

Power Supply (14.00)

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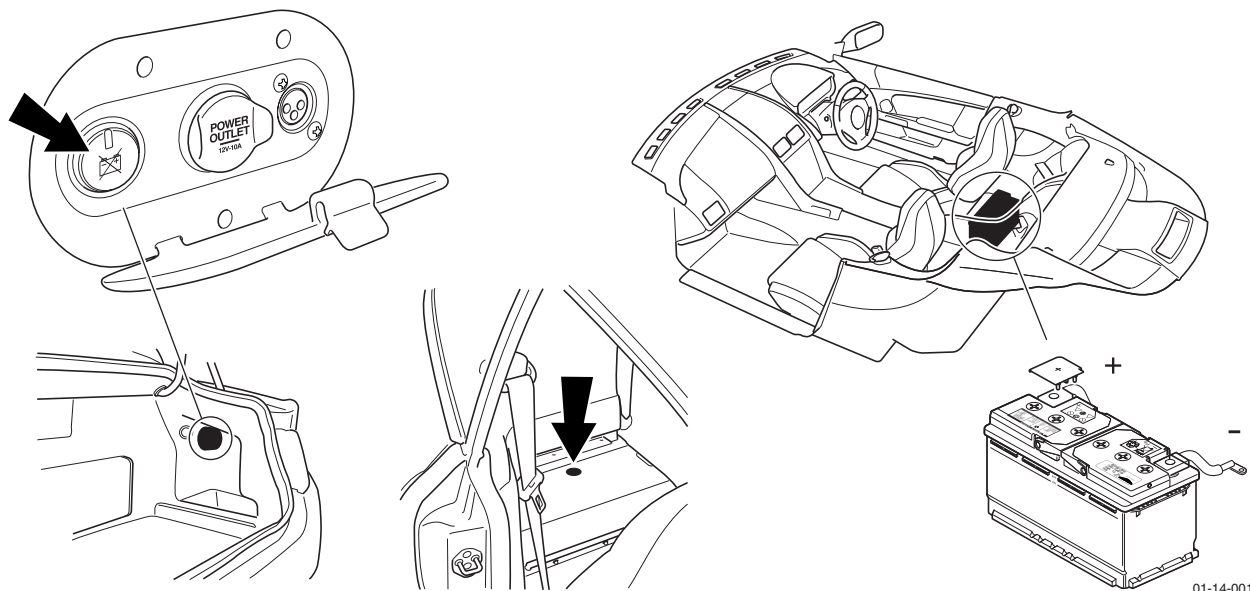


Power Supply (14.00)

Battery System (14.01)

Description

The 12 volt negative earth ('-' ve) battery is located under the RH side rear seat and is grounded to the vehicle body. The battery positive ('+' ve) terminal is connected to a battery connect switch. The connect switch may be accessed by raising the rear seat cushion.



Battery Connect Switch

When the battery connect switch is in an 'open' state it isolates electrical power from all systems except the 'keep alive memory' functions in the PCMs, TCU, radio, navigation system and door modules.

This function isolates electrical power from vehicle circuits under all normal service conditions with the following exceptions:

- Before any welding or other work which may induce high voltages into the electronic control modules
- Before disconnecting any of the control modules with 'keep alive memory'
- Before any major service task (e.g. engine removal)
- Before installing any accessory which involves modification of vehicle wiring

In the above four exceptions the battery earth ('-' ve) lead should be disconnected.

When the battery earth ('-' ve) terminal is disconnected, data held in keep alive memories will be lost.

After connecting the battery, the radio preset stations and the door window controllers will require to be reset (adaptive learning data in the PCM module will require to be re-learned by driving the vehicle for some miles in a range of driving conditions), **driveability may be slightly compromised until the vehicle systems have completed their adaptive learning routines again.**

Battery Disconnection and Alarm Activation

The vehicle is installed with an alarm which will be activated if the battery is disconnected. This alarm is driven by a back up battery within the alarm sounder unit.

