

1A



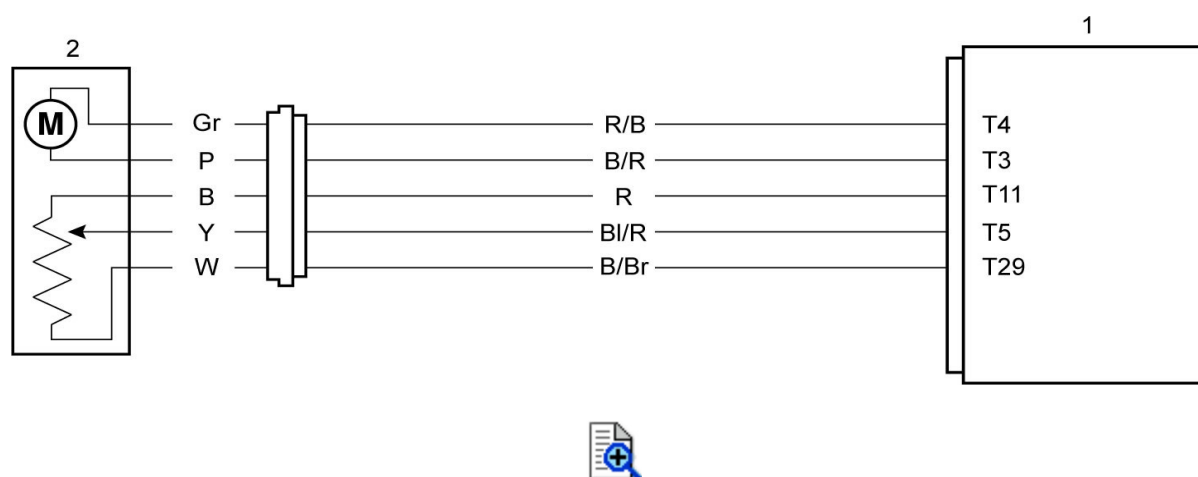
DTC P1657-H / P1657-L (C46)

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
P1657-H: EXCVA Sensor Circuit High Voltage The sensor output voltage is higher than the specified value.	<ul style="list-style-type: none"> EXCVA maladjustment EXCVA circuit ECM
P1657-L: EXCVA Sensor Circuit Low Voltage The sensor output voltage is lower than the specified value.	
C46: EXCVA Sensor Circuit Malfunction The sensor output voltage is not within 0.14 – 4.90 V.	


Wiring Diagram

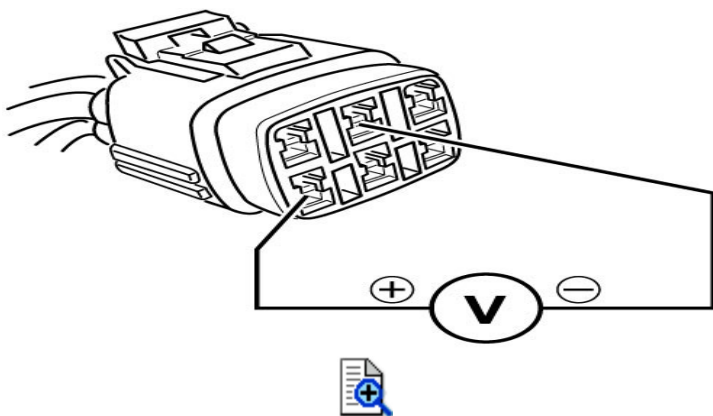
Refer to [FI System Wiring Diagram](#).



1. ECM	2. EXCVA
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Troubleshooting (Use of SDS)

Step	Action	Yes	No
1	EXCV position sensor power supply circuit check 1) Turn the ignition switch OFF. 2) Disconnect the EXCVA coupler.  3) Check for proper terminal connection to the EXCVA coupler. 4) If connections are OK, turn the ignition switch ON. 5) Measure the voltage between the R wire and B/Br wire.	Go to Step 3.	Go to Step 2.

