

CALIBRATION

1. VGRS SYSTEM CALIBRATION PROCEDURE (USING SST CHECK WIRE)

NOTICE:

Use this procedure to center the steering wheel position if:

- VGRS actuator has been replaced
- VGRS ECU has been replaced
- Steering column or gear has been disconnected
- Steering wheel is still off-center after completing the steering angle sensor initialization in step 6.

Actuator angle initialization:

1	Face the tires straight ahead.
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NOTICE:

Drive the vehicle to confirm steering wheel is centered.

NEXT

2	Check for DTCs
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Is DTC C1515/15 output?

A	DTC C1515/15 is not output
B	DTC C1515/15 is output

B

Go to step 4

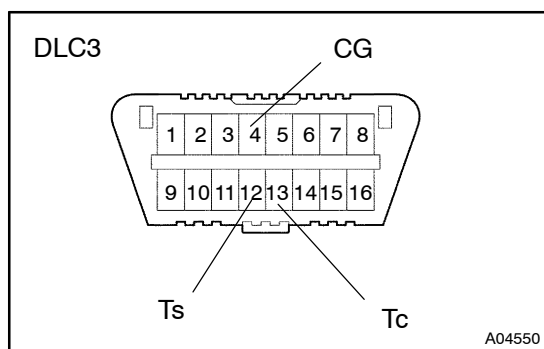
A

3	Actuator angle initialization
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NOTICE:

Complete steps (e) to (g) within 1 minute.

- Turn the ignition switch ON.
- Start the engine.
- Turn the steering wheel to the center.
- Using SST check wire, connect the terminals Ts and CG of DLC3.
- Connect and disconnect the SST check wire to the terminal Tc of DLC3 10 times or more within 20 sec.
- Turn the steering wheel to the left 180° or more and then return to the center position.
- Connect and disconnect the SST check wire to the terminal Tc of DLC3 10 times or more within 20 sec.



LAND CRUISER (W/G) SUP (RM1072E)

- (h) Check that the VGRS warning light is ON.
- HINT:
When the VGRS warning light illuminates, DTC 1515/15 is memorized.
- (i) Disconnect the SST check wire from the DLC3.
 - (j) Turn the ignition switch OFF.

NEXT

Go to step 1

Steering angle adjustment:

4	Confirm steering center
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Confirm that the steering wheel is centered when facing the tires straight ahead.

NOTICE:
Drive the vehicle to confirm steering wheels centered.

A	Steering wheel is off-center
B	Steering wheel is center

B

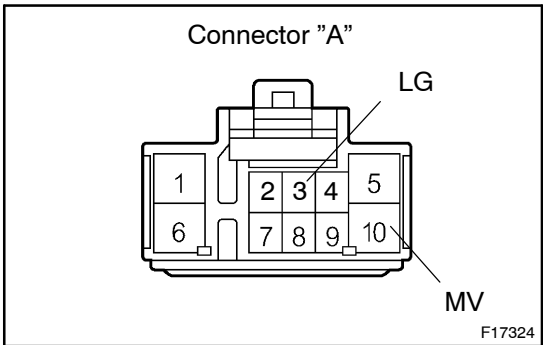
Go to step 8

A

5	Unlock the VGRS actuator
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- NOTICE:**
Do not start the engine.
- (a) Turn the ignition switch OFF. (Engine stop)
 - (b) Disconnect the negative battery terminal.
 - (c) Disconnect the VGRS ECU connector "A".
 - (d) Connect the jumper wire from terminal MV to Battery (+) and another jumper wire from terminal LG to ground(-).

NOTICE:
Do not apply the voltage for more than 3 minutes.



NEXT

6 Steering center adjustment

- (a) Turn the steering wheel to the center.

NOTICE:

If the spiral cable for the airbag is not centered when installing the steering wheel, adjust the spiral cable to the center ([See page SR-17](#)).

NEXT

7 Lock the VGRS actuator

- (a) Confirm the ignition switch is turned OFF.
 (b) Reconnect the VGRS ECU connector "A".
 (c) Reconnect the battery terminal.
 (d) Turn the steering wheel to the right and left by about 5 degrees and check that the steering wheel is level.