To prevent the alarm from sounding when the battery is disconnected (for workshop procedures), disconnect the battery within 10 seconds of switching off the ignition. Always carry out the following procedures upon connection of the battery.

- Reset the clock
- Reset the radio preset programmes.
- Reset the window maximum up and maximum down settings.

Charging Circuit

Electrical power generated at the alternator flows via two 'T Piece' connectors to the engine bay 'Dirty Feed' stud. It then flows via the Battery Disconnect Switch (BDS) to the battery positive terminal. Both the alternator and the battery are earthed via the vehicle body to complete the charging circuit.

The starter motor and the 'jump start terminal' are also fed directly from the charging circuit.

Go to page 18-X-XX for complete power distribution circuit diagram (Circuit Sheet 25).

+12 Volt Distribution

The +12 volt supply comes from the battery to the battery disconnect switch (BDS). Assuming that this switch is not activated, 12 volt power is then available from C0046-8 on the BDS to all of the clean feed battery studs.

The following clean feeds are then live:

- Boot fuse box clean feed
- Under bonnet fuse box clean feed
- CEM busbars 1, 2, 3 and 4 clean feeds

12V power to all systems and components is then controlled by the CEM and the under bonnet / boot fuse boxes.



Specifications

Torque Figures

Description	Nm.	lb. / ft.
Battery clamp	9	7
Battery Terminals	9	7

Maintenance

Vehicle Battery-Renew

Repair Operation Time (ROT)

Item	Code
Vehicle Battery-Renew	14.01.AB

Removal

1. Power the driver's fully forward.
2. Remove rear compartment cover.
3. Loosen and disconnect battery terminals, earth (- ve) terminal first.
4. Release rear carpet, studs (x2), move carpet aside.
5. Remove screws (x2), battery compartment cover to support rail.
6. Remove nuts (x2), battery compartment cover to body. Remove cover.
7. Remove Torx screws (x4), remove battery clamps (x2).
8. Disconnect battery vent tube.
9. With assistance, remove battery.

Installation

1. Clean battery tray and clamps.
2. With assistance, install battery into its compartment.
3. Connect battery vent tube.
4. Position battery clamps (x2), install and torque tighten Torx screws (x4).
5. Ensure battery vent tube is not distorted by battery.
6. Install battery terminals, tighten terminal nuts to correct torque.
7. Install battery compartment cover, install and tighten screws (x2) and nuts (x2).
8. Position rear carpet, secure with studs.
9. Install rear compartment cover.
10. Reposition driver's seat.

Switch Battery Disconnect-Renew

Repair Operation Time (ROT)

Item	Code
Switch Battery Disconnect-Renew	14.01.CJ

Removal

1. Power drivers seat fully forward.
2. Remove rear compartment cover.
3. Disconnect vehicle battery.

4. Remove panel assembly - quarter trim middle - RH (see Workshop Manual procedure 01.05.CT Panel Assembly - Quarter Trim Middle Section - RH - Renew).
5. Release rear carpet studs (x2), move carpet aside.
6. Remove screws (x2), battery compartment cover to support rail.
7. Remove nuts (x2), battery compartment cover to body. Remove cover.
8. Remove nuts/washers (x2), securing battery cables to battery disconnect switch.
9. Release battery cables (x4) from battery disconnect switch. Note fitted position of spacer washer between RH battery cables.
10. Remove Torx screws (x3), securing battery disconnect switch to mounting bracket.
11. Release multiplug from bracket, disconnect multiplug, remove battery disconnect switch.
12. Remove battery cable bolts from battery disconnect switch.