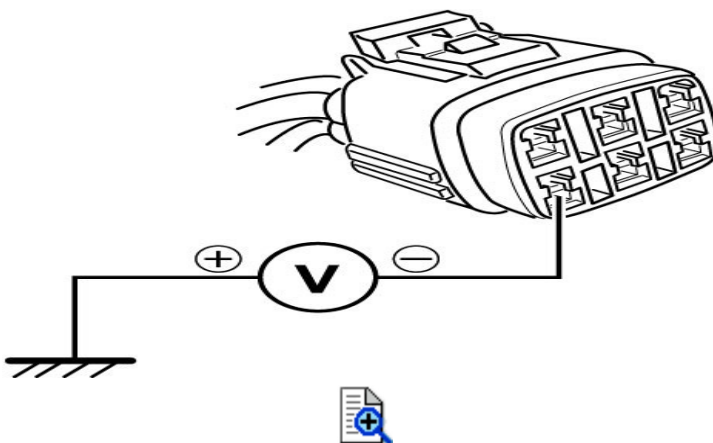


Is voltage 4.5 – 5.5 V?

2

EXCV position sensor ground circuit check

- 1) Measure the voltage between the R wire and ground.



Is voltage 4.5 – 5.5 V?

Repair or replace the B/Br wire.

Repair or replace the R wire.

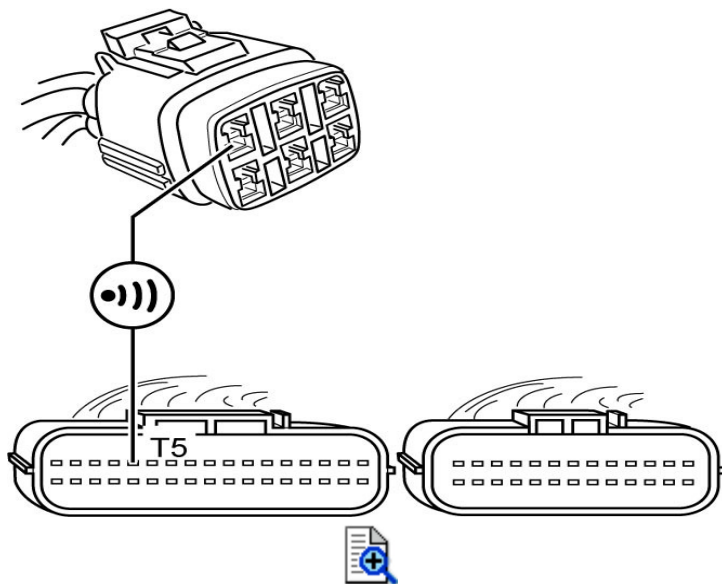
3

EXCV position sensor signal circuit check

- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM couplers.
- 3) Check for proper terminal connection to the ECM couplers.
- 4) If connections are OK, check the following points.
 - Resistance
 - BI/R wire: less than 1 Ω

Go to Step 4.

Repair or replace the BI/R wire.



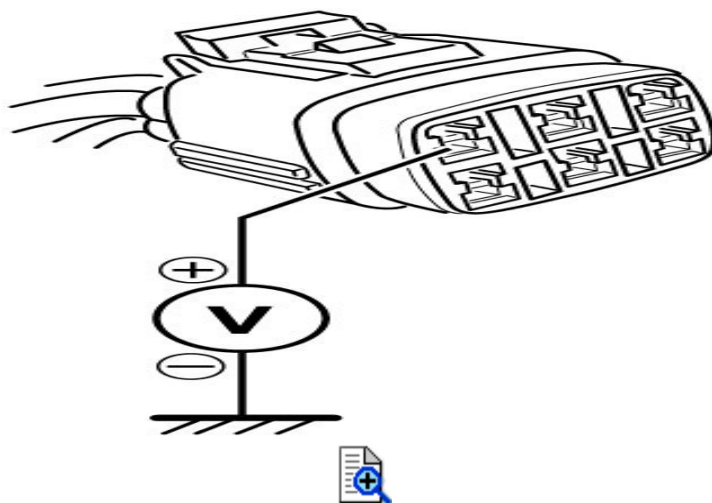
- Between BI/R wire and ground: infinity



