General Information

General Precautions

Dangerous Substances

Modern vehicles contain many materials and liquids which if not handled with care can be hazardous to both personal health and the environment.

Warning: Many liquids and other substances used in vehicles are poisonous and should under no circumstances be consumed and should, as far as possible, be kept from contact with the skin. These liquids and substances include acid, antifreeze, brake fluid, fuel, windscreen washer additives, lubricants, refrigerants and various adhesives.

Warning: Always read carefully the instructions printed on labels or stamped on components and obey them implicitly. Such instructions are included for reasons of your health and personal safety. Never disregard them.

Synthetic Rubber

Many O-rings, seals, hoses, flexible pipes and other similar items which appear to be natural rubber, are in fact, made of synthetic materials called Fluoroelastomers. Under normal operating conditions this material is safe and does not present a health hazard. However, if the material is damaged by fire or excessive heating, it can break down and produce highly corrosive Hydrofluoric acid.

Contact with Hydrofluoric acid can cause serious burns on contact with skin. If skin contact does occur :

- Remove any contaminated clothing immediately.
- Irrigate affected area of skin with a copious amount of cold water or limewater for 15 to 60 minutes.
- Obtain medical assistance immediately.

Should any material be in a burnt or overheated condition, handle with extreme caution and wear protective clothing (seamless industrial gloves, protective apron etc.).

Decontaminate and dispose of gloves immediately after use.

Lubricating Oils

Avoid excessive skin contact with used lubricating oils and always adhere to the health protection precautions.

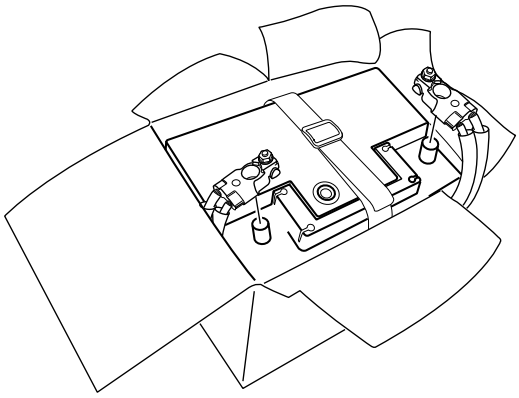
Warning: Avoid excessive skin contact with used engine oil. Used engine oil contains potentially harmful contaminants which may cause skin cancer or other serious skin disorders.

Warning: Avoid excessive skin contact with mineral oil. Mineral oils remove the natural fats from the skin, leading to dryness, irritation and dermatitis.

Health Protection Precautions

The following precautions should be observed at all times.

- Wear protective clothing, including impervious gloves where practicable.
- Avoid prolonged and repeated contact with oils, particularly used engine oils.
- Do not put oily rags in pockets.
- Avoid contaminating clothes (particularly those next to the skin) with oil.
- Overalls must be cleaned regularly. Discard heavily soiled clothing and oil impregnated footwear.
- First aid treatment should be obtained immediately for open cuts and wounds.
- Apply barrier creams before each work period to help prevent lubricating oil from contaminating the skin.
- Wash with soap and water to ensure all oil is removed (proprietary skin cleansers and nail brushes will help).
- Use moisturisers after cleaning; preparations containing lanolin help replace the skin's natural oils which have been removed.
- Do not use petrol/gasoline, kerosene, diesel fuel, oil, thinners or solvents for cleaning skin.
- Where practicable, degrease components prior to handling.
- If skin disorders develop, obtain medical advice without delay.
- Wear eye protection (e.g. goggles or face shield) if there is a risk of eye contamination. Eye wash facilities should be provided in close vicinity to the work area.



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- Remove the handset from the docking station.
- Disconnect both battery leads, earth lead first.
- Wait 10 minutes for **SRS ECU** the SRS ECU back-up power circuit to discharge.

The **SRS** system uses energy reserve capacitors to keep the system active in the event of electrical supply failure under crash conditions. It is necessary to allow the capacitor sufficient time to discharge (10 minutes) in order to avoid the risk of accidental deployment.

Caution: Disconnect the battery before starting the SRS operation. Disconnect the battery negative terminal first. DO NOT disconnect the battery in the reverse order.

Installation

In order to ensure system integrity, it is essential that the SRS system is regularly checked and maintained **SRS** so that it is ready for effective operation in the event of a collision. Carefully inspect SRS components before installation. **SRS** Do not install a part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.

Warning: The integrity of the SRS system is critical for safety reasons.

Ensure the following precautions are always adhered to:

- Never install used SRS components from another vehicle **SRS** or attempt to repair an **SRS** component.
- Never use the SRS parts without a clear identification **SRS** label.
- Never use an airbag or **SRS** ECU that has been dropped.
- When repairing an SRS system only use **SRS** genuine new parts.
- Never apply electrical power to an SRS component unless instructed to do **SRS** so as part of an approved test procedure.
- Ensure the bolts are tightened to the correct torque. Always use new fixings **SRS** when replacing SRS components.
- Ensure the ECU is always installed correctly. **SRS ECU**. **SRS ECU** There must not be any gap between the ECU and the bracket to which it is mounted. **SRS ECU** An incorrectly mounted ECU could cause the system to malfunction.
- Do not supply power to the ECU are connected. **SRS** before all SRS components **SRS ECU** before all SRS components.

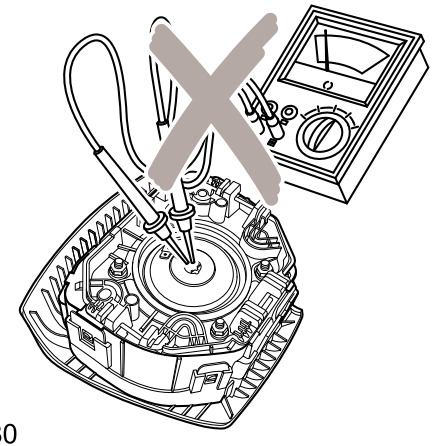
Caution: Ensure SRS components are not contaminated with oil, grease, detergent or water.

Caution: Torque wrenches should be regularly checked for accuracy to ensure that all fixings are tightened to the correct torque.

Caution: Following seat belt pretensioner deployment, the seat belts can still be used as conventional seat belts, but will need to be replaced as soon as possible to re-establish full SRS protection.

Caution: If the SRS component is to be replaced, the bar code of the new unit must be recorded.

SRS Component Testing Precautions



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The **SRS** components are triggered using relatively low operating currents, always adhere to the following precautions:

Warning: Do not use a multimeter or other general purpose test equipment on SRS system components or accidental deployment may occur. Only use the recommended diagnostic equipment to diagnose system faults.

Warning: Do not use electrical test equipment on the SRS harness while it is connected to any of the SRS system components. It may cause accidental deployment and personal injury.

