05KYP–01

PRE–CHECK

1. SELF–CHECK

(a) Turn the ignition switch ON.

(b) Check the buzzer and ES start indicator lamp on the combination meter.

OK: The buzzer emits a beep and the ES start indicator lamp turns on for 3 seconds.

NOTICE:

- **If only the ES start indicator lamp turns on, perform the clutch stroke sensor adjustment or cancel position initial setting.**
- **If the ES start indicator lamp flashes and the buzzer emits beeps repeatedly, the switch or sensor may have a malfunction. Check for DTCs.**
- **As long as no inspection method is specified, be sure to turn the ignition switch and systems OFF before removing/installing ECUs, actuators and sensors *.**
- **Be careful with the following as the systems are off:**
- **Turn the ignition switch OFF and wait for 10 seconds. Then, disconnect the connectors.**
- **Turning the ignition switch OFF while the ES starting system is operating causes the buzzer to sound for 30 seconds. When 10 seconds have passed after the buzzer stops sounding, disconnect the connectors.**
- **If the ES main switch is malfunctioning, the ES start indicator lamp will blink and the buzzer will sound even if the main switch is OFF.**

HINT:

*: Even after the ignition switch is turned OFF, systems may be operating due to power supplied from +B circuit.

2. OPERATION CHECK

CAUTION:

When checking the vehicle, be careful of the following:

- **The vehicle may jump out.**
- **The vehicle may move backwards on a slope.**

(a) Turn the ignition switch to the START position, release the parking break, and then turn the ES start main switch ON.

(b) Depress the break pedal for 1 second at the vehicle speed of 0 km/h (0 mph). Check that the buzzer emits a beep, the ES start indicator lamp turns on and the ES starting system is activated.

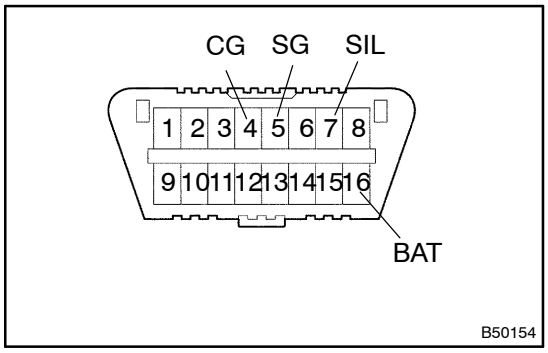
(c) Check that the brake is applied.

(d) Perform the normal starting operation (the gear is engaged and clutch is connected), and check that the ES starting system is canceled.

3. DIAGNOSIS SYSTEM

(a) Description

(1) The ECU controls the vehicle's easy & smooth starting system (ES starting system) functions. ES starting system data and the Diagnostic Trouble Code (DTCs) can be read through the vehicle's Data Link Connector 3 (DLC3) or ABS warning lamp. When the system seems to be malfunctioning, use the hand–held tester or SST check wire to check for malfunctions and perform repairs.

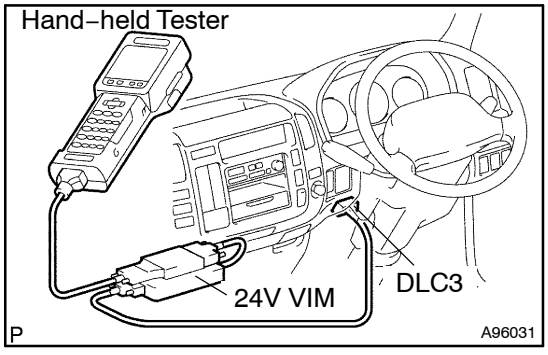


(b) Inspect the DLC3.

The vehicle uses the ISO 15765–4 communication protocol. The terminal arrangement of the DLC3 complies with ISO 15031–03 and matches the ISO 15765–4 format.

Symbols	Terminal No.	Name	Reference Terminal	Result	Condition
SIL	7	Bus "+" line	5 – Signal ground	Pulse generation	During transmission
CG	4	Chassis ground	Body ground	1 Ω or less	Always
SG	5	Signal ground	Body ground	1 Ω or less	Always
BAT	16	Battery positive	Body ground	20 to 28 V	Always

If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.



HINT:

Connect the cable of the hand–held tester (with 24V VIM) to the DLC3, turn the ignition switch ON and attempt to use the tester. If the screen displays UNABLE TO CONNECT TO VEHICLE, a problem exists on the vehicle side or the tester side.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still impossible when the tester is connected to another vehicle, the problem may be in the tester itself. Consult the Service Department listed in the tester's instruction manual.