- Between BI/R wire terminal and other terminal at EXCVA sensor circuit: infinity



- Voltage
 - Turn the ignition switch ON.
 - BI/R wire: approx. 0 V

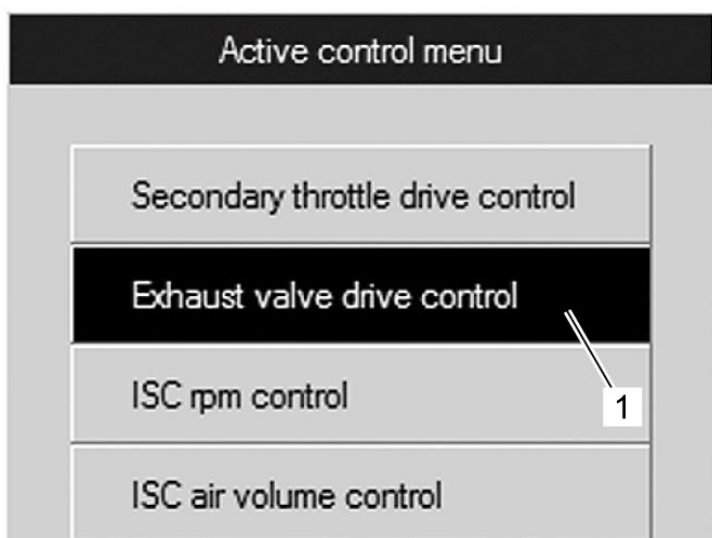


Is check result OK?

4

EXCV position sensor output voltage check

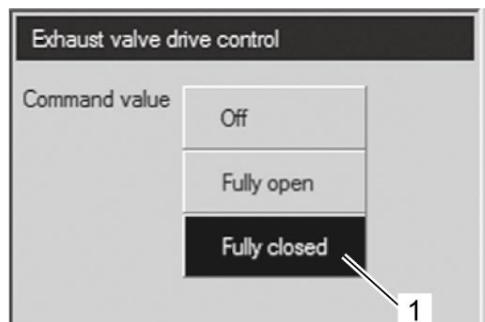
- 1) Turn the ignition switch OFF.
- 2) Connect the ECM couplers and the EXCVA coupler.
- 3) Set up the SDS tool referring to SDS operation manual for further details.
- 4) Turn the ignition switch ON.
- 5) Click "Exhaust valve drive control" (1).



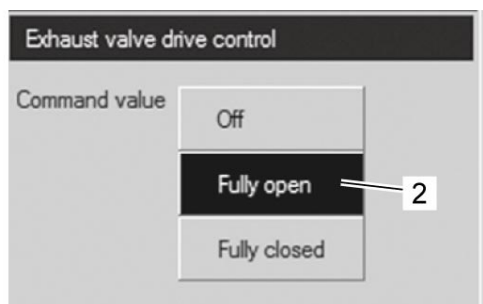
- 6) Click "Full closed" (1) and "Full open" (2).

Replace the ECM with a known good one, and inspect it again.

Replace the EXCVA with a new one.