Intake Manifold Gasket

Remove

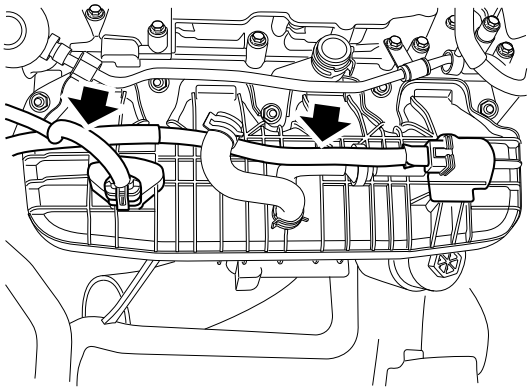
1. Disconnect the battery negative.
2. Remove the engine cover.
3. Remove the full load vacuum pipe from the turbocharger intake pipe.
4. Remove the oil-gas separator.

☞Oil-gas Separator Remove

5. Remove the canister solenoid.

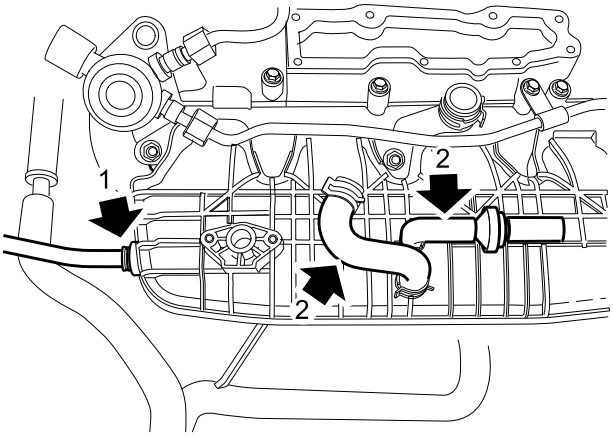
☞Canister Solenoid Remove

6. Disconnect the intake air temperature/manifold absolute pressure sensors, and take away the harness.



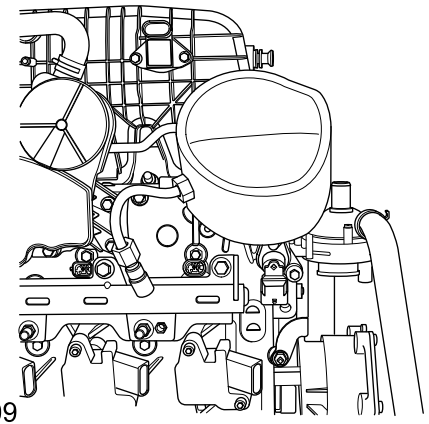
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7. Hold the red anti-looseness part to the right, until the red anti-looseness part fits the right part, and remove the vacuum pipe (1).
8. Release the clamp and remove the two vacuum hose (2) from the intake manifold.



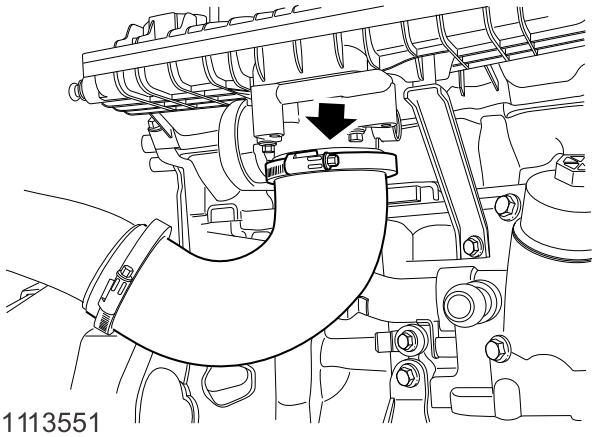
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9. Remove the shield of the high-pressure oil pump.



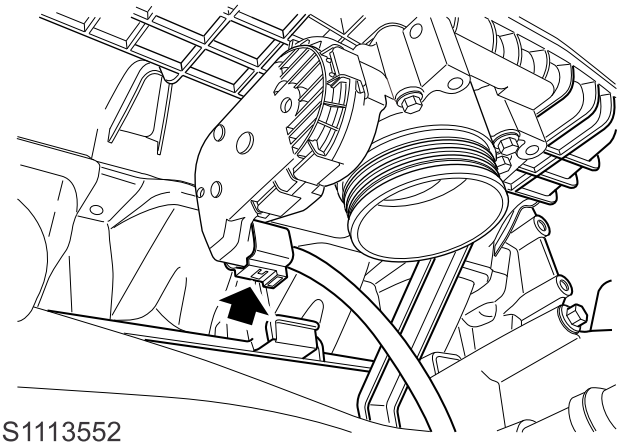
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10. Loosen the clamps and disconnect the intake pipe from the throttle body.



S1113551

11. Disconnect the connector of the throttle.



S1113552

12. Remove 1 bolt fixing the intake manifold bracket to the intake manifold.

Engine Compression Pressure Test

1. If the battery is not fully charged, charge it.
2. Disable the ignition system.
3. Disable the fuel injection system.
4. Remove all spark plugs.
5. Place the ignition switch in "ON" position.
6. Depress the accelerator pedal to keep the throttle fully open.
7. The compression pressure gauge gets started at zero position, and then starts the engine after 4 compression/expansion strokes.
8. Measure the compression pressure of each cylinder and record the reading.
9. If there is one cylinder with a too low compression pressure, inject about 15 **mL** engine oil through the spark plug hole into combustion chamber, and then remeasure the compression pressure and record the reading.
10. The minimum compression pressure of any cylinder should be no less than 70% of the maximum value, and the pressure reading of any cylinder shall be no less than 690**kPa**. For example, if the maximum pressure of any cylinder is 1035 **kPa**, then the allowable minimum pressure of other cylinders should be 725 **kPa** (1035×70%=725).

- Normal - For each cylinder, the compression pressure shall be augmented to its specified value in a rapid and steady manner.
- Piston ring leakage - The compression pressure of the first stroke is too low, and during the subsequent strokes, the compression pressure increases but fails to reach the normal level. Refill the engine oil, the compression pressure will be notably increased.
- Valve leakage - The compression pressure of the first stroke is too low, and the compression pressure will not increase in the following strokes. Refill the engine oil, and the compression pressure will increase not much.
- If the compression pressure of two adjacent cylinders is lower than the normal level, and the compression pressure will not increase by injecting oil to the cylinder, the cylinder head gasket may leak.

