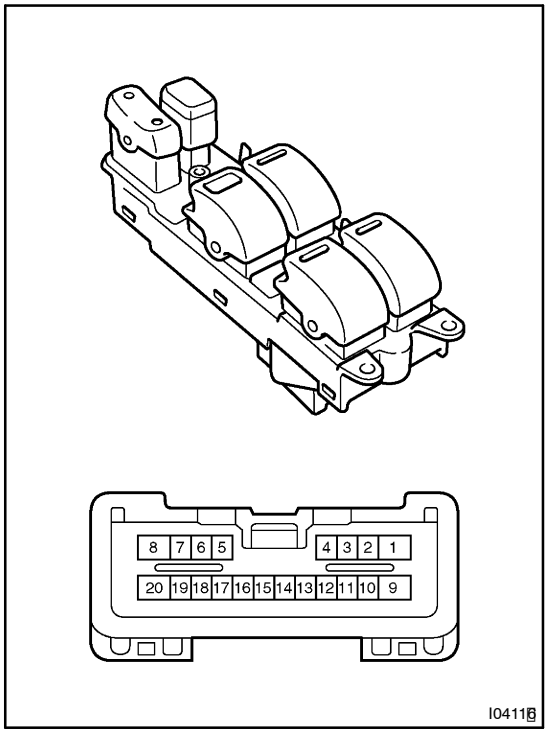


BE0HF–02

INSPECTION

1. INSPECT POWER WINDOW MASTER SWITCH CONTINUITY

Front Driver's Switch:

Switch position	Tester connection	Specified condition
AUTO	7 – 16	Continuity
UP	6 – 16	Continuity
OFF	–	No continuity
DOWN	16 – 18	Continuity

Front Passenger's Switch:

Switch position	Tester connection	Specified condition
AUTO	3 – 13	Continuity
UP	3 – 12	Continuity
OFF	–	No continuity
DOWN	3 – 4	Continuity

Rear Left Switch:

Switch position	Tester connection	Specified condition
AUTO	13 – 14	Continuity
UP	12 – 14	Continuity
OFF	–	No continuity
DOWN	4 – 14	Continuity

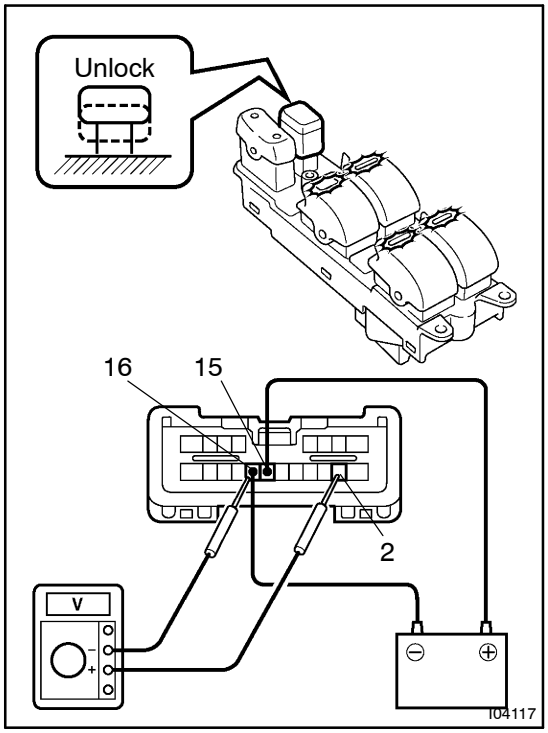
Rear Right Switch:

Switch position	Tester connection	Specified condition
UP, AUTO	11 – 13	Continuity
UP	11 – 12	Continuity
OFF	–	No continuity
DOWN	4 – 11	Continuity

If continuity is not as specified, replace the master switch.

2. INSPECT POWER WINDOW MASTER SWITCH CIRCUIT

(See page DI–710)

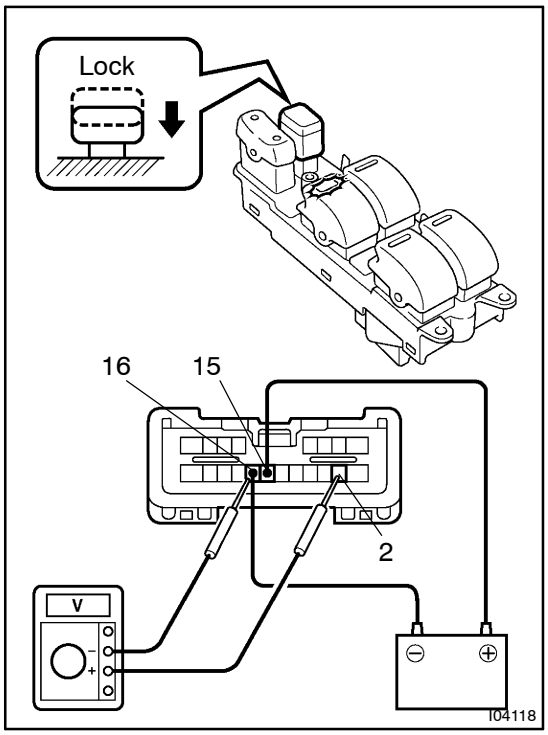


3. INSPECT POWER WINDOW MASTER SWITCH ILLUMINATION

(a) Set the window lock switch to the unlock position.

(b) Connect the positive (+) lead from the battery to terminal 15 and the negative (–) lead to terminal 16, and check that all the illuminations light up.