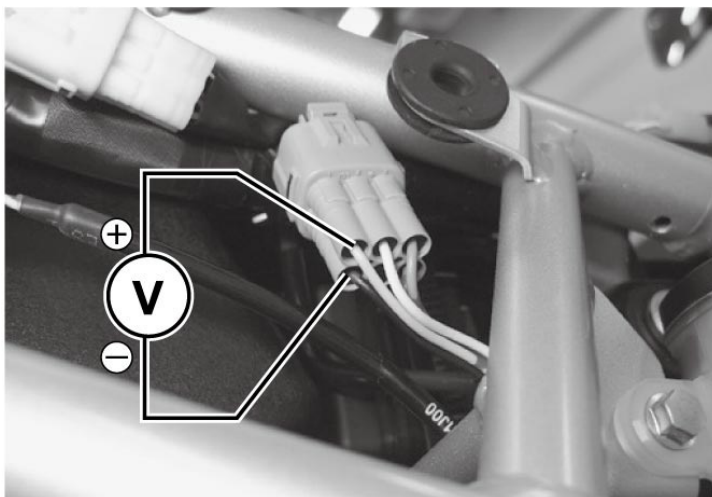
Item	Value	Unit
<input type="checkbox"/> Exhaust control valve actuator position sensor	2	%



Item	Value	Unit
<input type="checkbox"/> Exhaust control valve actuator position sensor	98	%





- 7) Measure the EXCV position sensor voltage between the Y wire and B wire at EXCV position is fully closed and fully opened.

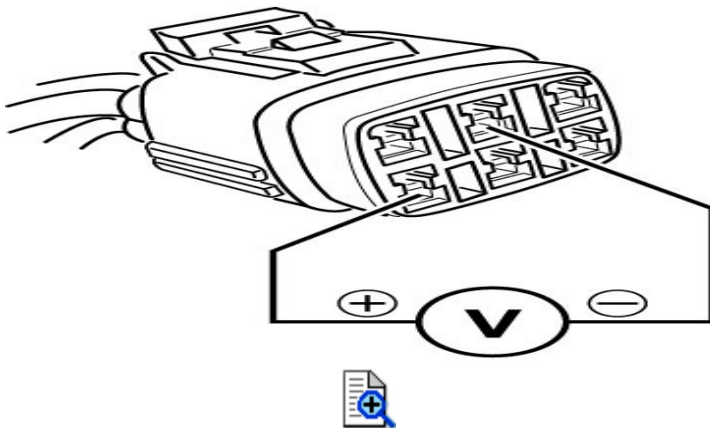


Is voltage 0.45 – 1.4 V (at exhaust control valve is fully closed) and 3.6 – 4.55 V (at exhaust control valve is fully opened)?

Troubleshooting (Use of Mode Select Switch)

Step	Action	Yes	No
1	<p>EXCV operation check</p> <ol style="list-style-type: none"> 1) Turn the ignition switch OFF. 2) Remove the right frame cover.  3) Check the EXCVA coupler (1) for loose or poor contacts.   <ol style="list-style-type: none"> 4) Remove the EXCV cover. Refer to Exhaust Pipe / Muffler Removal. 5) Turn the ignition switch ON. 6) Check the operation of EXCVA. (EXCVA operation order: Full close → Full open → Middle position)   <p><i>Is the operation OK?</i></p>	Go to Step 2.	Go to Step 7.
2	<p>EXCV position sensor power supply voltage check</p> <ol style="list-style-type: none"> 1) Turn the ignition switch OFF. 2) Disconnect the EXCVA coupler.  	Go to Step 4.	Go to Step 3.

- 3) Check for proper terminal connection to the EXCVA coupler.
- 4) If connections are OK, turn the ignition switch ON.
- 5) Measure the voltage between the R wire and B/Br wire.