Cylinder Leak Test

Caution: To inspect the leakage of the cylinder/combustion chamber, leakage test may be required.If the leakage is serious, one or more faults may exist:

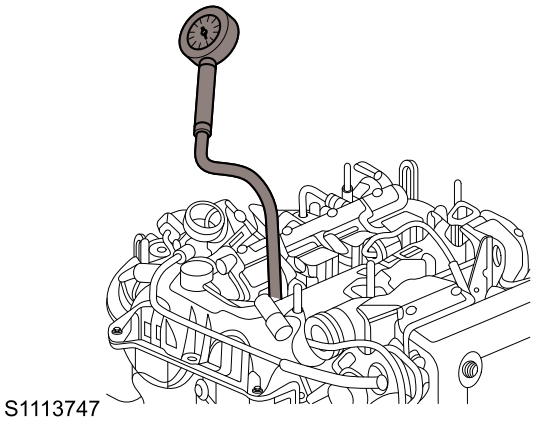
- ***Valve wearing or burnt***
- ***Valve spring broken***
- ***Valve tappet seized***
- ***Valve clearance/adjustment improper***
- ***Piston wearing***
- ***Piston ring wearing***
- ***Cylinder hole wearing or damage***
- ***Cylinder head cushion damaged***
- ***Cylinder head crack or damaged***
- ***Engine cylinder crack or damaged***

Warning: Before repairing any electrical parts, ignition and start switch must be turned to OFF or LOCK and all the electrical load must be turned off unless otherwise specified in the procedure. Disconnect the cathode cable of the battery to prevent the tool or equipment from contacting the exposed electrical terminal to generate spark. Failure to follow the safety instructions may cause personal injury and/or damage to the vehicle or parts.

1. Disconnect the battery negative.
2. Remove the spark plug.

☞**Spark Plug Remove**

3. Turn the crankshaft, place the cylinder piston under test to the top dead center of compression stroke (**TDC**).
4. Fit the cylinder head leakage tester or equivalent.


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5. Apply the workshop compressed air pressure to cylinder head leakage tester, and make adjustment according to the manufacturer's instructions.

Caution: The crankshaft balance tester bolt may be tightened to prevent the engine operation.

6. Record the cylinder leakage value. If the cylinder leak is more than 25%, it shall be deemed as excessive leakage, and the component may need repair. In case of excessive leakage, check for the following conditions:

- If the throttle body or intake hose sounds of air leakage, it indicates that the throttle may be worn, burnt or the throttle spring is cracked.
- If the exhaust system tail pipe sounds of air leakage, it indicates that the exhaust valve may be worn, burnt or the exhaust valve spring is cracked.

Engine Oil Pressure Diagnosis and Test

1. Park the vehicle on a level surface, wait long (2–3 **Min**) enough to allow the oil to flow down and check if the oil level is low.

   Engine oil of recommended grade shall be refilled. Refill the crankcase until the oil reaches the MAX mark on the dipstick.

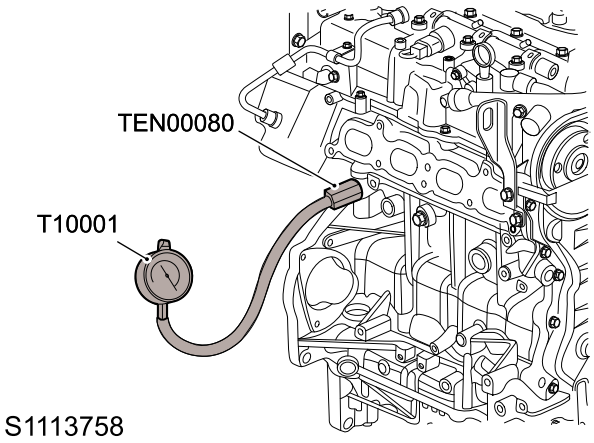
2. Warm up the engine, and confirm that there is no indication of "too low pressure" or "no oil pressure" on the vehicle instrument or indicator lamp.

   Listen whether there is valve train noise or knock.

3. Check for the following conditions:

   - The oil filer with return oil prevention function and the O-ring on filter cylinder block side are normal.
   - Oil diluted by water or unburnt fuel mixture
   - Oil viscosity not applicable to expected temperature
   - Oil pressure transmitter incorrect or failed
   - Oil pressure gauge incorrect or failed
   - Oil filter blockage
   - Oil bypass valve failure

4. Disconnect the battery negative cable.
5. Remove the starter motor.
6. Remove the engine oil pressure sensor.
7. Fit the special tools **TEN00080** and **T10001**.



8. Fit the starter motor.
9. Connect the battery negative cable.
10. Start the vehicle, the oil pressure must be 200-480KPa at idle speed.
11. If the pressure of the engine oil is below the specified value, check the engine for one or more of the following situations:

    - Oil filter and filter cylinder block side O-ring missing or damaged
    - Worn or contaminated oil pump.
    - Oil pump to lower crankcase O-ring missing or damaged
    - Oil strainer loose, clogged or damaged
    - Oil strainer O-ring missing or damaged
    - Oil pump pressure regulating valve failure
    - Large bearing gap
      ☞**Crankshaft check**
    - Oil passage cracked, porous or clogged
    - Missing or improperly fitted oil passage plug

- External harness connected to the 5V power supply is short-circuited
- External harness high resistance
- **ECM**Ground access cannot be provided.
- **ECT**Thermistor damaged

Cooling fan:

ECM controls three positions of the cooling fan through the control of two pins on three relays. ECM controls the speed of cooling fan based on the air conditioning system request, engine coolant temperature, air conditioning system pressure, ambient temperature and vehicle speed. If the engine temperature is still high after the engine stops running, ECM will keep the cooling fan running for a while.

Electronic thermostat

The electronic thermostat is used to adjust the engine coolant temperature to ensure that the engine coolant is heated rapidly and prevent engine overheating. When the engine operates at low and medium loads, the engine coolant temperature is increased to reduce oil viscosity, effectively reduce mechanical friction loss of piston, etc., reduce heat transfer loss, and optimize combustion; when the engine operates at high speed and high load, the engine temperature may be reduced to rapidly cool the engine.

ECMgives the **PWM** command, so that the electronic thermostat acts to heat paraffin in the core, the paraffin package is expanded, and paraffin pressurize the push rod; since the upper part of the push rod is fixed with the housing, the push rod drives the whole core to move downward in the reverse direction; the core copper cap and main valve are in interference fit to drive the main valve to open. The Electronic thermostat opening is proportional to the duty ratio of **PWM** signal.

When the engine coolant temperature rises to above 97℃, the thermostat starts to be gradually opened, engine coolant enters into general circulation (radiator) cooling, then flows back to the water pump inlet, reaches 112℃, and the thermostat is fully open. The coolant is below 97℃, the thermostat is in the closed state, and the coolant directly feeds into the water pump inlet.

Auxiliary 2 (external auxiliary)

The external auxiliary portion mainly includes:

- Alternator control input
- Brake pedal switch
- Brake lamp

Alternator load input

Alternator load input is the signal fed back to ECM by the alternator according to the vehicle electricity situation. Engine load change will seriously affect the engine idle speed. In order to compensate the load to maintain a stable idle speed, ECM needs to obtain the torque load information of AC motor.

Brake pedal switch

The brake switch is located on the pedal box in the cab. **ECM**monitors the switch status and transfers the data to **TCM** by **CAN** bus, and the **TCM** controls the gearbox clutch to open. When the brake pedal is operated, the brake switch is activated.