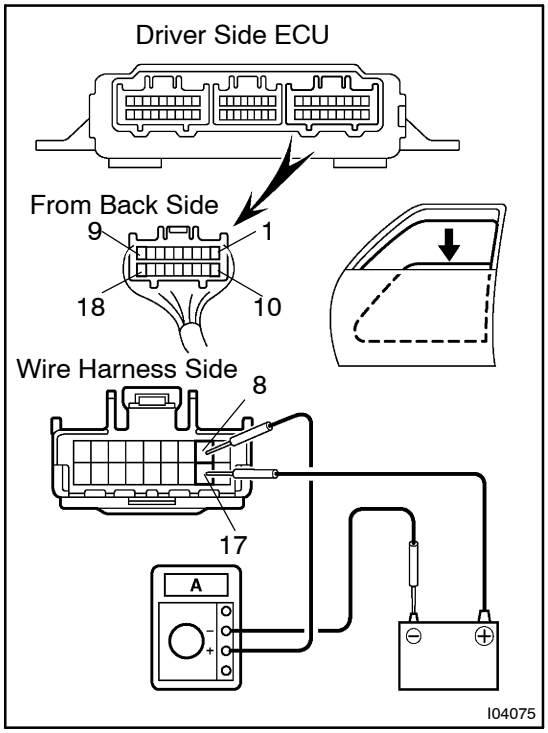
(c) Connect the positive (+) lead from the voltmeter to terminal 15 and negative (–) lead to terminal 2, and check that the voltage meter needle indicates battery positive voltage.



(d) Set the window lock switch to the lock position, check that all the passenger's power window switch illuminations go out.

(e) Then, check that the voltage meter needle indicates no voltage.

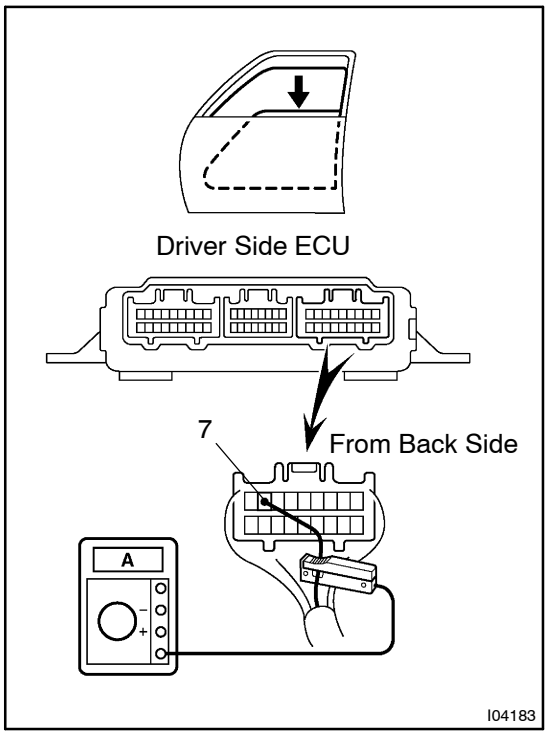
If operation is not as specified, replace the master switch.



4. INSPECT ONE TOUCH POWER WINDOW SYSTEM/ CURRENT OF CIRCUIT (Using an ammeter)

(a) Disconnect the connector from the driver door ECU.
(b) Connect the positive (+) lead from the ammeter to terminal 8 on the wire harness side connector and the negative (–) lead to negative (–) terminal of the battery.
(c) Connect the positive (+) lead from the battery to terminal 17 on the wire harness side connector.
(d) As the window goes down, check that the current flow is approximately 7 A.
(e) Check that the current increases up to approximately 14.5 A or more when the window stops going down.

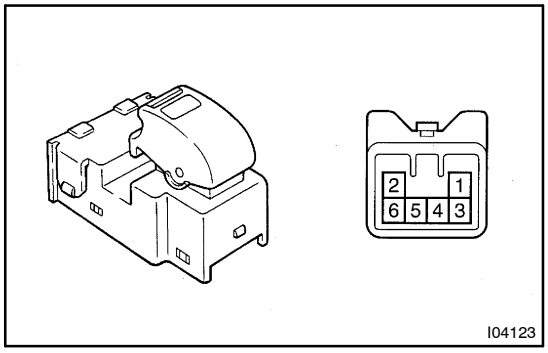
HINT:
The PTC opens some 4 – 90 seconds after the window stops going down, so that check must be made before the PTC operates.
If the operation is as specified, replace the driver door ECU.



5. INSPECT ONE TOUCH POWER WINDOW SYSTEM/ CURRENT OF CIRCUIT (Using an ammeter with a current–measuring probe)

(a) Remove the driver door ECU with connectors connected.
(b) Attach a current–measuring probe to terminal 7 of the wire harness.
(c) Turn the ignition switch ON and set the power window switch in the down position.
(d) As the window goes down, check that the current flow is approximately 7 A.
(e) Check that the current increases up to approximately 14.5 A or more when the window stops going down.

HINT:
The PTC opens some 4 – 90 seconds after the window stops going down, so that check must be made before the PTC operates.
If operation is as specified, replace the driver door ECU.