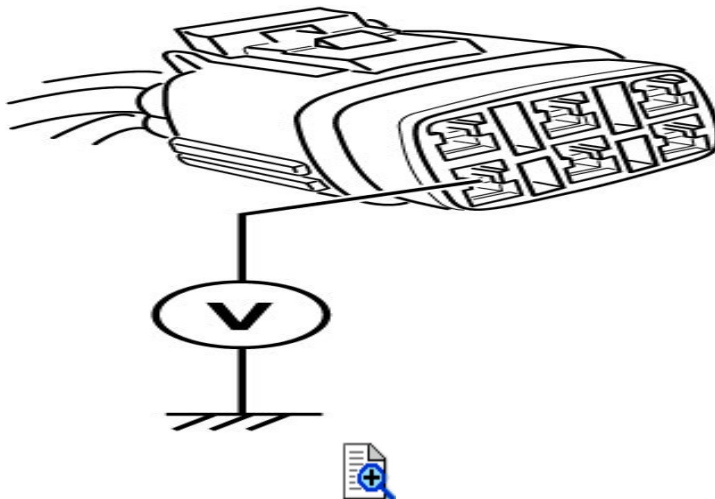


Is voltage 4.5 – 5.5 V?

3

EXCV position sensor ground circuit check

- 1) Measure the voltage between R wire and ground.



Is voltage 4.5 – 5.5 V?

Repair or replace the B/Br wire.

Repair or replace the R wire.

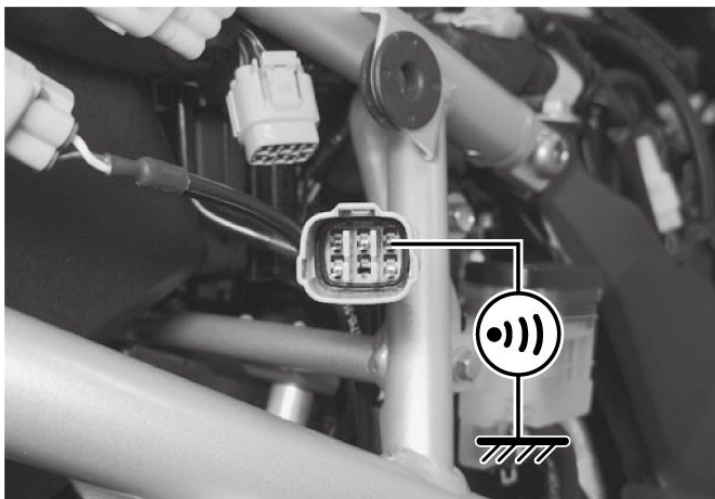
4

EXCVA position sensor signal circuit check

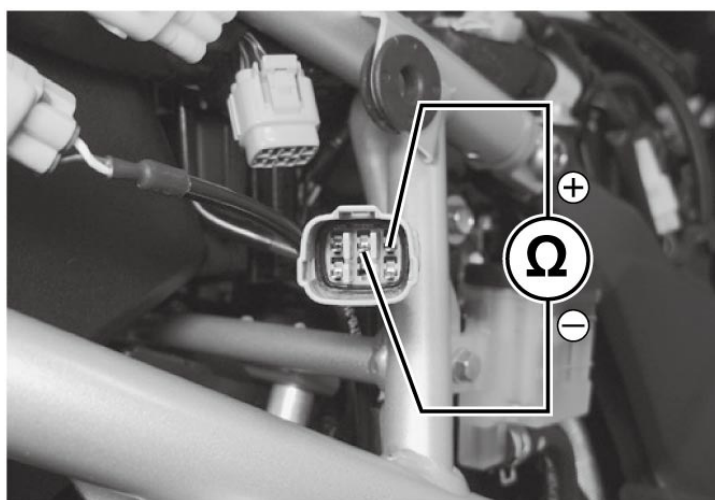
- 1) Turn the ignition switch OFF.
- 2) Check the following points.
 - Continuity
 - Y wire terminal and ground: infinity

Go to Step 5.

Replace the EXCVA with a new one.



- Resistance
 - Connect the ECM coupler.
 - Connect the EXCVA coupler and set the EXCVA to adjustment position. Refer to [EXCVA / EXCV Cable Removal and Installation](#).
 - Turn the ignition switch OFF.
 - Disconnect the EXCVA coupler.
 - Y wire terminal and W wire terminal: approx. 3.1 k Ω



Is check result OK?

