

Maintenance Schedules - Diesel Engines

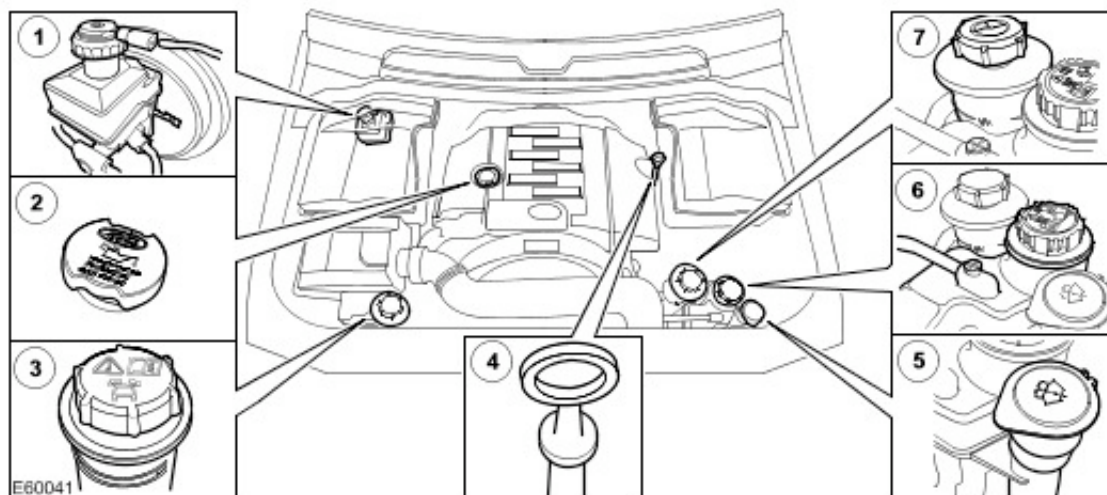
Torque Specifications

Description	Nm	lb-ft
Seat frame fixing Torx screws	40	30
Seat belt fixing Torx screws	40	30
Road wheel nuts	140	103



CAUTION: Unless stated otherwise, the following operations must be carried out at every service interval. Note that the A and B Services listed on the Maintenance Check Sheet, applicable to vehicles operating under arduous conditions, vary both in period and mileage (kilometres) to the intervals specified for those vehicles operating under normal conditions. Reference must therefore, always be made to the 'Arduous Conditions Maintenance Check Sheet' for vehicles operating under these conditions.

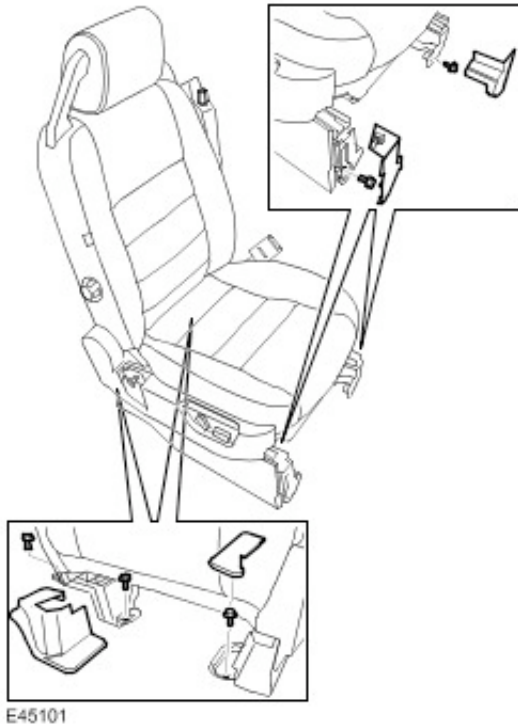
Under Bonnet View - 2.7 Litre



- 1. Brake fluid reservoir (RH drive illustrated - LH drive on opposite side)
- 2. Engine oil filler cap
- 3. Dynamic Response fluid reservoir
- 4. Engine oil level indicator
- 5. Windshield washer reservoir
- 6. Coolant expansion tank
- 7. Power steering fluid reservoir