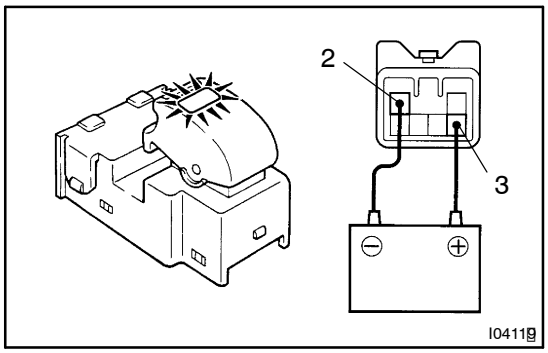
6. INSPECT POWER WINDOW SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
AUTO	3 – 5	Continuity
UP	3 – 6	Continuity
OFF	–	No continuity
DOWN	3 – 4	Continuity

If continuity is not as specified, replace the switch.

7. INSPECT POWER WINDOW SWITCH CIRCUIT

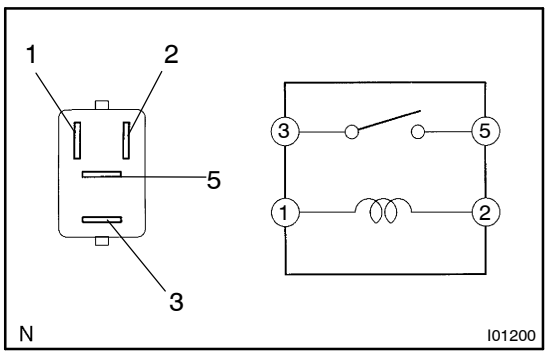
Passenger side: (See page DI–752)
Rear Left side: (See page DI–781)
Rear Right side: (See page DI–799)



8. INSPECT POWER WINDOW SWITCH ILLUMINATION

Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 2, and check that the indicator light lights up.

If operation is not as specified, replace the switch.

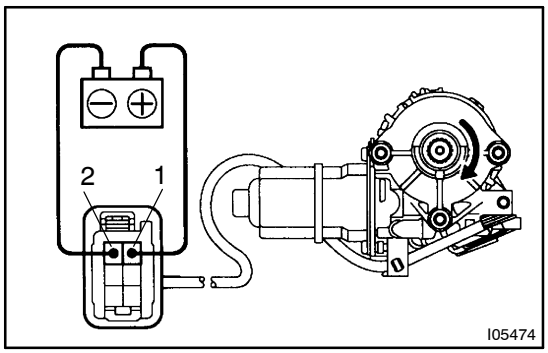


9. INSPECT POWER MAIN RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

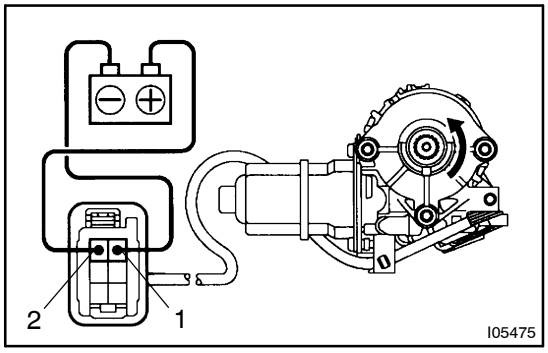
If continuity is not as specified, replace the relay.

10. INSPECT POWER MAIN RELAY CIRCUIT
(See page BE–21)



11. Front Left Side Door:
INSPECT POWER WINDOW MOTOR OPERATION

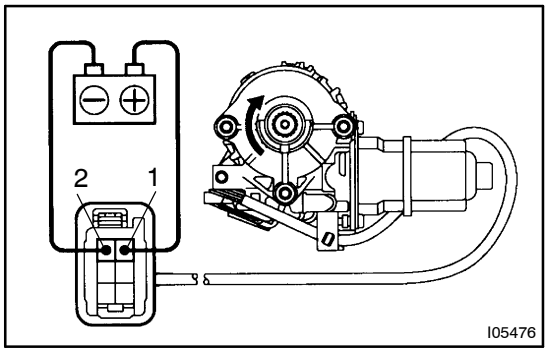
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, and check that the motor turns clockwise.



(b) Reverse the polarity, check that the motor turns counter-clockwise.

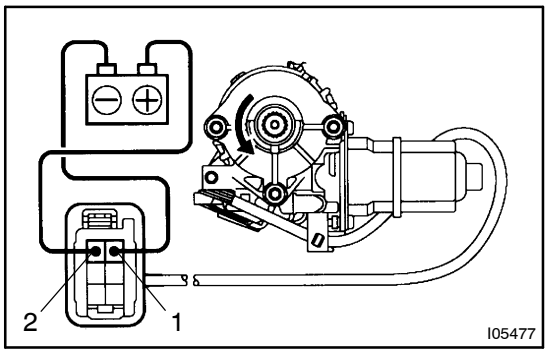
If operation is not as specified, replace the motor.

12. Front Left Side Door:
INSPECT POWER WINDOW MOTOR CIRCUIT
(See page DI–720)



13. Front Right Side Door:
INSPECT POWER WINDOW MOTOR OPERATION

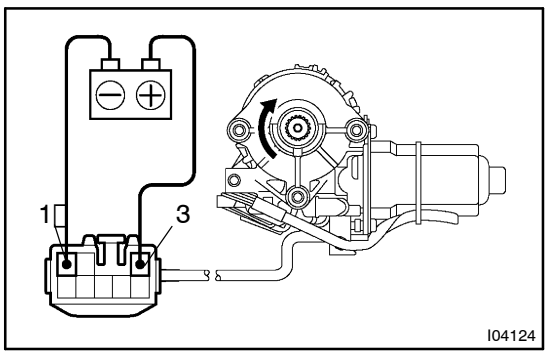
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, and check that the motor turns clockwise.



(b) Reverse the polarity, check that the motor turns counter-clockwise.