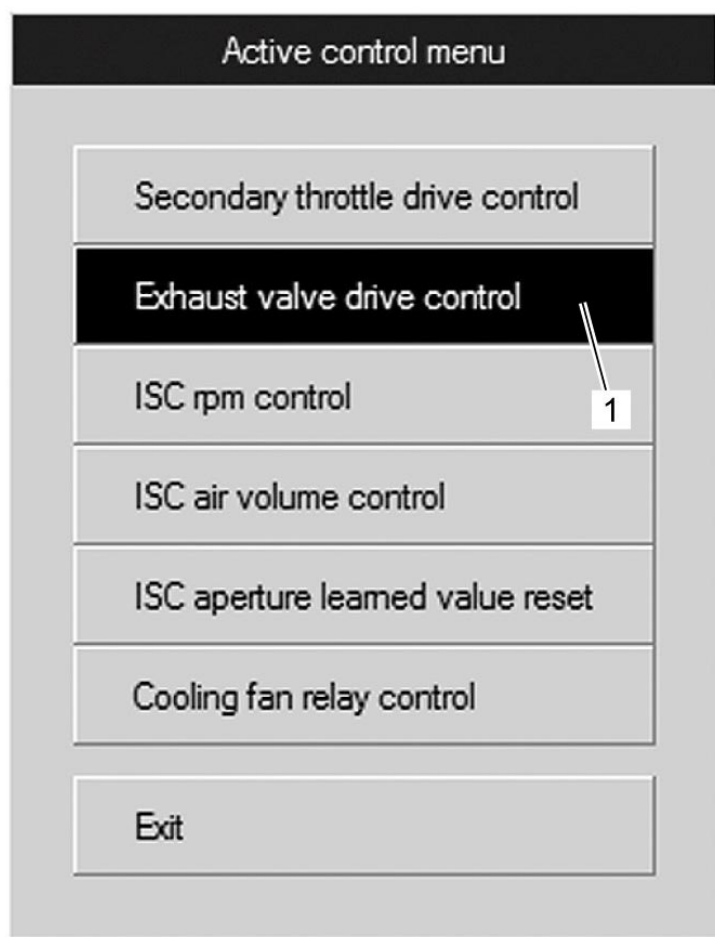
5

EXCVA sensor output voltage check

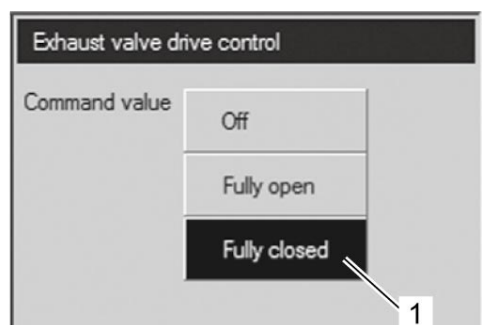
- 1) Connect the EXCVA coupler.
- 2) Set up the SDS tool according to the SDS operation manual.
- 3) Turn the ignition switch ON.
- 4) Click "Exhaust valve drive control" (1).

Replace the ECM with a know good one, and inspect it again.

Go to Step 6.

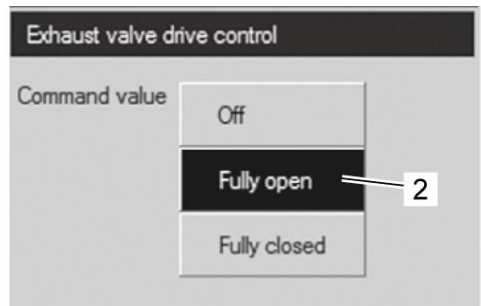


5) Click "Full closed" (1) and "Full open" (2).