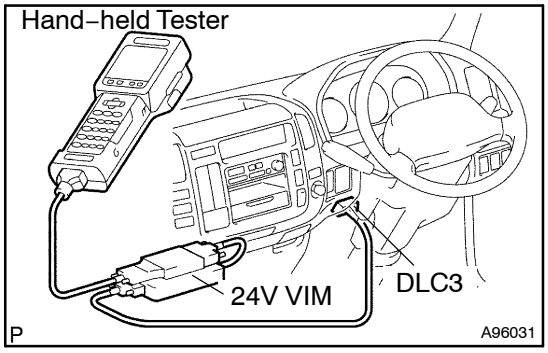
NOTICE:

Be sure to use the 24V VIM, because the hand–held tester will be damaged if you do not use 24V VIM.

(c) Measure the battery voltage.

Standard: 20 to 28 V

If the voltage is below 20 V, replace the battery before proceeding.



4. DTC CHECK/CLEAR (USING HAND–HELD TESTER)

(a) Check the DTC.

(1) Connect the hand–held tester (with 24V VIM) to the DLC3.

(2) Turn the ignition switch ON.

(3) Read the DTCs on the tester's screen.

HINT:

Refer to the hand–held tester operator's manual for further details.

(b) Clear the DTC.

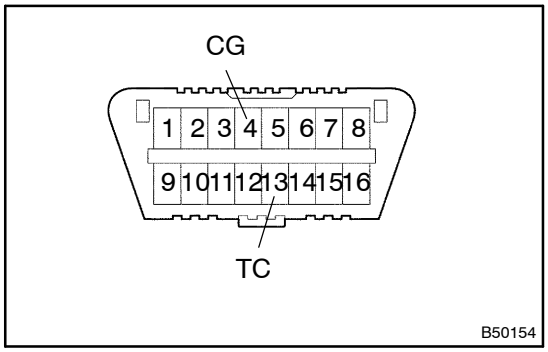
(1) Connect the hand–held tester to the DLC3.

(2) Turn the ignition switch ON.

(3) Erase the DTCs by following the directions on the tester's screen.

HINT:

Refer to the hand–held tester operator's manual for further details.



5. DTC CHECK/CLEAR (USING SST CHECK WIRE)

(a) Check the DTC.

(1) Using SST, connect terminals TC and CG of the DLC3.

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(2) Turn the ignition switch ON.

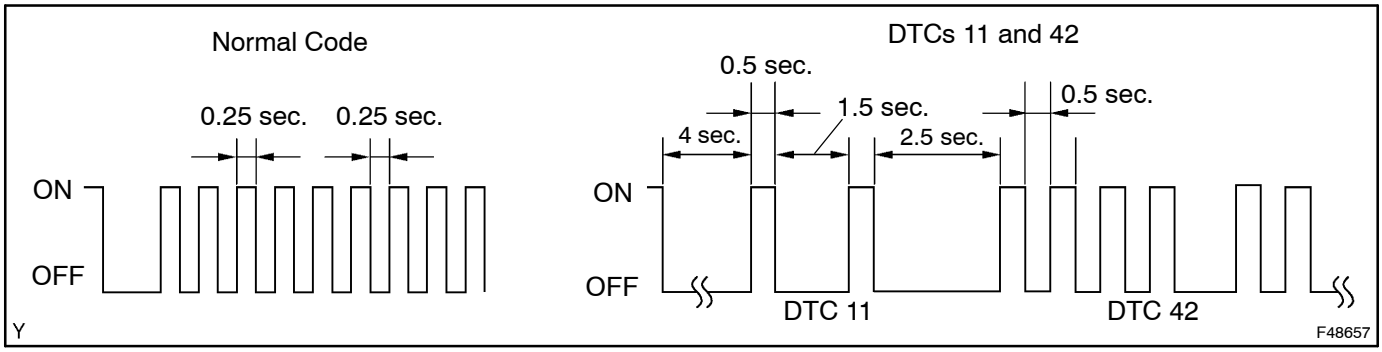
(3) Read the DTC from the ABS warning lamp on the combination meter.

