

Kwikkee[®] PRODUCTS

by  Lippert Components[®]

KWIKEE[®] IMGL STEP CONTROL TESTING PROCEDURE #82-ST0500

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Introduction

NOTE: This information was obtained from Power Gear® manual #82-ST0500 issued May 2011 with Rev OD dated May 2014.

NOTE: The service procedures outlined in this document apply only to KwikEE® IMGL (integrated motor/ gear box/ linkage) controls used on 2006 or newer models (Fig. 1 and 2). This manual does not apply and should not be used as a reference to previous versions of a KwikEE® electric step.

Fig. 1

**IMGL Control
(2006 and newer)**

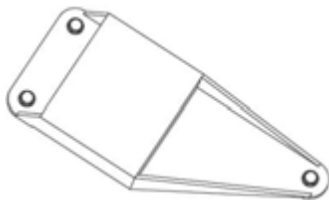
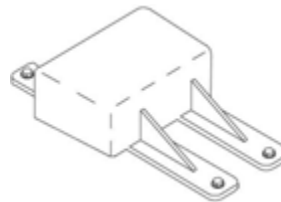


Fig. 2

**Pre-IMGL Control
(Before 2006)**



The step test procedures outlined are provided to troubleshoot and test all KwikEE® IMGL automatic electric step functions. The procedures are designed to initially check the basic functions of the step separately from the RV wiring to determine whether or not the step is malfunctioning. The procedures test various components of the step until the source of the malfunction is located. Using the procedures will shorten and reduce the time spent troubleshooting.

⚠ WARNING

A 12 volt automotive battery contains sulfuric acid, which can cause severe burns. Avoid contact with skin, eyes and clothing. A 12 volt automotive battery can also produce hydrogen gas, which is explosive. Keep cigarettes, open flames and sparks away from the battery at all times.

Resources Required

Some portions of the test procedures require additional equipment. This equipment includes:

- A Voltmeter
- A fully charged 12V DC automotive battery
- A Four-way Pigtail Connector (Power Gear® part number 909306000 / LCI 369243)

General Service Notes

These general service notes and the step test procedures address the most common questions about Kwiikee® electric steps. Due to the number of variable conditions, you may experience symptoms other than those covered.

NOTE: 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.

