



VERY IMPORTANT

As the booklet is constantly re-edited, this one only covers vehicles for this particular model year.

It is therefore necessary to order a new booklet each year and RETAIN THE OLD ONES.





CITROËN

AC/DTAV/MMCB/MMEC
Méthodes Mécaniques

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PRIVATE CARS

2005



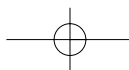
CITROËN C6

«The technical information contained in this document is intended for the exclusive use of the trained personnel of the motor vehicle repair trade. In some instances, this information could concern the security and safety of the vehicle. The information is to be used by the professional vehicle repairers for whom it is intended and they alone would assume full responsibility to the exclusion of that of the manufacturer.»
«The technical information appearing in this brochure is subject to updating as the characteristics of each model in the range evolve. Motor vehicle repairers are invited to contact the CITROËN network periodically for further information and to obtain any possible updates.»

CAR 000 023

2005



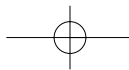


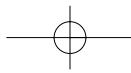
PRESENTATION

THIS HANDBOOK summarises the specifications, adjustments, checks and special features of **CITROËN** private vehicles, not including UTILITY vehicles for which there exists a separate handbook.

The handbook is divided into groups representing the main functions:

GENERAL - ENGINE - INJECTION - IGNITION - CLUTCH, GEARBOX, DRIVESHAFTS - AXLES, SUSPENSION, STEERING - BRAKES - HYDRAULICS - AIR CONDITIONING.





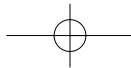
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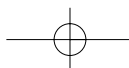
If you find that this handbook does not always meet your requirements, **we invite you to send us your suggestions** which we will take into account when preparing future publications. For example:

- INSUFFICIENT INFORMATION.
- SUPERFLUOUS INFORMATION.
- NEED FOR MORE DETAILS.

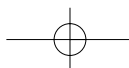
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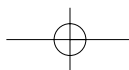
**CITROEN U.K. Ltd.
221, Bath Road,
SLOUGH,
SL1 4BA.
U.K.**



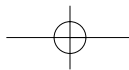


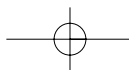
CONTENTS					
GENERAL		Auxiliary equipment drive belt	45	IGNITION	
Vehicle identification	1 - 4	Checking and setting the valve timing	50	Sparking plugs	100
General specifications: dimensions	5 - 6	Exhaust line specifications	68 - 72	CLUTCH - GEARBOX - TRANSMISSION	
General specifications: weights	7	Cooling system specifications	73 - 75	Speedometer	101
Operations to be performed before and after a disconnection of the battery	8	Checking the oil pressure	76	AM6 automatic gearbox specifications	102
		Valve clearances	77	Procedure before operations	103
Towing specifications	9 - 10	Drain-fill-bleed the engine cooling circuit	78 - 82	Precautions: AM6 gearbox	104
Lifting and supporting the vehicle	11 - 15	INJECTION		AM6 gearbox specifications	105
Capacities	18	BOSCH 7.4.7 injection system	83 - 89	Tightening torques: AM6 gearbox	106 - 107
Lubricants	18 - 20	Prohibited operations: SIEMENS HDi direct injection	90 - 91	AM6 gearbox control specifications	108 - 110
ENGINE		Safety requirements: HDi direct injection	92	Shift lock function	111
Engine specifications	22	Checking the low pressure fuel supply circuit	93 - 94	Initialisation of the AM6 gearbox	112 - 113
Engine suspension tightening torques: ES9A	23	Turbo pressure checks	95 - 97	Draining-filling-topping up the AM6 gearbox	114 - 116
Tightening torques: ES9A engine	24 - 28	Air supply circuit specifications	98	Oil pressure checks: AM6 gearbox	117 - 119
Suspension tightening torques: DT17	29 - 31	Checking the air supply circuit	99	Transmission	120
Adjustment of torque reaction rod	32				
Tightening torques: DT17 engines	33 - 41				
Cylinder head tightening	42 - 43				



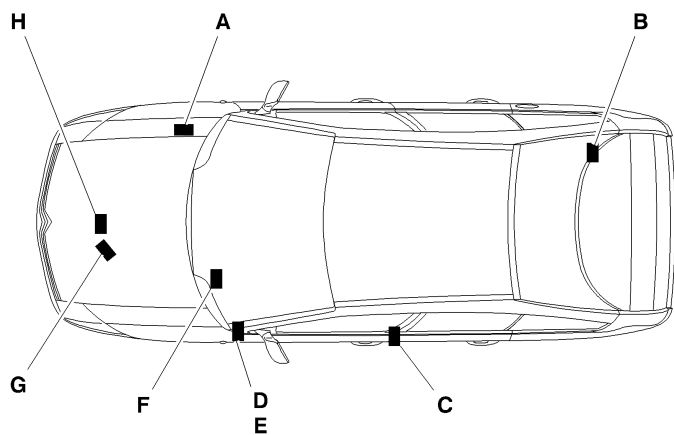


CONTENTS					
AXLES - SUSPENSION - STEERING		BRAKES		AIR CONDITIONING	
Wheels and tyres	121 - 124	Brake specifications	170	Quantities: aircon system R134.a	203
Checking and adjusting the vehicle height	125 - 128	Braking system: general specifications	171 - 173	Special features: air conditioning circuit	204 - 205
Values for checking and adjusting the axle geometries	129 - 133	Braking system: tightening torques	174 - 177	Pollen filter	206
Front axle	134 - 135	Values for checking and adjusting the braking system	178	Checking the compressor oil level	207 - 208
Front axle tightening torques	136 - 139	General feataures of the electric parking brake	179 - 189	Checking the efficiency of the air conditioning circuit	209 - 215
Rear axle	140 - 141	Brake fluid checks	190	Air conditioning circuit: ES9A	216
Rear axle tightening torques	142 - 143	Drain-fill-bleed the braking system	191 - 194	Air conditioning circuit: DT17	217
Active suspension with variable damping	144 - 149	HYDRAULICS			
Suspension tightening torques	150 - 154	Safety requirements: active suspension with variable damping	195 - 197		
Draining-filling-bleeding the hydraulic steering/suspension circuit	155 - 158	Suspension spheres: general specifications	198		
Power steering specifications	159 - 162	Suspension spheres: specification - identification	199 - 200		
Power steering tightening torques	163 - 164	Depressurising the hydraulic suspension circuit	201 - 202		
Checking the steering assistance pressure (ES9A engine)	165 - 168				
Bleeding the hydraulic steering assistance circuit	169				





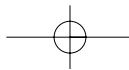
IDENTIFICATION OF VEHICLES

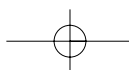


- A** - Chassis stamp
(cold stamp on suspension leg).
- B** - Chassis stamp
(cold stamp on bodywork below rear screen).
- C** - Manufacturer's data plate
(on the LH centre pillar).
- D** - AS/RP No. and RP paint code
(label on front pillar close to driver's door).
- E** - Inflation pressures and tyre references
(label on front pillar close to driver's door).
- F** - Serial no. on bodywork.
- G** - Gearbox reference - Factory serial no.
- H** - Engine legislation type - Factory serial no.

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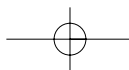
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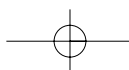




IDENTIFICATION OF VEHICLES		
	Petrol	Diesel
	ES	DT
	9	17
	A	BTED4
	3.0i 24 S	2.7 24V HDi
Emission standard	E4	
Type code	TD XfvJ	TD UHZJ
Engine type	XFV	UHZ
Cubic capacity (cc)	2946	2720
Fiscal rating (hp)	15	13
Gearbox type	AM6	AM6
Gearbox ident. plate	20 GH 07	20 GG 07

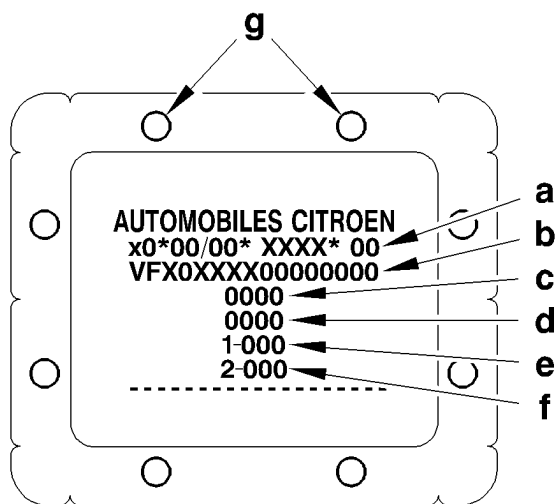
GENERAL





IDENTIFICATION OF VEHICLES

Manufacturer's plate

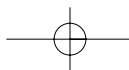


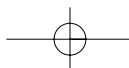
The manufacturer's plate carries the following information:

- (a) Type approval number (*)
- (b) Type serial number (VIN)
- (c) Gross vehicle weight (*)
- (d) Gross vehicle weight (*)
- (e) Maximum weight on front axle (*)
- (f) Maximum weight on rear axle (*)
- (g) Manufacturer identification

(*) = according to marketing country.

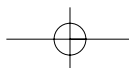
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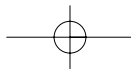




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TD XFVJ	T	Family (1)	<table border="1"> <thead> <tr> <th colspan="9">Depollution levels</th> </tr> <tr> <th>L3</th> <th>L4</th> <th>Euro IV</th> <th>US</th> <th rowspan="2">Other</th> <th>K</th> <th colspan="2">Alcohol</th> </tr> <tr> <th>W3</th> <th></th> <th></th> <th>83/87</th> <th>K'</th> <th>L3/L4</th> <th>Euro IV</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>B</td> <td>C</td> <td>P</td> <td>V</td> <td>5</td> <td>8</td> <td>1</td> </tr> <tr> <td></td> <td>E</td> <td>F</td> <td>R</td> <td>W</td> <td>6</td> <td>9</td> <td>2</td> </tr> <tr> <td></td> <td>G</td> <td>H</td> <td>S</td> <td>X</td> <td></td> <td></td> <td>3</td> </tr> <tr> <td></td> <td>D</td> <td>J</td> <td>N</td> <td></td> <td></td> <td></td> <td>U</td> </tr> <tr> <td></td> <td>K</td> <td>L</td> <td>T</td> <td>Y</td> <td>7</td> <td>0</td> <td>4</td> </tr> <tr> <td></td> <td>M</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="8"></td> <td colspan="3">Z</td> </tr> </tbody> </table>								Depollution levels									L3	L4	Euro IV	US	Other	K	Alcohol		W3			83/87	K'	L3/L4	Euro IV	A	B	C	P	V	5	8	1		E	F	R	W	6	9	2		G	H	S	X			3		D	J	N				U		K	L	T	Y	7	0	4		M															Z		
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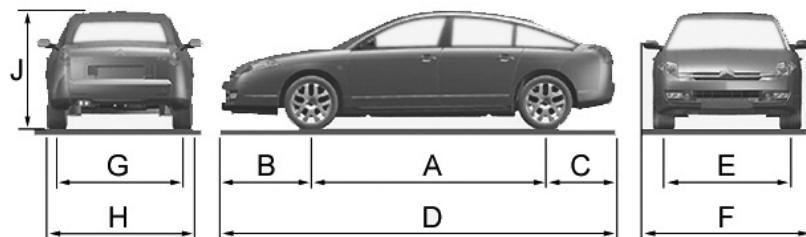
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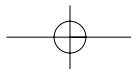


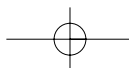
GENERAL SPECIFICATION: DIMENSIONS

Exterior dimensions



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GENERAL SPECIFICATION: DIMENSIONS

Exterior dimensions (mm)

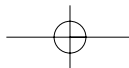
Vehicles		All types
Wheelbase	A	2900
Front overhang	B	1124
Rear overhang	C	884
Length overall	D	4908
Front track at ground level	E	1586
Width overall	F	2081
Rear track at ground level	G	1558
Track width	H	1860
Height overall ODM	J	1464

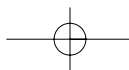
ODM = Vehicle in running order (*vehicle empty, levels topped up*).

Interior dimensions and volumes (mm)

Elbow width, front	1503
Elbow width, rear	1510
Height under boot	490
Minimum floor width	1115
Volume of boot below parcel shelf	407 dm ³

(*) = Boot floor can be moved and configured.



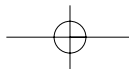


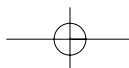
GENERAL SPECIFICATION: WEIGHTS

	ES9A	DT17BTED4
Versions	3.0i 24S	2.7HDi 24V
Engine type	XFV	UHZ
Gearbox type	AM6	
Payload	455	464
Weight empty in running order	1816	1871
Gross Vehicle weight	2271	2335
Gross Train weight	3671	
Max. trailer weight with brakes		
Incline 12 %	1400	1400
Incline 10 %	1500	
Incline 8 %	1700	
Max. trailer weight without brakes	750	
Maximum nose weight	70	
Maximum weight on roof bars	80	

GENERAL

NOTE: Maximum nose weight = Vertical load at the tow hook (CVA).





OPERATIONS TO BE CARRIED OUT BEFORE AND AFTER A DISCONNECTION OF THE BATTERY

Before reconnecting the battery.

Doors and tailgate.

WARNING: Before disconnecting the battery, partially open the door windows.

Automatic gearbox.

If the vehicle has to remain stationary: Place the gear lever in the parking position "P".

If the vehicle has to be moved: Place the gear lever in the neutral position "N".

Electric parking brake.

If the vehicle has to remain stationary: Activate the electric parking brake.

If the vehicle has to be moved: Deactivate the electric parking brake.

Features of the vehicle's electrical supply.

When the boot is closed and the battery is disconnected, it is possible to supply the vehicle by connecting another battery or a 12V exterior supply. Operations to be performed:

- Link the earth of the exterior supply to the vehicle earth.
- Link the 12V of the exterior supply to the positive terminal of the battery + unit, in the front left hand side of the engine compartment.

After reconnecting the battery.

Antiscanning function.

It is necessary to wait 1 minute after reconnecting the battery in order to be able to restart the vehicle.

Electric windows.

It may be necessary to re-initialise the sequential and anti-pinch functions.

NOTE: If the window is open at the time the battery is reconnected, action the window switch several times to close it, then re-initialise.

Open the window fully.

Action and release the window switch until the window is completely closed.

NOTE: This operation has to be carried out on each electric window.

Sun roof.

The anti-pinch function has to be re-initialised.

Place the sun roof switch in the maximum tilt position.

Keep the sun roof switch pressed until the sun roof ceases its movement.

Release the sun roof switch.

Press the sun roof switch within 5 seconds.

Keep the sun roof switch pressed until the end of the sun roof opening sequence.

Multifunction screen.

It is necessary to adjust the date, time and outside temperature.

Adjust the display language of the multifunction screen if necessary.

NOTE: The default display language of the multifunction screen is French.

Reconfigure the personalisation menu of the multifunction screen.

Radio.

Reprogramme the radio stations.

Telematic control unit (*RT3 radiotelephone*).

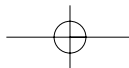
Reprogramme the radio stations.

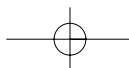
Navigation.

Warning: the vehicle has to be out in the open (when you switch on the ignition, the navigation ECU searches for satellites).

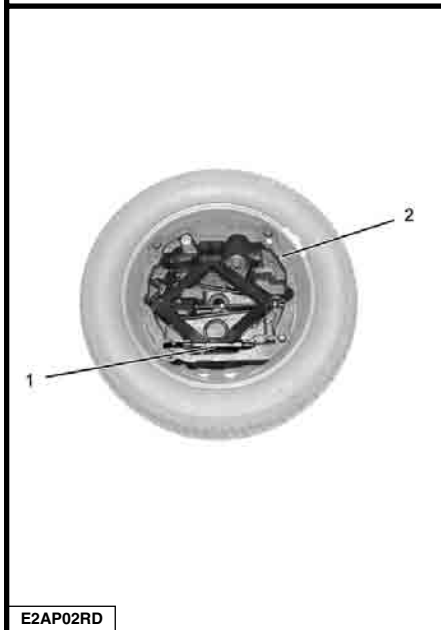
Reprogramme the customer parameters.

GENERAL





GENERAL SPECIFICATION: TOWING THE VEHICLE



WARNING: When the engine is not running, steering and braking are no longer power-assisted.

Open the boot.
Lift the boot floor plate.

Towing eye.
The towing eye (1) is to be found in the vehicle toolkit (2) stowed in the spare wheel.

Front of the vehicle.

Open the flap (3).
Screw in the towing eye (1).

Rear of the vehicle.

Open the flap (4).
Screw in the towing eye (1).

Front towing



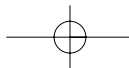
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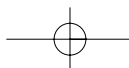
Rear towing



E2AP02TD

GENERAL





GENERAL SPECIFICATION: TOWING THE VEHICLE

Vehicle with automatic gearbox.

IMPERATIVE: Never tow the vehicle with the wheels hanging (*towing by the wheels*).