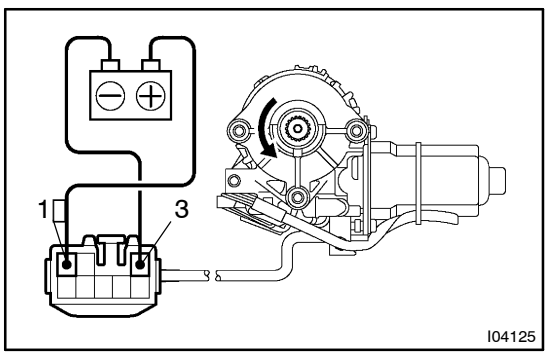
If operation is not as specified, replace the motor.

14. Front Right Side Door:
INSPECT POWER WINDOW MOTOR CIRCUIT
(See page DI–754)



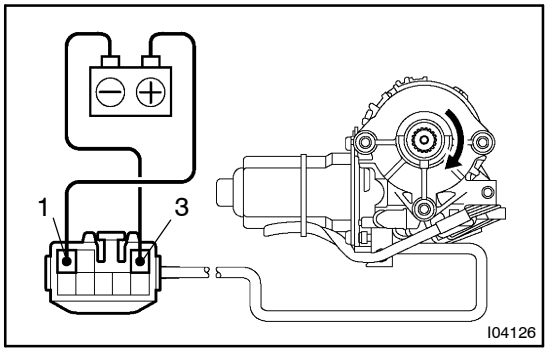
15. Rear Left Side Door:
INSPECT POWER WINDOW MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 1, and check that the motor turns clockwise.



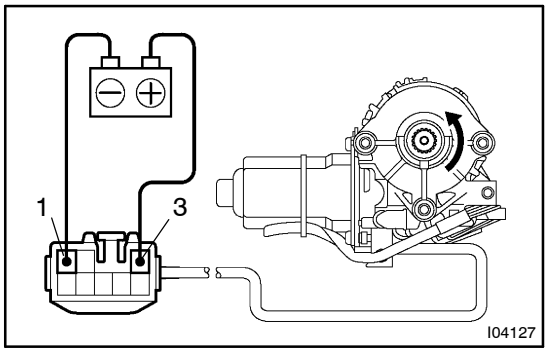
(b) Reverse the polarity, check that the motor turns counter-clockwise.

If operation is not as specified, replace the motor.



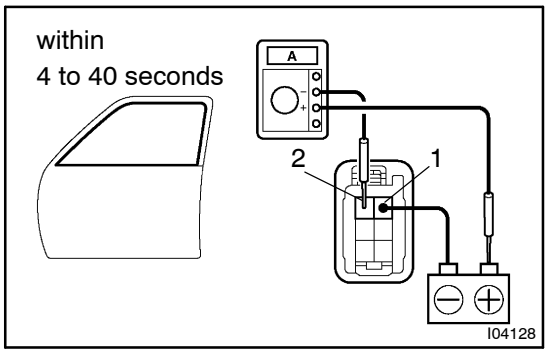
16. Rear Right Side Door:
INSPECT POWER WINDOW MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 3, and check that the motor turns clockwise.



(b) Reverse the polarity, check that the motor turns counter-clockwise.

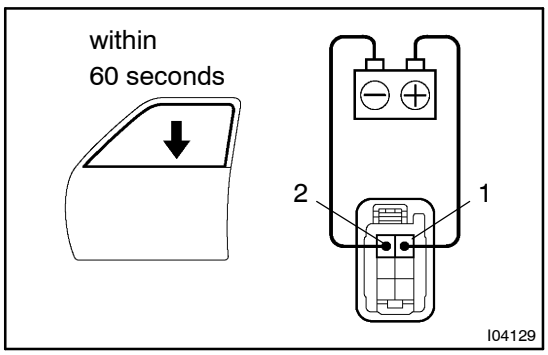
If operation is not as specified, replace the motor.

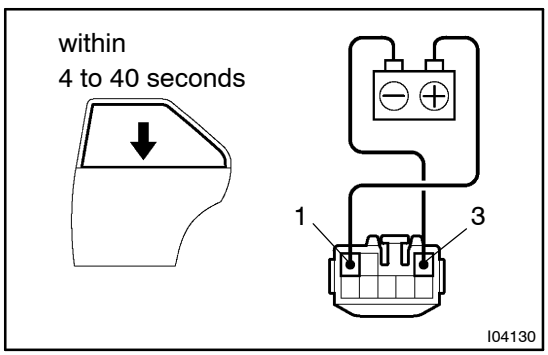


17. Front Door:
INSPECT POWER WINDOW MOTOR PTC OPERATION

(a) Disconnect the connector from the master switch.
(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1 on the wire harness side connector and raise the window to full closed position.
(c) Continue to apply voltage, check that there is a PTC operation noise within approximately 4 to 90 seconds.
(d) Reverse the polarity, check that the window begins to descend within approximately 60 seconds.

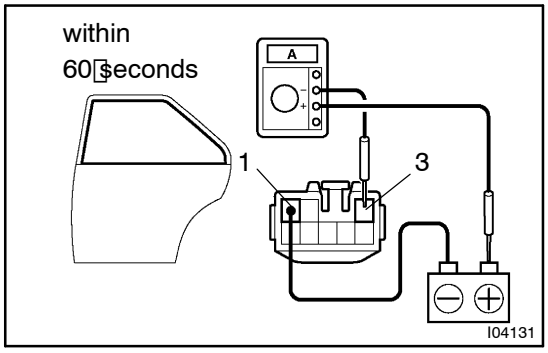
If operation is not as specified, replace the motor.