HINT:

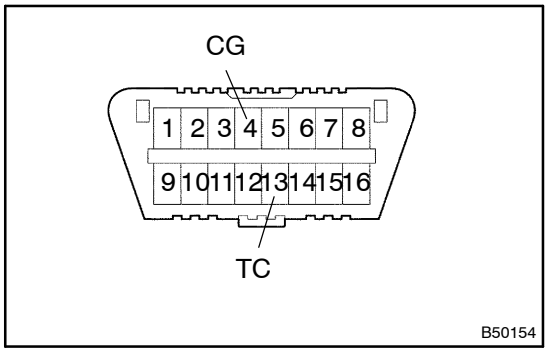
- If 2 or more malfunctions are detected at the same time, the lowest numbered code will be displayed first.
- If no code appears, inspect the diagnostic circuit and the ABS warning lamp circuit.

Trouble Area	See Page
TC and CG terminal circuit	05–261
ABS warning lamp	05–250

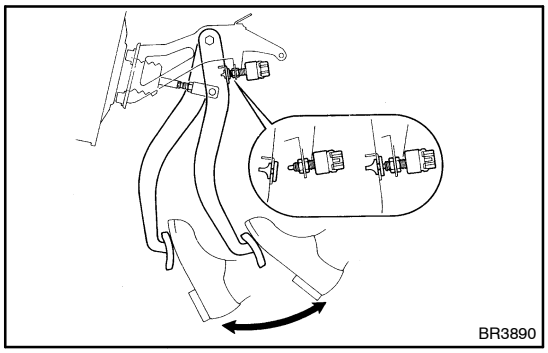
- As an example, the blinking patterns for a normal system code, DTCs 11 and 42 are shown on the illustration below.



(1) Codes are explained in the code table on page 05–276.
(2) After completing the check, disconnect terminals TC and CG of the DLC3, and turn off the display.



(b) Clear the DTC.
(1) Using SST, connect terminals TC and CG of the DLC3.
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(2) Turn the ignition switch ON.



(3) Clear the DTCs stored in the ECU by depressing the brake pedal 8 or more times within 5 seconds.
(4) Check that the ABS warning lamp shows the blinking pattern for the normal code.
(5) Remove the SST from the DLC3.
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6. WARNING FUNCTIONS CHECK

(a) If a malfunction occurs, the type of malfunction is communicated through flashing indicator lamps and buzzer beeps.
(b) If a malfunction is present, troubleshoot according to the DTC.

Indicator Lamp	Buzzer	Type	Warning Contents	Countermeasures
Flashing	No signal	Unperformed adjustment warning	Initial settings have not been performed	Execute initial settings
Flashing	Beeps	Trouble warning	Switch or sensor trouble	• Deactivate ES starting system by moving operation cancel switch to the cancel position • Troubleshoot according to DTC
ON	Beeps	Driver's seat vacant warning	Door is opened while ES start system is activated	Securely engage parking brake
ON	Beeps	Ignition switch OFF warning	Ignition switch is turned off with the shift lever in neutral position while ES starting system is activated	Securely engage parking brake

Indicator Lamp	Buzzer	Type	Warning Contents	Countermeasures
ON	Beeps	Vehicle moving warning	vehicle moves when shift lever is in neutral position while ES starting system is activated	• Securely engage parking brake • Increase foot pressure applied to brake pedal
ON	Elapsed time signal	Operating time information	ES start operating time is announced every minute After 1 minute: 1 beep After 2 minutes: 2 beeps After 10 minutes and thereafter: series of beeps repeated 5 times	• Securely engage parking brake • Increase foot pressure applied to brake pedal (alarm is reset after foot pressure is applied, and the operating time will be counted from the beginning again)

7. CANCEL TIMING ADJUSTMENT

HINT:

If the cancel timing is fast or slow (the brakes are dragged or the vehicle moves backward), the driver can adjust it by himself.

(a) Engine start and then turn the ES start main switch ON.
(b) Press either the FAST or SLOW of the ES start timing switch for at least 0.5 seconds.
(c) If the brakes are dragged, press FAST to advance the cancel timing. If the vehicle moves backwards, press SLOW to retard the cancel timing.
(d) The adjustment setting has 8 levels to FAST side and 5 levels to SLOW side. The adjustment settings are indicated by buzzer signals shown in the table below.

Adjustment Setting	Buzzer Signal
Intermediate setting	Long beep
Slow setting	Short beep
Fast setting	2 short beeps

NOTICE:

Cancel timing adjustment mode cannot be activated under the following conditions: if a malfunction is detected by the self–diagnosis function, if the vehicle speed is 5 km/h (3.1 mph) or more, if the ES start switch is OFF, or if the alarm is activated.