Item	Value	Unit
<input type="checkbox"/> Exhaust control valve actuator position sensor	2	%

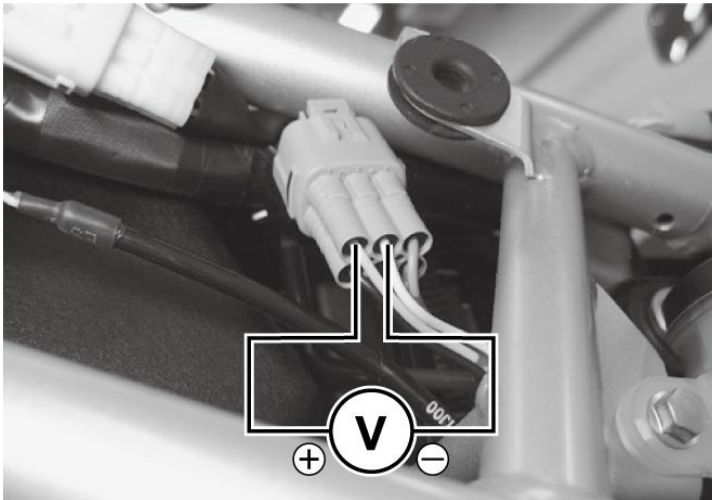




Item	Value	Unit
<input type="checkbox"/> Exhaust control valve actuator position sensor	98	%



- 6) Measure the EXCVA position sensor output voltage at EXCV position is fully closed and fully opened.



Is voltage 0.45 – 1.4 V (at EXCV is fully closed) and 3.6 – 4.55 V (at EXCV is fully opened)?

6

EXCV cable installation check

NOTICE:

- Adjusting the cable with the EXCV fully opened or fully closed can damage the EXCVA.
Be sure to adjust the cable with the EXCV set in the adjustment position.
- Do not turn the EXCVA pulley using the wrench.

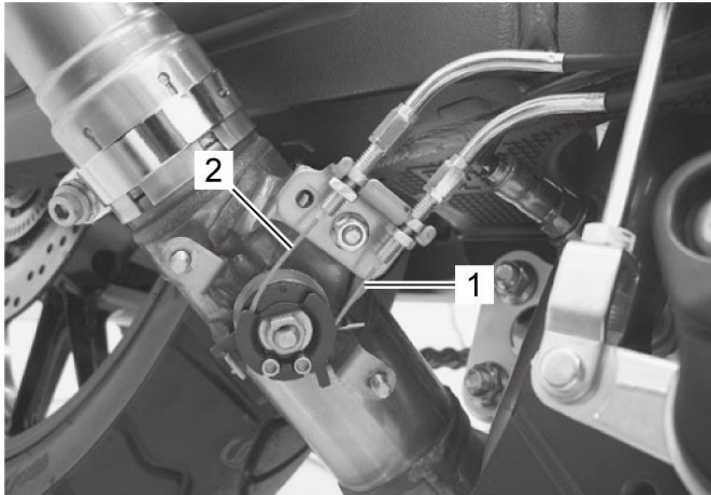
- If the EXCVA position sensor output voltage is 0.45 V or less at EXCV fully closed position, adjust the output voltage to the specified value by turning the No. 1 cable adjuster (1).
- Repeat the procedure in Step 5 until the output

Replace the ECM with a known good one, and inspect it again.

Replace the EXCVA with a new one.

voltage is set within the specified value. (If P1657 (C46) code is indicated after adjusting the voltage, increase the voltage to 0.9 V).

- 3) If the EXCVA position sensor output voltage is 4.55 V and more at EXCV fully opened position, adjust the output voltage to the specified value by turning the No. 2 cable adjuster (2). Refer to [EXCVA / EXCV Cable Removal and Installation](#). Repeat the procedure in Step 5 until the output voltage is set within the specified value.