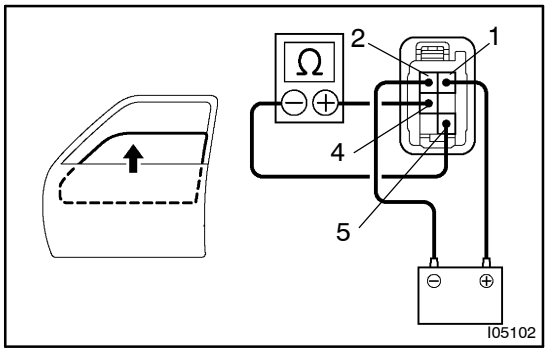
18. Rear Door:
INSPECT POWER WINDOW MOTOR PTC OPERATION

(a) Disconnect the connector from the rear door ECU.
(b) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 1 on the wire harness side connector, and raise the window to full closed position.
(c) Continue to apply voltage, check that there is a PTC operation noise within approximately 4 to 90 seconds.



(d) Reverse the polarity, check that the window begins to descend within approximately 60 seconds.

If operation is not as specified, replace the motor.

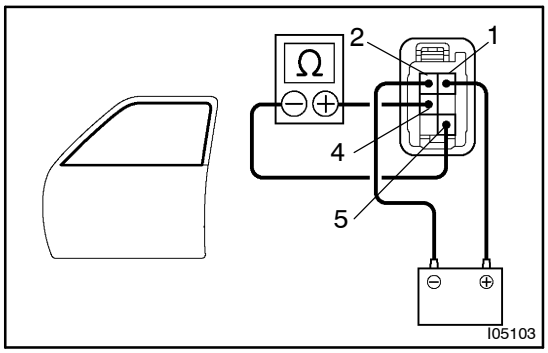


19. Front Left Side Door (Window Up): INSPECT JAM PROTECTION LIMIT SWITCH OPERATION

(a) Connect the positive (+) lead from the ohmmeter to terminal 4 and the negative (–) lead to terminal 5.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2.

(c) Check that the continuity exists when the window goes up.

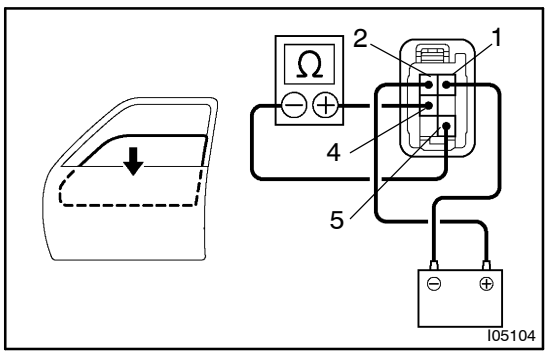


(d) Check that the no continuity exists when the window is in the fully closed position.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

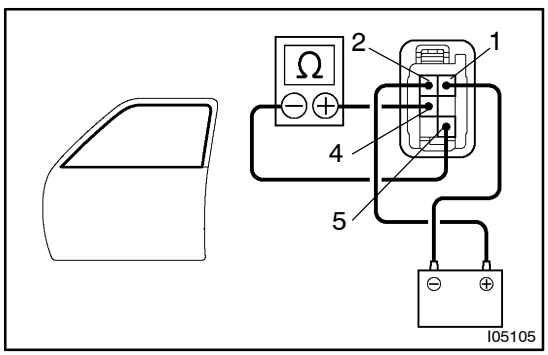


20. Front Left Side Door (Window Down): INSPECT JAM PROTECTION LIMIT SWITCH OPERATION

(a) Connect the positive (+) lead from the ohmmeter to terminal 4 and the negative (–) lead to terminal 5.

(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1.

(c) Check that the continuity exists when the window goes down.



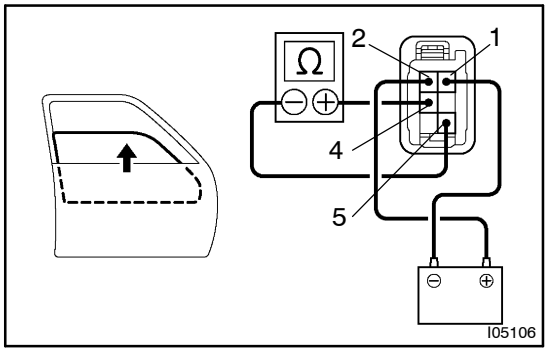
(d) Check that the no continuity exists when the window is in the fully opened position.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

21. Front Left Side Door: INSPECT JAM PROTECTION LIMIT SWITCH CIRCUIT
(See page DI–722)

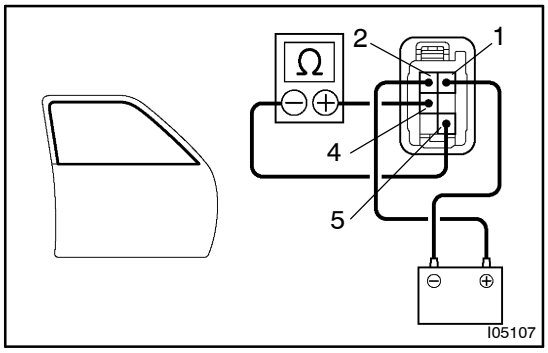


22. Front Right Side Door (Window Up): INSPECT JAM PROTECTION LIMIT SWITCH OPERATION

(a) Connect the positive (+) lead from the ohmmeter to terminal 4 and the negative (–) lead to terminal 5.