Installation

1. Install battery cable bolts in disconnect switch.
2. Position battery disconnect switch, connect multiplug, install multiplug on bracket.
3. Install and torque tighten Torx screws (x3).
4. Install battery cables (x4), install washers (x2), install and torque tighten nuts (x2)
5. Install battery compartment cover, install and tighten screws (x2) and nuts (x2).
6. Position rear carpet, install on studs (x2).
7. Connect vehicle battery.
8. Install rear compartment cover.
9. Power drivers seat to original position.

Switch Battery Off-Renew

Repair Operation Time (ROT)

Item	Code
Switch Battery Off-Renew	14.01.CK

Removal

1. Remove Carpet - RH side luggage compartment. (see Workshop Manual procedure 01.05.FB Carpet Assembly - Luggage Compartment - Side - RH - Renew).
2. Remove bolt and loosen nuts (x2), power socket bracket.
3. Release harness clips (x2) from power socket bracket.
4. Disconnect multiplug from battery 'OFF' switch.
5. Depress clips (x2), remove battery 'OFF' switch from power socket bracket.
6. Installation
7. Install battery 'OFF' switch, secure with clips.
8. Connect multiplug to battery 'OFF' switch.
9. Install harness clips (x2) on power socket bracket.

10. Position power support bracket, install bolt, torque tighten bolt and nuts (x2).
11. Install carpet - RH side luggage compartment. (see Workshop Manual procedure 01.05.FB Carpet Assembly - Luggage Compartment - Side - RH - Renew).

Battery Conditioner-Renew

Repair Operation Time (ROT)	
Item	Code
Battery Conditioner-Renew	14.01.DL

Removal

1. Disconnect vehicle battery.
2. Remove carpet - RH side luggage compartment. (see Workshop Manual procedure 01.05.FB Carpet Assembly - Luggage Compartment - Side - RH - Renew).
3. Remove tyre sealant bottle.
4. Remove mobility kit from storage rack.
5. Remove bolt, loosen nuts (x2), power socket bracket.
6. Slide luggage compartment fusebox rearwards, release from mounting bracket.
7. Release terminal cover, remove nut securing main battery lead to fusebox.
8. Release harness clips (x2) from power socket bracket.
9. Disconnect harness multiplug, battery conditioner.
10. Remove screws (x2), battery conditioner to power socket bracket. Remove battery conditioner.

Installation

1. Install battery conditioner, install and tighten screws (x2).
2. Connect multiplug, battery conditioner.
3. Install harness clips (x2) on power socket bracket.
4. Position main battery cable, install and torque tighten nut, install terminal cover.
5. Install fusebox in mounting bracket.
6. Install harness clips (x2) on power socket bracket.
7. Position power socket bracket, install bolt. torque tighten bolt and nuts (x2).
8. Install mobility kit.
9. Install tyre sealant bottle.
10. Install carpet - RH side luggage compartment. (see Workshop Manual procedure 01.05.FB Carpet Assembly - Luggage Compartment - Side - RH - Renew).
11. Connect vehicle battery.

Jump Start Terminal-Renew

Repair Operation Time (ROT)	
Item	Code
Jump Start Terminal-Renew	14.01.EA

Removal

1. Disconnect vehicle battery.

2. Remove nuts (x2), securing jump start terminal to mounting bracket.
3. Remove nut securing battery cable to jump start terminal. Release cable, remove terminal.

Installation

1. Clean jump start terminal and cable connection.
2. Position jump start terminal, connect cable, install and torque tighten nut.
3. Position jump start terminal to mounting bracket, install and torque tighten nuts (x2).
4. Connect vehicle battery.

Battery to Ground Cable Assembly-Renew

Repair Operation Time (ROT)	
Item	Code
Battery to Ground Cable Assembly-Renew	14.01.EB

Removal

1. Power drivers seat fully forward.
2. Remove rear compartment cover.
3. Loosen and disconnect battery earth (negative) terminal.
4. Remove nut securing battery earth cable to body stud. Remove earth cable.