8. CANCEL POSITION INITIAL SETTING

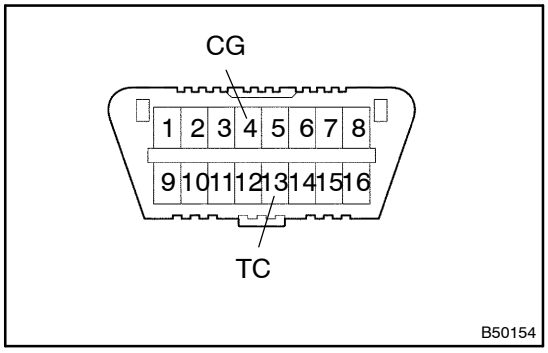
HINT:

If the ES starting system cannot be canceled, preform the cancel position initial setting.

NOTICE:

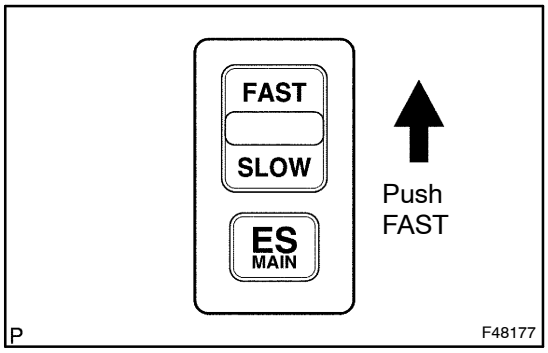
- **The clutch pedal play must first be properly adjusted before setting the initial cancel position.**
- **Operating the ES starting system without adjusting the clutch pedal play may result in premature wear of brakes and clutch, or it may cause the vehicle to move on a downhill grade.**

(a) Turn the ignition switch ON.
(b) Turn the ES start main switch ON and start the engine with the parking brake applied.



(c) Using SST, connect terminals TC and CG of the DLC3.
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(d) Disengage the clutch. Move the shift lever into the 2nd gear.



(e) Press FAST of the ES start timing switch for 3 seconds.

HINT:

The buzzer will emit a long beep and the indicator lamp will flash at the same time.

(f) Depress the clutch pedal.

(g) Move the shift lever into the 2nd gear and slowly engage the clutch.

(h) The engine speed will drop slightly and then be restored after about 1 second. When this happens, press FAST of the ES start timing switch again.

HINT:

The buzzer will emit 4 short beeps and the indicator lamp will turn off.

(i) Remove the SST from the terminals of the DLC3 and turn the ignition switch OFF to exit from the initial setting mode.

(j) After setting the cancel position, operate the ES starting system and make sure that the cancel position is suitable.

NOTICE:

Initial setting mode cannot be activated when any of the following conditions is met: if a malfunction is detected by the self–diagnosis function, if the vehicle speed is 0.5 km/h (0.3 mph) or more, the ES starting system is in operation, if the parking brake is not applied, or if terminals TC and CG of the DLC3 are not connected.

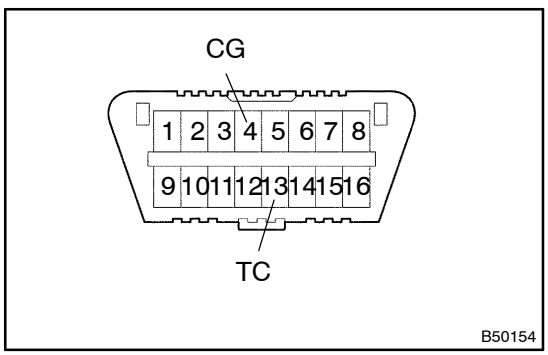
9. CLUTCH STROKE SENSOR ADJUSTMENT

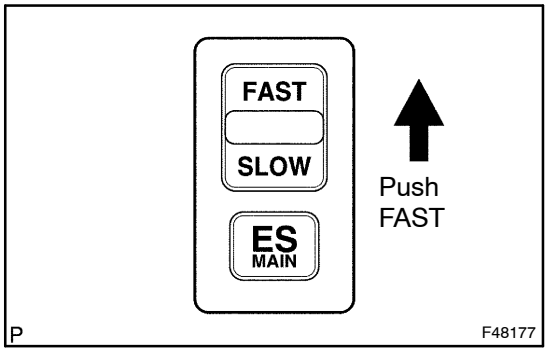
NOTICE:

Adjust the clutch stroke sensor after replacing the sensor.