(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1.

(c) Check that the continuity exists when the window goes up.

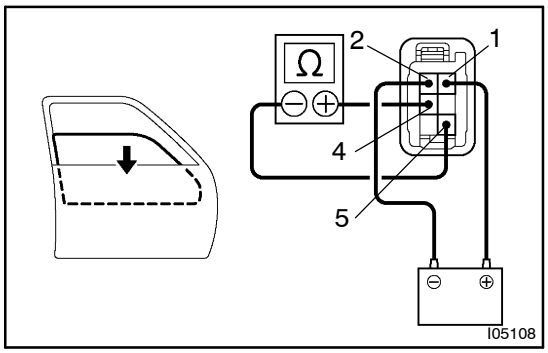


(d) Check that the no continuity exists when the window is in the fully closed position.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

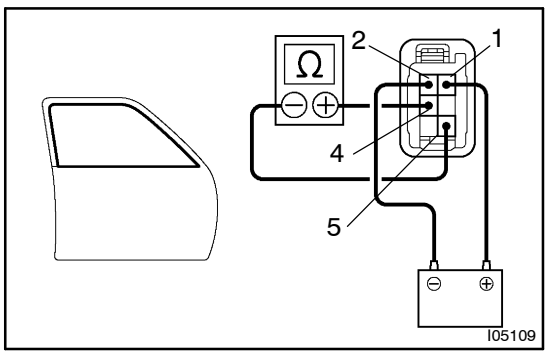


23. Front Right Side Door (Window Down): INSPECT JAM PROTECTION LIMIT SWITCH OPERATION

(a) Connect the positive (+) lead from the ohmmeter to terminal 4 and the negative (–) lead to terminal 5.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2.

(c) Check that the continuity exists when the window goes down.



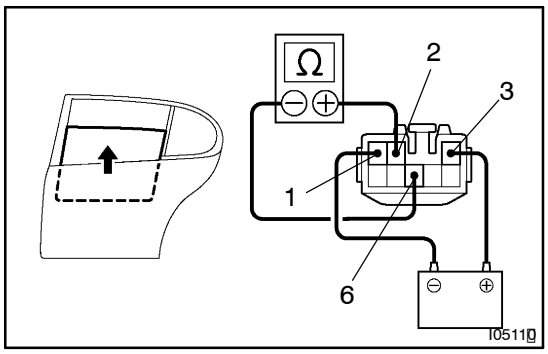
(d) Check that the no continuity exists when the window is in the fully opened position.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

24. Front Right Side Door: INSPECT JAM PROTECTION LIMIT SWITCH CIRCUIT (See page DI–756)

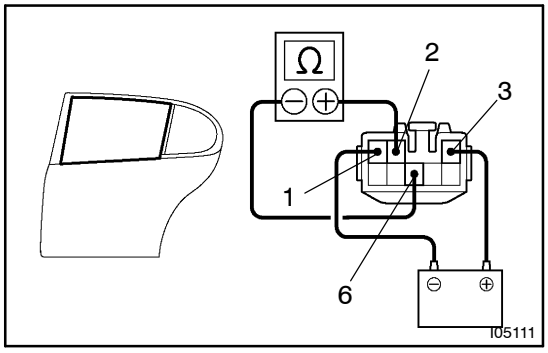


25. Rear Left Side Door (Window Up): INSPECT JAM PROTECTION LIMIT SWITCH OPERATION

(a) Connect the positive (+) lead from the ohmmeter to terminal 2 and the negative (–) lead to terminal 6.

(b) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 1.

(c) Check that the continuity exists when the window goes up.

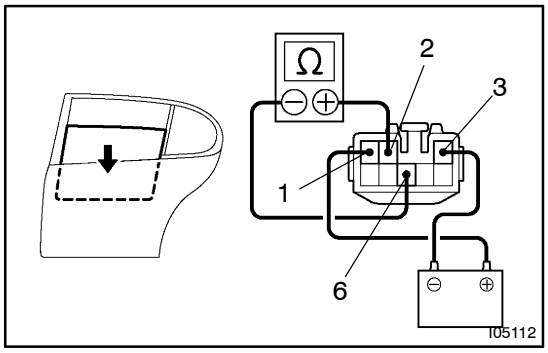


(d) Check that the no continuity exists when the window is in the fully closed position.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

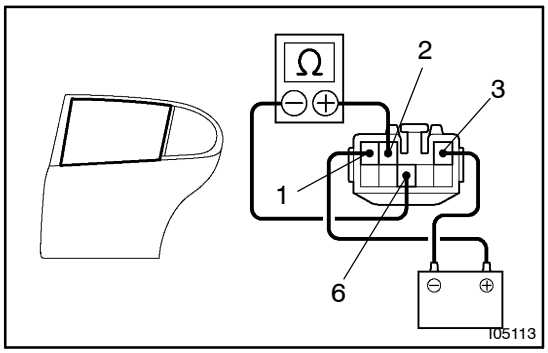


26. Rear Left Side Door (Window Down): INSPECT JAM PROTECTION LIMIT SWITCH OPERATION

(a) Connect the positive (+) lead from the ohmmeter to terminal 2 and the negative (–) lead to terminal 6.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 3.

(c) Check that the continuity exists when the window goes down.