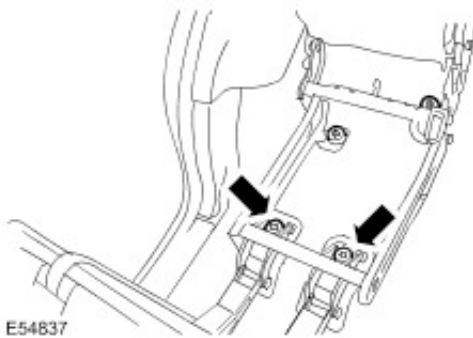
Maintenance Operations

Seats and Safety Belts



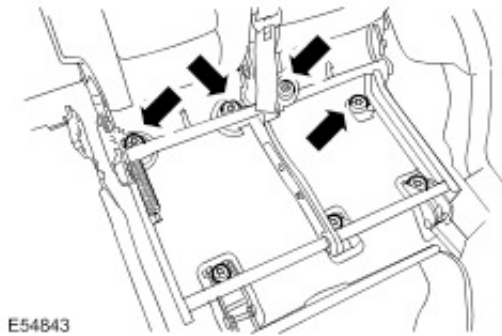
Front seat frame fixings - Every 2 years or 30,000 miles (48,000 km)

1. Carefully remove the trim panels covering the seat frame fixing Torx screws.
2. Check that the front seat frame fixing Torx screws are secure and that the seat frames show no signs of movement.
3. Reinstall the trim panels on completion.



Rear seat frame front fixings - Every 2 years or 30,000 miles (48,000 km)

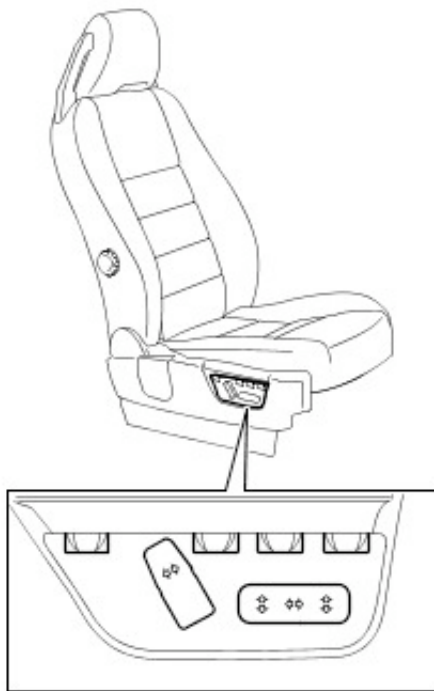
4. Check that the rear seat frame front fixings are secure and that the seat frames show no signs of movement.



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Rear seat frame rear fixings - Every 2 years or 30,000 miles (48,000 km)

5. Fold the seat cushions forwards and check that the rear seat frame rear fixings are secure and that the seat frames show no signs of movement.
6. Fold the seat cushions back on completion.



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Front seat controls

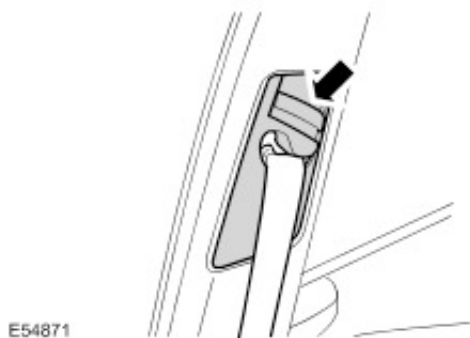
7. Check operation of all seat controls.

Safety belts - Every 2 years or 30,000 miles (48,000 km)

8. Fully extend each safety belt and check that it returns unassisted; repeat for all belts.
9. Check entire length of safety belt webbing for signs of fraying or damage; repeat for all belts.

10. Connect each safety belt to the correct buckle, check safety belt buckle and tongue are secure; check that buckle releases tongue correctly.