Towing:

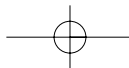
- It is necessary to raise the front of the vehicle, in order to tow it.
- If it is not possible to raise the front of the vehicle.
- It is essential to place the selection lever in position "N".
- Do not add any oil.
- Do not exceed a speed of **70 km/h (45 mph)** on a journey of **100 Km (60 miles)**.
- Never tow the vehicle backwards.
- Check that the parking brake is released.

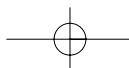
Driving:

- Never drive with the ignition switched off.

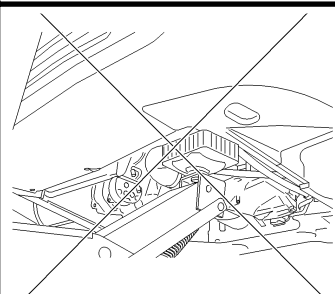
NOTE: The automatic gearbox is only lubricated when the engine is running.

Never push the vehicle to attempt to start it (*impossible with an automatic gearbox*).





LIFTING AND SUPPORTING THE VEHICLE



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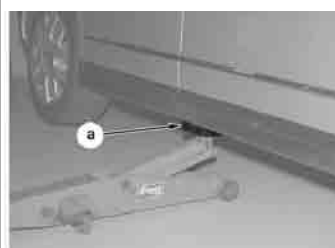
IMPERATIVE: Respect the safety and cleanliness requirements.

Lifting.

Front of the vehicle.

ATTENTION: Lifting the vehicle by the front can only be done one side at a time.

IMPERATIVE: Do not lift the vehicle by taking weight under the front subframe. Do not place blocks under the front subframe.

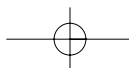


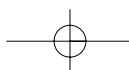
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IMPERATIVE: Never take weight on the front panel support and the front part of the engine subframe.

IMPERATIVE: Place the jack under the centre pillar, inserting an elastomer shim at «a».

GENERAL





LIFTING AND SUPPORTING THE VEHICLE



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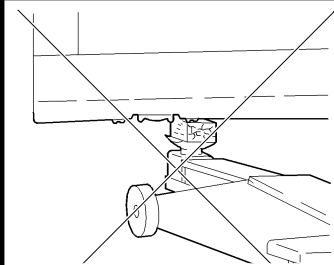
Rear of the vehicle.

IMPERATIVE: Do not lift under the spare wheel (*risk of deformation of the floor*). Do not lift under the rear axle crossmember.

Use lateral lifting as for the front of the vehicle, or rear lifting (see diagrams).

IMPERATIVE: Do not place a block between the jack and the strengthener «b».

Place the jack under the strengthener «b».

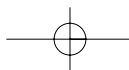


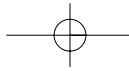
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Lateral lifting.

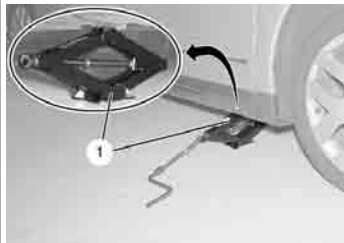
IMPERATIVE: Do not place the jack outside the lifting points.

GENERAL





LIFTING AND SUPPORTING THE VEHICLE



E2AP02ND



E2AP02QD

Lifting by vehicle jack.

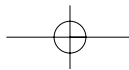
NOTE: the vehicle jack, with the extension and handle, is to be found in the toolkit stowed in the spare wheel.

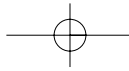
Front of the vehicle.

Correct position for the vehicle jack (1).

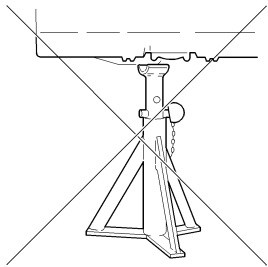
Rear of the vehicle.

Correct position for the vehicle jack (1).





LIFTING AND SUPPORTING THE VEHICLE



E2AP018C

Supporting the vehicle.

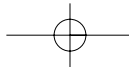
Incorrect positioning of the axle stand.

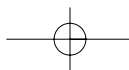


E2AP02PD

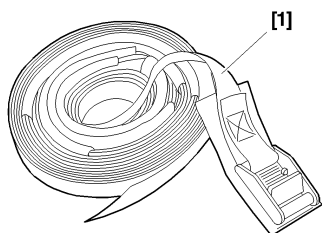
IMPERATIVE: Do not place the axle stands under the lugs of the jacking points.

Correct positioning of the axle stand.





LIFTING AND SUPPORTING THE VEHICLE



E5AP2DNC

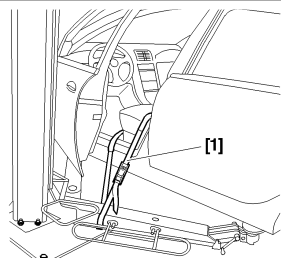
Raising the vehicle on a lift, supported from the jacking points.

Equipment involved:
- Two-column lift.
- Auxiliary lift with blocks.

IMPERATIVE: Position the safety straps, if placing the vehicle on a lift supported from the jacking points (*risk of the vehicle overbalancing when a heavy component is removed*).

Tooling required.

[1] Safety straps



E2AP02FC

Using the safety straps.

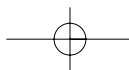
WARNING: Check the condition of the safety straps before using them, do not use worn safety straps.

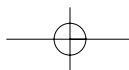
WARNING: Do not use straps that show any signs of oil or grease (*risk of soiling the carpets and/or seats*).

Place protections on the front seats and on the fragile parts of the vehicle.

Example:

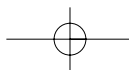
- Two-column lift.
- Place the safety straps [1] under the arm of the lift and criss-crossing the vehicle.

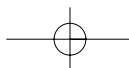




GENERAL

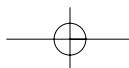
CAPACITIES (in litres)	
Draining methods	
Oil capacities are defined according to the following methods	
Draining of the engine lubrication system by GRAVITY	Draining of the engine lubrication system by SUCTION
<p>Place the vehicle on horizontal ground (<i>in the high position if hydropneumatic suspension</i>).</p> <p>The engine should be hot (<i>oil temperature 80°C</i>).</p> <p>Drain the sump by gravity.</p> <p>Remove the oil filter cartridge (<i>time for draining and drip-drip = 15 minutes approx.</i>).</p> <p>Refit the cap with a new seal.</p> <p>Refit a new oil filter cartridge.</p> <p>Refill the engine with oil (<i>see table for oil capacity</i>).</p> <p>Start the engine to fill the oil filter cartridge.</p> <p>Stop the engine (<i>allow to stabilise for 5 minutes</i>).</p>	<p>Place the vehicle on horizontal ground (<i>in the high position if hydropneumatic suspension</i>).</p> <p>The engine should be hot (<i>oil temperature 80°C</i>).</p> <p>Remove the oil by suction through the dipstick tube.</p> <p>Remove the oil filter cartridge.</p> <p>Maintain the suction of oil in the sump (<i>15 minutes approx.</i>).</p> <p>Refit a new oil filter cartridge.</p> <p>Refill the engine with oil (<i>see table for oil capacity</i>).</p> <p>Start the engine to fill the oil filter cartridge.</p> <p>Stop the engine (<i>allow to stabilise for 5 minutes</i>).</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>WARNING: Remove the suction container before starting the engine.</p> </div>
<p>ESSENTIAL: Systematically check the oil level using the oil dipstick.</p>	

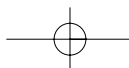




CAPACITIES (in litres)		
	Petrol	Diesel
	3.0i 24S	2.7 24V
	BVA	BVA
Engine type	XFV	UHZ
Engine with filter cartridge	5,25	
Max. after draining and change of filter (by suction)	5,75	
Max. after draining and change of filter (by gravity)	5,55	
Dry sump	5,95	
Between min. and max.	2	
Dry automatic gearbox	7	
Volume of oil remaining after draining	4	
Quantity of oil to be put back in after draining	3	
Hydraulic circuit	6,3	
Cooling circuit	11,3	13,2
Fuel tank	65	

GENERAL





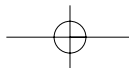
LUBRICANTS - TOTAL recommended oils

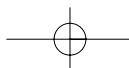
Engine oil specifications

Commercial description	TOTAL ACTIVA or TOTAL ACTIVA QUARTZ				
	Synthetic 9000			Semi-synthetic 7000	
	0W40	5W30	5W40	10W40	15W40
S.A.E. norms	0W40	5W30	5W40	10W40	15W40
Climate	Climate	Cold		Temperate	Hot
		Temperate		Hot	
Petrol engines	ACE: A3	ACE: A5	ACE : A3		
	API: SJ	API: SL			
Diesel engines (*) (**)	Prohibited	ACEA: B5	ACEA: B3 or B4	ACEA: B3	
		API: CF			
		Prohibited FAP			

(*) In the winter season, on HDi engines, it is recommended to use **5W40** oil instead of **10W40** oil, this to enhance starting from cold.

(**) Do not use **5W30** oil on HDi engines with particle filter (**FAP**).





LUBRICANTS - TOTAL recommended oils

Gearbox oil

AM6 automatic gearbox	All countries	JWS 3309 (ESSO)
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Power steering oil

Power-assisted steering	All countries	LDS TOTAL H50126
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Engine coolant

	Packs	CITROËN references	
		GLYSANTIN G33	REVKOGEL 2000
All countries	2 Litres	9979 70	9979 72
	5 Litres	9979 71	9979 73
	20 Litres	9979 76	9979 74
	210 Litres	9979 77	9979 75

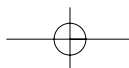
Synthetic brake fluid

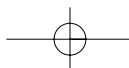
	Packs	CITROËN references
All countries	1/2 Litre	DOT 4

Hydraulic circuit

	Norm	Packs	CITROËN references
All countries	Colour Orange	1 Litre	TOTAL FLUIDE LDS

GENERAL





LUBRICANTS - TOTAL recommended oils

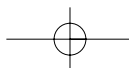
Screen wash fluid

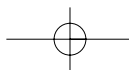
	Packs		CITROËN references		
	All countries	Concentrate: 250 ml		9980 33	ZC 9875 953U
Fluid ready to use		1 Litre	9980 06	ZC 9875 784U	
		5 Litres	9980 05	ZC 9885 077U	ZC 9875 279U

**Greasing
General use**

All countries	NLGI norms	
	TOTAL MULTIS 2	2
TOTAL PETITES MECANISMES		

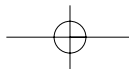
Nota : NLGI = National Lubricating Grease Institute.

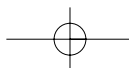




ENGINE OIL CONSUMPTION

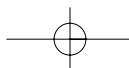
- I** - Oil consumption depends on:
- The engine type.
 - How run-in or worn it is.
 - The type of oil used.
 - The driving conditions.
- II** - An engine can be considered **RUN-IN** after:
- **3 000 miles (5 000 km)** for a **PETROL** engine.
 - **6 000 miles (10 000 km)** for a **DIESEL** engine.
- III** - **MAXIMUM PERMISSIBLE** oil consumption for a **RUN-IN** engine.
- **0.5 litres per 600 miles (1 000 km)** for a **PETROL** engine.
 - **1 litre per 600 miles (1 000 km)** for a **DIESEL** engine.
- DO NOT INTERVENE BELOW THESE VALUES.**
- IV** - **OIL LEVEL:** The level should **NEVER** be above the **MAX.** mark on the dipstick after changing or topping up the oil.
- This excess oil will be used up rapidly.
 - It will reduce the engine output and adversely affect the operation of the air circuits and gas recycling.

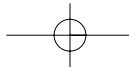




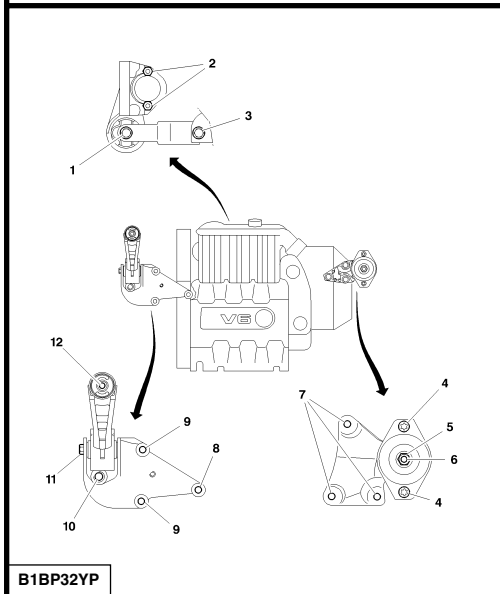
ENGINE

ENGINE SPECIFICATIONS		
	Engines: ES9A - DT17TED4	
	Petrol	Diesel
	3.0i 24S	2,7 24V
Engine type	XFV	UHZ
Cubic capacity (cc)	2946	2720
Bore/stroke	87/82,6	81x88
Compression ratio	10,9/1	17,3/1
Power ISO or EEC (KW - rpm)	155-6000	150-4000
Torque ISO or EEC (m.daN - rpm)	29-3750	44-1900

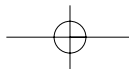


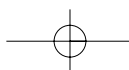


TIGHTENING TORQUES: POWER UNIT SUSPENSION		
Engine: ES9A		
Torque reaction rod - lower RH engine support		
1		6 ± 0,5
2		1 ± 0,1
3		6,5 ± 0,5
LH engine support		
4		3 ± 0,3
5		6,5 ± 0,6
6		5 ± 0,5
7		5,5 ± 0,5
Upper RH engine support		
8-9		6 ± 0,6
10		4,5 ± 0,5
11		6 ± 0,5
12		6 ± 0,5



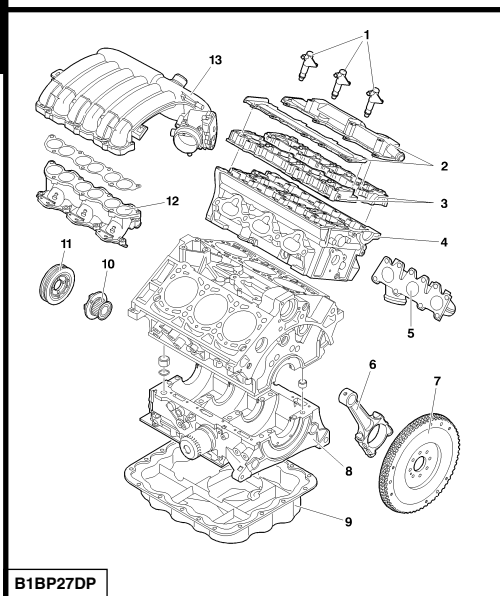
B1BP32YP





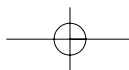
ENGINE TIGHTENING TORQUES

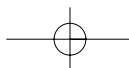
Engine: ES9A



B1BP27DP

1	Pencil-type ignition coil	0,8 ± 0,3
	Sparking plugs Pre-tightening Angular tightening	1 ± 0,1 90° ± 5°
2	Valve cover Pre-tightening Tightening	0,5 ± 0,1 1 ± 0,1
3	Camshaft bearing cap cover Pre-tightening Tightening	0,2 ± 0,1 1 ± 0,1
4	Cylinder head Pre-tightening Slackening Tightening Angular tightening	2 ± 0,2 yes 1,5 ± 0,1 225° ± 5°





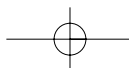
ENGINE

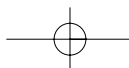
ENGINE TIGHTENING TORQUES

Engine: ES9A

	5	Exhaust manifold (equipped with a new gasket) Pre-tightening (order from 1 to 10) Tightening (order from 1 to 10)	$1 \pm 0,1$ $3 \pm 0,3$
	6	Con rod caps Pre-tightening Angular tightening	$2 \pm 0,2$ $74^\circ \pm 5^\circ$
	7	Engine flywheel Pre-tightening Angular tightening	$2 \pm 0,2$ $60^\circ \pm 5^\circ$

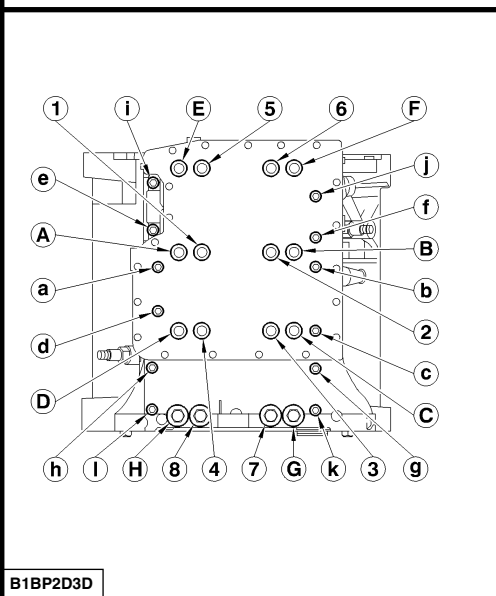
B1JP02LD





ENGINE TIGHTENING TORQUES

Engine: ES9A



B1BP2D3D

8 Crankshaft bearing

NOTE: Maximum length under heads for **M11** = 131,5 mm.