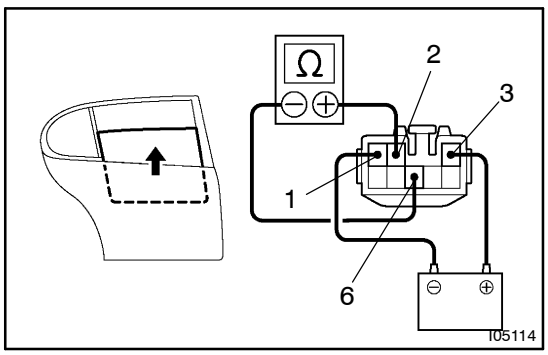


(d) Check that the no continuity exists when the window is in the fully opened position.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

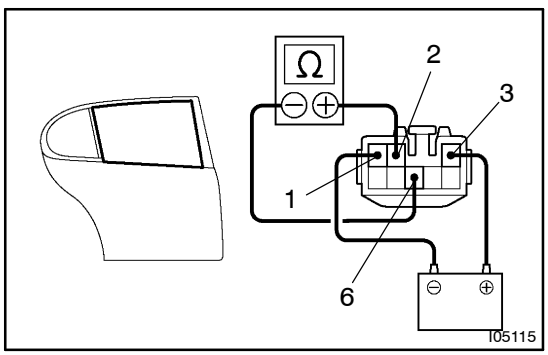


27. Rear Right Side Door (Window Up): INSPECT JAM PROTECTION LIMIT SWITCH OPERATION

(a) Connect the positive (+) lead from the ohmmeter to terminal 2 and the negative (–) lead to terminal 6.

(b) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 1.

(c) Check that the continuity exists when the window goes up.

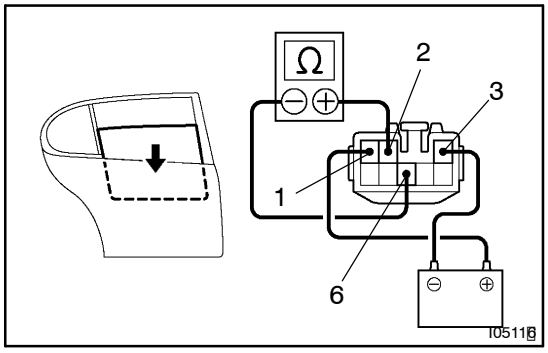


(d) Check that the no continuity exists when the window is in the fully closed position.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

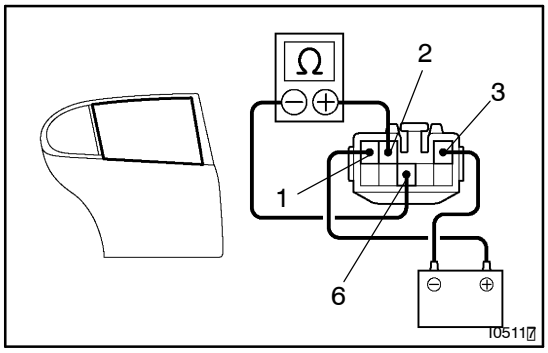


28. Rear Right Side Door (Window Down):
INSPECT JAM PROTECTION LIMIT SWITCH OPERATION

(a) Connect the positive (+) lead from the ohmmeter to terminal 2 and the negative (–) lead to terminal 6.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 3.

(c) Check that the continuity exists when the window goes down.

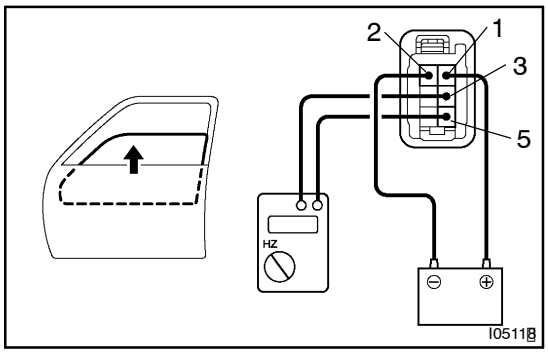


(d) Check that the no continuity exists when the window is in the fully opened position.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

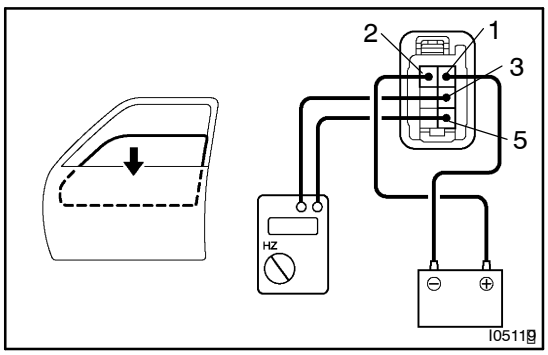


29. Front Left Side Door:
INSPECT JAM PROTECTION PULSE SWITCH OPERATION

(a) Connect the positive (+) lead from the TOYOTA electrical tester to terminal 3 and the negative (–) lead to terminal 5.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2.

(c) Check that pulse is generated during the motor running.



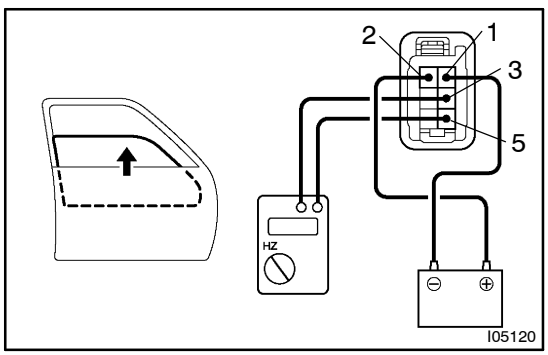
(d) Reverse the polarity and check that pulse is generated.