Installation

1. Clean battery earth terminal and body stud.
2. Install battery earth cable to body stud, install and torque tighten nut.
3. Position earth lead on battery terminal (negative), torque tighten terminal nut.
4. Install rear compartment cover.
5. Power drivers seat to original position.

Battery to Battery Disconnect Switch Cable Assembly-Renew

Repair Operation Time (ROT)	
Item	Code
Battery to Battery Disconnect Switch Cable Assembly-Renew	14.01.EF

Removal

1. Power drivers seat fully forward.
2. Remove rear compartment cover.
3. Disconnect vehicle battery.
4. Remove panel assembly - quarter trim middle - RH (see Workshop Manual procedure 01.05.CT Panel Assembly - Quarter Trim Middle Section - RH - Renew).
5. Release rear carpet studs (x2), move carpet aside.
6. Remove screws (x2), battery compartment cover to support rail.



7. Remove nuts (x2), battery compartment cover to body. Remove cover.
8. Remove nut and washer securing battery cable to battery disconnect switch.
9. Release cable and main battery cable from battery disconnect switch.
10. Loosen terminal nut, disconnect main battery cable (positive), remove cable.

Installation

1. Install battery cables (x2), install washer, install and torque tighten nut.
2. Install battery compartment cover, install and tighten screws (x2) and nuts (x2).
3. Position rear carpet, install on studs (x2).
4. Connect vehicle battery.
5. Install rear compartment cover.
6. Power drivers seat to original position.

Bulkhead Stud to Starter Cable Assembly-Renew

Repair Operation Time (ROT)	
Item	Code
Bulkhead Stud to Starter Cable Assembly-Renew	14.01.EG

Removal

1. Disconnect vehicle battery.
2. Remove starter motor. (see Workshop Manual procedure 03.06.AB Starter Motor - Renew).
3. Release rubber cover, remove nut securing battery cable to bulkhead stud.
4. Release battery cable clip from bracket, remove cable.

Installation

1. Position battery cable to bulkhead stud, install and torque tighten nut. Install rubber cover.
2. Secure battery cable clip in bracket.
3. Install starter motor (see Workshop Manual procedure 03.06.AB Starter Motor - Renew).
4. Connect vehicle battery.

Bulkhead Stud to Engine Bay Fusebox Cable Assembly-Renew

Repair Operation Time (ROT)	
Item	Code
Bulkhead Stud to Engine Bay Fusebox Cable Assembly-Renew	14.01.EH

Removal

1. Disconnect vehicle battery.
2. Remove engine bay fusebox (see Workshop Manual procedure 18.01.KD Fuse Box - Engine Bay - Renew).

3. Release rubber cover, remove nut securing cable to bulkhead stud, Remove cable.
4. Remove rubber cover from cable.

Installation

1. Clean cable connection on bulkhead stud and fusebox.
2. Install rubber cover onto cable.
3. Position cable to bulkhead stud, install and torque tighten nut.
4. Install engine bay fusebox (see Workshop Manual procedure 18.01.KD Fuse Box - Engine Bay - Renew).
5. Connect vehicle battery.

Bulkhead to Starter Jump Terminal Harness-Renew

Repair Operation Time (ROT)	
Item	Code
Bulkhead to Starter Jump Terminal Harness-Renew	14.01.EJ

Removal

1. Disconnect vehicle battery.
2. Remove terminal jump start (see Workshop Manual procedure 14.01.EA Terminal - Jump Start - Renew).
3. Raise vehicle on ramp.
4. Remove RH front wheel arch liner (see Workshop Manual procedure 01.02.GB Wheel Arch Liner - Front - RH - Renew).
5. Release battery cable clips (x6), from body.
6. Release battery cable clips (x2) from screen washer reservoir.
7. Release cover, remove nut securing harness to bulkhead stud.
8. Release harness from bulkhead stud, manoeuvre and remove harness.