NOTE: Maximum length under heads for **M8** = 119 mm.

Perform the following operations:

- Brush the screw threads.
- Refit the screws having first pre-coated them with «MOLYKOTE G RAPID PLUS» grease on the threads and under heads.

Check the presence of the eight centring pins

Pre-tighten the screws **M11** (sequence from **1** to **8**)

3 ± 0,3

Pre-tighten the screws **M8** (sequence from **A** to **H**)

1 ± 0,1

Tighten the screws **M6** (sequence from **a** to **1**)

1 ± 0,1

Slacken the screws screws **M11** and **M8**

Yes

Proceeding screw by screw

Tighten the screws **M11** (sequence from **1** to **8**)

3 ± 0,3

Angular tightening

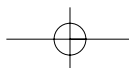
180°

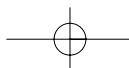
Tighten the screws **M8** (sequence from **A** to **H**)

1 ± 0,1

Angular tightening

180°

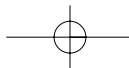


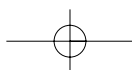


ENGINE

ENGINE TIGHTENING TORQUES		
Engine: ES9A		
	9 Sump Pre-tightening (<i>sequence from 1 to 20</i>) Tightening (<i>sequence from 1 to 20</i>)	$0,5 \pm 0,1$ $0,8 \pm 0,1$
	10 Crankshaft pinion Pre-tightening Angular tightening	$4 \pm 0,4$ 80°
	11 Crankshaft pulley	$2,5 \pm 0,2$
	12 Inlet distributor (<i>with new seals</i>) Pre-tightening Tightening	$0,4 \pm 0,1$ $0,8 \pm 0,1$
	Air inlet manifold Pre-tightening Tightening	13 $0,4 \pm 0,1$ $0,8 \pm 0,1$

B1BP1GZD

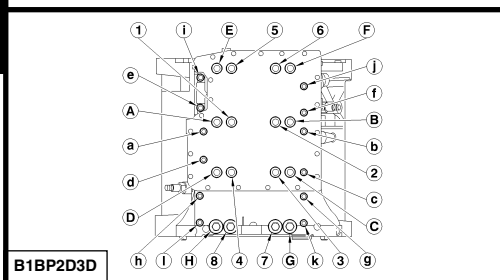




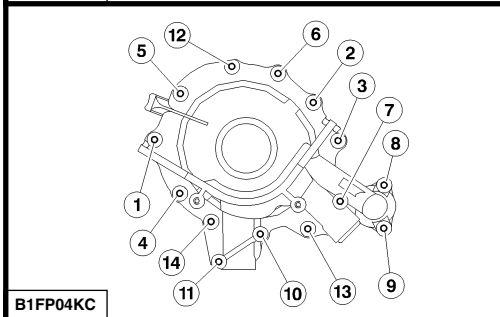
ENGINE

ENGINE TIGHTENING TORQUES

Engine: ES9A

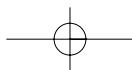


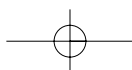
B1BP2D3D



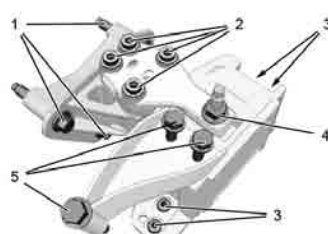
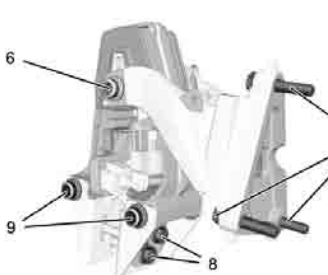
B1FP04KC

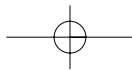
14	Camshaft hubs Pre-tightening Angular tightening	$2 \pm 0,2$ 57°
15	Cap	$1,5 \pm 0,1$
16	Guide roller	$8 \pm 0,8$
17	Camshaft pulley Pre-tightening Angular tightening	$2 \pm 0,2$ 115°
18	Camshaft pulleys	$1 \pm 0,1$
20	Timing belt tensioner roller	$2,5 \pm 0,2$
21	Plate for the dynamic tensioner roller	$2,5 \pm 0,2$
22	Coolant pump Pre-tightening Tightening	$0,5 \pm 0,1$ $0,8 \pm 0,1$
19	Oil pump Pre-tightening Tightening	$0,5 \pm 0,1$ $0,8 \pm 0,1$

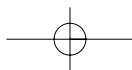




ENGINE

TIGHTENING TORQUES: POWER UNIT SUSPENSION			
Engine: DT17BTED4			
 <p>B1BP3EPD</p>	RH engine support		
	1	Screws	$8,2 \pm 1,25$
	2	Screws	$6 \pm 0,6$
	3	Screws	$2,8 \pm 0,4$
	4	Nut	$6,5 \pm 0,6$
 <p>B1BP3EQD</p>	Front piloted torque reaction rods		
	6	Screws	$6 \pm 0,6$
	7	Screws	
	8	Screws	$4,3 \pm 0,4$
	9	Screws	$6 \pm 0,6$

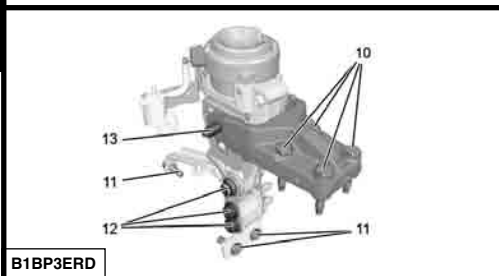




ENGINE

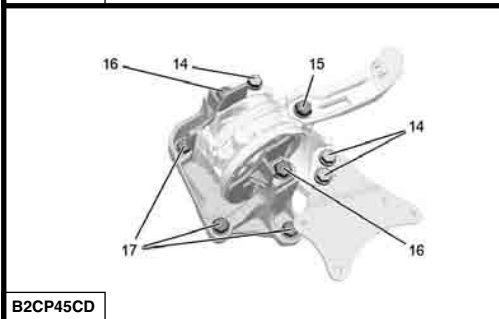
TIGHTENING TORQUES: POWER UNIT SUSPENSION

Engine: DT17BTED4



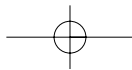
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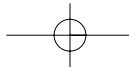
Rear piloted torque reaction rods		
10	Screws	6 ± 0,6
11	Screws	
12	Screws	
13	Screws	



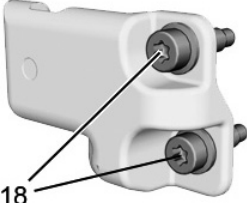
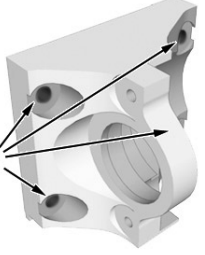
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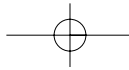
LH gearbox support		
14	Screws	6 ± 0,6
15	Screws	5,5 ± 0,8
16	Screws	6 ± 0,6
17	Screws	5,5 ± 0,8

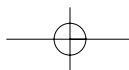




ENGINE

TIGHTENING TORQUES: POWER UNIT SUSPENSION		
Engine: DT17BTED4		
 <p>18</p> <p>B2CP45DC</p>	Gearbox impact absorber	
	18	Screws
 <p>19</p> <p>B2CP45EC</p>	Driveshaft bearing	
	19	Screws

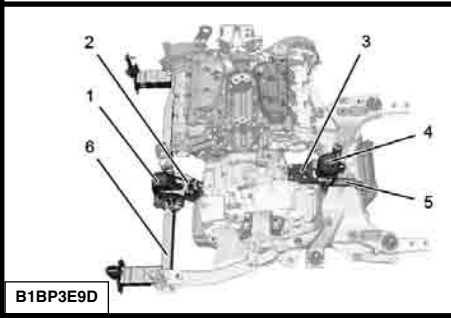




ENGINE

ADJUSTMENT OF PILOTED TORQUE REACTION ROD

Engine: DT17BTED4



B1BP3E9D

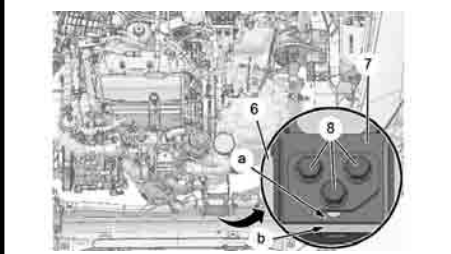
IMPERATIVE: Respect the safety and cleanliness requirements.

IMPERATIVE: Respect the safety and cleanliness requirements specific to High pressure Diesel injection (HDI) engines.

Additional operations.

NOTE: The piloted torque reaction rods have to be adjusted in the event of removing the fixing yoke of the front piloted torque reaction rod (1).

WARNING: Tighten the supports of the engine/gearbox assembly prior to adjusting the rods.



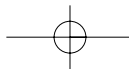
B1BP3EBD

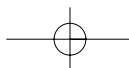
- Fit the supports (2) and (3), tighten the fixings :
- Fit the tie-rod (5), tighten the fixings : **6,5 ± 0,6.**
- Fit the rear piloted torque reaction rod (4).
- Fit the front piloted torque reaction rod (1).
- Tighten the fixings of the rear piloted torque reaction rod (4) : **6,5 ± 0,6.**

Adjustment.

Position the lower edge "a" of the yoke (7) to **5 mm** from the lower edge "b" of the crossmember (6).

- Tighten the fixings (8) : **6 ± 0,6.**
- Tighten the fixings of the front piloted torque reaction rod : **6 ± 0,6.**

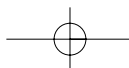


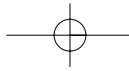


ENGINE

ENGINE TIGHTENING TORQUES			
Engine: DT17BTED4			
Cylinder head			
	1	Butterfly housing	0,9 ± 0,2
	2	Inlet valve cover screws (*) Inlet valve cover studs (*)	
	3	Coolant outlet housing	
	4	Cylinder heads	2 ± 0,2
		Pre-tightening	4 ± 0,5
		Tightening	8 ± 0,5
		Angular tightening	180 ± 5°
	5	EGR (exhaust gas recycling) electrovalve	0,9 ± 0,2
	6	Exhaust manifold nuts	2,3 ± 0,3
Exhaust manifold studs		1,3 ± 0,2	
7	Turbocharger nuts	2,3 ± 0,3	
	Turbocharger studs	1,3 ± 0,2	
8	Pre-catalysers	2 ± 0,1	
9	Vacuum pump	2,3 ± 0,3	
(*) Respect the sequence of tightening.			

B1DP1LZD

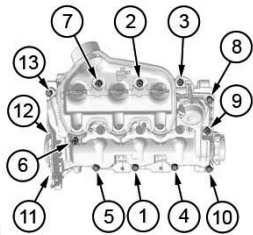




ENGINE

ENGINE TIGHTENING TORQUES

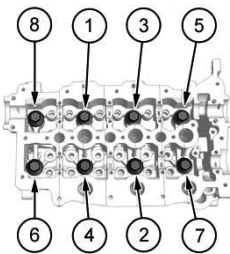
Engine: DT17BTED4



B1DP1M1C

Order of tightening of screws (2)

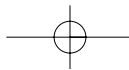
- (2) Camshaft bearing cover screws (*from 1 to 13*)
- (2) Camshaft bearing cover studs (*from 1 to 13*)

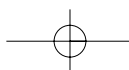


B1DP1M2C

Order of tightening of bolts (4) (*from 1 to 8*)

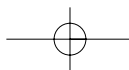
- (4) Cylinder head bolts

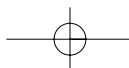




ENGINE

ENGINE TIGHTENING TORQUES			
Engine: DT17BTED4			
Cylinder block			
	11	Coolant pump	0,9 ± 0,2
	12	Con rod screws	2 ± 0,1
		Pre-tightening	45 ± 5°
		Angular pre-tightening	45 ± 5°
	13	Starter gearwheel carrier	5 ± 0,5
		Pre-tightening	45 ± 5°
		Angular pre-tightening	45 ± 5°
	14	Lower engine block screw (*)	0,9 ± 0,2
	15	Lower engine block screw (*)	2,3 ± 0,3
	16	Bearing cap fixing screws (*)	6 ± 0,6
Pre-tightening		14,5 ± 1,4	
Tightening		90 ± 20°	
17	Crankshaft bearing cap cover	1,5 ± 0,1	
	Pre-tightening	3,3 ± 0,9	
	Angular tightening	47 ± 20°	
18	Accessories drive pulley	2,5 ± 0,2	
(*) Respect the sequence of tightening.			

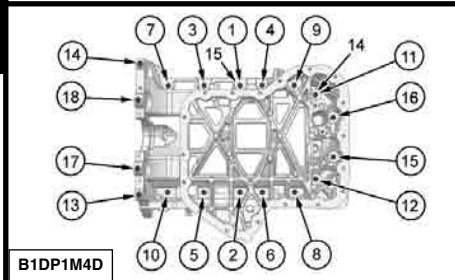




ENGINE

ENGINE TIGHTENING TORQUES

Engine: DT17BTED4



B1DP1M4D

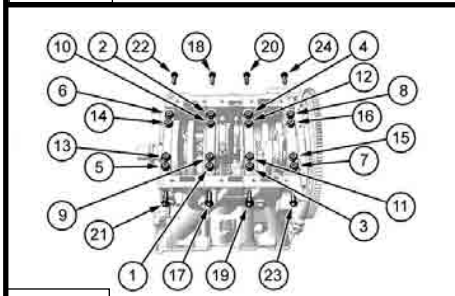
Order of tightening for screws (14) and (15)

- (14) Lower engine block screw (screw M6)
- (15) Lower engine block screw (screw M8)

Method of tightening:

- Tighten the 10 screws (15) (from 1 to 10) to
- Tighten the 8 screws (14) (from 1 to 18) to

: 2,3 ± 0,3
: 0,9 ± 0,1



B1DP1M5D

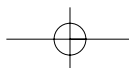
Order of tightening for screws (16) and (17)

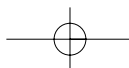
- (16) Bearing cap fixing screw (screw M9)
- (17) Crankshaft bearing cap cover screw (screw M6)

Method of tightening:

- Pre-tighten the 16 screws (16) (from 1 to 16) to
- Pre-tighten the 8 screws (17) (from 17 to 24) to
- Pre-tighten the 16 screws (16) (from 1 to 16) to
- Tighten the screws (16) (from 1 to 16)
- Tighten the 8 screws (17) (from 17 to 24) to
- Tighten the screws (17) (from 17 to 24)

: 6 ± 0,6
: 1,5 ± 0,1
: 14,5 ± 2
: 90° ± 20°
: 3,3 ± 0,3
: 47° ± 20°

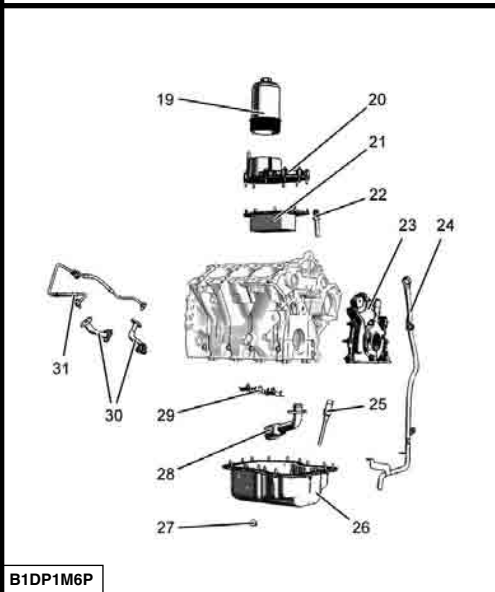




ENGINE

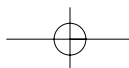
ENGINE TIGHTENING TORQUES

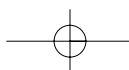
Engine: DT17BTED4



B1DP1M6P

Lubrication		
19	Oil filter cover	2,3 ± 0,3
20	Oil filter support	0,9 ± 0,2
21	Oil/coolant heat exchanger	
22	Oil pressure switch	1,3 ± 0,2
23	Oil pump assembly	0,9 ± 0,2
24	Oil gauge	2,3 ± 0,3
25	Oil level sensor	2,7 ± 0,5
26	Oil sump	0,9 ± 0,2
27	Drain plug	2,3 ± 0,3
28	Oil suction strainer	0,9 ± 0,1
29	Piston skirt spray jets	1 ± 0,1
30	Turbocharger lubrication pipe	0,9 ± 0,2
31	Turbocharger lubrication pipe	1,3 ± 0,3





ENGINE

ENGINE TIGHTENING TORQUES

Engine: DT17BTED4

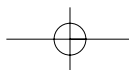


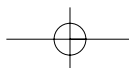
B1EP1JCD

Valve timing

Valve timing		
32	Camshaft pulley hub screw Tightening Angular tightening	8 ± 0,8 90° ± 5°
33	Camshaft pulley screw	2,3 ± 0,3
34	Camshaft bearing caps (*) Tightening Pre-tightening	0,5 ± 0,1 0,9 ± 0,1
35	Tensioner roller for the fuel high pressure pump drive belt	2,5 ± 0,2
36	Fuel high pressure pump drive pulley Tightening Angular tightening	8 ± 0,8 90° ± 5°
37	Camshaft timing chain tensioner	0,9 ± 0,1
38	Timing belt guide roller	4,5 ± 0,3
39	Timing pinion on crankshaft Tightening Angular tightening	10 ± 1 90° ± 5°
40	Timing belt tensioner roller	2,6 ± 0,2

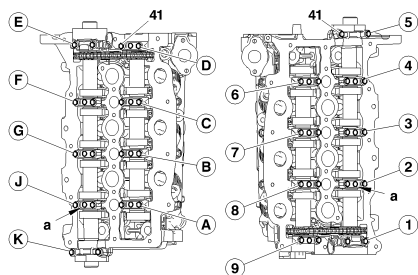
(*) Respect the sequence of tightening.