NOTICE:

The DTC will be detected later on when not turning the steering wheel to the right and left by about 5 degrees.

NEXT

Go to step 1

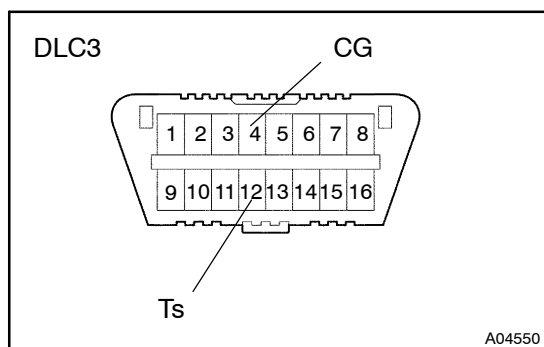
Actuator angle adjustment:

8 Adjust the actuator angle

HINT:

Actuator angle adjustment is completed by turning the Test Mode ON and OFF.

- (a) Make sure the ignition switch is OFF.
 (b) Using the SST check wire, connect the terminals Ts and CG of DLC3.
 (c) Turn the ignition switch ON.
 (d) Check that the VGRS warning light is blinking.
 (e) Turn the ignition switch OFF and disconnect the SST check wire from the DLC3.
 (f) Actuator angle sensor learning confirmation procedure:
 (1) Start the engine.
 (2) Turn the steering wheel from center to the left 90° and then back to center.
 (3) Turn the steering wheel from center to the right 90° and then back to center.
 (4) Confirm that the steering wheel is centered.

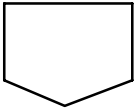


- (5) Hold the steering wheel in the centered position for 3 seconds.
- (6) Perform the following check procedure;
 - Turn the steering wheel slowly to the left.
 - While turning the steering wheel to the left, turn off the engine.
 - Continue to turn the steering wheel slowly to the left for 3 seconds.
- (7) Repeat steps (1) to (6) 15 times.

NOTICE:

DTC C1568/68 requires that the fault occurs 5 consecutive times to set. The confirmation procedure must be performed multiple times to ensure the condition does not repeat.

- (8) Recheck for DTCs
 - If C1568/68 is set, repeat the procedure for a second time. If C1568/68 is set again, replace the VGRS actuator.