Cruise control system

The cruise control system can maintain the vehicle at a constant and comfortable speed with the accelerator pedal not depressed. Cruise control system involves:

- Brake switch
- Cruise control switch
- Cruise indicator lamp
- Automatic transmission**TCM**
- **ECM**
- Electronic throttle

Cruise control switch

The cruise control switch is of a handle type, used for engaging and disengaging the cruise control system and adjusting the set speed.

The cruise operating switch is connected to GW which transmits network signals to **ECM**, different **CAN** signals may be provided for **ECM** by operation of different switches to determine the cruise switch input state at this time.

Cruise status indicator lamp

The indicator lamp indicates the status of cruise control system. The lamp is located on the instrument pack. When the cruise control system is on standby, the cruise indicator illuminates green; when the cruise control system is activated, the cruise indicator illuminates yellow. When a fault relating to the cruise system is detected, there will be tooltip for the cruise system failure when the driver operates the main cruise switch, and the indicator lamp will flash at this time.

On standby

When the main switch is pressed, the cruise control system is on standby.

Activation

Once it is on standby, when the vehicle is in the following status:

- Non-brake state
- Running with the speed in the range of 40 - 200km/h
- Engine speed no more than 6000rpm
- Transmission not in parking, neutral or reverse gear (automatic transmission)

Description

Overview

The vehicle is equipped with 6-speed wet dual clutch automatic transmission which possesses the high transmission efficiency and durability of a manual transmission and the comfortability of an automatic transmission that will not show interruption of traction during shifting.

The **TCM** controls the system in a way similar with that used by other **ECU**s equipped on the vehicle. It receives information from the sensors or other control modules, calculate according to the pulse spectrum information stored in **TCM** memory, and then outputs signals to the actuators or other **ECU**. The signal exchange with other control modules is mainly conducted through the high-speed **CAN** bus. The diagnostic test can be conducted through the Data Link Connector (DLC). When the transmission has some faults, **TCM** will store related diagnostic trouble codes (**DTC**), and these DTCs may be accessed again by using the scan tool.

Transmission Housing

The transmission housing assembly consists of the clutch housing, main housing and end cap. The transmission housing is made of cast aluminum, and the transmission assembly is connected to the engine by bolts.

Dual Clutch and Shock Absorber Assembly

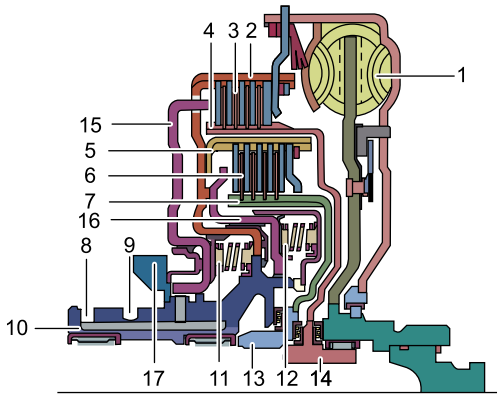
The dual clutch and shock absorber assembly contains 2 parts: dual clutch module and torsional shock absorber.

The dual clutch module consists of 2 wet-type multi-plate friction clutches, its operation principle is as follows:

Even gears are deployed on one part of the transmission, which odd gears are deployed on another part of the transmission. Before the gear shifting, the next gear is already locked on the unloaded part of the transmission (pre-selected gear). Then, the clutch of pre-selected gear is engaged, meanwhile the clutch of loaded gear is disengaged, so as to complete the torque transfer.

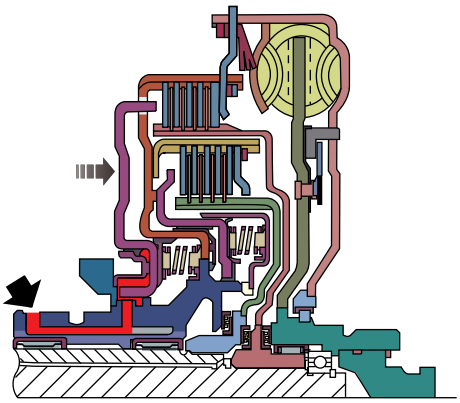
The torque is inputted to the clutch from the flywheel, and the torque in the clutch is introduced from the external friction plate bracket, and applied to the internal plate clutch by the engagement of the clutch, then transmitted to the corresponding input shaft. One of the clutch always works in the force transmission chain.

Clutch Release State



1. Torsional vibration damper
2. C1 External Plate Bracket
3. External (Odd) Clutch C1
4. C1 Internal Plate Bracket
5. C2 External Plate Bracket
6. Internal (Even) Clutch C2
7. C2 Internal Plate Bracket
8. C1 Pressure Oil Cavity
9. C2 Pressure Oil Cavity
10. Pressure Oil Cavity for Lubricating Oil
11. C1 Return Spring
12. C2 Return Spring
13. Connecting External (Even) Input Shaft
14. Connecting Internal (Odd) Input Shaft
15. C1 Piston
16. C2 Piston
17. Oil Pump Drive Wheel

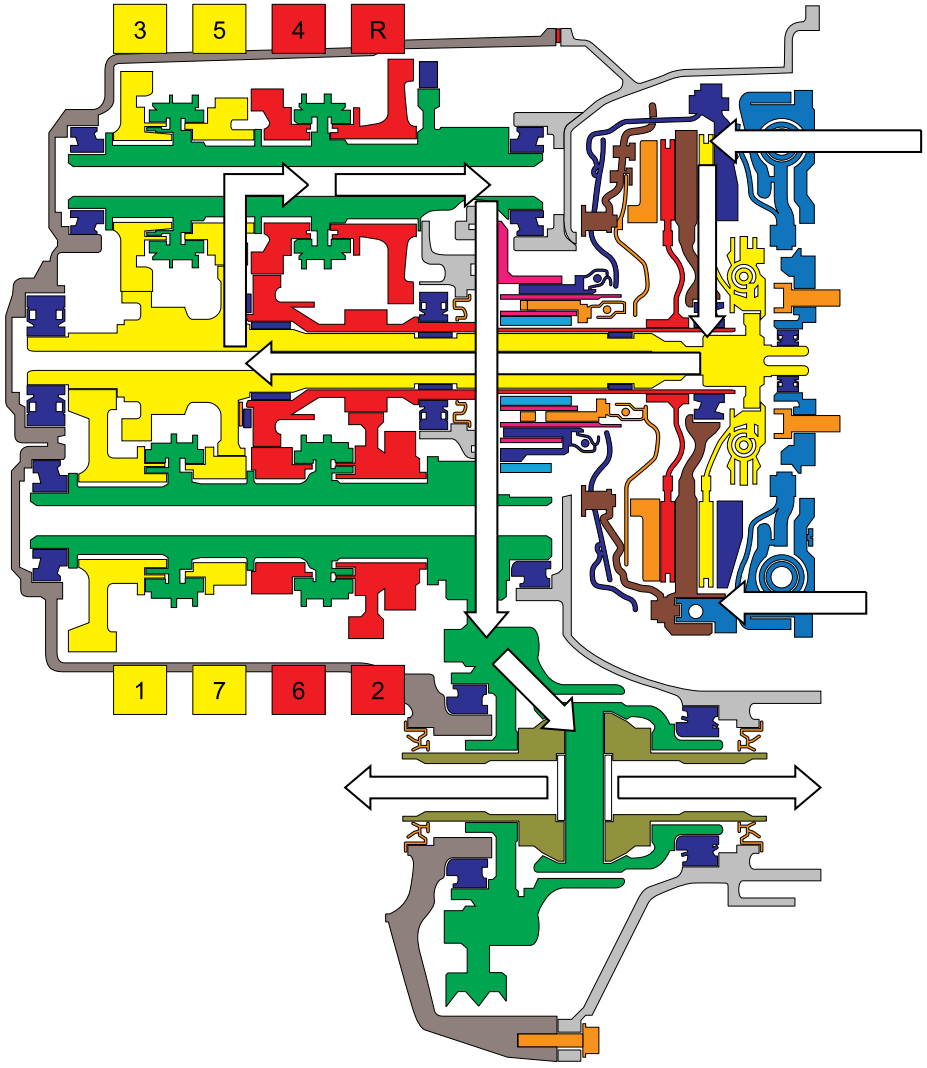
External (Odd) Clutch Engaged State and Torque Transfer