ENGINE TIGHTENING TORQUES

Engine: DT17BTED4



IMPERATIVE: The camshaft bearing caps are marked at "a" with a letter on the front cylinder head and with a number on the rear cylinder head.

Refit the camshaft bearing caps according to the plan below:

Refit: The camshaft bearing caps (34) 9, 8, 7, 6, 4, 3, 2, D, C, B, A, J, G and F ; the screws (41)

Tightening of the screws (41):

Pre-tighten the screws (41) of the camshaft bearing caps (34) by hand in the following sequence 9, 8, 7, 6, 4, 3, 2, D, C, B, A, J, G and F.

Pre-tighten the screws (41) of the camshaft bearing caps (34) to $0,5 \pm 0,1$ m.daN in the following sequence 9, 8, 7, 6, 4, 3, 2, D, C, B, A, J, G and F.

Tighten the screws (41) of the camshaft bearing caps (34) to $1 \pm 0,1$ m.daN in the following sequence 9, 8, 7, 6, 4, 3, 2, D, C, B, A, J, G and F.

Apply sealing product **LOCTITE 518** on the camshaft bearing caps (15) K, 5, E and J (*see procedure: remove/refit camshaft*).

Refit: the camshaft bearing caps K, 5, E and J.

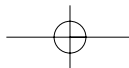
Tightening of the screws (41):

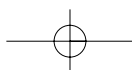
- Pre-tighten the screws (41) of the camshaft bearing caps (34) by hand in the following sequence K, 5, E and J.

- Pre-tighten the screws (41) of the camshaft bearing caps (34) to $0,5 \pm 0,1$ m.daN in the following sequence K, 5, E and J.

- Tighten the screws (41) of the camshaft bearing caps (34) to $1 \pm 0,1$ m.daN in the following sequence K, 5, E and J.

B1DP1MQD

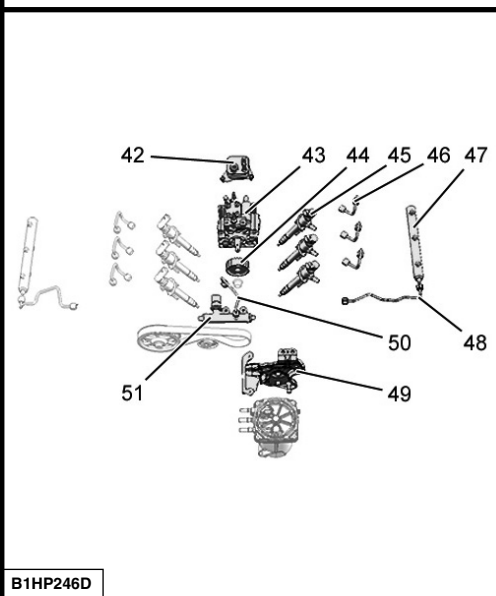




ENGINE

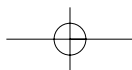
ENGINE TIGHTENING TORQUES

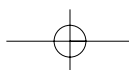
Engine: DT17BTED4



Injection circuit			
42	Diesel fuel/coolant exchanger	2,2 ± 0,3	
43	Diesel injection pump on support	2,3 ± 0,3	
44	Diesel injection pump pinion	5 ± 0,2	
45	Diesel injector fixing flange screw	0,9 ± 0,1	
46	Union on diesel injector	Pre-tightening	1,5 ± 0,3
		Tightening	2,3 ± 0,3
47	Fuel high pressure common injection rail on engine block	Pre-tightening	1,5 ± 0,3
		Tightening	3 ± 0,3
48	Unions on fuel high pressure common injection rail	Pre-tightening	1,5 ± 0,3
		Tightening	3 ± 0,3
49	Fuel filter support	2,3 ± 0,3	
50	Union on diesel fuel high pressure pump	Pre-tightening	1,5 ± 0,3
		Tightening	3 ± 0,3
51	Fuel high pressure common injection intermediate rail	Pre-tightening	1,5 ± 0,3
		Tightening	3 ± 0,3

B1HP246D

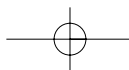


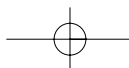


ENGINE

ENGINE TIGHTENING TORQUES			
Engine: DT17BTED4			
	Accessories		
	52	Screw M8 for automatic tensioner roller (<i>accessories drive belt</i>) Screw M10 for dynamic tensioner roller (<i>accessories drive belt</i>)	2,2 ± 0,3 4,7 ± 0,7
	53	Guide roller	4,7 ± 0,7
	54	Accessories support	2,3 ± 0,3
	55	Multifunction support	2,3 ± 0,3
	56	Power steering pump pulley	2,3 ± 0,3
	57	Power steering pump	2,3 ± 0,3
	58	Alternator screw	5 ± 0,3
	59	Alternator power circuit	1,4 ± 0,2
	60	Aircon compressor screw	2,3 ± 0,3

B1BP3C0D





ENGINE

SPECIAL FEATURES: CYLINDER HEAD TIGHTENING

Engine: ES9A

Cleaning to be carried out just prior to refitting the cylinder head

WARNING: Clean the contact faces with the approved CITROËN cleaning product.

Do not use abrasives or cutting tools on the contact faces.

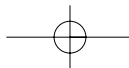
The contact faces must not bear any traces of impact or scratching.

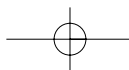
Insert a tap in the threads of the holes in the cylinder block receiving the cylinder head bolts.

Brush the threads of the cylinder head bolts.

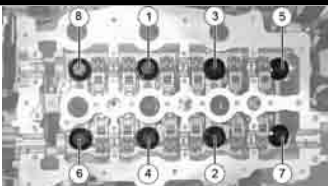
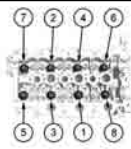
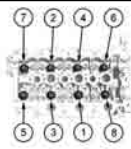
Oil the threads and under the heads of the bolts, using **MOLYKOTE G RAPID PLUS**.

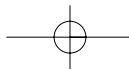
Front cylinder head	Engine	Tightening (from 1 to 8)	X = MAX. re-usable length
<p>A</p> <p>B1DP1KEC</p>	ES9A	Pre-tightening Slackening Tightening Angular tightening	<p>$2 \pm 0,2$ yes $1,5 \pm 0,1$ $225^\circ \pm 5^\circ$</p> <p>149,5 mm</p>
<p>B</p> <p>B1DP1KHC</p>		<p>IMPERATIVE: Take new screws if their length is greater than X mm.</p> <p>NOTE: Tightening of the cylinder head after a repair is prohibited.</p>	

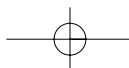




ENGINE

SPECIAL FEATURES: CYLINDER HEAD TIGHTENING				
Engine: DT17BTED4				
<p style="text-align: center;">Cleaning to be carried out just prior to refitting the cylinder head</p> <p>WARNING: Clean the contact faces with the approved CITROËN cleaning product. Do not use abrasives or cutting tools on the contact faces. The contact faces must not bear any traces of impact or scratching. Insert a tap in the threads of the holes in the cylinder block receiving the cylinder head bolts. Brush the threads of the cylinder head bolts. Oil the threads and under the heads of the bolts, using MOLYKOTE G RAPID PLUS.</p>				
Front cylinder head	Engine	Tightening (from 1 to 8)	NOT re-usable	
 <p>B1DP1MDD</p>	DT17BTED4	Pre-tightening $2 \pm 0,2$ Tightening $4 \pm 0,4$ Tightening $8 \pm 0,8$ Angular tightening $180^\circ \pm 5^\circ$	New screws	
<th>Rear cylinder head</th> <td>  <p>B1DP1MLC</p> </td> <td colspan="2"> <p>NOTA : Tightening of the cylinder head after a repair is prohibited.</p> </td>		Rear cylinder head		 <p>B1DP1MLC</p>





BELT TENSION/SEEM UNITS CORRESPONDENCE TABLE

↓ 4099-T (C.TRONIC.105)

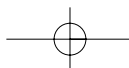


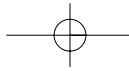
Tools



4122-T (C.TRONIC.105.5) ↓

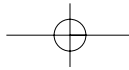
		1 daN = 1 Kg																					
		daN																					
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100		
		TYPE DE COURROIES																					
S																							
		18 28 36 44 51 58 64 70 76 82 88 94 100 106 112	18 28 36 44 51 58 64 70 76 82 88 94 100 106 112																				
P																							
		E5 18 23 27 31 34 37 40 43 46 49 52 54 56 58 60 62 64 66 68	E6 25 32 39 45 50 54 58 62 66 70 74 78 81 84 86 88 89 90 91	32 41 48 55 62 69 76 83 90 96 102 108 114 120 126 132 138 144 150																			
P																							
		E6 27 36 43 49 55 61 66 71 76 80 84	32 41 49 57 63 69 75 81 87 93 99																				
P																							
		E6 26 35 42 48 53 58 63 68 73 78 82	30 40 47 54 61 68 75 81 87 93 99																				
P																							
		E7 45 55 65 74 83 89 95 101 107 113 119	36 49 52 64 73 80 86 92 98 104 110																				
T																							
		E7 28 34 39 44 48 52 56 60 64 68 71	34 41 48 55 62 69 76 83 89 96 102																				
T																							
		E8 32 39 45 51 56 61 66 71 76 79 81	37 43 51 59 66 73 80 86 92 98 104																				
T																							
		E9 52 60 67 74 81 88 94 100 106 110 114	49 57 63 69 75 81 87 93 99 105 111																				

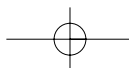




ENGINE

AUXILIARY EQUIPMENT DRIVE BELT		
	Petrol	Diesel
	3.0i 24S	2,7 24V
Engine type	XFV	UHZ
C6	X	X
See pages:	47 to 48	49





AUXILIARY EQUIPMENT DRIVE BELT

Engines : all types Petrol and Diesel

Tools.

Belt tension measuring instrument : 4122-T.(C.TRONIC 105.5).

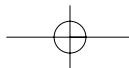
WARNING: If using tool 4099-T (C.TRONIC 105).

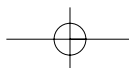
Essential.

Before refitting the auxiliary equipment drive belt, check that:

- 1 / The roller(s) rotate freely (*no play or stiffness*).

- 2 / The belt is correctly engaged in the grooves of the various pulleys.





ENGINE

AUXILIARY EQUIPMENT DRIVE BELT

Engine: ES9A

Tools.

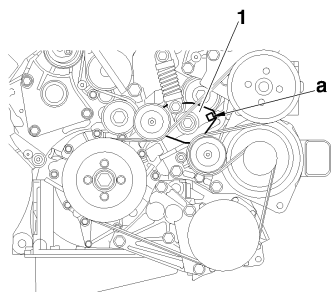
- [1] Ratchet spanner **S.171 FACOM (1/2 square)** : S 171
- [2] Reduction box **S.230 FACOM (1/2 - 3/8)** : S 230

Removing.

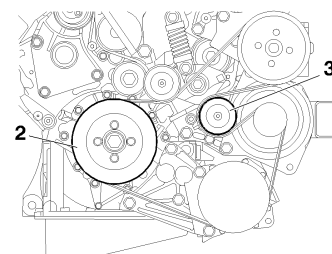
Remove the engine cover.
 Pivot the tensioner roller bracket **(1)** clockwise, until it locks, using tools **[1]** and **[2]** at «**a**».
 Remove the auxiliary equipment drive belt.
ESSENTIAL: Check that the guide rollers are turning freely (no play and no tightness).

Refitting.

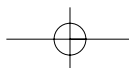
Refit the auxiliary equipment drive belt.
 Respect the following order of assembly:
 - The crankshaft pulley **(2)**.
 - The tensioner roller **(3)**.
 Release the tensioner roller bracket **(1)**, by turning it anti-clockwise, using tools **[1]** and **[2]**.
ESSENTIAL: Make sure that the belt is correctly positioned in the grooves of the various pulleys.

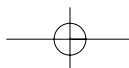


B1BP27EC



B1BP27FC





AUXILIARY EQUIPMENT DRIVE BELT

Engine: ES9A

Tool.

[1] 2 mm diameter peg

: (-).0188-Q1

Removing.

Remove:

- The under-engine sound-deadening.
- The front RH wheel.
- The RH splash-shield.
- The air duct (*linking the air distributor heat exchanger*).

Compress the dynamic tensioner roller (1) to free the pegging hole at "a".
Peg the dynamic tensioner roller at "a", using tool [1].

WARNING: Do not compress the dynamic tensioner roller completely (risk of damage).

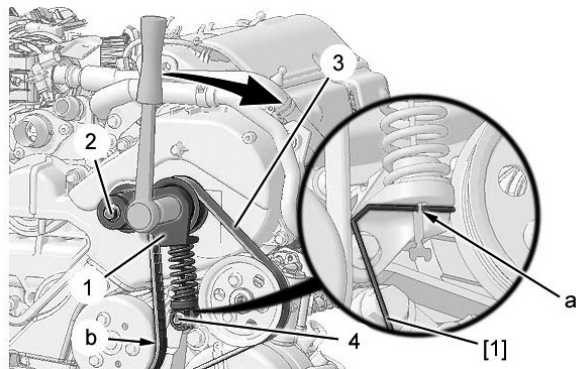
WARNING: Mark the direction of fitting of the auxiliary equipment drive belt if for re-use.

Disengage the auxiliary equipment drive belt from the various pulleys, commencing at "b" (*coolant pump pulley*).

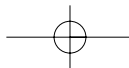
Remove:

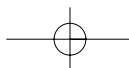
- The screws (2) and (4).
- The dynamic tensioner roller (1).
- The auxiliary equipment drive belt (3).

ESSENTIAL: Check that the tensioner and guide rollers as well as the coolant pump can turn freely (without play, without tight spots and without projections of grease).



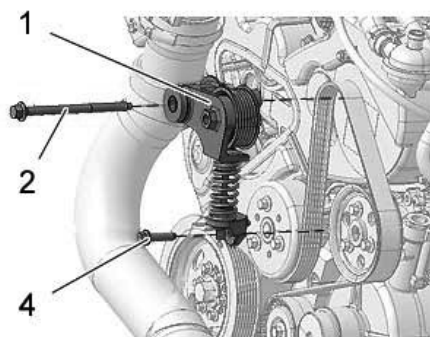
B1BP3BSD





AUXILIARY EQUIPMENT DRIVE BELT

Engine: DT17BTED4



Refitting.

WARNING: If re-using the auxiliary equipment drive belt, refit it respecting its direction of fitting.

Fit the auxiliary equipment drive belt.

ESSENTIAL: Make sure that the auxiliaries drive belt is correctly positioned in the grooves of the various pulleys.

Refit:

- The dynamic tensioner roller (1) by engaging the belt on the roller.
- The screws (2) and (4).

Tighten:

- Screw (2) : $5 \pm 0,5$.
- Screw (4) : $2,3 \pm 0,2$.

Compress the dynamic tensioner roller.

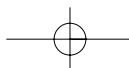
Remove tool [1].

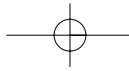
ESSENTIAL: Make sure that the auxiliaries drive belt is correctly positioned in the grooves of the various pulleys.

Refit:

- The air duct (*linking the air distributor heat exchanger*).
- The RH splash-shield.
- The front RH wheel.
- The under-engine sound-deadening.

B1BP3BVC

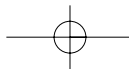


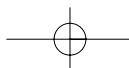


ENGINE

CHECKING AND SETTING THE VALVE TIMING

	Petrol	Diesel
	3.0i 24BS	2,7 24V
Engine type	XFV	UHZ
C6	X	X
See pages:	51 to 57	58 to 67





CHECKING THE VALVE TIMING

Engine: ES9A

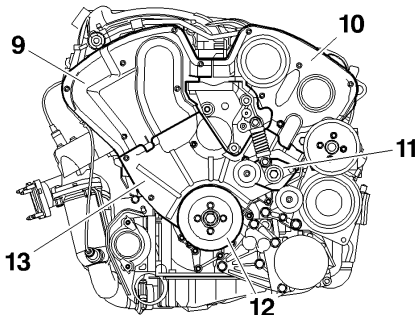
Tools.