11. Check all safety belt and buckle mountings and fixings for security.

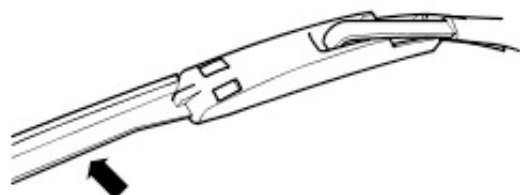


12. Check front safety belt height adjusters for correct operation.

Lamps, Horns and Warning Indicators

1. Check side, head, fog, reversing and tail lamps for correct operation.
2. Check operation of headlamp automatic levelling system - if installed.
3. Check turn signals and hazard warning lamps for correct operation.
4. Check brake (stop) lamps for correct operation.
5. Check all exterior lamp lenses for clarity and condition; pay particular attention to headlamp and fog lamp lenses for stone chips or damage.
6. Check horn for loud, clear sound.
7. Switch on headlamps and check that side/headlamp reminder warning sounds when door is opened.
8. Check operation of interior courtesy lamps.
9. Check operation of all instrument pack warning and indicator lamps.

Washers and Wipers



1. Check all wiper blades for condition and signs of splits or damage.
2. Check security of wiper arms.
3. Operate front and rear screen washers, check that jets are clear and correctly aimed.
4. Operate front and rear wipers at all speeds and check for smooth, smear free operation.

Check High/Low Gear Engagement

1. Select LOW range gear, drive vehicle forwards 3 to 4 vehicle lengths, stop vehicle and select HIGH range gear - gears must engage smoothly.

Pollen Filter

1. Replace pollen filter. For additional information, refer to [Pollen Filter](#) (412-01 Air Distribution and Filtering)

Corrosion/Cosmetic Inspection

1. Carry out the annual corrosion/cosmetic inspection using the Annual Corrosion Inspection Sheet.

Wheels and Tires

1. Check that tires comply with manufacturer's specification. For additional information, refer to [Wheels and Tires](#) (204-04 Wheels and Tires)

2. Check/adjust tire pressures including spare. For additional information, refer to [Wheels and Tires](#) (204-04 Wheels and Tires)

3. **Vehicles fitted with Uni-directional tires:** Mark the wheel to stud relationship of each road wheel and note location of each road wheel to its respective hub.

4. Loosen road wheel nuts. Raise vehicle to a wheel free condition. For additional information, refer to [Lifting](#) (100-02 Jacking and Lifting)

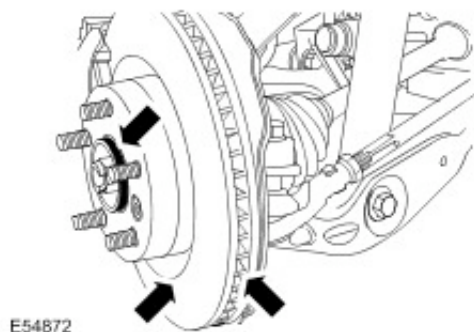
5. Remove the road wheels.

6. Visually check tires for condition, lumps or bulges. Check tread depth across the width of the tire and around the circumference; ensure that remaining tread depth does not contravene local legislative requirements.

NOTE:

Do not install wheels at this stage.

Braking System





CAUTION: When vehicles are operating under arduous conditions, the following service items must be carried out every 3 months or 3,750 miles (6,000 km).

1. Inspect front brake pads for wear. For additional information, refer to [Specifications](#) (206-03 Front Disc Brake)
2. Inspect rear brake pads for wear. For additional information, refer to [Specifications](#) (206-04 Rear Disc Brake)
3. Check brake calipers for signs of fluid leaks.
4. Check brake discs for condition.
5. Check all brake booster and brake system pipes and hoses for condition, chafing and leaks.
6. Clean road wheel hub spigots and apply grease, Land Rover Part Number RYL 105020 to the wheel mating surface of each spigot.
7. **Vehicles fitted with Uni-directional tires:** Install road wheels to their respective hubs ensuring that stud to wheel relationship is maintained.
8. **Vehicles fitted with NON uni-directional tires:** Install wheels on the opposite side of the vehicle but ensure that they are on the same axle as they were originally fitted.
9. Install road wheel nuts and tighten to 140 Nm (103 lb-ft).



CAUTION: When vehicles are operating under arduous conditions, the following service item must be carried out every 2 years or 30,000 miles (48,000 km).

10. **Every 3 years or 45,000 miles (72,000 km):** Replace brake fluid. For additional information, refer to [Brake System Bleeding - Vehicles With: Standard Brakes](#) (206-00 Brake System - General Information)
For additional information, refer to [Brake System Pressure Bleeding - Vehicles With: Standard Brakes](#) (206-00 Brake System - General Information)
11. **Every 6 years or 90,000 miles (144,000 km):** Replace all flexible brake hoses.