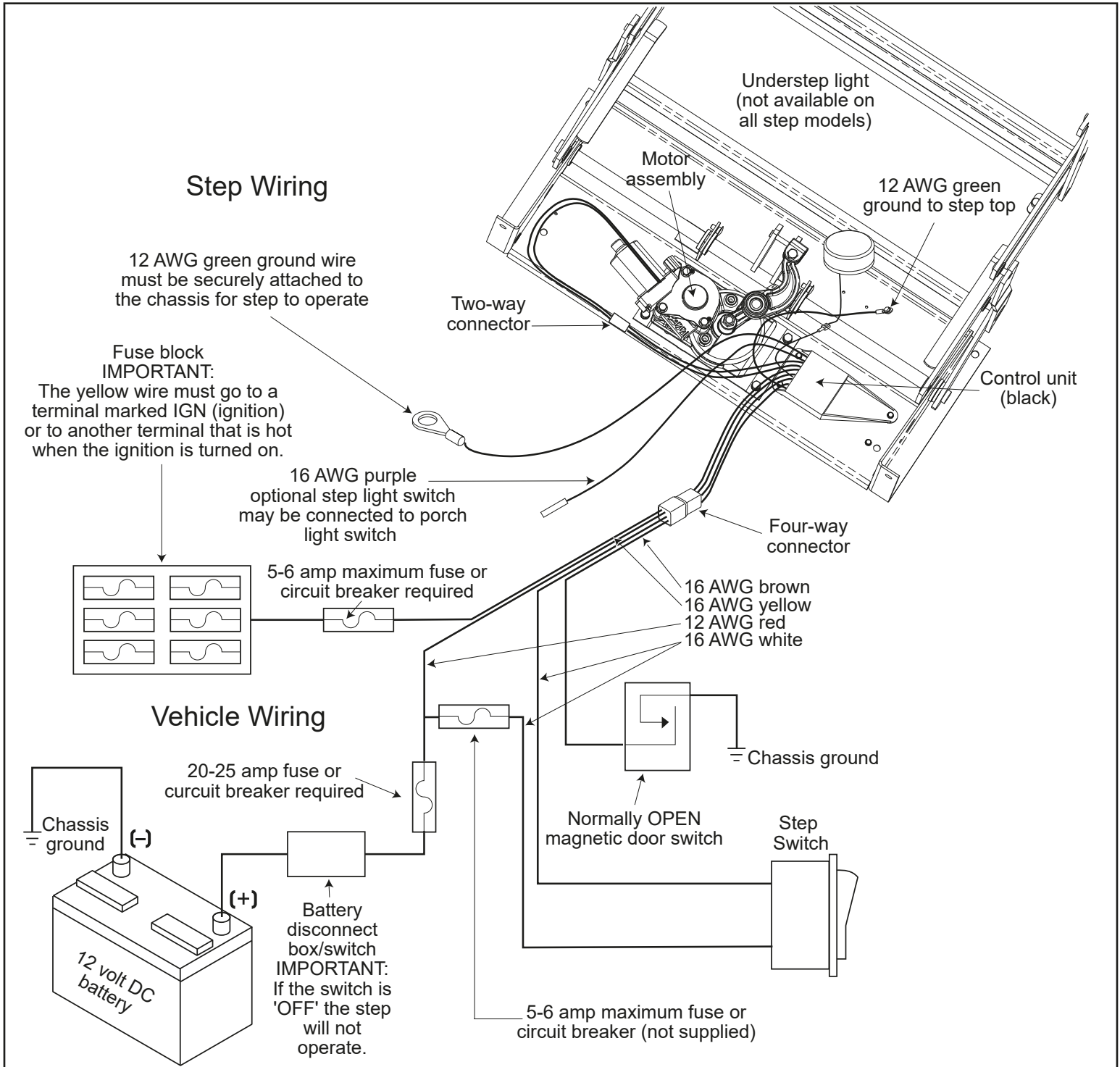
1. To determine if a control unit is not shutting off, perform the following test.

NOTE: When doing this test, switch the voltmeter leads back and forth between the red and yellow motor wires to make sure no voltage registers.

- A. Remove the four-way connector to the chassis and the two-way connector between the step motor and the control unit.
 - B. Place a voltmeter between the red and yellow motor wires at the two-way connector from the control unit.
 - C. Reconnect the four-way connector.
 - D. Refer to OEM Owner's Manual (or OEM Requirements) and place the step switch in the appropriate position for the step to remain in the extended position.
 - I. If any voltage registers on the meter for more than five seconds, the control unit is not shutting off and may be defective.
 - II. Disconnect the four-way connector to keep the step motor from overheating.
 - III. If zero voltage is present, the control unit has shut off and is normal.
2. If the step does not work or operates erratically (for example, extends part way and shuts off) the first item to check is the vehicle battery.
- A. Low supply voltage may cause erratic operation of the step.
 - B. Poor ground connections may also cause erratic operation of the step.
 - C. Check battery voltage and condition. A battery in good condition and properly charged will have a no load voltage of approximately 12.6 volts.
 - D. Check the voltage at the battery and at the four-way connector at the control unit.
 - E. Make sure that all battery and step control unit connections are clean and secure.
 - F. Recharge or replace the battery as necessary and retest the step for proper operation.
3. The step may also operate erratically if it is operating directly from a converter and the converter output 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.
4. The step will not function if the ground to the control unit is lost 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).
5. Make sure the battery terminals and all wire connections are clean and tight.
6. Verify that all wires meet the minimum requirements specified in Figure 3.

Fig. 3

Wiring Diagram for Step with Control Unit



Preparation

1. Prior to beginning the test procedures, check to make sure that all ground connections are securely fastened with good metal-to-metal contact. A good ground is required for proper step operation.
2. Inspect the step for visible damage that might restrict operation.
3. Obtain a four-way pigtail connector (Kwikkee Part Number 909306000 / LCI Part Number 369243).
4. Disconnect four-way connector on underside of step and connect the step-half of the connector to the four-way pigtail connector (Fig. 3).
5. Place a fully charged 12V DC automotive battery beside the step.