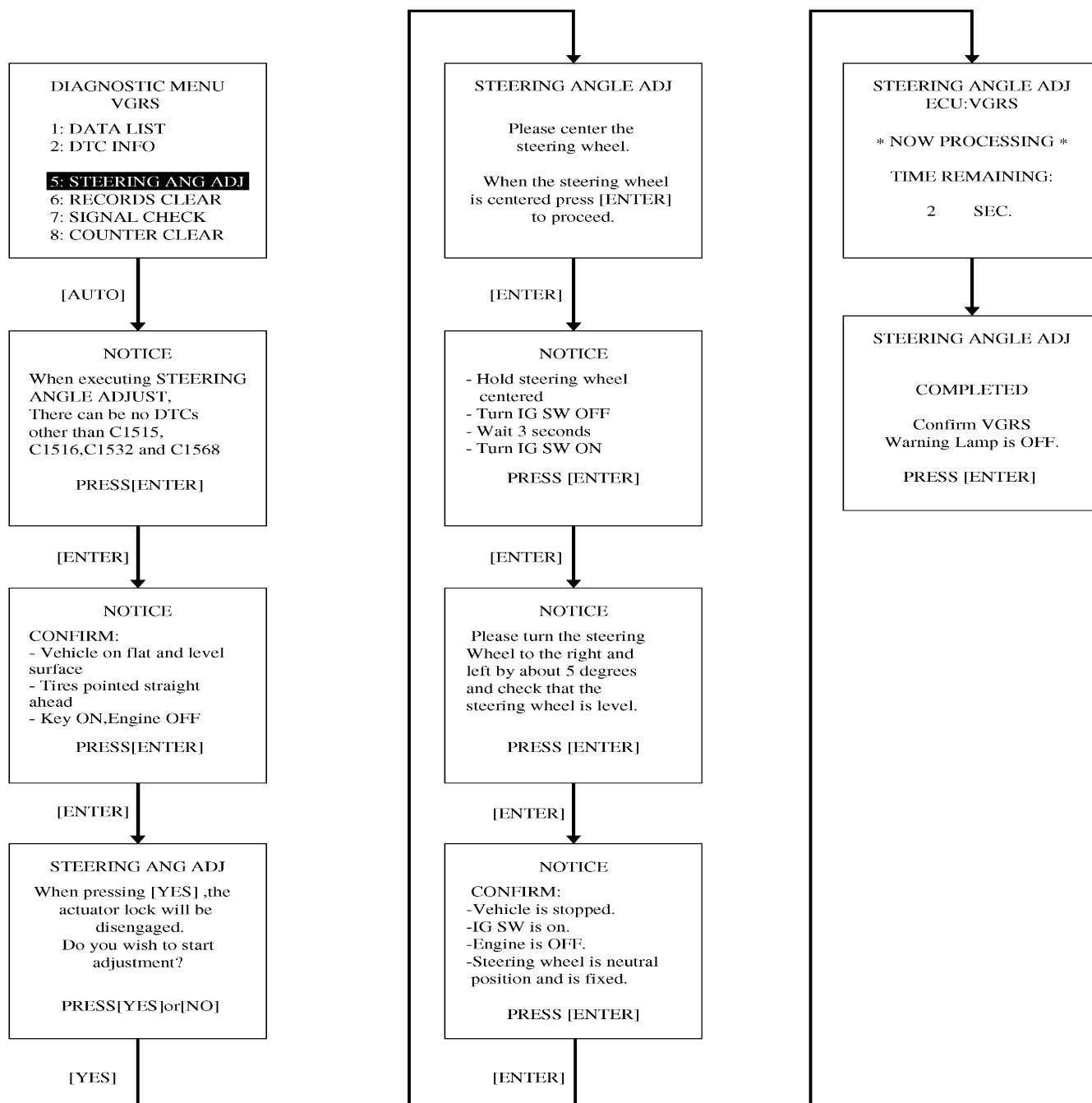


END

2. VGRS SYSTEM CALIBRATION PROCEDURE (USING HAND-HELD TESTER)

- Stop the vehicle and face the tires straight ahead.
- Connect the hand-held tester to DLC3.
- Turn the ignition switch ON.
- Perform the steering angle adjust procedure from the VGRS menu.

Tester menu flow:



- (e) Follow the tester prompts to complete procedure.
- (f) Confirm that the VGRS warning light OFF.
- (g) Turn the ignition switch OFF.
- (h) Disconnect the hand-held tester.
- (i) Confirm normal VGRS light operation.
- (j) Start the engine.
- (k) Turn the steering wheel from lock to lock to check that it rotates approximately 2.4 turns.
- (l) Actuator angle sensor learning confirmation procedure:
 - (1) Start the engine.
 - (2) Turn the steering wheel from center to the left 90° and then back to center.
 - (3) Turn the steering wheel from center to the right 90° and then back to center.
 - (4) Confirm that the steering wheel is centered.
 - (5) Hold the steering wheel in the centered position for 3 seconds.
 - (6) Perform the following check procedure;
 - Turn the steering wheel slowly to the left.
 - While turning the steering wheel to the left, turn off the engine.
 - Continue to turn the steering wheel slowly to the left for 3 seconds.
 - (7) Repeat steps (1) to (6) 15 times.

NOTICE:

DTC C1568/68 requires that the fault occurs 5 consecutive times to set. The confirmation procedure must be performed multiple times to ensure the condition does not repeat.

- (8) Recheck for DTCs
 - If C1568/68 is set, repeat the procedure for a second time. If C1568/68 is set again, replace the VGRS actuator.
- (m) Drive vehicle to confirm steering wheel is centered.