If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

30. Front Left Side Door:
INSPECT JAM PROTECTION PULSE SWITCH CIRCUIT
(See page DI–724)

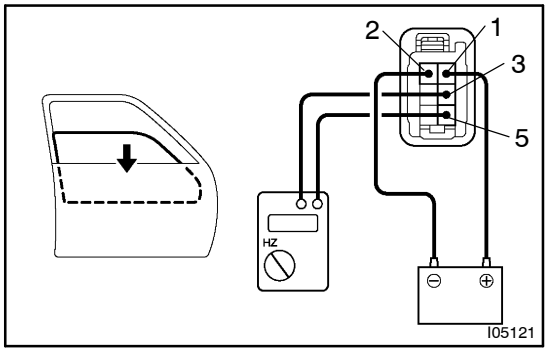


31. Front Right Side Door:
INSPECT JAM PROTECTION PULSE SWITCH OPERATION

(a) Connect the positive (+) lead from the TOYOTA electrical tester to terminal 3 and the negative (–) lead to terminal 5.

(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1.

(c) Check that pulse is generated during the motor running.

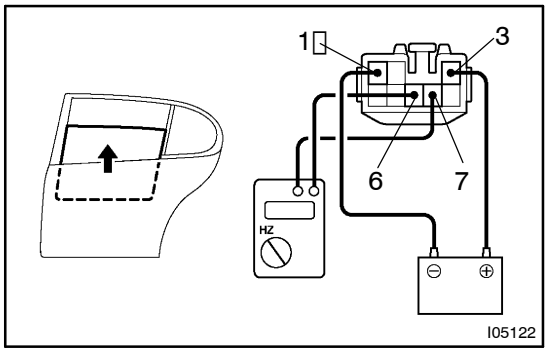


(d) Reverse the polarity and check that pulse is generated.
If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

32. Front Right Side Door:
INSPECT JAM PROTECTION PULSE SWITCH CIRCUIT
(See page DI–758)

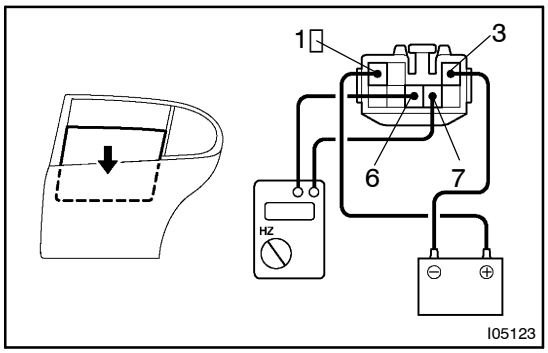


33. Rear Left Side Door:
INSPECT JAM PROTECTION PULSE SWITCH

(a) Connect the positive (+) lead from the TOYOTA electrical tester to terminal 3 and the negative (–) lead to terminal 5.

(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1.

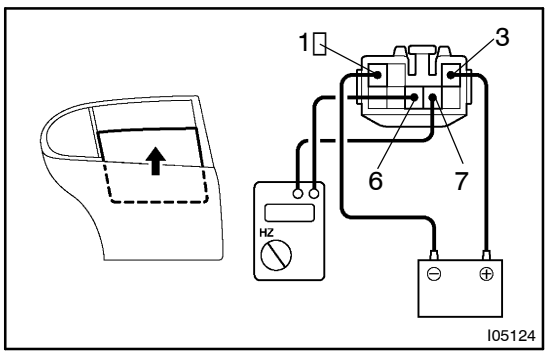
(c) Check that pulse is generated during the motor running.



(d) Reverse the polarity and check that pulse is generated.
If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

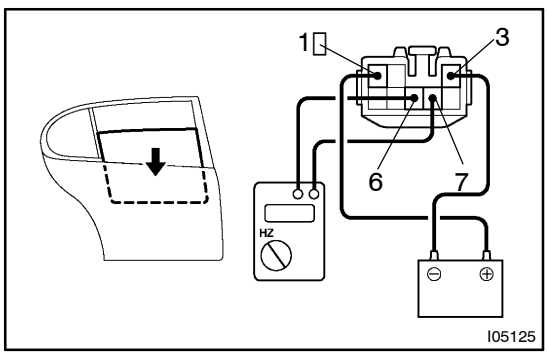


34. Rear Right Side Door:
INSPECT JAM PROTECTION PULSE SWITCH

(a) Connect the positive (+) lead from the TOYOTA electrical tester to terminal 3 and the negative (–) lead to terminal 5.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2.

(c) Check that pulse is generated during the motor running.



(d) Reverse the polarity and check that pulse is generated.
If operation is not as specified, replace the motor.

NOTICE:

If connecting the wire harness wrongly, the sensor might be damaged so caution is necessary.

35. CHECKING OF THE JAM PROTECTION FUNCTION

NOTICE:

Never, ever be caught any part of your body when checking.

HINT:

In case of performing resetting of the limit switch, do checking after repeating up and down of the glass with automatic operation.

(a) Confirmation of AUTO up operation:
Confirm that the window will be fully close with AUTO up operation.

(b) Checking of the operation of the jam protection function:
(1) Move up the window with AUTO up operation and check that the window will go down when it touches the handle of the hammer stetted.
(2) Confirm that the window will then stop going down about 200 mm.

HINT:

In case of removing the glass, glass guide, regulator and etc. be sure to perform checking of the jam protection function.