External clutch transfers the torque to the internal input shaft connecting with 1st, 3rd, 5th and reverse gear. When the external clutch is engaged, the hydraulic oil will fill into the oil

D5 gear

Power flow in D5 gear



S1212514

With the improvement of vehicle speed and running to the appropriate conditions, the transmission control module (**TCM**) processes the input signals from the transmission input and output shaft speed sensor, throttle position sensor and other vehicle sensors to determine when the command connects 1/3/5/7 clutch flow solenoid S3, S7 and A37 oil circuit pressure solenoid S5 and A15 oil circuit flow solenoid S7 and 1357/246R logic valve pressure control solenoid S9, and command 1357 gear clutch to engage. At the same time, command to close 2/4/6/R clutch flow solenoid S4, S8, A6R oil circuit pressure solenoid S6, and A24 oil circuit flow solenoid S8. At the same time, the transmission is shifted to 5th gear.

Engage 1/3/5/7 gear clutch

• 1/3/5/7 clutch flow solenoid S3

Open 1/3/5/7 clutch flow solenoid S3, so that S1 signal enters into 1/3/5/7 clutch circuit. Then, 1/3/5/7 clutch oil is conveyed to the clutch actuator cylinder assembly through #1 orifice.

• Clutch actuator cylinder assembly

1/3/5/7 clutch oil enters the clutch actuator cylinder assembly, then overcomes the spring force, moves the 1/3/5/7 gear clutch piston, and engages the 1/3/5/7 gear clutch plate.

Engage 3/5 gear shifting fork assembly

• 1357/246R logic valve pressure control solenoid S9

Open 1357/246R logic valve pressure control solenoid S9, so that energy accumulator oil enters the S9 signal circuit. Then, S9 signal flow is conveyed to 1/3/5/7 gear logic valve and 2/4/6/R gear logic valve through #3 orifice.

• S7 and A37 oil circuit pressure solenoid S5

Open S7 and A37 oil circuit pressure solenoid S5, so that energy accumulator oil enters the S7/37 actuator circuit. Then, S7/37 actuator oil is conveyed to A15 oil circuit flow solenoid S7 and 1/3/5/7 gear logic valve through #7 orifice.

Right Differential Oil Seal - Manual

Remove

1. Raise the vehicle on an elevator.

Warning: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

2. Drain the manual transmission oil.

☞**Manual Transmission Oil Drain**

3. Remove right drive shaft assembly.

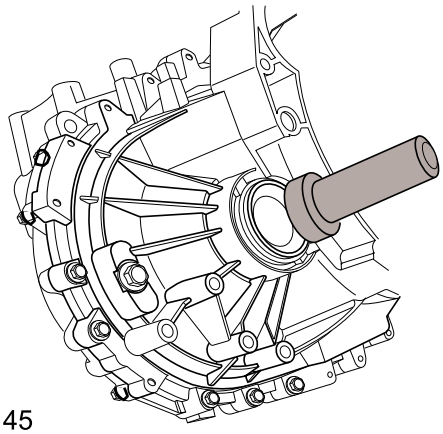
☞**Right Drive Shaft Assembly Remove**

4. Remove the differential oil seal and discard it.

Caution: *Do not damage the oil seal groove.*

Refit

1. Clean the oil seal groove.
2. Fit the new oil seal with **TPT00130**.



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3. Fit the right drive shaft assembly.

☞**Right Drive Shaft Assembly Refit**

4. Fill the manual transmission oil.

☞**Manual Transmission Oil Refill**

Manual Transmission Remove

Remove

1. Raise the vehicle on an elevator.

Warning: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

2. Drain the manual transmission oil.

☞**Manual Transmission Oil Drain**

3. Remove the manual transmission assembly.

☞**Manual Transmission Assembly Remove**

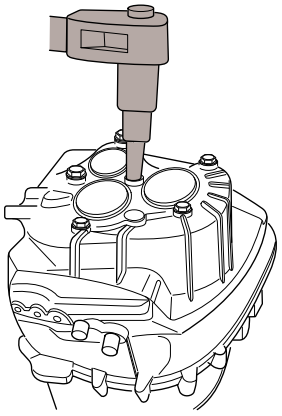
4. Remove the gear selection/shift control mechanism assembly.

☞**Gear selection/Shift Control Mechanism Assembly Remove**

5. Remove the transmission accessories and release mechanism.

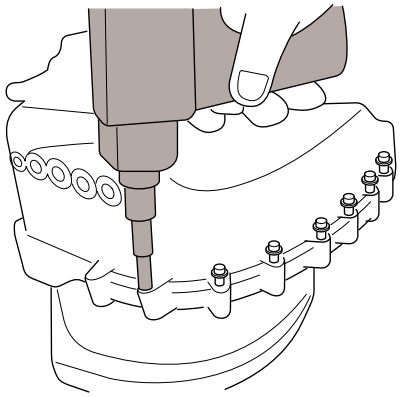
☞**Transmission Accessories and Release Mechanism Remove**

6. Place the transmission inverted, and remove the rear case bearing cover plate bolts.



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7. Remove the housing connecting bolts.



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8. Remove the housing reverse connecting bolts.