- | | |
|---|--------------|
| [1] Camshaft setting pegs | : (-).0187.B |
| [2] Crankshaft setting peg | : (-).0187.A |
| [3] Fuel pressure take-off union | : 4192-T |
| [4] Belt retaining pin | : (-).0187.J |
| [5] Exhaust camshaft hubs immobilising tool | : (-).0187.F |
| [6] Inlet camshaft hubs immobilising tool | : FACOM D12 |
| [7] SEEM belt tension measuring equipment | : 4122-T |

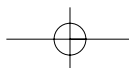
Remove components as necessary for this operation.
Remove the auxiliaries drive belt (*see corresponding operation*).

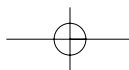
Checking the valve timing.

- Remove:
- The power steering pulley.
 - The roller/dynamic tensioner assembly (11).
 - The crankshaft pulley (12).
 - The upper timing covers (9) and (10).
 - The lower timing cover (13).



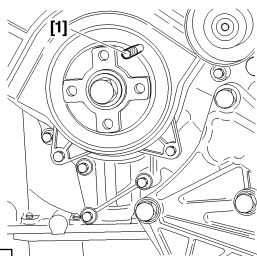
B1BP2BKC



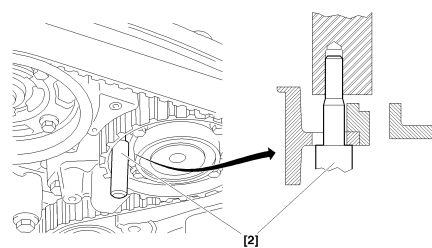


CHECKING THE VALVE TIMING

Engine: ES9A



B1EP08TC



B1EP15UD

Checking the valve timing (continued).

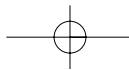
Peg the crankshaft, using tool [1].
Check that the tool [2] engages without effort in the cylinder heads at the camshaft pulleys.
Remove the tools [1] and [2].

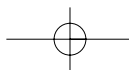
Refit:

- The lower timing cover (13).
- The upper timing covers (9) and (10).
- The crankshaft pulley (12).
- The roller/dynamic tensioner assembly (11).
- The power steering pulley.

Complete the refitting of components.

Initialise the ignition injection ECU.





CHECKING AND SETTING THE VALVE TIMING

Engine: ES9A

Setting the valve timing.

Remove the components as necessary for the operation.

Remove the screws (19) and the plate (20).

Peg the crankshaft, using tool [2].

NOTE: Damp the rotation of the camshafts (15) and (17), using tool [6].

Untighten the camshaft pulley screws (15) and (17).

NOTE: Damp the rotation of the camshafts (14) and (18), using tool [5].

Untighten the camshaft pulley screws (14) and (18).

NOTE: Lubricate the tools [1], with grease **G6 (TOTAL MULTIS)**.

Peg the camshafts, using tools [1], [5] and [6].

Remove the screw (21) of the panel (25).

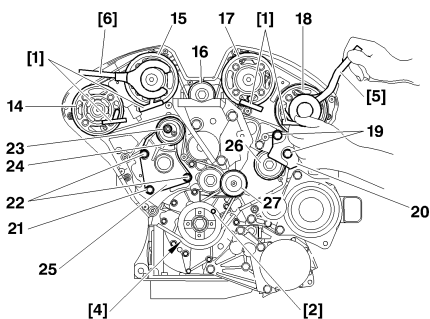
Untighten the nut (23) of the tensioner roller (24).

Untighten the screws (22) of the panel (25).

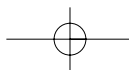
Remove the guide roller (16).

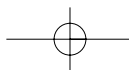
WARNING: Mark the direction of fitting of the timing belt, in case the belt is to be reused.

Remove the timing belt.



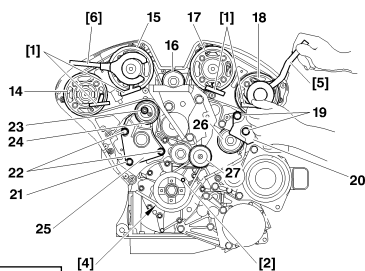
B1EP15VD



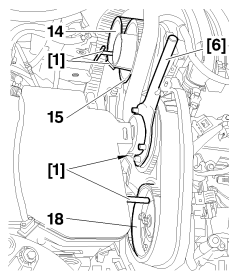


CHECKING AND SETTING THE VALVE TIMING

Engine: ES9A



B1EP15VD



B1BP2BLC

Setting the valve timing (continued).

Refitting.

Check that the camshafts and the crankshaft are correctly pegged.
 Check that the rollers and the coolant pump pulley are turning freely (*no tightness*).
 Loosen the camshaft pulley screws by a **1/4 turn**.
 Make sure that the pulleys are turning freely on the camshaft hub.
 Turn the camshaft pulleys in a clockwise direction, to end of slots.

WARNING: Respect the direction of fitting of the belt: Facing the timing, the inscriptions on the belt should be readable the correct way up.

Fit the timing belt on the crankshaft pinion.

Position the tool [6].

Position the timing belt in the following sequence (*belt well tensioned*):

- The roller (26), the pulley (18), the pulley (17).

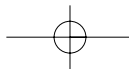
WARNING: Keep the timing belt well tensioned.

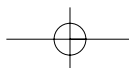
- Refit the guide roller (16), tighten to **8 ± 0,8 m.daN**.

Position the timing in the following sequence:

- The camshaft pulleys (15) and (14), the tensioner roller (24), the coolant pump pulley and the guide roller (27).

NOTE: When positioning the belt on the camshaft pulleys, turn these clockwise so as to engage the next tooth. The angular displacement of the pulleys should not be more than the equivalent of one tooth.





ENGINE

CHECKING AND SETTING THE VALVE TIMING

Engine: ES9A

Setting the valve timing (continued).

Adjusting the timing belt tension.

Preliminary operations.

Pivot the plate (25) of the tensioner roller (24), using a spanner (type **FACOM S.161**).
Engage the screw (21) on the plate (25).
Tighten the screws (21) and (22), tighten to **2,5 ± 0,1 m.daN**.

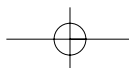
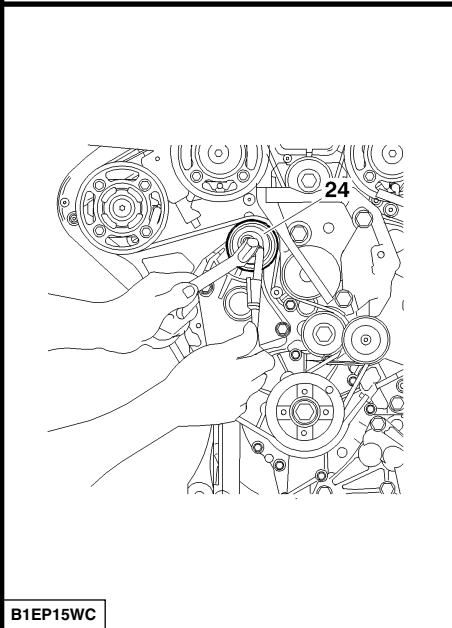
Act on the tensioner roller (24) so as to tension the belt, using a spanner (type **FACOM R 161**).

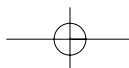
Adjust the belt tension, using tool [7]:

- | | |
|---|-------------------------------|
| - Measuring equipment SEEM CTI 901.1 | : 440 ± 15 SEEM units. |
| - Measuring equipment SEEM CTG 105.5 | : 83 ± 2 SEEM units. |
| - Measuring equipment SEEM CTG 105.6 | : 88 ± 2 SEEM units. |

WARNING: Never go beyond the tensioner limit.

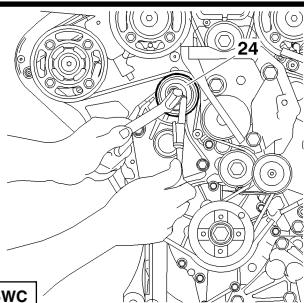
NOTE: The check of the belt tension is done on the longest belt section between the crankshaft pinion and the guide roller.



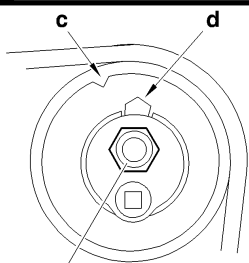


CHECKING AND SETTING THE VALVE TIMING

Engine: ES9A



B1EP15WC



B1EP15XC

23

Tighten the nut (23) of the tensioner roller (24), tighten to $1 \pm 0,1$ m.daN.

Check that the exhaust camshaft pulley screws are not at the end of slots (*by loosening one screw*).

WARNING: Otherwise, restart the operation for positioning the timing belt.

Tighten at least **2 screws** per exhaust camshaft pulley to $1 \pm 0,1$ m.daN.

Remove the tools [1], [2] and [4].

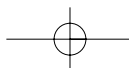
Rotate the crankshaft **2 turns** in a clockwise direction.

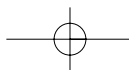
IMPERATIVE: Never turn it back.

Peg the crankshaft, using tool [2].

Peg the camshaft pulleys, using tool [1].

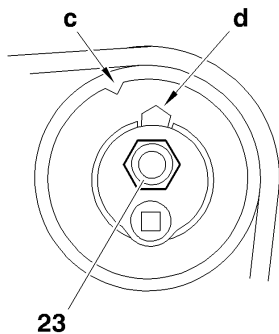
Slacken the nut (23) of the tensioner roller (24).





CHECKING AND SETTING THE VALVE TIMING

Engine: ES9A



Tensioning the timing belt.

Act on the tensioner roller (24) so as to align the marks «c» and «d», without detensioning the timing belt (failing this, restart the operation of adjusting the belt tension).

Hold the tensioner roller (24).

Tighten the nut (23), tighten to $1 \pm 0,1$ m.daN.

Check the position of the tensioner roller (the alignment of the marks «c» and «d» should be correct).

Remove the tools [1], [2] and [4].

Turn the crankshaft **2 rotations** clockwise.

IMPERATIVE: Never turn it back.

Peg the crankshaft, using tool [2].

Check the position of the tensioner roller (the alignment of the marks «c» and «d» should be correct).

Peg the camshaft pulleys, using tool [1].

If the peg [1] goes in: Loosen the exhaust camshaft pulley screws by 45° .

If the peg [1] does not go in: Slacken the exhaust camshaft pulley screws by 45° .

Bring the exhaust camshaft hub to the pegging position (5), using tool [5].

WARNING: Check that the exhaust camshaft pulleys are not at the end of slots. Otherwise, restart the operation to position the timing belt.

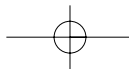
Tighten the exhaust camshaft pulley screws to $1 \pm 0,1$ m.daN.

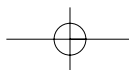
Remove tools [1] and [2].

Complete the refitting.

Initialise the injection ECU (see corresponding operation).

B1EP15XC





CHECKING THE VALVE TIMING

Engine: DT17BTED4

Tools.

[1] Set of plugs	: (-).0188-T	
[2] Flywheel setting peg (double flywheel)	: (-).0195.K	Toolkit 0188-T
[3] Camshaft setting pegs	: (-).0195.H	Toolkit 0188-T

Checks.

IMPERATIVE: Respect the safety and cleanliness requirements specific to High pressure Diesel injection (HDi) engines.

Remove the engine cover.
 Disconnect the battery negative terminal.
 Raise and support the front of the vehicle.

Remove:

- The under-engine sound-deadening.
- The front RH wheel.
- The front RH splash-shield (*see corresponding operation*).

Remove:

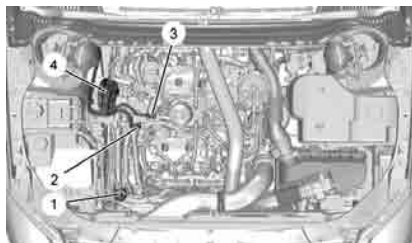
- The air duct between the air/air exchanger and the air inlet housing (4).
- The air inlet housing (4).

Uncouple, plug and move aside the pipes (2) and (3), using tools [1].

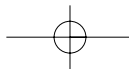
Unclip and move aside the electrical harness.

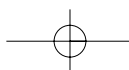
Remove the venting chamber fixing (1).

Move aside the venting chamber (1).



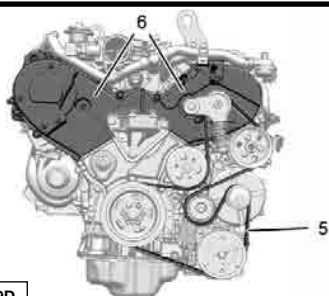
B1BP3BXD





CHECKING THE VALVE TIMING

Engine: DT17BTED4



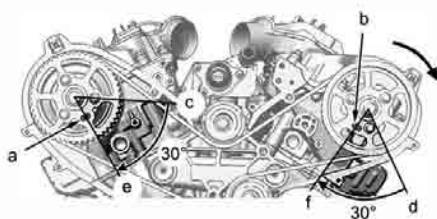
B1EP1J9D

Remove:

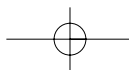
- The auxiliary drive belt (5) (see corresponding operation).
- The upper timing covers (6).

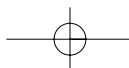
Position the camshaft pegging holes "a" and "b" at "c" and "d", $30^\circ \pm 5^\circ$ forward of their pegging holes "e" and "f".

NOTE: Turn the crankshaft in the normal direction of rotation, by means of the crankshaft pinion screw.



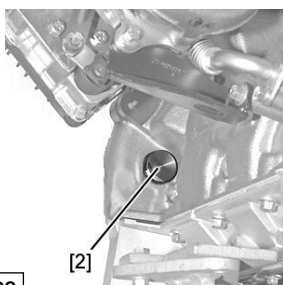
B1EP1JAD





CHECKING THE VALVE TIMING

Engine: DT17BTED4



B1DP1MOC

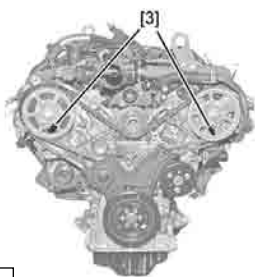
Remove the plug from the pegging hole on the cylinder block.

NOTE: Removing the particle filter and catalytic converter flexible pipe assembly facilitates removal of the plug from the pegging hole and the positioning of the tool [2].

NOTE: Turn the crankshaft in the normal direction of rotation, by means of the crankshaft pinion screw.

Peg the crankshaft, using tool [2].
Peg the camshafts, using tools [3].

IMPERATIVE: If it is not possible to peg the camshafts, restart the setting of the valve timing (*see corresponding operation*).



B1EP1JBD

Remove the tools [2] and [3].
Refit the plug on the pegging hole on the cylinder block.

Refit:

- The upper timing covers (6).
- The auxiliary drive belt (5) (*see corresponding operation*).

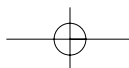
Reclip the electrical harness.

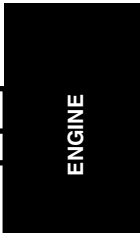
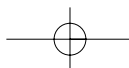
Fit the venting chamber (1).

Remove the tools [1].

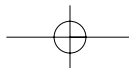
Reposition and connect the pipes (2) and (3).

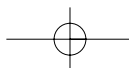
Complete the refitting.





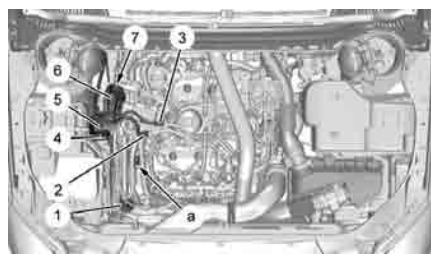
CHECKING AND SETTING THE VALVE TIMING		
Engine: DT17BTED4		
Tools.		
[1] Kit of plugs	: (-).0188-T	
[2] Flywheel setting peg (<i>double damping flywheel</i>)	: (-).0195.K	Toolkit 0188-T
[3] Camshaft setting pegs	: (-).0195.H	Toolkit 0188-T
[4] Belt compressure spring	: (-).0188.K	
[5] Coolant pump pulley peg	: (-).0195.C	
[6] Lifting bracket	: (-).0195.N	
IMPERATIVE: Respect the safety and cleanliness requirements.		
WARNING: Before disconnectng the battery, partially open the door windows.		
Removing.		
IMPERATIVE: Respect the safety and cleanliness requirements specific to High pressure Diesel injection (HDi) engines.		
Remove the engine cover.		
Disconnect the negative terminal of the battery.		
Raise and support the front of the vehicle.		
Remove:		
- The under-engine sound-deadening.		
- The front RH wheel.		
- The front RH splash-shield (<i>see corresponding operation</i>).		