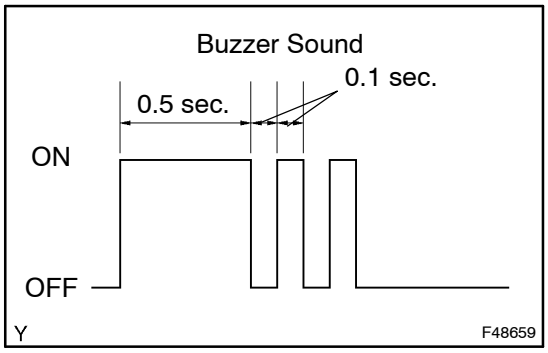
(a) Turn the ES start main switch OFF and turn the ignition switch ON with the parking brake applied.

(b) Using SST, connect terminals TC and CG of the DLC3.
SST 09843–18040





(c) Press FAST of the ES start timing switch once.



HINT:
The buzzer sounds.

(d) Remove the SST from the terminals of the DLC3 and turn the ignition switch OFF to exit from the stroke sensor position adjustment mode.

HINT:

- If the buzzer emits a beep, the clutch stroke sensor adjustment has failed to be set. In this case, inspect the clutch stroke sensor circuit (see page 05–281).
- If the buzzer does not sound, inspect the circuits listed below:
  TC terminal circuit (see page 05–261)
  Parking brake switch circuit (see page 05–309)
  Tachometer circuit (see page 05–295)
  ES start switch circuit (see page 05–288)
  ES buzzer circuit (see page 05–306)
  Clutch stroke sensor circuit (see page 05–281)

NOTICE:

- **Always set the initial cancel position after adjusting the clutch stroke sensor position.**
- **The stroke sensor position cannot be adjusted if the vehicle speed is 0.5 km/h (0.3 mph) or more and the ES starting system is in operation, or if terminals TC and CG of the DLC3 are not connected.**

10. DATA LIST

HINT:
Using the hand–held tester's DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to shorten labor time.

(a) Connect the hand–held tester (with 24V VIM) to the DLC3.
(b) Turn the ignition switch ON.
(c) Read the DATA LIST according to the display on the tester.
Skid control ECU:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
ES WARN LIGHT	ES start indicator lamp/ ON or OFF	ON: ES start indicator lamp ON OFF: ES start indicator lamp OFF	–
DOOR SW	Door switch/ ON or OFF	ON: Door open OFF: Door closed	–

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
PKB SW2	Parking brake switch/ ON or OFF	ON: Parking brake pulled OFF: Parking brake not pulled	–
NEUTRAL SW	Neutral Switch/ ON or OFF	ON: Shift position neutral OFF: Shift position except neutral	–
SLOW SW	Timing SLOW switch/ ON or OFF	ON: Timing SLOW switch ON OFF: Timing SLOW switch OFF	–
FAST SW	Timing FAST switch/ ON or OFF	ON: Timing FAST switch ON OFF: Timing FAST switch OFF	–
MAIN SW 1	ES start main switch 1/ ON or OFF	ON: ES start main switch ON OFF: ES start main switch OFF	–
MAIN SW 2	ES start main switch 2/ ON or OFF	ON: ES start main switch ON OFF: ES start main switch OFF	–
RELEASE LRN	Learning value of cancel position setting/ min. 0, max. 5	Learning value of cancel position setting	–
RELEASE INI	Initial value of cancel position setting/ min. 0, max. 5	Initial value of cancel position setting	–
CLUTCH LRN	Learning value of clutch stroke sensor adjustment/ min. 0, max. 5	Learning value of clutch stroke sensor adjustment	–
ES NUMBER	Number times of ES operation/ min. 0, max. 100	Times of ES operation number	–
OIL PRESS LRN	Learning value of oil pressure/ min. 0, max. 5	Learning value of oil pressure	–
CLUTCH STROKE	Clutch stroke sensor/ min. 0, max. 5	Clutch stroke sensor	–
ES VEHICLE SPD	Vehicle speed calculated by ES starting system/ min. 0, max. 204.6 (km/h)	Vehicle speed calculated by ES starting system	–

11. ACTIVE TEST

HINT:

Performing the hand–held tester's ACTIVE TEST allows relay, VSV, actuator, and other times to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to shorten labor time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the hand–held tester (with 24V VIM) to the DLC3.

(b) Turn the ignition switch ON.

(c) Perform the ACTIVE TEST according to the display on the tester.

Skid control ECU:

Item	Normal Condition	Diagnostic Note
ES LIGHT	ES start light ON/OFF	–
ES BUZZER	ES start buzzer ON/OFF	–