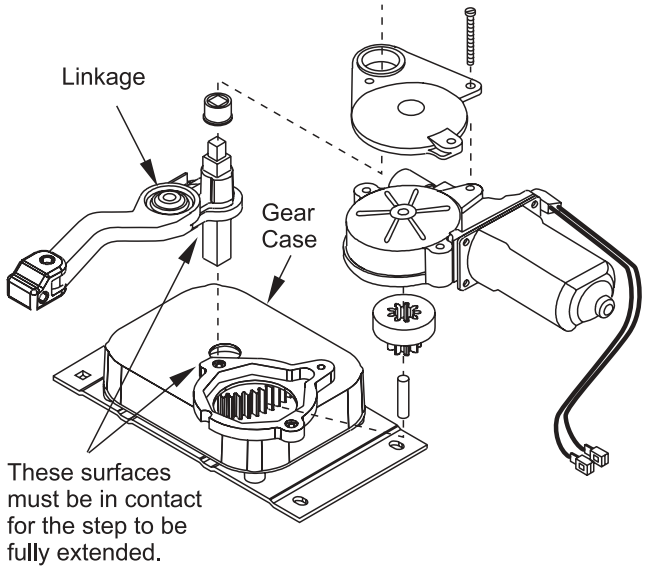
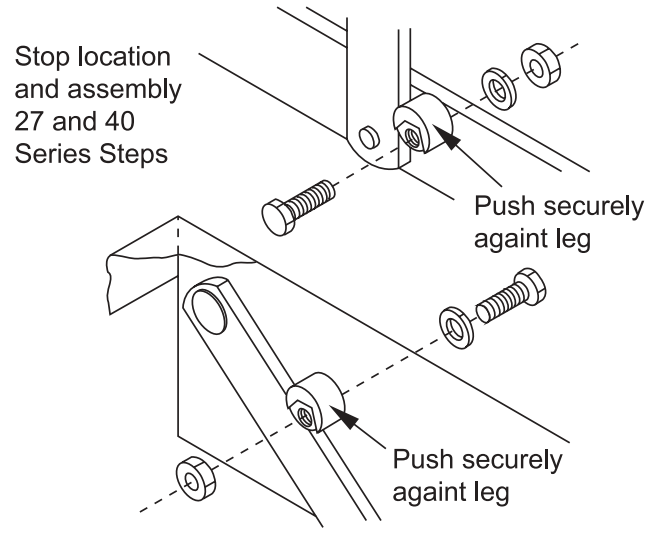


FIGURE 9: Stop location and assembly, 32, 34, 36, and 38 Series Steps



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 contol 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 for more than 5 seconds, 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 ***Figures 10, 11, and 12*** on Page 10.

These general service notes and the Step Test Procedures address the most common questions about Kwikee 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.

TROUBLE SHOOTING AND TESTING PROCEDURES

The following 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).

Read the entire procedure prior to testing. If you need assistance contact Kwikee's Service Line at 1-800-736-9961.

TESTING THE STEP

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 4-way connector on underside of step and connect step-half of the connector to the four-way connector pigtail. ***See Figures 10, 11, and 12, Page 10-11.***

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 (–) battery pos to the green ground wire of the control unit.

***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.**

VAN STEPS

If the van step is equipped with a splash cover, remove the cover to access motor assembly and control unit. If step is locked in retracted (up) position and the plastic cover can not be removed, disassemble the step tread to access the plastic cover.

To disassemble the tread, remove the (8) 1/4-20 x 1" long hex head bolts in tread side rails (connects tread and sliding blocks to side rail. This allows the tread to drop out of the way and the plastic cover to be accessible.

Reassemble the tread after removing the cover. Reinstall the cover after testing procedures and any necessary repairs are complete. Fully extend the step to reinstall the cover. Be sure that the four-way connector exits the notch in the plastic cover when reassembling.

5. To supply power, 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.

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.