Electric Parking Brake



CAUTION: When vehicles are operating under arduous conditions, the following service items must be carried out every 3 months or 3,750 miles (6,000 km)

1. Check the adjustment of the electric parking brake. For additional information, refer to [Parking Brake Shoe and Lining Adjustment](#) (206-05 Parking Brake and Actuation)
2. **Vehicles operating under arduous conditions:** Check the condition of the electric parking brake system.

Road Wheel Speed Sensors



CAUTION: When vehicles are operating under arduous conditions, the following service item must be carried out every 3 months or 3,750 miles (6,000 km).

1. Inspect the road wheel speed sensor harnesses for damage.

Fuel Filter Element



CAUTION: When vehicles are operating under arduous conditions, the following service item must be carried out every 12 months or 15,000 miles (24,000 km).

1. **Every 2 years or 30,000 miles (48,000 km):** Replace fuel filter element. For additional information, refer to [Fuel Filter Element](#) (310-01C)

Fuel Sedimentor



CAUTION: When vehicles are operating under arduous conditions, the following service item must be carried out every 3 months or 3,750 miles (6,000 km).

1. Drain the fuel sedimentor.

Radiator/intercooler and Cooling Fan



CAUTION: Vehicles operating under arduous conditions:

1. Visually check the radiator/intercooler for external obstructions, check cooling fan blades for damage.
2. Remove any debris from the intercooler using a low pressure hose.

Air Suspension

1. **Every 5 years or 75,000 miles (120,000 km) - Vehicles operating under arduous conditions:** Replace the air suspension compressor filter. For additional information, refer to [Air Suspension Air Filter](#) (204-05 Vehicle Dynamic Suspension)

Door Locks and Hinges

1. Check operation of all door locks, bonnet lock and fuel filler flap.
2. Lubricate all door check straps, bonnet catch and fuel filler flap catch.

Cooling System

1. Check specific gravity of coolant using a hydrometer.

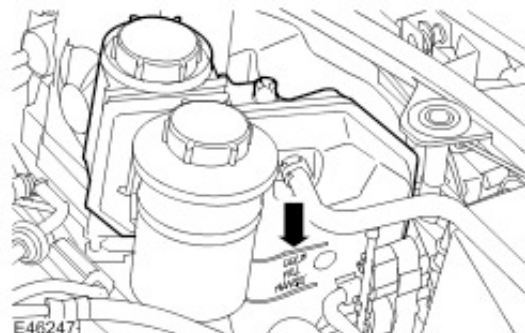
NOTE:

A suitable hydrometer is available from the Equipment Programme under Part Number 511 3302 001 00.

2. Top-up cooling system if necessary. For additional information, refer to [Specifications](#) (303-03C Engine Cooling - 2.7L (TdV6) Diesel)



CAUTION: Anti-freeze concentration must be maintained at 50%.



Cooling system - Check/Top-up



WARNING: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank whilst the system is hot.



CAUTION: Engine coolant will damage the paint finished surfaces. If coolant is spilled, immediately remove the coolant and wash the area with water.

1. Check the level of coolant in the expansion tank. With the engine cold, the coolant level must be to the '**UPPER LEVEL**' indicator mark above the '**COLD FILL RANGE**' text on the side of the expansion tank. Ignore any coolant which may be visible in the top section of the tank.
2. If topping-up is required, remove expansion tank filler cap and top-up coolant level to the '**UPPER LEVEL**' indicator mark. For additional information, refer to [Specifications](#) (303-03C Engine Cooling - 2.7L (TdV6) Diesel)



CAUTION: Always top-up with a 50% mixture of anti-freeze and water.

3. Install expansion tank filler cap, tighten cap until ratchet is heard to 'click'.

Coolant - Replace

1. **Every 10 years or 150,000 miles (240,000 km):** Replace the coolant. For additional information, refer to [Cooling System Draining, Filling and Bleeding](#) (303-03C Engine Cooling - 2.7L (TdV6) Diesel)

Air Filtering



CAUTION: When vehicles are operating under arduous conditions, the following service item must be carried out every 12 months or 15,000 miles (24,000 km).