Expansion Valve

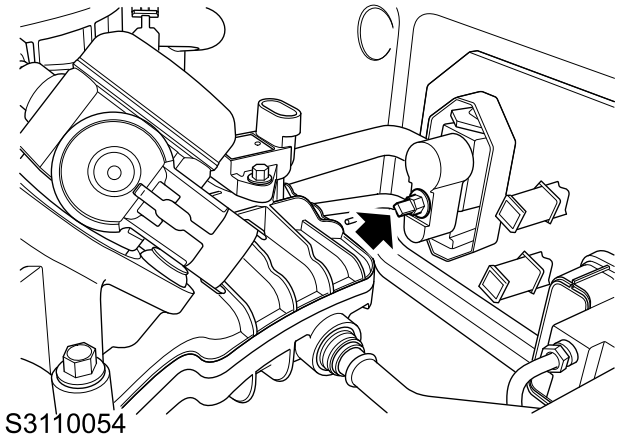
Remove

1. Recover the A/C refrigerant.

☞**A/C Refrigerant Recovery**

2. Remove 1 nut fixing the A/C hard pipe to the TXV and disconnect the pipe.

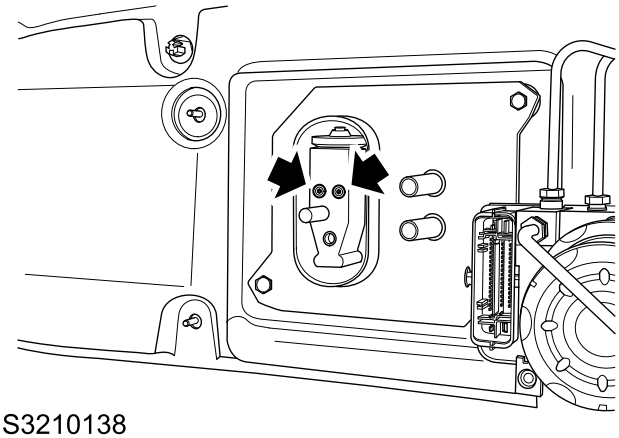
Caution: Always fit plugs to open connections to prevent contamination.



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3. Remove and discard the O ring.
4. Remove 2 bolts fixing the TXV to the A/C box and remove the TXV.

Caution: Always fit plugs to open connections to prevent contamination.



S3210138

5. Remove and discard the O ring.

Refit

1. Renew the O ring, and fit it to the evaporator core pipe.
2. Fit the TXV bracket to the evaporator core, fit 2 bolts, tighten to **5.5Nm** and check the torque.
3. Renew the O ring, and fit it to the air conditioning hard pipe assembly.
4. Fit the A/C hard pipe assembly to the TXV, fit 1 nut, tighten to **18–22Nm** and check the torque.
5. Refill the A/C refrigerant.

☞**A/C Refrigerant Refill**

Condenser

Remove

1. Disconnect the battery negative.
2. Recover the A/C refrigerant.

☞**A/C Refrigerant Recovery**

3. Remove the cooling fan assembly.

☞**Cooling Fan Assembly Remove**

4. Remove the front bumper assembly.

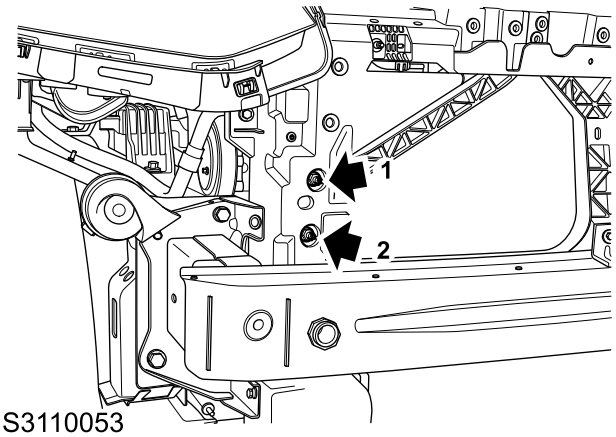
☞**Front Bumper Assembly Remove**

5. Remove 1 nut (2) securing the A/C hard pipe assembly (condenser) on the condenser.

Caution: Always fit plugs to open connections to prevent contamination.

6. Remove the nut (1) securing the A/C pipe (compressor/condenser) on the condenser.

Caution: Always fit plugs to open connections to prevent contamination.

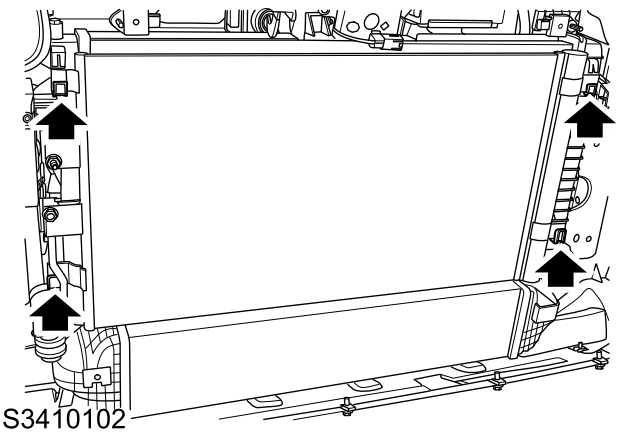


S3110053

7. Remove the upper radiator beam.

☞**Upper Radiator Beam Remove**

8. Remove the condenser from the radiator groove.



S3410102

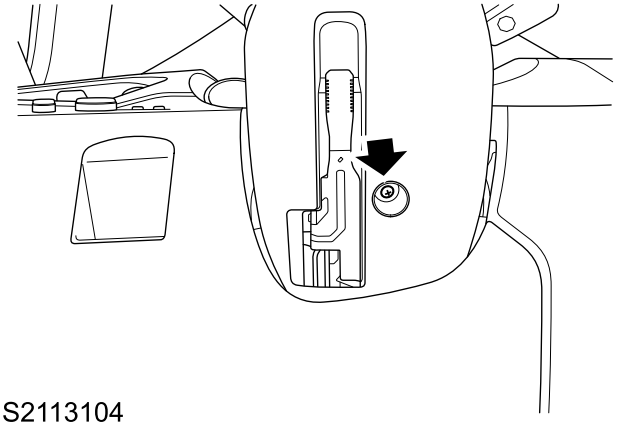
Refit

1. Fix the condenser to the radiator groove.

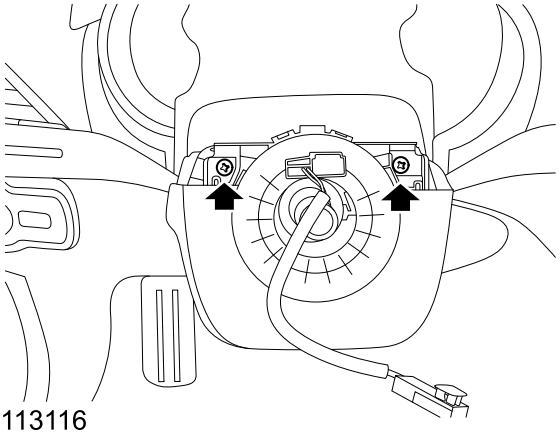
Steering Column Trim Cover

Remove

1. With a screwdriver, carefully disconnect the upper trim cover from the lower trim cover.
2. Remove the clip fixing the upper trim cover of the steering column to the upholstery and the IPK frame, and remove the upper trim cover.
3. Remove 3 screws fixing the lower trim cover of the steering column to the steering column.