CHECKING AND SETTING THE VALVE TIMING

Engine: DT17BTED4



B1BP3C2D

Remove:

- The air duct between the air/air exchanger and the air inlet housing (6).
- The air inlet housing (6).

Uncouple, plug and move aside the pipes (2) and (3) using tool [1].

Detach and move aside the electrical harness.

Remove:

- The header tank fixing (1).
- The "Swirl" electrovalve fixings (7).

Move aside:

- The "Swirl" electrovalve (7) with its support.
- The header tank (1).

Position the lifting bracket [6] at "a".

Support the engine by means of a workshop hoist.

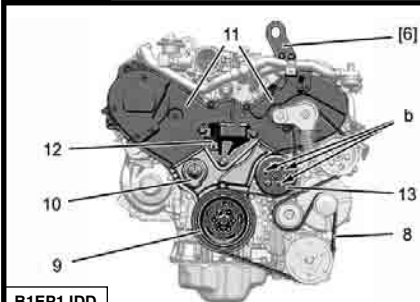
Remove:

- The upper RH engine support tie bar, and the upper RH engine support (5).
- The engine support (4) on the chassis member.
- The accessories drive belt (8) (*see corresponding operation*).
- The engine support (12), the crankshaft pulley (9), the upper timing covers (11).
- The lower timing cover (10).

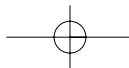
Line up one of the three holes "b" on the pulley with the hole on the body of the coolant pump.

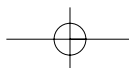
Immobilise the coolant pump pulley, using tool [6].

Remove the coolant pump pulley (13).



B1EP1JDD

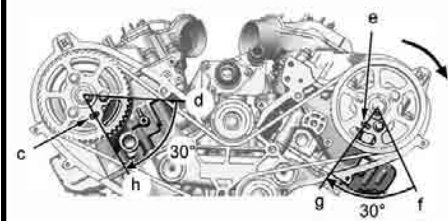




ENGINE

CHECKING AND SETTING THE VALVE TIMING

Engine: DT17BTED4



B1EP1JED

Position the camshaft pegging holes "c" and "e" at "d" and "f", $30^\circ \pm 5^\circ$ in front of the pegging holes "h" and "g".

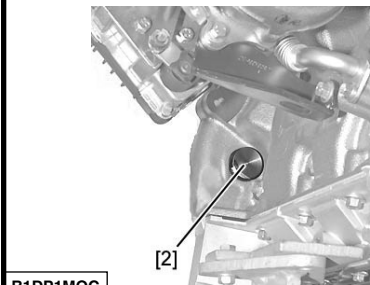
NOTE: Turn the crankshaft in the normal direction of rotation, by means of the crankshaft pinion screw.

Remove the plug from the pegging hole on the cylinder block.

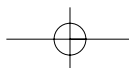
NOTE: Turn the engine by means of the crankshaft pinion screw to bring it to the pegging position (following the arrow).

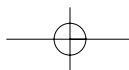
Peg the crankshaft using the tool [2].

NOTE: Removing the particle filter and catalytic converter flexible pipe assembly facilitates the removal of the plug from the pegging hole and the positioning of tool [2].



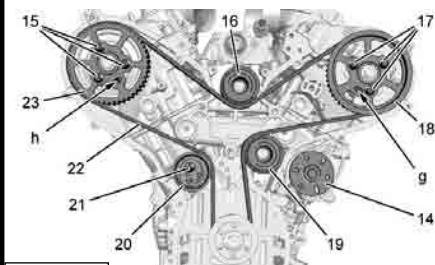
B1DP1MOC





CHECKING AND SETTING THE VALVE TIMING

Engine: DT17BTED4



B1EP1JFD

Peg the camshafts, using tools [3] at "h" and "g".

Slacken:

- The 3 screws (15) of the camshaft pulley (23).
- The 3 screws (17) of the camshaft pulley (18).
- The screw (21) of the tensioner roller (20).

Remove the timing belt (22).

Checks.

IMPERATIVE: Just before refitting, carry out the checks below.

Check that the rollers (16), (20) and (19) and the coolant pump (14) can turn freely (*without play and without any tight spot*).

Check that there are no signs of oil leaks (*from the crankshaft and camshaft seals*).

Check that there are no signs of coolant leaks (*from the coolant pump*).

Replace components that are faulty (*if necessary*).

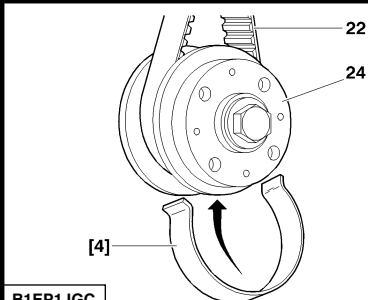
Refitting.

Reposition the timing belt on the crankshaft pinion (24).

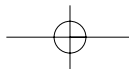
Hold the timing belt (22) in position, using tool [4].

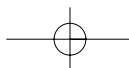
Tighten the screws (15) and (17) by hand.

Turn the camshaft pulleys (23) and (18) clockwise, to place them at the end of slots.



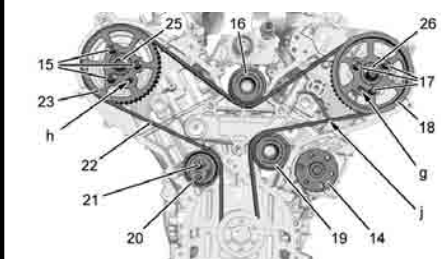
B1EP1JGC





CHECKING AND SETTING THE VALVE TIMING

Engine: DT17BTED4

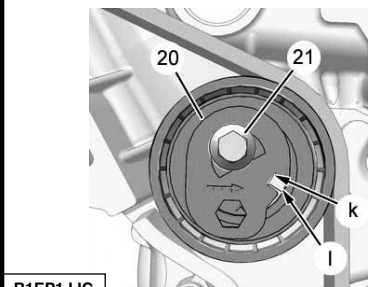


B1EP1JHD

Reposition the timing belt, strip «j» well tensioned, in the following order:

- Guide roller (19).
- Camshaft pulley (18).
- Guide roller (16).
- Camshaft pulley (23).
- Tensioner roller (20).

NOTE: If necessary, turn the pulleys (23) and (18) slightly anti-clockwise (*the offset must not be more than one tooth*).



B1EP1JJC

Remove the tool [4].

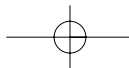
Using a hexagonal spanner, rotate the tensioner roller (20) anti-clockwise.

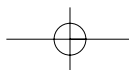
Position the index "I" facing the notch "k".

Tighten the screw (21) : $2,5 \pm 0,2$.

Remove the screws (15) and (17) from the pulleys (23) and (18) in order to check that the screws (15) and (17) are not at the end of slots.

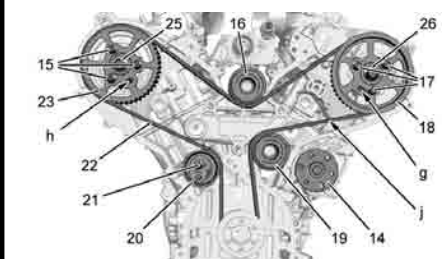
IMPERATIVE: If the screws (15) and (17) are at the end of slots, restart the operations to refit the timing belt.





CHECKING AND SETTING THE VALVE TIMING

Engine: DT17BTED4



B1EP1JHD

Tighten the screws (15) and (17) : $2,2 \pm 0,2$.
 Remove tools [2] and [3].
 Rotate the crankshaft **8 times** in the normal direction of rotation.

Fit the tool [2].
 Peg the camshafts using tools [3], at "h" and "g".

NOTE: If it is not possible to refit the tools [3], slacken the screws (15) and/or (17) of the camshafts and drive the camshafts by means of their central screws (25) and/or (26).

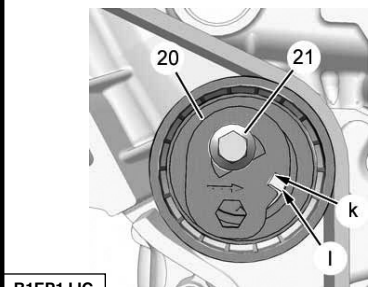
Peg the camshafts using tools [3], at "h" and "g".

Tighten the screws (15) and (17) : $2,2 \pm 0,2$.

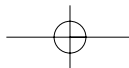
Remove tools [2] and [3].

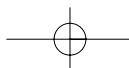
Rotate the crankshaft **8 times** in the normal direction of rotation.

Fit the tool [2].
 Fit the tools [3], at "h" and "g".
 Check that the index "l" of the tensioner roller (20) is facing the notch "k".



B1EP1JJC

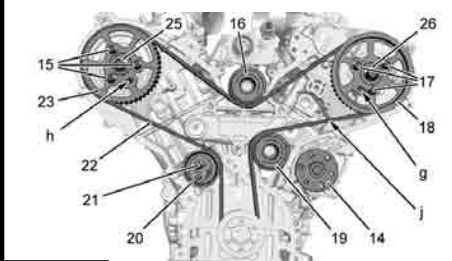




ENGINE

CHECKING AND SETTING THE VALVE TIMING

Engine: DT17BTED4



B1EP1JHD

Remove tools [2] and [3].

Refit: The lower timing cover (10), the upper timing covers (11), the crankshaft pulley (9), the engine support (12), the coolant pump pulley (13), the accessories drive belt (8) (see corresponding operation), the engine support (4) on the chassis member, the upper RH engine support (5) and the upper RH engine support tie bar.

Take away the workshop hoist.

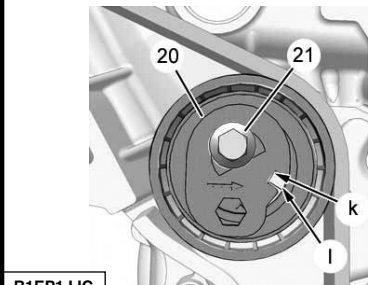
Remove the tool [6].

Refit the "Swirl" electrovalve (7) with its support, the header tank (1), the electrical harness.

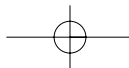
Remove the tool [1].

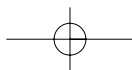
Reposition and couple the pipes (3) and (2).

Complete the refitting.



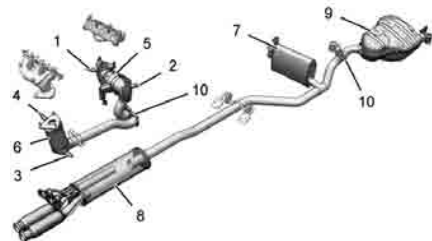
B1EP1JJC





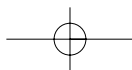
EXHAUST SPECIFICATIONS

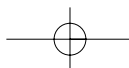
Engine: ES9A



B1JP08AD

1	Upstream oxygen sensor (rear)	4,7 ± 0,5
2	Downstream oxygen sensor (rear)	
3	Downstream oxygen (front)	
4	Upstream oxygen sensor (front)	
5	Precatalyser (rear)	3,5 ± 0,5
6	Precatalyser (front)	
7	Resonator	
8	Catalytic converter	
9	Rear silencer	
10	Clips	2,6 ± 0,3





ENGINE

EXHAUST SPECIFICATIONS

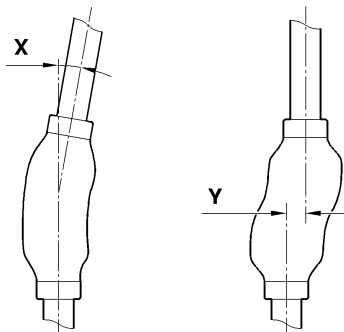
Engine: ES9A

Repair.

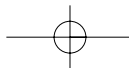
Respect the precautions to be taken prior to any operation:

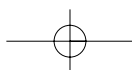
- The front flexible pipe must be protected against any external mechanical damage.
- The front flexible pipe must not come into contact with corrosive products.
- Do not deform the front flexible pipe more than 20° angular (X), 20 mm axial, 25 mm shearing (Y) (front flexible pipe removed).
- Do not deform the front flexible pipe more than 3° angular (X), 0 mm axial, 3 mm shearing (Y) (front flexible pipe in place).

WARNING: Non-respect of these precautions will shorten the life of the flexible pipe. It is therefore imperative to disconnect or remove the exhaust line for any operations necessitating lifting of the engine-gearbox.



B1JP02JC

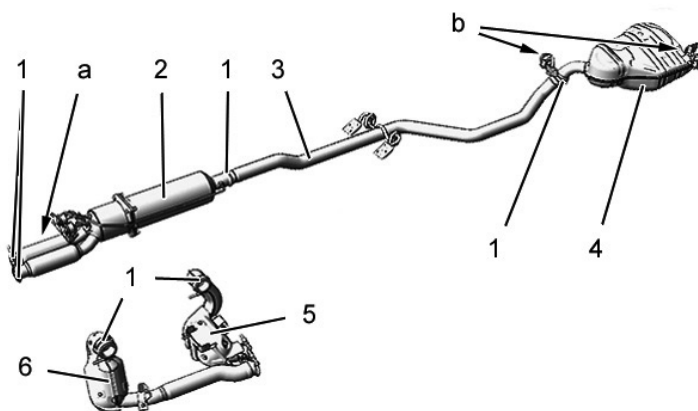




ENGINE

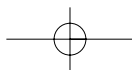
EXHAUST SPECIFICATIONS

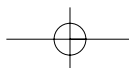
Engine: DT17BTED4



B1JP07QD

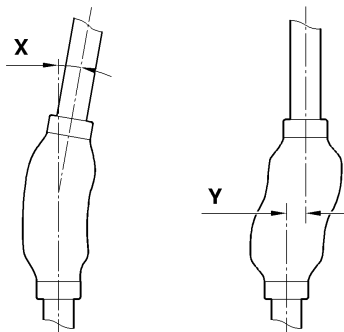
Engine versions	(1) Clip	(2) Particle filter	(3) Intermediate pipe	(4) Exhaust silencer	(5) Rear pre-catalyser	(6) Front pre-catalyser
UHZ		TR PSA F016	TR PSA K330	PSA 4234	TR PSA K311	TR PSA K310





EXHAUST SPECIFICATIONS

Engine: DT17BTED4



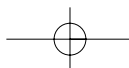
Repair.

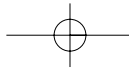
Respect the precautions to be taken prior to any operation:

- The front flexible pipe must be protected against any external mechanical damage.
- The front flexible pipe must not come into contact with corrosive products.
- Do not deform the front flexible pipe more than 20° angular (X), 20 mm axial, 25 mm shearing (Y) (front flexible pipe removed).
- Do not deform the front flexible pipe more than 3° angular (X), 0 mm axial, 3 mm shearing (Y) (front flexible pipe in place).

WARNING: Non-respect of these precautions will shorten the life of the flexible pipe. It is therefore imperative to disconnect or remove the exhaust line for any operations necessitating lifting of the engine-gearbox.

