

Phoenix Cruiser

Electric Step Trouble-shooting Guide

Situation: When the coach door is opened the electric steps do not come out.

Do this first:

While standing outside with the door closed, check to see if the amber courtesy light under the steps comes on when you open the door. If the light comes on, listen for a click about two seconds later and observe that the light turns off.

- a. If the light **does not** occur, there is no power to the steps.
 - Check to see if the step actuator switch in the lower doorframe is stuck. It should push in easily and return without binding.
 - Disconnect then reconnect the power cable to the step controller. Make very sure it clicks securely closed. This connector is very special for keeping out dirt and moisture. It is possible it was not perfectly closed.
 - Check the 4 fuses located in the fuse box by the hand brake. If the fuses are ok you will need to go through the Kwikkee diagnostic procedure (see at end) or take your motorhome to any RV service center where they have the necessary Kwikkee connector and expertise.

- b. If the light does occur, you have power from the engine battery to the steps. The step controller tried to activate the step motor and, failing that, shut off the power.
The steps are jammed.

About jammed steps

There are degrees of jamming from slight to hard. The way the steps work is that the actuator arm rotates to the full-out or full-in positions where it hits a stop (or an obstruction like a curb). The motor continues to try to rotate causing the nominal 12 volt DC current of 8-9 amps to rise sharply. At a stall torque of around 14 Nm (Newton-meters) or 22–25 amps the motor shuts off leaving the gears tightly meshed under pressure.

When the step controller senses the door switch closed, the motor is reversed. The kick normally overcomes the pressure on the gears and the steps are actuated. However, with time the motor gradually loses strength. Inadequate lubrication also increases the load pressure.

There ultimately will come a time when the motor sometimes cannot overcome the load pressure and the steps will not deploy reliably. At this early stage it may not take much to free the jam.

What to do for jammed steps

- If the engine battery voltage is a little low, the steps may work again after driving enough to fully charge the engine battery. Merely having the engine running will not make a difference because the step controller gets a signal from the Ford computer that causes the steps to retract for safety reasons. Also, try pushing the battery boost (white switch on left front panel) when opening the door to see if it can supply the extra current needed. An external battery has been tried without success. *A manual switch to by-pass the step controller has been used if a user has excellent timing.*
- Try the “magic moment”. With a hammer or wrench in hand, slide under the chassis to the side of the steps. (*Danger! Do not get under the steps*). Have someone open the door. The “magic moment” is the two seconds while the courtesy light is on and the controller is trying to get the steps to move. A kick to the steps or firm tap to the actuator arm at this moment may provide the extra oomph the motor needs to overcome the load pressure on the gears. Even just wiggling the loose fitting connector joints in the actuator arm has on occasion reduced the load pressure enough to free the steps. A whack at other times is usually useless.

When nothing above works, the following procedure is the only alternative.

1. Disconnect the steps from the actuator arm
 - For safety, remove the power connector or block the steps up so they cannot accidentally be activated and crush your chest.
 - Working from underneath the steps, remove the cotter pin from the clevis pin that links the steps to the actuator arm. Remove the clevis pin to free the steps.

This is very difficult to do and requires hammering to get the clevis pin to start to move followed by progressive prying against the head of the clevis pin.

Suggestion: Get an 18 inch pry bar and cut/file a ¼” slot in it. Prying is much more effective with this tool. A tapered wedge helps too.

2. Remove three bolts and drop the gearbox by prying and wiggling against the load on the gears. Be careful not to disturb the position of the gears and washers when it comes free.
3. Test the motor. With the power cord connected to the motor, open the door to verify that the motor and actuator arm are no longer jammed.
4. Inspect the gears for signs of damage. Lubricate the gears. Use the manufacturers product “Kwiikee Lube” or similar gear lubricant.
5. Re-attach the actuator arm to the steps. The clevis pin should enter the link from the rear. The cotter pin should be on the forward end to make it easier the next time..
6. Reseat the gearbox. Align the bolt holes and lift the gearbox straight up to mesh the gears. Secure using the three bolts.
7. Remove safety blocks and test to verify that the steps are working.

What next?

Your steps may work for a long time after this fix. Lubrication of all the moving parts will help to keep the load on the motor to a minimum. Kwiikee Lube or one of the “grease gun in a can” types is preferred. WD40 or silicone does not last. Oil attracts dirt.

Sooner or later the steps will jam again as the motor ages. You will repeat the trouble shooting process. Jam. Fix. Jam. Fix. The frequency increases with time.

Think ahead.

A proactive approach is to drill a hole under the head of the clevis pin and put in a very strong wire loop to be a pull ring. Removing the clevis pin then requires hooking in a ratchet strap and pulling and wiggling the pin out by brute force.

A small lanyard on the cotter pin also makes things easier the next time.

Note:

Replacing a clevis pin and cotter pin is extremely simple when the steps are working. Merely stop the step from extending out all the way by stopping it with your leg. Then leave the door open or turn off the steps. The steps will be loose. The pins can then be easily taken out and replaced without tools.

The real solution is to replace the motor.

The step used is Kwikkee 28 Stair Step #892809000

A direct replacement motor for this is available from:

AM Equipment, 402 E. Hazel St. Jefferson, OR 97352 Div. Of Powergearus.com

Telephone: 541-327-1546.

Internet: www.amequipment.com

Order: 14 Nm stall torque actuator motor, Part #: 214-1001, around \$40

Replacement procedure:

Unlock and remove wire harness connector. Remove the clevis pin to free the steps (the hard part of the job). Remove three bolts and work loose the motor. Remove drive gear and washers from motor drive shaft and transfer to new motor. Attach and lock wire harness connector. Attach actuator arm to steps with clevis pin (cotter pin forward). Mount new motor and secure with the three bolts.

*** *Trouble-shooting the Electric Step Wiring***

<http://support.powergearus.com/techdocs/Step%20Troubleshooting%20Flow%20Chart.pdf>

First, check engine battery must be 12 v. or more

Do a visual inspection under the steps to see if there is damage to the wires or cabling leading to the step motor.

Corrosion may be a problem. Next, disconnect the four-pin connector. Clean the pins and reconnect. Be sure the to fully seat the connectors so the latch clicks. Also take a close look at the green ground wire connection to the frame. If corrosion is evident there is a possibility of a bad ground. Remove, clean and reconnect.

If still no power, disconnect the four-pin connector and use a voltmeter to check the control wires at the motor connector as follows.

Red wire should be 12v, else a bad connection or blown 20 amp.fuse.

Yellow wire should be off when ignition is off and 12v when ignition is in RUN position, else bad connection or blown 6 amp. Fuse

White wire should be 12v to signal the step controller to remain extended (courtesy light off) when the door is closed. If not, check connections, wall switch and 5 amp. fuse.

Note: This is 0.8 Ampere/Hour draw from your motor battery. It is not good to use this feature if you do not have shore power

Brown/Red wire. The switch on the coach door activates the electric steps via this wire. Should be 12v with door open. If not, bad connection or problem is in the door switch.

If your tests at the step connector checkout ok, the step controller is suspect.

Ordering a controller:

Check the label on the controller and record the Date Code (such as 5113) and Part Number (something like 9095 xxx00) and Revision Number if given. Also note the color of the controller, Black, Brown or Green.

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