S2113104



S2113116

4. Release the steering column to the lowermost position and remove the lower trim cover of the steering column.

Refit

1. Release the steering column lever and move the steering column to the upper position.
2. Fix the steering column lower trim cover to the steering column, fit 3 screws and fasten.
3. Fix the steering column upper trim cover to the upholstery and IPK frame, and secure with clips.
4. Place the upper trim cover of the steering column on the steering column, and secure it on the lower trim cover with clips.

Steering Column Assembly

Remove

1. Disconnect the battery negative.
2. Remove the steering wheel assembly.

☞**Steering Wheel Assembly Remove**

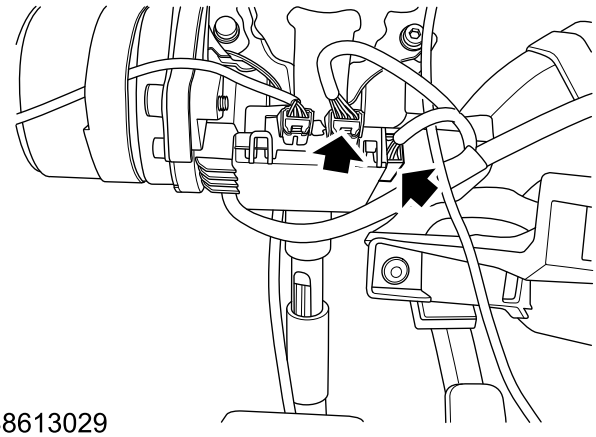
3. Remove the combination switch.

☞**Combination Switch Remove**

4. Remove the lower closing plate of the driver side instrument panel.

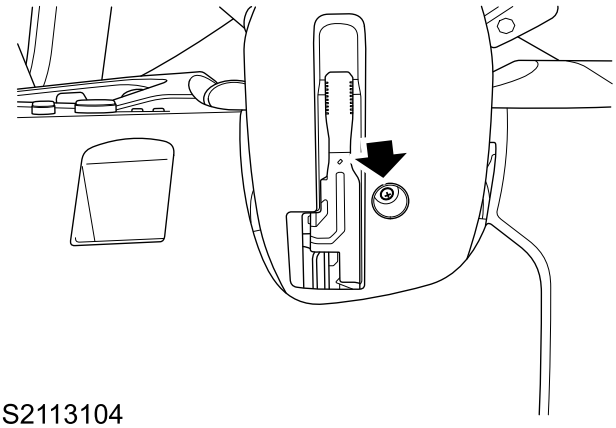
☞**Driver Side Instrument Panel Lower Closing Plate Remove**

5. Release the steering column to the lowermost position.
6. Disconnect the connector of the **EPS** module.



S8613029

7. Remove 3 screws fixing the lower trim cover of the steering column to the steering column.



S2113104

8. Gently disconnect the upper trim cover from the lower trim cover with a screwdriver, and remove the gap.
9. Loosen the steering column adjusting handle, and remove the steering column lower trim cover.
10. Remove and discard 1 bolt fixing the steering column to the power steering gear.

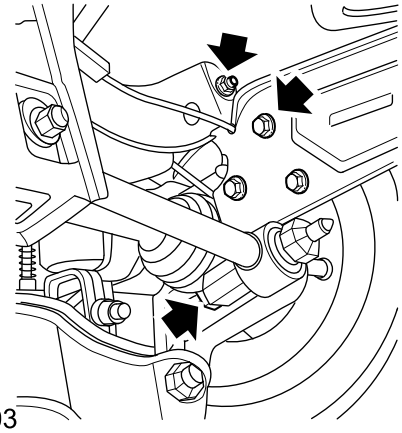
Left Rear Axle Shaft Assembly

Remove

1. Raise the vehicle.
2. Remove the fender board assembly of the rear wheel.

☞**Rear Wheel House Liner - Remove**

3. Pry up the nut locking device of the left rear axle shaft, depress the brake pedal, remove and discard axle shaft nut.
4. Remove the bolt and nut fixing the rear tie rod to the wheel bracket, and release the rear tie rod.
5. Remove 3 bolts fixing the rear blade trailing arm to the wheel bracket, and release the rear blade trailing arm.



S9410003

6. Remove the bolt and nut fixing the rear upper swing arm to the wheel bracket, and release the rear upper swing arm.
7. Remove the bolt and nut fixing the shock absorber to the wheel bracket, and release the shock absorber.
8. Pull the wheel hub outward to remove the left rear axle shaft assembly from the wheel hub.
9. Disconnect the left rear axle shaft assembly from the differential with the **T30001**.
10. Remove the left rear axle shaft assembly.
11. Remove and discard the axle shaft circlip.

Refit

1. Fit the circlip into the axle shaft.
2. Clean the end of the axle shaft, mounting location of the wheel hub and junction of the differential.
3. Fit the left rear axle shaft to the differential and ensure full engagement.
4. Pull the wheel hub outwards and allow the axle shaft to engage the wheel hub.
5. Fix the shock absorber to the wheel bracket, fit the nut and tighten to **75–90Nm**.
6. Fix the rear upper swing arm to the wheel bracket, fit the nut and tighten to **50Nm+90°**.
7. Fix the rear blade trailing arm to the wheel bracket, fit 3 bolts and tighten to **60±5Nm**.
8. Fix the rear tie rod to the wheel bracket, fit the nut and tighten to **130Nm+90°**.
9. Fit the new axle shaft nut and tighten to **350–370Nm**.
10. Lock the nut to the left rear axle shaft.
11. Fit the fender board assembly of the rear wheel.

☞**Rear Wheel House Liner - Refit**

12. Lower the vehicle.

Service Procedures

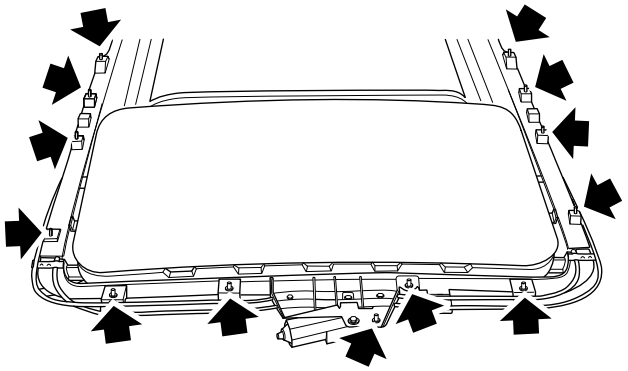
Sunroof Assembly

Remove

1. Disconnect the battery negative.
2. Remove the interior roof trim panel.

☞Interior Roof Trim Panel Remove – With Sunroof

3. Release the drain pipe clip and disconnect 4 drain pipe clips from the sunroof assembly.
4. Remove 13 bolts fixing the sunroof assembly to the body, and with assistance, remove the sunroof assembly.