B1JP02JC

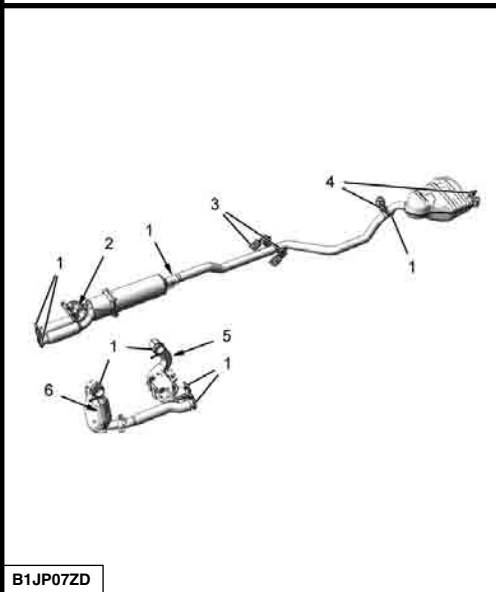




ENGINE

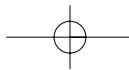
TIGHTENING TORQUES - EXHAUST LINE

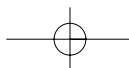
Engine: DT17BTED4



1	Clip	2,6 ± 0,4
2	Particle filter hangers	0,8 ± 0,1
3	Intermediate pipe hangers	
4	Silencer hangers	
5	Rear precatlyser screw	2 ± 0,3
6	Front precatlyser screw	2 ± 0,3

B1JP07ZD

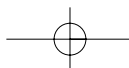


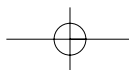


ENGINE

COOLING SYSTEM SPECIFICATIONS

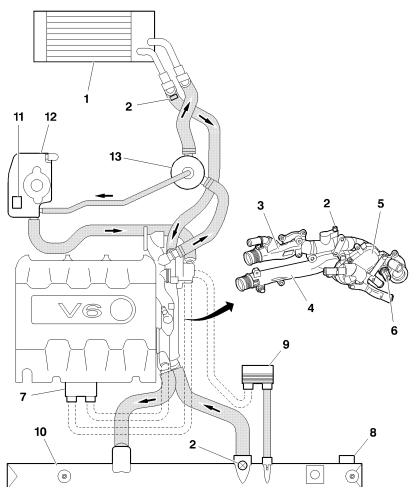
Engines: ES9A - DTE17BTED4			
		3.0i 24S	2,7 24V
Engine type		XFV	UHZ
Capacity		11,3	13,2
Radiator surface		27 dm ²	
Pressurisation		1,4 bar	
Opening of thermostatic regulator		78°C	83°C
Cooling fan		1 x 600 W	2 x 150W
1st speed		FRIC function	97°C or aircon in operation
2nd speed		105°C	101°C or 17 bars in the aircon circuit
3rd speed			105° or 30 bars in the aircon circuit
Air con cut-off			115°C or 30 bars in the aircon circuit
Alert		118°C	
Post cooling		6 minutes	
Marking		11	6
Information		Level of coolant	Temperature of coolant
Sensor		Resistance	Thermostat
Colour of connector		Black	Blue
Tightening (m.daN)		1,7 ± 0,4	
			Grey





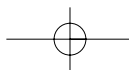
COOLING SYSTEM SPECIFICATIONS

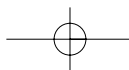
Engine: ES9A



- (1) Heater matrix
- (2) Bleed screw
- (3) Coolant outlet housing
- (4) Coolant inlet housing
- (5) Thermostat
- (6) Coolant temperature sensor
- (7) Coolant/oil heat exchanger (*engine*)
- (8) Cooling radiator drain plug
- (9) Coolant/oil heat exchanger (*automatic gearbox*)
- (10) Engine cooling radiator
- (11) Coolant level sensor
- (12) Header tank
- (13) Venting chamber

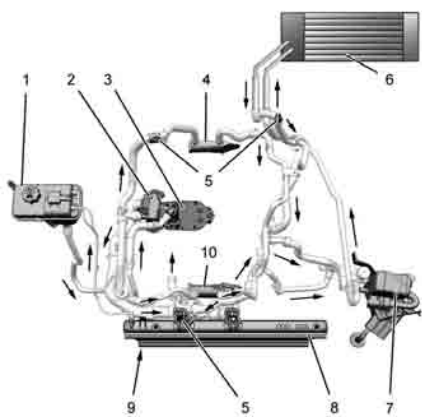
B1GP0CXP





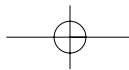
COOLING SYSTEM SPECIFICATIONS

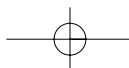
Engine: DT17BTED4



- (1) Header tank
- (2) Coolant outlet housing
- (3) Coolant/oil heat exchanger
- (4) Coolant/EGR heat exchanger (*rear cylinder bank*)
- (5) Bleed screw
- (6) Heater matrix
- (7) Additional heating unit
- (8) Engine cooling radiator
- (9) Engine cooling radiator drain tap
- (10) Coolant/EGR heat exchanger (*front cylinder bank*)

B1GP0D4P

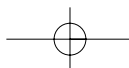


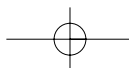


ENGINE

CHECKING THE OIL PRESSURE		
Engine	ES9A	DT17BTED4
Temperature (°C)	80°C	
Pressure (bars)	2	
Rpm	900	
Pressure (bars)	5	1 to 4
Rpm	3000	2500
Pressure (bars)		
Rpm		
2279-T.Bis		X
4103-T		X
(-).1503.K		X
4202-T	X	

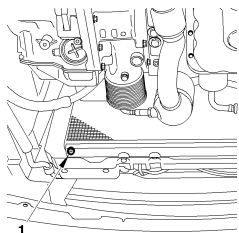
NOTE: Oil pressure should be checked with the engine cold, after checking the oil level.



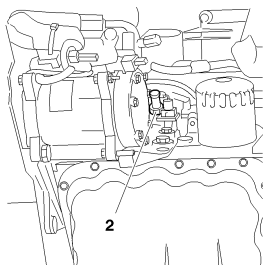


DRAINING, FILLING AND BLEEDING THE ENGINE COOLING CIRCUIT

Engine: ES9A



B1GP0BPC



B1BP2BNC

Tools.

- [1] Filling cylinder : 4520-T
- [2] Adaptor for filling cylinder : 4222-T
- [3] Control rod for filling cylinder : 4370-T

IMPERATIVE: Respect the safety and cleanliness requirements.

The draining and refilling operations can be carried out using coolant fluid replacement equipment. It is essential to follow the instructions as stated for that equipment.

Draining.

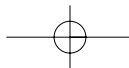
Remove the header tank cap with caution (*engine cold*).

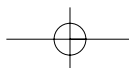
Open the bleed screw of the radiator.

Slacken the drain screw (1) of the radiator

Open the plug (2) to drain the first bank of cylinders.

NOTE: The plug (2) is provided with a drain tube.

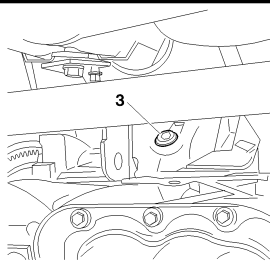




ENGINE

DRAINING, FILLING AND BLEEDING THE ENGINE COOLING CIRCUIT

Engine: ES9A



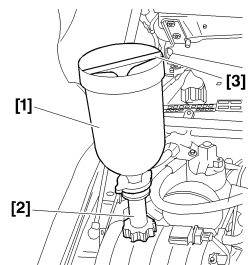
B1GP08TC

Open the plug **(3)** to drain the second bank of cylinders.
Remove the drain plugs **(2)** and **(3)**.

Filling and bleeding the circuit.

Prior to any filling, rinse the cooling with fresh water.

WARNING: Check the sealing of the cooling circuit.



B1GP0BQC

Open the bleed screws of the following components:

- Heater matrix outlet.
- Coolant outlet housing.
- Radiator.

Close the drain screw **(1)** of the radiator.

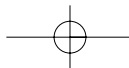
Refit the plugs **(2)** and **(3)** with a new seal ; tighten to

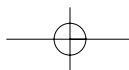
3 ± 0,3 m.daN.

Fit the filling cylinder assembly **[1]**, **[3]**, and **[2]** on the filler aperture.

Fill the cooling circuit.

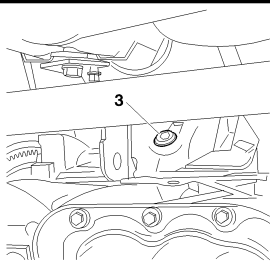
NOTE: Keep the filling cylinder full to the maximum.





DRAINING, FILLING AND BLEEDING THE ENGINE COOLING CIRCUIT

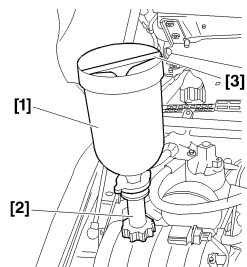
Engine: ES9A



B1GP08TC

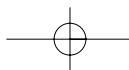
Reclose the bleed screw when the fluid flows out clear and without air bubbles.
 Start the engine.
 Maintain an engine speed of **1500/2500 rpm**, up to the first cooling cycle (*starting and stopping of the cooling fan*).
 Block the filling cylinder [1] using the control rod [3].
 Remove the filling cylinder assembly [1], [3] and [2].
 Refit the header tank cap.
 Stop the engine and wait for it to cool down.

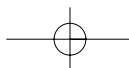
Checks.



B1GP0BQC

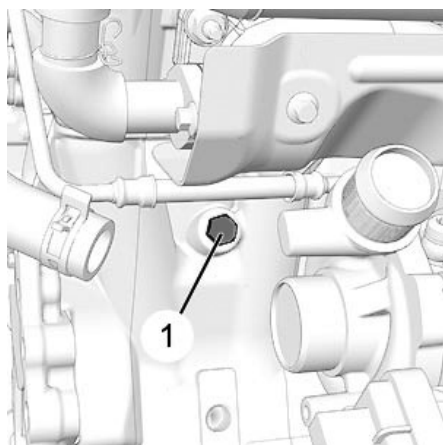
Start the engine.
 Maintain an engine speed of **1500/2500 rpm**, up to the first cooling cycle (*starting and stopping of the cooling fan*).
 Stop the engine and wait for it to cool down.
 Remove the header tank cap with caution.
 If necessary, top up the level to the maximum mark.
 Refit the header tank cap.





DRAINING, FILLING AND BLEEDING THE ENGINE COOLING CIRCUIT

Engine: DT17BTED4



B1GP0CNC

Tools.

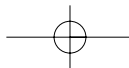
- | | |
|--------------------------------------|----------|
| [1] Filling cylinder | : 4520-T |
| [2] Adaptor for filling cylinder | : 4222-T |
| [3] Control rod for filling cylinder | : 4370-T |

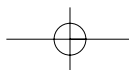
IMPERATIVE: Respect the safety and cleanliness requirements.

The draining and refilling operations can be carried out using coolant fluid replacement equipment. It is essential to follow the instructions as stated for that equipment.

Draining.

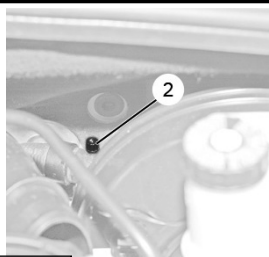
- Remove the header tank cap.
- Open the bleed screw of the engine cooling radiator, located under the radiator on the LH side.
- Remove the drain screw **(1)**.
- Drain the cylinder block.





DRAINING, FILLING AND BLEEDING THE ENGINE COOLING CIRCUIT

Engine: DT17BTED4



B1GP0CPC

Filling and bleeding.

Open the bleed screw (2) on the heater matrix hose.
Open the bleed screw (3) of the engine cooling radiator.
Refit the drain screw (1) with a new seal.

Tighten the screw (1) : $3 \pm 0,1$.

Fit the filling cylinder [1], control rod [3] and adaptor [2] assembly on the filler aperture.

Fill the engine cooling circuit.

NOTE: Keep the filling cylinder full to the maximum.

Start the engine.

Close each bleed screw as soon as the liquid starts to flow out without air bubbles.

Block the filling cylinder [1], using the control rod [3].

Remove the filling cylinder [1], control rod [3] and adaptor [2] assembly.

Refit the header tank cap.

Stop the engine.

Checks.

Start the engine.

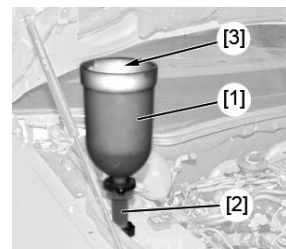
Maintain an engine speed of **1600 rpm**, up to the second cooling cycle (*starting and stopping of the cooling fan*).

Stop the engine and wait for it to cool down.

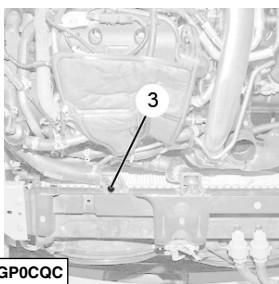
Remove the header tank cap.

If necessary, top up the level of the header tank to the maximum mark.

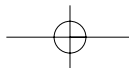
Refit the header tank cap.

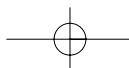


B1GP0CRC



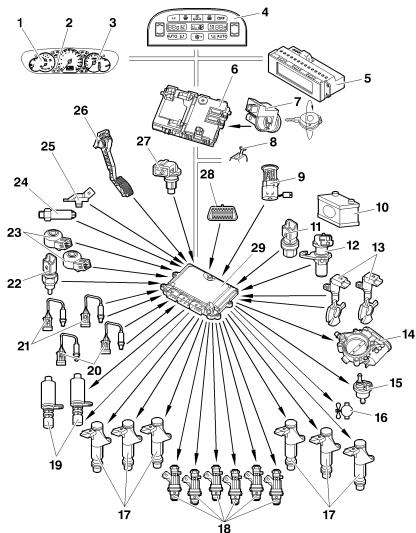
B1GP0CQC





BOSCH ME 7.4.7 INJECTION SYSTEM

Engine: ES9A

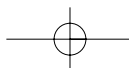


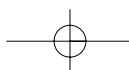
B1HP1Z9P

Synopsis.

- (1) Fuel consumption information
- (2) Ignition injection test warning lamp
- (3) Rev counter
- (4) Air conditioning ECU
- (5) Multifunction screen
- (6) Built-in systems interface
- (7) Transponder
- (8) Automatic gearbox ECU
- (9) Fuel pump, filter and pressure regulator (*except grande exportation*)
- (10) Battery
- (11) Pressostat
- (12) Engine speed sensor
- (13) Camshaft position sensor (x2)
- (14) Motorised butterfly housing

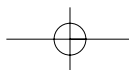
INJECTION

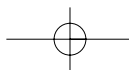




INJECTION

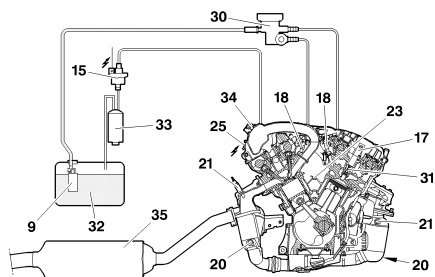
BOSCH ME 7.4.7 INJECTION SYSTEM	
Engine: ES9A	
	<p>Synopsis.</p> <ul style="list-style-type: none"> (15) Canister purge electrovalve (16) Cooling fan (17) Pencil type ignition coil (x6) (18) Petrol injector (x6) (19) Variable timing electrovalve (x2) (20) Downstream oxygen sensor (x2) (21) Upstream oxygen sensor (x2) (22) Engine coolant temperature sensor (23) Knock sensor (x2) (24) Power steering pressure sensor (25) Integrated pressure sensor (26) Accelerator pedal position sensor (27) Inlet air temperature sensor (28) Diagnostic connector (29) Ignition injection ECU
B1HP1Z9P	





BOSCH ME 7.4.7 INJECTION SYSTEM

Engine: ES9A



Synopsis.

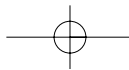
- (30) Pulse damper
- (31) Sparking plugs (x6)
- (32) Fuel tank
- (33) Canister reservoir
- (34) Discharge valve
- (35) Exhaust line

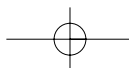
Specifications.

Cylindrical capacity (cc)	: 2946.
Idling speed (rpm) non-adjustable	: 700 ± 50.
Cut-off at maximum engine speed (rpm)	: 6520.

B1HP1ZAD

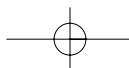
INJECTION

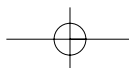




INJECTION

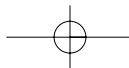
BOSCH ME 7.4.7 INJECTION SYSTEM				
Engine: ES9A				
Fuel circuit				
Component	Location	Supplier	Reference	Observations
Recommended fuel				Super unleaded 95 RON or 98 RON
Fuel tank	32			Capacity 65 litres Composition polyethylene
Fuel pump, filter and pressure regulator	9	MARWALL		Electric pump submerged in the tank Voltage, 12 V Pressure, 3 bars Flow, 115 à 120 l/h
Canister reservoir	33	PURFLUX	PPGF 30	Regulation pressure, 3,5 bars Installation under the front LH wing
Canister purge electrovalve	15	BOSCH	0 280 142 317	Electrovalve normally closed 2-way brown connector Installation, under the front LH wing Resistance, 24 ohms
Petrol injectors	18	BOSCH	EV 14	Group of injectors, 1-2-3, 2-way brown connector
			0 280 155 613	Group of injectors, 4-5-6, 2-way black connector
				Marking, yellow in colour Injectors, 4 jets Resistance, 16 ohms
Pulse damper	30		0 280 161 500	Installation, on the timing cover Equipped with a SCHRAEDER valve

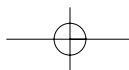




BOSCH ME 7.4.7 INJECTION SYSTEM				
Engine: ES9A				
Air circuit				
Component	Location	Supplier	Reference	Observations
Integrated pressure sensor	25	BOSCH	DS-S2 0	3-way grey connector
			261 260 140	Integrated in the inlet manifold
Motorised butterfly housing	14		DVE5	6-way black connector
			0 280 750 041	Fixing, on the inlet manifold
Accelerator pedal position sensor	26		14 43 33	6-way black connector
				Supply, 5 volts
			Fixing, on the accelerator	
Electrical circuit				
Ignition injection ECU	29	BOSCH	ME 7.4.7.	128-way connector
			0 261 B00 736	Sequential injection
				"Flash" type Eprom (<i>reprogrammable eprom</i>) Installation, in the electronic ECU compartment
Power steering pressure sensor	24	BITRON	280 911	2-way blue connector
				Opening of contact at 20 bars
				For ECU information (<i>steering on full lock</i>)
				Marking mauve ring seal
			Fixing : on the power steering high pressure pump outlet pipe	