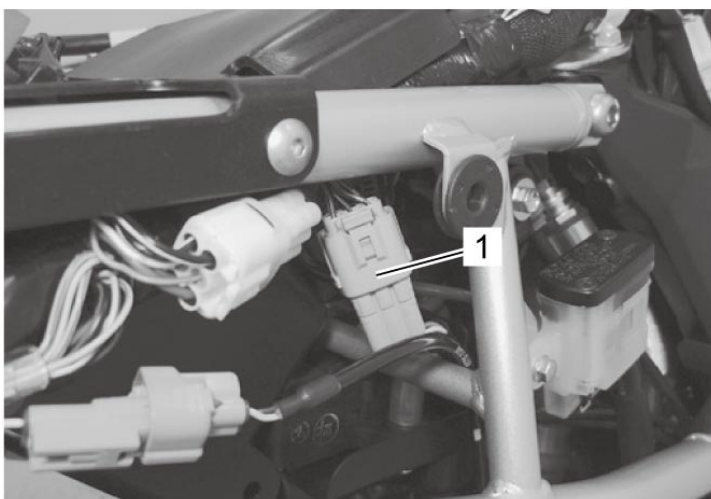


Is voltage 0.45 – 4.1 V (at EXCV is fully closed) and 3.6 – 4.55 V (at EXCV is fully opened)?

7

EXCVA motor operating check

- 1) Turn the ignition switch OFF.
- 2) Disconnect the EXCVA coupler (1).

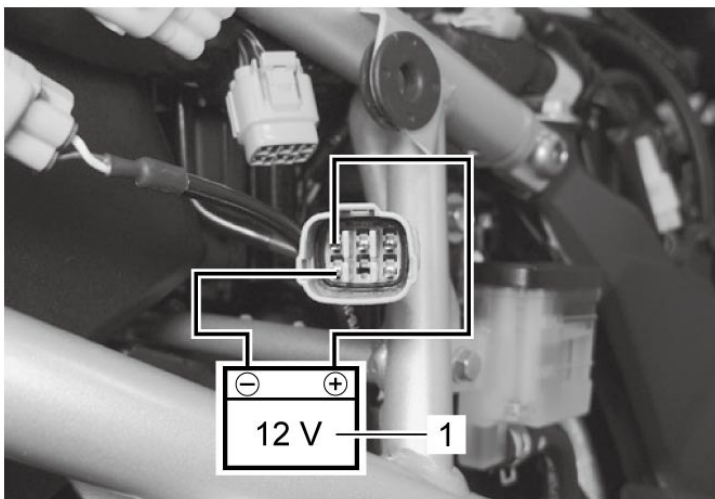


- 3) Apply 12 V to the terminals with a battery (1) and check the operation of EXCVA.

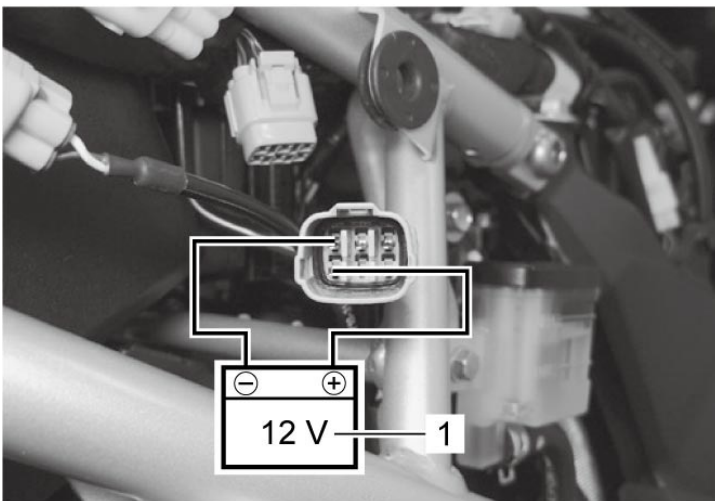
- Repair or replace the B/R wire or R/B wire.
- Replace the ECM with a known good one, and inspect it again.



- Replace the EXCVA with a new one.
- Inspect that the EXCV and two cables move smoothly. Refer to [Exhaust Control Valve Inspection](#).



- 4) Then, switch the wires supplied 12 V with a battery (1) and check the operation of EXCVA. (Check the operation of EXCVA in both way.)



Is the operation OK?