S6310002

Refit

1. Locate the sunroof assembly to the vehicle body with aid, and tighten the bolts to **4.5–5.9Nm** to secure it.
2. Connect the drain pipe to the sunroof assembly and secure with clamps.
3. Fit the roof interior trim.

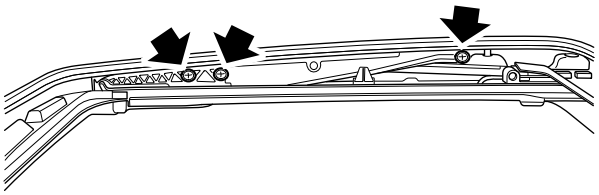
☞Roof Interior Trim Refit – with Sunroof

4. Connect the battery negative.

Sunroof Glass Panel

Remove

1. Open the sunroof sunvisor.
2. Remove the screws (6 in total on both sides) securing the sunroof glass panel.



S6310001

3. Take off the sunroof glass panel assembly.

Refit

1. Locate the sunroof glass panel to the vehicle body, prefit 6 screws.
2. Adjust the sunroof glass panel to allow it consistent with the roof panel radian, and tighten the screws to **4.8–7.2Nm**.
3. Operate the sunroof motor to make the sunroof glass panel open for 8 seconds slantways, so as to initialize the sunroof motor.
4. Operate the sunroof glass panel to check for the mounting.
5. Close the sunroof sunvisor.

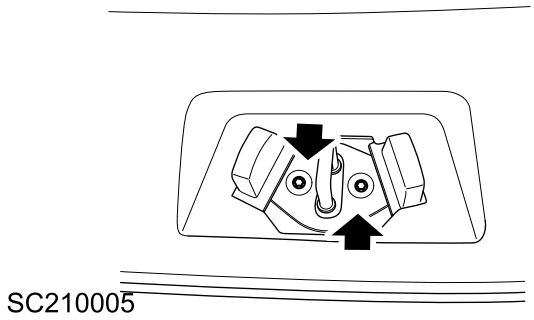
Tail Gate Striker

Remove

1. Open the tail gate.
2. Remove the tail gate sill trim panel.

☞**Tail Gate Sill Trim Panel Remove**

3. Mark the tail gate position relative to the back panel.
4. Remove 2 screws fixing the tail gate striker to the rear panel.



5. Remove the tail gate striker.
6.

Refit

1. Pre-fit the tail gate striker according to the scale of the tail gate striker and body.
2. Open/close the tail gate repeatedly, and adjust the fit clearance and surface difference between the tail gate and the surrounding panels by moving the striker.
3. Make sure that the tail gate lock is fully locked, and check if the electrical signal of the tail gate lock is correct.
4. Tighten the bolt securing the striker to the body to **19–25Nm**, and check the torque.
5. Fit the tail gate sill trim panel.

☞**Tail Gate Sill Trim Panel Refit**

Tail Gate Hinge Assembly

Remove

1. Open the tail gate.
2. Remove the tail gate assembly.

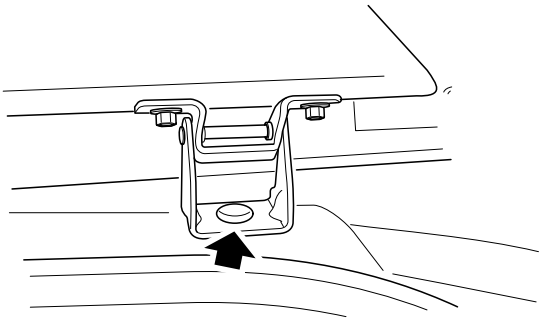
☞**Tail Gate Assembly Remove**

3. Mark the position of the tail gate hinge on the vehicle body with a non-permanent marker.
4. Remove the roof interior.

☞**Roof Interior Remove**

5. Remove the nut fixing the hinge assembly to the body (the hinge bolt indicated corresponds to the nut fitted from the inside of the body), and remove the tail gate hinge assembly.

Warning: As the large weight of the tailgate, operations should be performed after the safety feature is set, and take extra care to prevent the vehicle from damaging and personal injury.



6. Remove the tail gate hinge assembly.

Refit

1. Locate the tail gate hinge assembly to the marked mounting position on the body.
2. Fit the nut fixing the tail gate hinge to the body, tighten the nut to **26–34Nm**, and check the torque.
3. Fit the roof interior.

☞**Roof Interior Refit**

4. Fit the tail gate assembly.

☞**Tail Gate Assembly Refit**

5. Close the tail gate, and check if the fit clearance and surface difference between the side body panel and the back panel meet the DTS (dimension technical specification) requirements.

Glossary List

Name	Description
A/C	Air Conditioning
ABS	Anti-lock braking system
AC	Alternating current
ACM	
AGM	Absorbed Glass Mat
ATC	Automatic Temperature Control
AUTO	Automatic
AUX	Auxiliary
AWD	
BCM	Body Controller Module
CAN	Controller area network
CDL	Central Door Locking
CHMSL	Centre High Mounted Stop Lamp
CKP	Crankshaft Position
CMP	Camshaft Position
CO	Carbon Monoxide
CO2	Carbon Dioxide
DC-DC	
DDSP	Driver's Door Switch Pack
DTC	Diagnostic Trouble Code
DTI	Dial Test Indicator
EBD	Electronic Braking-force Distribution
EBS	
ECM	Engine Control Module
ECT	Engine Coolant Temperature
ECU	Electronic Control Unit
EEPROM	Electronic Erasable Programmable Read Only Memory
ELR	Emergency Locking Retractor
EMCD	Electric Magnetic Control Device
EMS	Engine Management System
EPB	Electronic Parking Brake
EPS	

Name	Description
FDU	Final Drive Unit
GPS	Global Positioning System
HC	Hydro Carbons
HFM	Hot film air mass
HHC	Hill Hold Control
HO2S	Heated Oxygen Sensor
HRW	Heated Rear Window
HS	High Speed
HSLA	High Strength Low Alloy
HVAC	Heating, Ventilation and Air Conditioning
HVACM	
Hz	
ICE	In Car Entertainment
ICS	Inflatable Curtain Structure
IPK	Instrument Cluster
ISO	International Organization for Standardization
Km/h	
Km/l	
L	
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LIN	Local Interconnect Network
MAG	Metal Active Gas
MIG	Metal Inert Gas
MIL	Malfunction Indicator Lamp
MLS	Master Light Switch
Min	
NOx	Oxides of Nitrogen
NTC	Negative Temperature Coefficient
OAT	Organic Acid Technology
PCV	Positive Crankcase Ventilation
PDC	Parking Distance Control
PLCD	Permanentmagnetic Linear Contactless Displacement
PTU	Power Transfer Unit
PVC	Polyvinyl Chloride