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

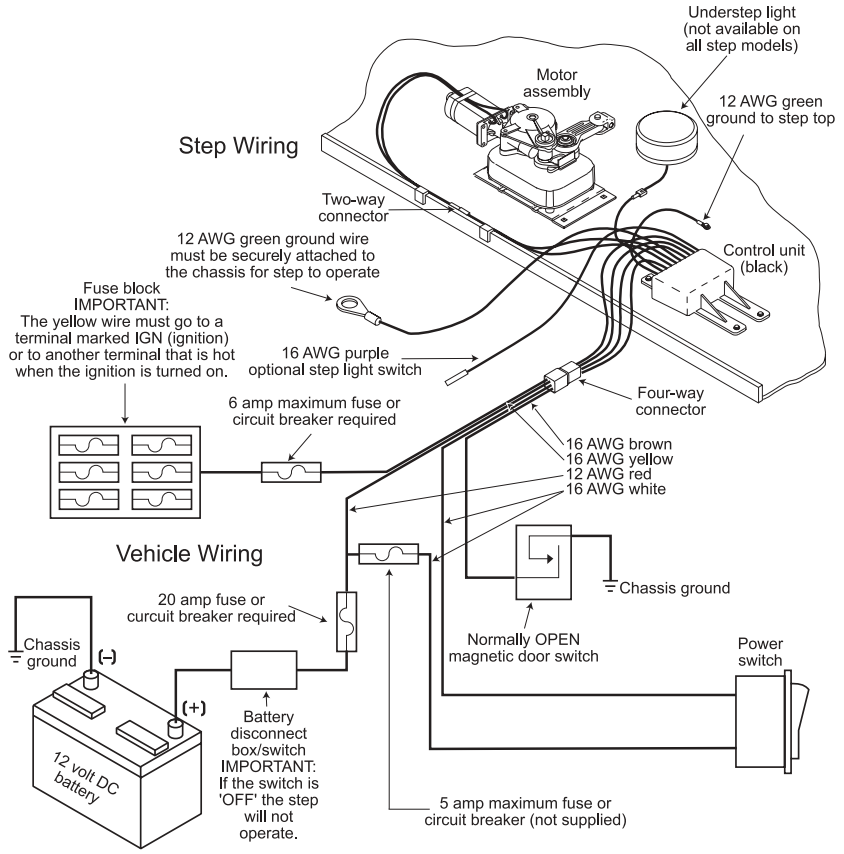
7. To extend the step, touch the white wire to the battery's positive (+) post. The step should extend and remain extended.

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.

FIGURE 10: Wiring diagram for step with control unit



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 on Page 11.

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 on Page 11.

FIGURE 11: Wiring diagram for steps with door switch only operation

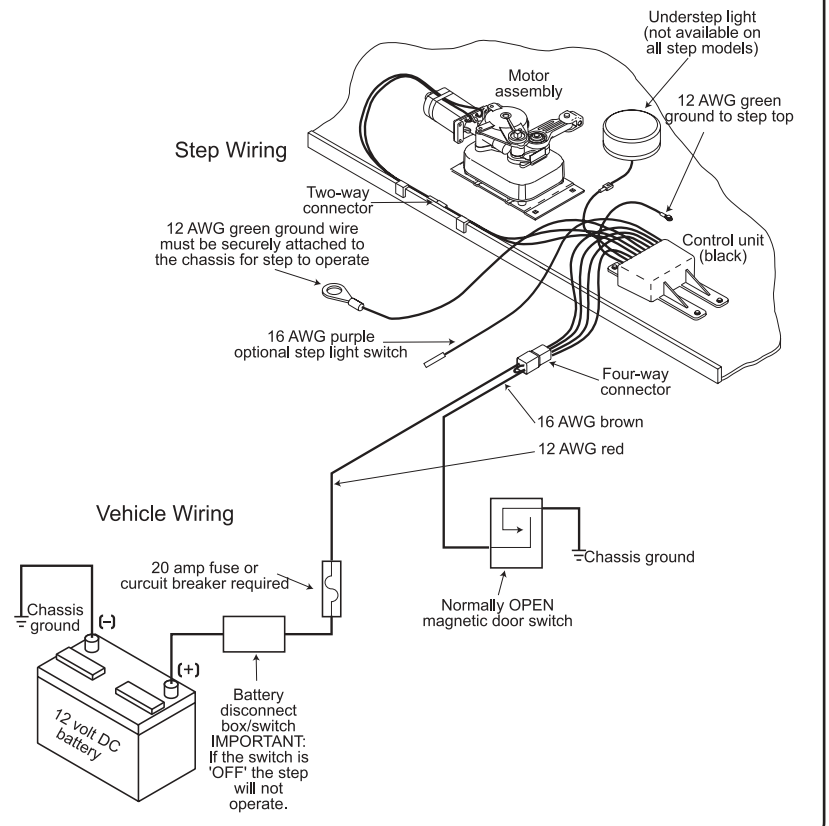
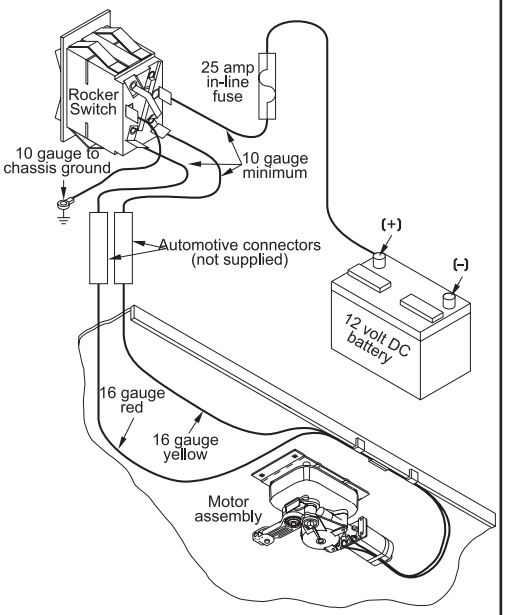