Installation

1. Position harness to bulkhead stud, install and torque tighten nut, install cover.
2. Secure harness to body and screen washer reservoir with clips (x8).
3. Install RH front wheel arch liner (see Workshop Manual procedure 01.02.GB Wheel Arch Liner - Front - RH - Renew).
4. Lower vehicle on ramp.
5. Install terminal jump start (see Workshop Manual procedure 14.01.EA Terminal - Jump Start - Renew).
6. Connect vehicle battery.

BDS to Bulkhead Dirty Feed Harness-Renew

Repair Operation Time (ROT)	
Item	Code
BDS to Bulkhead Dirty Feed Harness-Renew	14.01.EK

Removal

1. Remove RH seat (see Workshop Manual procedure 01.10.AA Seat Assembly - Front - RH - Remove for Access and Refit).
2. Disconnect vehicle battery.
3. Remove screws (x4), retaining brackets securing front floor carpet, remove brackets (x2).
4. Release RH rear floor carpet from fasteners (x4), remove carpet.
5. Remove nuts (x2) and screws (x2) securing RH rear heel board to body and support rail. Remove heel board.
6. Remove nuts (x3) and screws (x6) securing CEM cover plate to body, remove cover plate.
7. Release cover, remove nut securing battery dirty feed cable to bulkhead stud.
8. Release battery dirty feed cable clips (x9) from body.
9. Remove nut securing battery dirty feed cable to BDS, release cable from BDS.
10. Remove battery dirty feed cable from vehicle.

Installation

1. Install battery dirty feed cable in vehicle.
2. Connect battery dirty feed cable to BDS, install and torque tighten nut.
3. Secure battery dirty feed cable to body with clips (x9).
4. Connect battery dirty feed cable to bulkhead stud, install and torque tighten nut. Install terminal cover.
5. Install CEM cover plate, Install and torque tighten nuts (x3) and screws (x6).
6. Install RH rear heel board, install and torque tighten nuts (x2) and screws (x2).
7. Install RH rear floor carpet and secure with fasteners (x4).
8. Install front floor carpet retaining brackets (x2), install and tighten screws (x4)
9. Install RH seat (see Workshop Manual procedure 01.10.AA Seat Assembly - Front - RH - Remove for Access and Refit).
10. Connect vehicle battery.

Engine Earth Strap-Renew

Repair Operation Time (ROT)	
Item	Code
Engine Earth Strap-Renew	14.01.EP

Removal

1. Raise vehicle on ramp.

2. Remove rear undertray (see Workshop Manual procedure 01.02.PB Undertray - Rear - Renew).
3. Remove bolt securing engine earth strap to RH transaxle mounting bracket.
4. Remove nut securing engine earth strap to body, remove earth strap.

Installation

1. Clean earth points on transaxle mounting bracket and body.
2. Position engine earth strap, install and torque tighten nut and bolt.
3. Install rear undertray (see Workshop Manual procedure 01.02.PB Undertray - Rear - Renew).
4. Lower vehicle on ramp.

Hood Earth Strap-Renew

Repair Operation Time (ROT)	
Item	Code
Hood Earth Strap-Renew	14.01.EQ

Removal

1. Remove cap nuts (x2), hood and body terminals.
2. Remove nuts (x2), securing earth strap to hood and body terminals.
3. Release clips (x2), earth strap to body, remove earth strap.

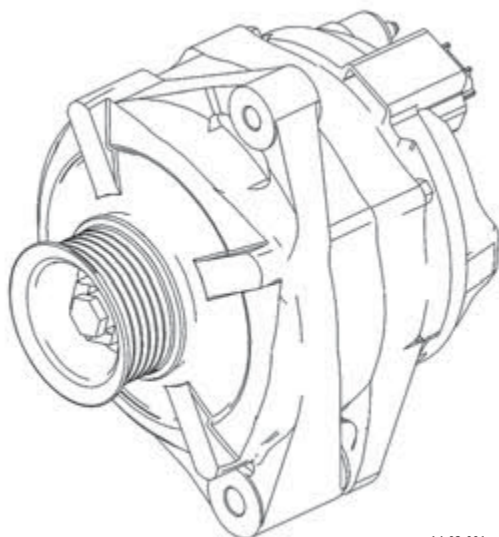
Installation

1. Clean earth points on hood and body.
2. Install new clips (x2) to earth strap.
3. Install earth strap, install and torque tighten nuts (x2).
4. Secure clips (x2), earth strap to body.
5. Install and tighten cap nuts (x2).