CAUTION

Do not allow the battery terminals to come in contact with the step.

6. Complete a ground for the step tests by connecting a 10 AWG from the negative battery post to the green ground wire of the control unit.
7. To supply power, attach the red wire from the pigtail to the battery's positive post. The step will extend.
8. With the power and ground connections complete, all functions of the control unit can be checked at the four wires of the pigtail connector.
 - A. The red wire is the power supply,
 - B. The brown wire is the door switch,
 - C. The white wire is the step lockout switch,
 - D. The yellow wire is the ignition override.

WARNING

Keep fingers, arms, and legs clear of step mechanism while performing these tests. Failure to do so may result in serious personal injury.

Troubleshooting and Test Procedures

NOTE: Read each procedure in its entirety prior to testing.

Testing the Step

1. Retracting the step.
 - A. Touch the brown wire to the negative terminal.
2. Extending the step.
 - A. Remove the brown wire from the negative terminal.
 - B. The step should extend and stay extended.
3. Testing the ignition override feature.
 - A. If step is retracted, remove the brown wire from the negative terminal. Step should extend and stay extended.
 - B. With the step extended, connect the white wire to the positive terminal.
 - C. Attach the brown wire to the negative terminal.
 - D. Touch the yellow wire to the battery's positive terminal.
 - E. The step should retract.
 - F. Remove the brown wire and the step should extend.

- G. 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.
 - H. If all of the step functions do work, the malfunction is either in the door switch, step lockout switch, or the vehicle wiring. Proceed to Testing the Four-Way Connector section.
4. Testing the Auto Extend feature.
- A. Touch the brown wire to the negative terminal to retract the step.
 - B. While holding the brown wire to the negative terminal, remove the yellow from the positive terminal.
 - C. Touch the white wire to the positive terminal.
 - D. The step will stay retracted.
 - E. Remove the brown wire and the step should extend.
 - F. Next touch the brown wire to the negative terminal.
 - G. The step should stay extended.

⚠ WARNING

Do not leave the wires connected while testing the motor 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 Motor

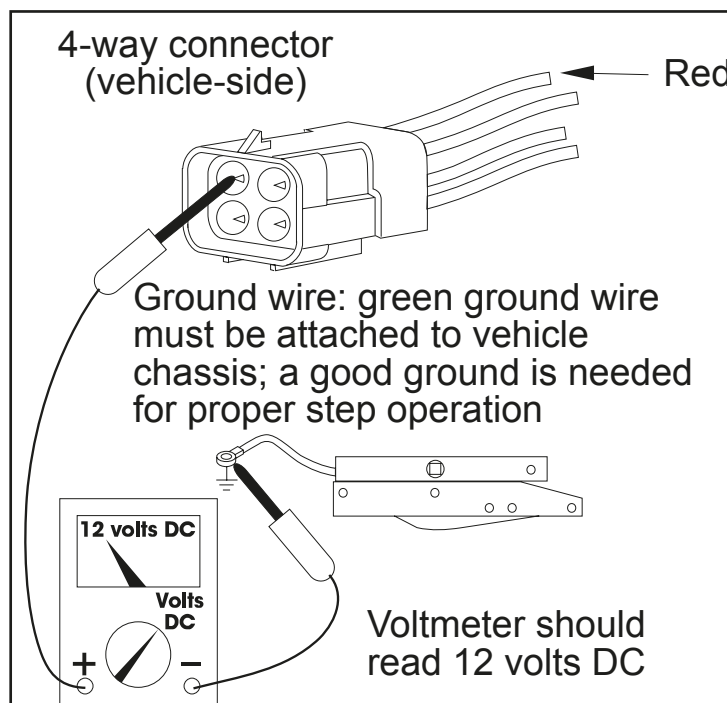
NOTE: On steps with reverse polarity plug (Power Gear part number 1800711 / LCI 365884) reverse the red and yellow wire connections to perform the following test.

If the step extends and retracts during this test, the condition of the step motor is good.

1. Disconnect the two-way connector between the step motor and the control unit.
2. Connect the motor's red wire to the positive terminal of the battery.
3. Touch the motor's yellow wire to the negative terminal of the battery to extend the step.
4. To retract the step, reverse the connections.
 - A. Connect the motor's yellow wire to the positive terminal of the battery.
 - B. Touch the motor's red wire to the negative terminal of the battery.