FIGURE 12: Wiring diagram for steps without control unit



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 13***). 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 14***). The reading should be a minimum of 12 volts DC (the 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 15***). 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.

FIGURE 13: Check main power source

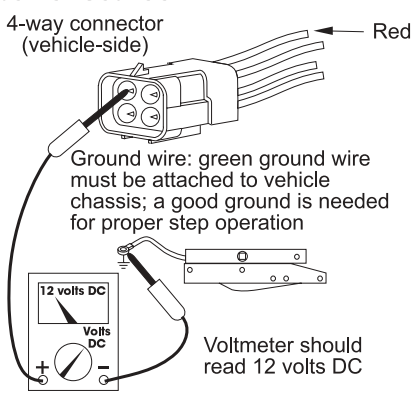


FIGURE 14: Check power switch

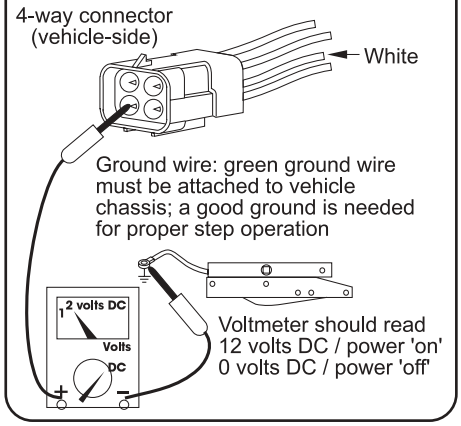
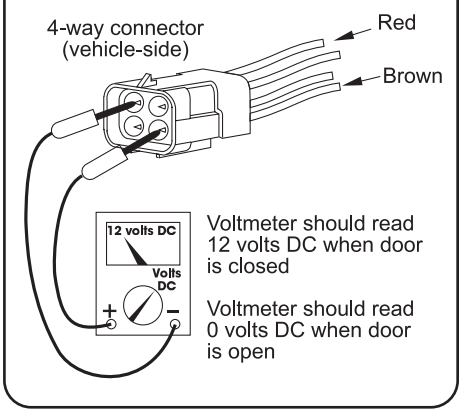


FIGURE 15: Check door switch



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 16*** on Page 12.) The voltage reading should be approximately 12 volts DC when ignition is on and zero (0) volts when ignition is off.

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 (see ***Figure 17***).

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

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.

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

FIGURE 16: Check ignition override

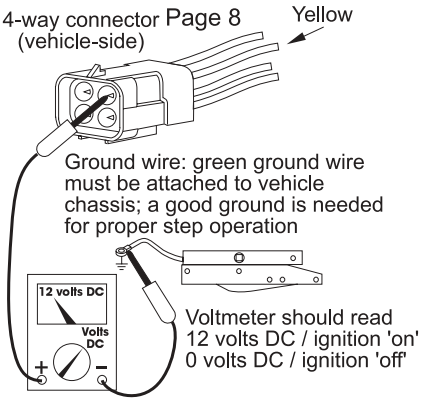
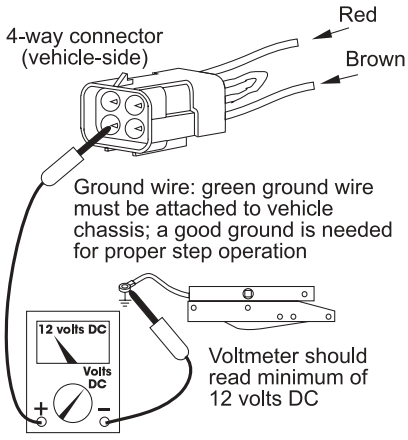


FIGURE 17: Check connector



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

www.kwikee.com