Power Supply (14.00)**Alternator and Regulator System (14.02)****Description**

The alternator installed to this vehicle is a Denso, SC1, 120 amp rating, with a 14.4 volt regulator.



14-02-001

The Alternator has an 'Altmon' signal that goes to and from the PCM via a wire in the 3 way connector.

The 'Altmon' signal is monitored by the PCM which adjusts ignition timing and fuelling if necessary to maintain idle speed when the alternator is charging.

Specifications

Torque Figures		
Description	Nm	lb/ft
Alternator mounts	43-52	32-38.5

Maintenance**Alternator-Renew**

Repair Operation Time (ROT)	
Item	Code
Alternator-Renew	03.05.BC

Removal

1. Battery isolation switch 'OFF'.
2. Disconnect breather pipe quickfits (x2) from air cleaner duct.
3. Remove throttle body duct for access (clips x3).
4. Release tensioner and slip belt from idler.
5. Move belt off alternator pulley.
6. Reposition oil tank (to release alternator).
7. Remove breather pipe (quick fit).
8. Remove pipes (x2) from oil tank, tie aside.
9. Remove bolts (x4) securing tank to body, support tank and move aside to left side of engine bay.

10. Disconnect top hose from engine (clip x1) tie aside (catch coolant).
11. Raise vehicle on ramp.
12. Remove undertray (see Workshop Manual procedure 01.02.NB Undertray - Front - Renew).
13. Remove bolts (x3) securing oil thermostat to body (allows oil tank more sideways movement).
14. Remove road wheel/s.
15. Remove oil filter and renew (see Workshop Manual procedure 03.02.AB Filter - Oil Canister Renew).
16. Reposition heatsheild to gain access to top bolt.
17. Unclip harness from bracket for access to top bolt and move aside.
18. Remove top securing nut and bolt.
19. Remove nut from bottom fixing and withdraw bolt (will foul on front subframe).
20. Lever alternator forward to release clamping of sliding bushes.
21. Using suitable grips remove bottom/ front sliding bush together with bolt.
22. Position alternator for access, disconnect battery (nut x1) lead and multiplug.
23. Lower ramp.
24. Remove alternator via front of engine (oil tank).

Installation

1. Install alternator.
2. Raise ramp.
3. Connect battery lead and multiplug to alternator.
4. Position alternator to bracket, install top fixing nut and bolt (do not tighten).
5. Install bottom bolt with sliding bush into bracket (through alternator).
6. Install nut to bottom bolt and tighten (torque).
7. Tighten top nut and bolt (torque)
8. Install oil filter and renew (see Workshop Manual procedure 03.02.AB Filter - Oil Canister Renew).
9. Clip harness to bracket.
10. Reposition heatsheild to original position.
11. Install bolts (x3) securing oil thermostat to body (torque).
12. Install undertray (see Workshop Manual procedure 01.02.NB Undertray - Front - Renew).
13. Install road wheel/s
14. Lower vehicle on ramp.
15. Reposition oil tank.
16. Connect top hose to engine (clip x1).
17. Position tank to body and fit bolts (x4) (torque).
18. Install oil pipes to tank.
19. Connect breather hose.
20. Fit belt to alternator pulley.



21. Release tensioner and slip belt on idler.
22. Install throttle body duct.
23. Connect breather pipe quickfits (x2) to air cleaner duct.
24. Battery isolation switch 'ON'.
25. Top up coolant.