1. **Every 3 years or 45,000 miles (72,000 km):** Replace the air cleaner element. For additional information, refer to [Air Cleaner Element](#) (303-12C Intake Air Distribution and Filtering - 2.7L (TdV6) Diesel)

Ancillary Drive Belt

1. Check the condition of the ancillary drive belt.
2. Remove all traces of mud and dirt from the drive belt and pulleys.
3. Check the drive belt for signs of splitting and wear.



CAUTION: When vehicles are operating under arduous conditions, the following service item must be carried out every 3 years or 45,000 miles (72,000 km).

4. **Every 7 years or 105,000 miles (168,000 km):** Replace the ancillary drive belt. For additional information, refer to [Accessory Drive Belt](#) (303-05C Accessory Drive - 2.7L (TdV6) Diesel)

Camshaft Timing Belt and High Pressure Fuel Pump Drive Belt

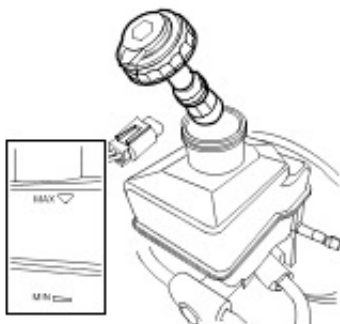


CAUTION: When vehicles are operating under arduous conditions, the following service item must be carried out every 4 years or 60,000 miles (96,000 km).

1. **Every 7 years or 105,000 miles (168,000 km):** Replace camshaft timing belt. For additional information, refer to [Timing Belt](#) (303-01C Engine - 2.7L (TdV6) Diesel)
Replace High pressure fuel pump drive belt. For additional information, refer to [Fuel Injection Pump Belt](#) (303-05C Accessory Drive - 2.7L (TdV6) Diesel)

Fluid Levels

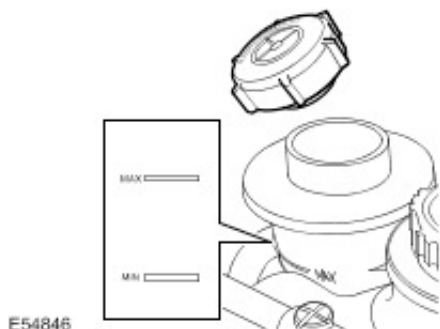
Brake/clutch fluid reservoir



1. Remove the brake/clutch fluid reservoir cover.
2. Check the fluid level in the brake/clutch fluid reservoir, the level must be to the '**MAX**' mark on the reservoir; top-up if necessary.

3. Clean the area around the reservoir filler cap, remove the cap.
4. If necessary, top-up using the recommended fluid to the '**MAX**' mark on the reservoir. For additional information, refer to [Specifications](#) (206-00 Brake System - General Information)
5. Install the reservoir filler cap.
6. Install the brake/clutch fluid reservoir cover.

Power steering fluid reservoir



CAUTION: To prevent over filling, check/top-up the system with the engine switched off and the system cold. Ensure that the steering wheel is in the straight ahead position, do not turn the steering wheel prior to checking the fluid level.

1. Check that the fluid level is to the mid-way mark between the '**MAX**' and '**MIN**' marks on the fluid reservoir, top-up if necessary.
2. Clean the area around the reservoir filler cap, remove the cap.
3. If necessary, top-up using the recommended fluid to the mid-way mark on the reservoir. For additional information, refer to [Specifications](#) (211-02 Power Steering)



CAUTION: Do not fill reservoir above the '**MAX**' mark.

4. Refit the reservoir filler cap.

Windshield washer reservoir



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1. Remove the windshield washer reservoir filler cap.
2. Top-up the reservoir using a mixture of an approved windshield washer fluid and water until the level is to the bottom of the gauze filter in the reservoir filler neck.
3. Install the reservoir filler cap.

Dynamic Response reservoir

1. Check that the fluid level is to the mid-way mark between the '**MAX**' and '**MIN**' marks on the fluid reservoir, top up if necessary.
2. Clean the area around the reservoir filler cap, remove the cap.
3. If necessary, top-up using the recommended fluid.

Engine Oil and Filter



CAUTION: When vehicles are operating under arduous conditions, the following service item must be carried out every 3 months or 3,750 miles (6,000 km).