Fig. 4

Main Power Source

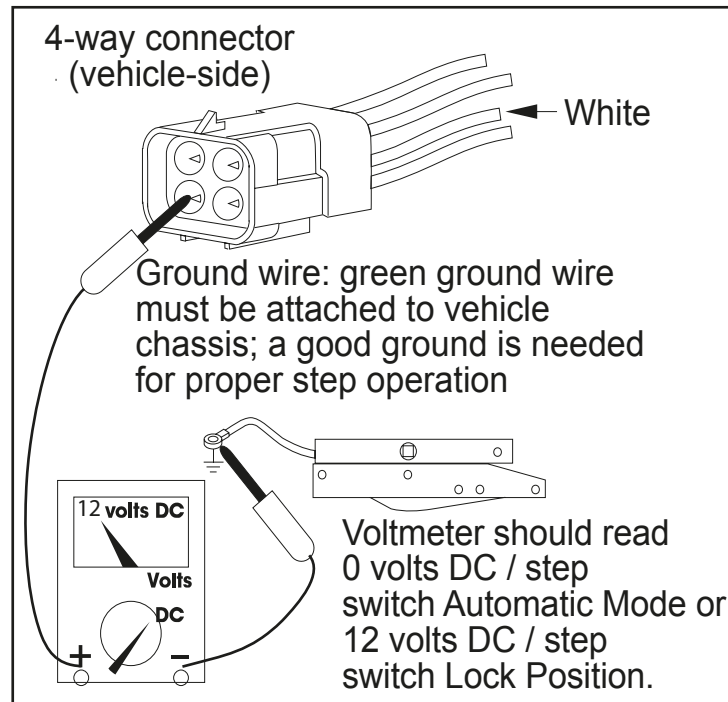


Testing the Four-Way Connector

1. To check the main power source, connect a voltmeter between the red wire from the four-way connector (vehicle half) and the ground terminal at the end of the control unit's green ground wire (Fig. 5).
 - A. The reading should be a minimum of 12 volts DC.
 - B. 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.
 - C. If the voltage reading is zero 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.

Fig. 5

Step Switch



2. To check the step lockout switch, connect a voltmeter between the white wire from the four-way connector (vehicle half) and the terminal at the end of the control unit's green ground wire (Fig. 5).
 - A. The reading should be a minimum of 12 volts DC with the switch in one position, and zero volts DC with the switch in the opposite position.

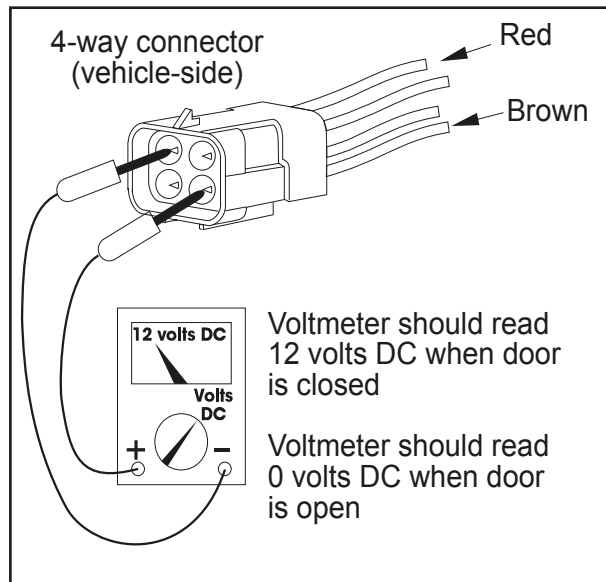
NOTE: Refer to vehicle OEM owner's manual (or OEM requirements) which will provide the switch position of "on" or "off" for the step lock position.

 - B. If the voltmeter reads zero volts when the step switch is the Automatic Mode position, there is a problem in the step lockout switch circuit.
 - C. Check the 6 amp in-line fuse, the step lockout switch, and the condition of the circuit's wiring and terminal connections.