CAUTION: Vehicles operating on high sulphur content fuel - above 0.7%, the oil and filter change period **MUST NOT** exceed 3 months or 3,750 miles (6,000 km).



CAUTION: Vehicles operating on moderate sulphur content fuel - 0.3 to 0.7%, the oil and filter change period **MUST NOT** exceed 6 months or 7,500 miles (12,000 km).

1. Renew engine oil and filter. For additional information, refer to [Engine Oil Draining and Filling](#) (303-01C Engine - 2.7L (TdV6) Diesel)
For additional information, refer to [Oil Filter Housing](#) (303-01C Engine - 2.7L (TdV6) Diesel)

Automatic Transmission

1. **Every 10 years or 150,000 miles (240,000 km):** Renew automatic transmission fluid. For additional information, refer to [Specifications](#) (307-01C Automatic Transmission/Transaxle - 2.7L (TdV6) Diesel)
For additional information, refer to [Transmission Fluid Drain and Refill](#) (307-01C)

Transfer Case

1. **Every 5 years or 75,000 miles (120,000 km):** Renew transfer case oil. For additional information, refer to [Specifications](#) (308-07B Transfer Case)
For additional information, refer to [Transfer Case Draining and Filling](#) (308-07B Transfer Case)

Differential Assemblies

1. **Every 10 years or 150,000 miles (240,000 km):** Renew front differential oil. For additional information, refer to [Specifications](#) (205-03 Front Drive Axle/Differential)
For additional information, refer to [Differential Draining and Filling](#) (205-03)
2. **Every 5 years or 75,000 miles (120,000 km):** Renew rear 'Electronic Torque Managed (ETM)' differential oil. For additional information, refer to [Specifications](#) (205-02 Rear Drive Axle/Differential)
For additional information, refer to [Differential Draining and Filling](#) (205-02 Rear Drive Axle/Differential)
3. **Every 10 years or 150,000 miles (240,000 km):** Renew rear 'OPEN' differential oil. For additional information, refer to [Specifications](#) (205-02 Rear Drive Axle/Differential)
For additional information, refer to [Differential Draining and Filling](#) (205-02 Rear Drive Axle/Differential)

Suspension and Body Mountings

1. Check for free play in all suspension and body mounting rubbers.
2. Check condition of suspension rubber boots and gaiters.

Fuel System

1. Check fuel system pipes, hoses and unions for chafing, leaks and corrosion.

Electrical Harnesses

1. Check all electrical harnesses for chafing.

Oil/Fluid Leaks

1. Check for oil/fluid leaks.

Exhaust System

1. Check exhaust system for leaks, security and damage.

Power Steering

1. Check power steering rod ball joint fixings, gaiters and condition of ball joints and dust covers.
2. Check power steering pipes, hoses and unions for chafing, leaks and corrosion.

Clutch

1. Check clutch pipes and unions for chafing, leaks and corrosion.

Fault Lamp(s)

1. If fault lamp(s) are illuminated, test the associated system using T4 and report findings.

Road Test

1. Carry out road test of vehicle. For additional information, refer to [Road/Roller Testing](#) (100-00 General Information)

General

1. Endorse Service Record.
2. Report any unusual features of vehicle condition and any additional work required.

Additional Items That May Require Attention

It is recommended that:

1. **Every 6 years:** All brake fluid hydraulic seals are replaced.

NOTE:

This is in addition to the maintenance requirement that flexible brake hoses **MUST** be replaced at this service interval.

2. After 50 miles (80 km) continuous use in severe off-road conditions i.e. wading, deep mud and abrasive grit/slurry: The electric parking brake should be cleaned and inspected.

3. After 50 miles (80 km) continuous use in severe off-road conditions i.e. wading, deep mud and abrasive grit/slurry: The ancillary drive belt should be cleaned and inspected.

4. Vehicles fitted with air suspension: Vehicles used extensively in arduous or off road conditions will require the compressor air inlet filter to be renewed more frequently.

5. Vehicles used in dusty or field conditions or deep wading: More frequent attention to the air cleaner will be required.

6. Vehicles used in areas where fuel quality is poor: Where vehicles are used in these areas, the fuel sedimentor may require draining at more frequent intervals.