3. To check the door switch, connect a voltmeter between the red wire from the four-way connector (vehicle half) and the brown in the same connector (Fig. 6).
 - A. The voltage should be a minimum of 12 volts DC when the door is closed and zero volts when the door is open.
 - B. If the readings are incorrect, there is a problem with the switch.
 - C. Check the door switch and the condition of the circuit's wiring and terminal connections.

Fig. 6

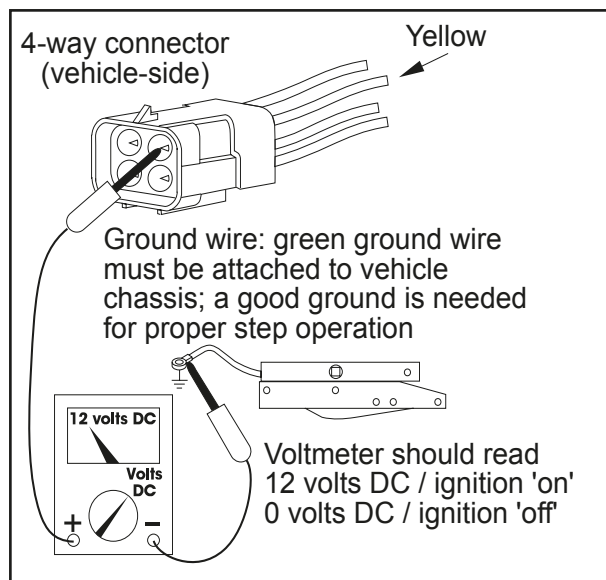
Door Switch



4. To check the ignition override system, connect a voltmeter between the yellow wire from the four-way connector (vehicle half) and the ground terminal on the end of the control unit's green ground wire (Fig. 7).
 - A. The voltage reading should be approximately 12 volts DC when ignition is on and zero volts when ignition is off.
 - B. If the reading is zero when the ignition is on, check all terminal connections, wiring, and the vehicle's ignition fuse.

Fig. 7

Ignition Override



⚠ WARNING

Step control wiring is only to be used for step and step light (provided with the step) functions. Do not splice or tap into any of the step wiring. Failure to heed this warning may result in failure of step control, which may result in loss of step function or fire in the step control. Refer any questions to the step manufacturer.

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.

5. For steps equipped with door switch only operation:

A. 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 (Fig. 8).

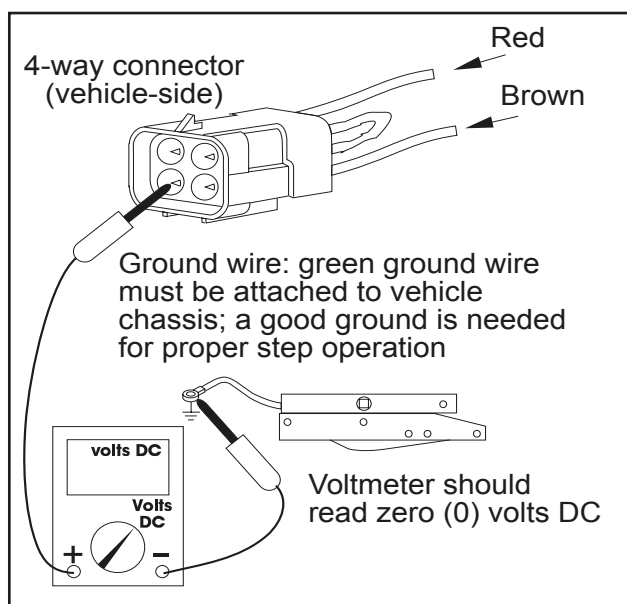
NOTE: Make sure to use the terminal with only the white wire.

B. The reading should be zero volts DC.

C. If the voltage reading is more, the white wire is connected to 12 volts DC and should be cut.

Fig. 8

Connector



Support Documentation

Document #	Description
Kwikee 1422279 / LCI 369410	Kwikee Steps Owner's Manual #888
82-S0501	Kwikee Step Identification Guide Tip Sheet
82-S0502	Removal and replacement of the step motor for Power Gear 9010000462 / LCI 378633, 9010000464 / LCI 372579, 9010000465, and 9010000466 Revolution Series
Kwikee #3010002262 / LCI #375656	Owner's Manual for Revolution Series Electric Steps



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