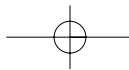
INJECTION

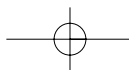




INJECTION

BOSCH ME 7.4.7 INJECTION SYSTEM				
Engine: ES9A				
Electrical circuit				
Component	Location	Supplier	Reference	Observations
Inlet air temperature sensor	27	JAEGER	402 084 01	2-way grey connector
				Fixing: on the air filter inlet duct
Camshaft position sensor	13	ELECTRICFIL	14 43 2514 43 25	3-way grey connector
				Fixing: on the inlet camshaft bearing cap cover
Knock sensor	23	BOSCH	0 261 231 10	3-way green connector
				Fixing: on the central part of the «V» of the engine block
				Essential to respect tightening torque: 2 ± 0,5 m.daN
Engine coolant temperature sensor	22	DAV	402 243 03	2-way green connector
		ELECTRICFIL	14 43 32	Fixing: on the coolant outlet housing
			14 43 28	Tightening torque: Tighten to: 2 ± 0,2 m.daN
Engine speed sensor	12	ELECTRICFIL	14 43 28	2-way black connector Fixing: on the gearbox clutch housing





BOSCH ME 7.4.7 INJECTION SYSTEM

Engine: ES9A

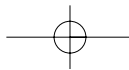
Ignition circuit

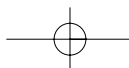
Component	Location	Supplier	Reference	Observations
Sparking plugs	31	BOSCH	FGR8MQPE	Electrode gap: 1 mm
				Tightening torque
		NGK	PFR6E 10	Tighten to: 1 ± 0,1 m.daN
				Angular tightening: 90°
Pencil type ignition coils	17	SAGEM	BAC 1 2526140	4-way black connector
				Twin-static type ignition

INJECTION

Exhaust circuit

Upstream oxygen sensor	21	BOSCH	258 040 232	4-way green connector
				Front fixing: on the exhaust manifold
				Rear fixing: on the pre-catalyser
Downstream oxygen sensor	20		258 006 185	4-way blue connector
				Front fixing: on the pre-catalyser
				Rear fixing: on the pre-catalyser
		Tightening torque		
				Tighten to: 4,7 ± 0,1 m.daN

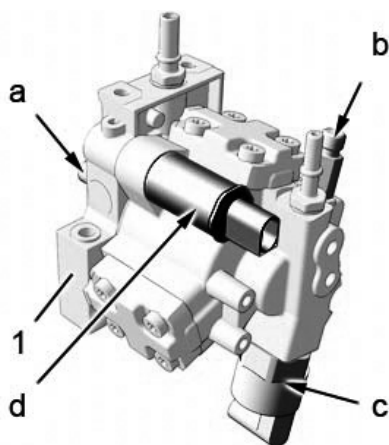




PROHIBITED OPERATIONS: SIEMENS HDI DIRECT INJECTION SYSTEM

Engine: DT17BTED4

INJECTION



B1HP23GC

Cleaning.

The use of high pressure cleaners is prohibited.
Do not use compressed air.

Fuel supply circuit.

Required fuel: **Diesel**.

WARNING: Do not use other fuels.

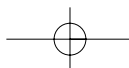
Electrical circuit.

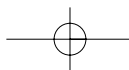
Swapping injection ECUs between two vehicles will render it impossible to start either vehicle.
It is **forbidden** to supply a diesel injector with **12 volts**.
Do not disconnect a diesel injector when the engine is running.

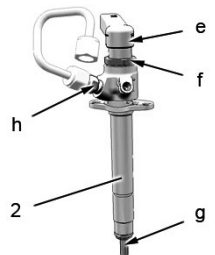
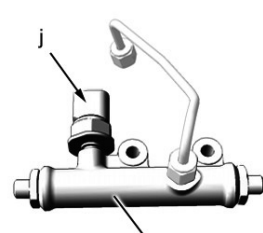
Fuel high pressure pump.

Do not separate the fuel high pressure pump (1) from the following components:

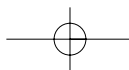
- The sealing ring (a) (no replacement parts).
- The high pressure outlet connector (b) (will cause a malfunction).
- The fuel pressure regulator (c) (no replacement parts).
- The flow electrovalve (d) (no replacement parts).

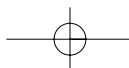




PROHIBITED OPERATIONS: SIEMENS HDI DIRECT INJECTION SYSTEM	
Engine: DT17BTED4	
 <p>B1HP23HC</p>	<p>Diesel injectors.</p> <p>WARNING: Diesel and ultrasonic cleaners are prohibited.</p> <p>Do not separate the diesel injector carrier (2) from the following components:</p> <ul style="list-style-type: none"> - Diesel injector (g) (<i>no replacement parts</i>). - The fuel flow actuator (e) (<i>destruction</i>). <p>Do not move the nut (f) (<i>will cause a malfunction</i>).</p> <p>Do not separate the union (h) from a diesel injector.</p> <p>It is forbidden to clean the carbon deposits from the diesel injector nozzle.</p>
 <p>B1HP23JC</p>	<p>Central fuel high pressure common injection rail.</p> <p>Do not separate the fuel high pressure sensor (j) from the central fuel high pressure injection rail (3).</p>

INJECTION





SAFETY REQUIREMENTS: HDi DIRECT INJECTION SYSTEM

Safety requirements.

Preamble.

All interventions on the injection system must be carried out to conform with the following requirements and regulations:

- Competent health authorities.
- Accident prevention.
- Environmental protection.

WARNING: Repairs must be carried out by specialised personnel informed of the safety requirements and of the precautions to be taken.

Safety requirements.

IMPERATIVE: Take into account the very high pressures in the high pressure fuel circuit (1600 bars), and respect the requirements below:

- No smoking in proximity to the high pressure circuit when work is being carried out.
 - Avoid working close to flame or sparks.
- Engine running:
- Do not work on the high pressure fuel circuit.
 - Always stay clear of the trajectory of any possible jet of fuel, which could cause serious injuries.
 - Do not place your hand close to any leak in the high pressure fuel circuit.

After the engine has stopped, wait **30 seconds** before any intervention.

NOTE: This waiting time is necessary in order to allow the high pressure fuel circuit to return to atmospheric pressure.

Cleanliness requirements.

Preliminary operations.

IMPERATIVE: The technician should wear clean overall.

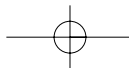
Before working on the injection system, it may be necessary to clean the apertures of the following sensitive componen (*refer to corresponding procedures*):

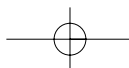
- Fuel filter.
- Fuel high pressure pump.
- Fuel high pressure common injection rail.
- Fuel high pressure pipes
- Diesel injector carriers.

IMPERATIVE: After dismantling, immediately block the apertures of sensitive components with plugs, to avoid the entry of impurities.

Work area:

- The work area must be clean and free of clutter.
- Components being worked on must be protected from dust.





CHECKS: LOW PRESSURE FUEL SUPPLY CIRCUIT

Engine: DT17BTED4

Tools.

- [1] Ø 10 mm low pressure connector : 4215-T
- [2] Ø 8 mm low pressure connector : 4218-T
- [3] Pressure gauge for testing boost pressure : 4073-T Kit 4073-T
- [4] Extension : 4251-T

Checks.

IMPERATIVE : Respect the safety and cleanliness requirements specific to high pressure diesel injection (HDi) engines.

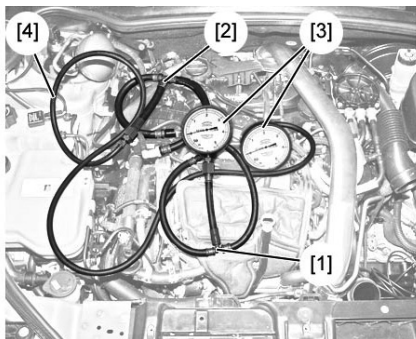
Connect the tool [1] between the booster pump and the fuel filter (*white mark on the fuel supply pipe*).

Connect the tool [2] downstream of the diesel injectors, between the high pressure fuel pump and the fuel filter green mark on the fuel return pipe.

Connect the tool [3] on tool [1] or on tool [2].

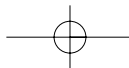
WARNING: Any check of pressure downstream of the fuel filter is prohibited.

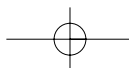
NOTE: To check the pressures while the vehicle is being driven, insert the extension [4] between tool [3] and tools [1] or [2].



B1BP3CRD

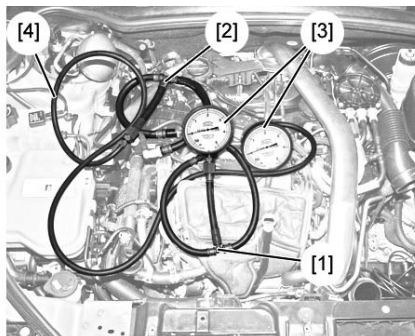
INJECTION





CHECKS: LOW PRESSURE FUEL SUPPLY CIRCUIT

Engine: DT17BTED4



Checks on pressure: static.

Switch on the ignition.

For **3 seconds** (*normal functioning*):

- Fuel supply pressure shown by the pressure gauge [3] = 1.1 ± 0.4 bar.
- Fuel return pressure shown by the pressure gauge [3] = 2 ± 0.5 bar.

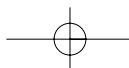
Abnormal functioning:

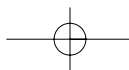
Fuel supply pressure	Fuel return pressure	Checks
Between 2 and 3 bar	0.8 ± 0.4 bar	Check the condition of the diesel fuel filter
More than 3 bar	More than 0.8 bar	Check the fuel return circuit (<i>pipe pinched</i>)
Between 0.3 and 0.5 bar	Less than 0.8 bar	Check the fuel supply circuit : Booster pump (<i>low pressure</i>), piping

Impossible to start the engine:

- Fuel supply pressure less than 0.3 bar.

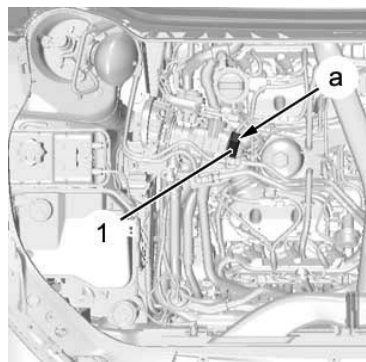
B1BP3CRD





CHECKS: TURBO PRESSURE

Engine: DT17BTED4



B1BP3CZC

Tools.

- | | |
|---|---------------|
| [1] Pressure gauge for checking the pressure | : 7073-T.A |
| [2] Tool for checking the inlet air pressure/vacuum | : (-).0171.G3 |
| [3] LEXIA diagnostic tool | : 4171-T |
| [4] PROXIA diagnostic tool | : 4165-T |

Checks.

IMPERATIVE: Respect the safety and cleanliness specific to high pressure diesel injection engines.

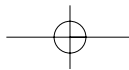
Preliminary operations.

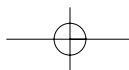
WARNING: Prior to any intervention, check the connections of the turbocharger pressure regulation actuators.

NOTE: If an air flow fault is memorised by the diagnostic tool, refer to the chapter "Air flow from the turbochargers".

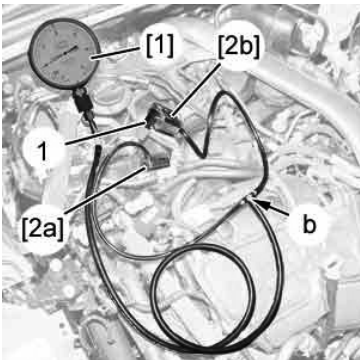
Turbo pressure sensor.

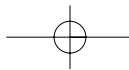
- Remove the engine cover.
- Disconnect the connector "a".
- Remove the turbo pressure sensor (1).

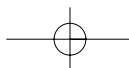




INJECTION

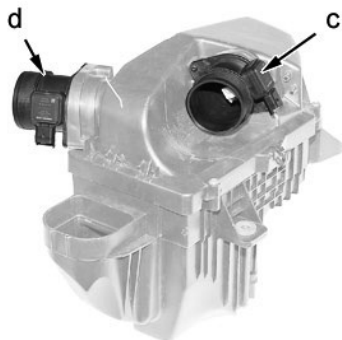
CHECKS: TURBO PRESSURE	
Engine: DT17BTED4	
 <p style="font-size: small; margin-top: 10px;">B1BP3D0C</p>	<p>Connect:</p> <ul style="list-style-type: none"> - The tool [2a] in place of the turbo pressure sensor (1). - The turbo pressure sensor (1) on the tool [2b]. - Tool [1] on tool [2], at "b". <p>Connect the diagnostic tool [3] or [4] to the vehicle's diagnostic socket:</p> <ul style="list-style-type: none"> - Put the diagnostic tool [3] or [4] in parameter measures. <p>Start the engine. Accelerate to 2500 rpm.</p> <p>Compare the pressure values read on the diagnostic tool and on the pressure gauge [1].</p> <p>NOTE: If there is a significant difference in pressure, replace the turbo pressure sensor.</p> <p>Air/air exchanger. Check the condition of the following components:</p> <ul style="list-style-type: none"> - Air inlet pipe. - Airoutlet pipe. - Air /air exchanger. <p>Air flow from the turbochargers.</p> <p>NOTE: If an air flow fault is memorised by the diagnostic tool, check the air flow from the turbocharger incriminated.</p> <p>Connect the diagnostic tool [3] or [4] to the vehicle's diagnostic socket:</p> <ul style="list-style-type: none"> - Put the diagnostic tool [3] or [4] in parameter measures. <p>Start the engine. Accelerate to 2500 rpm.</p> <p>Compare the air flows (<i>mg/stroke</i>) from the two turbochargers.</p>





CHECKS: TURBO PRESSURE

Engine: DT17BTED4



B1HP24TC

Significant difference in pressure between the two turbochargers:

- Stop the engine.
- Remove the air filter with the two flowmeters.
- Mark the flowmeters "d" and "c".
- Remove both flowmeters.

Refit:

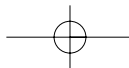
- Flowmeter "d" in place of flowmeter "c".
- Flowmeter "c" in place of flowmeter "d".

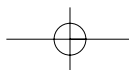
Start the engine.

Accelerate to **2500 rpm**.

Compare the air flows (**mg/stroke**) from the two turbochargers:

- If the difference in air flow has changed turbochargers, replace the flowmeter that is faulty.
- If the difference in air flow is coming from the same turbocharger, check the condition of the air inlet and outlet pipes of this turbocharger: replace or repair the parts that are faulty.
- If no anomaly is detected on the air inlet and outlet pipes of the turbocharger: replace the turbocharger.

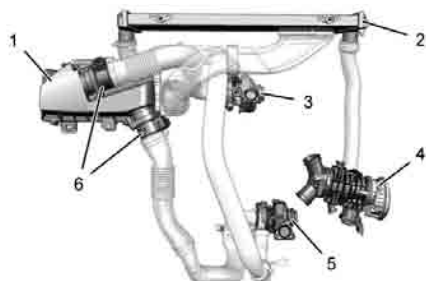




CHECKING THE AIR SUPPLY CIRCUIT SPECIFICATIONS

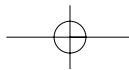
Engine: DT17BTED4

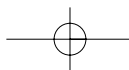
INJECTION



- (1) Air filter: **MECAPLAST**
- (2) Air/air heat exchanger: **BEHR**
- (3) Front turbocharger: **GARETT**
- (4) Air butterfly housing: **MAN HUMEL**
- (5) Rear turbocharger: **GARETT**
- (6) Flowmeters: **SIEMENS VDO**

B1HP26UD





CHECKING THE AIR SUPPLY CIRCUIT

Engine: DT17BTED4

Tool.

[1] Manual pressure-vacuum pump : FACOM DA 16

Checks.

IMPERATIVE: Respect the safety and cleanliness specific to high pressure diesel injection engines.

Checking the vacuum source (*vacuum pump*).

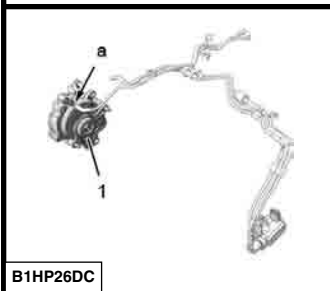
Connect the tool [1] on the take-off "a" of the vacuum pump (1).
Start the engine.
The value should be **0,85 ± 0,2 bar**.

"Swirl" control electrovalve.

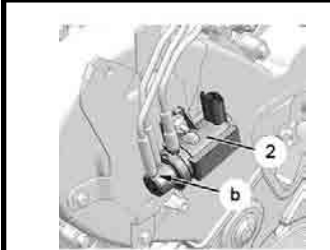
Connect the tool [1] on the vacuum supply "b" of the electrovalve (2).
Start the engine.
The value should be **0,85 ± 0,2 bar**.

"Swirl" control diaphragm.

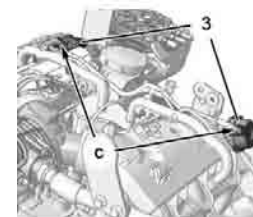
Connect the tool [1] on the "Swirl" control diaphragms (3) at "c".
Apply a vacuum of approx. **0,7 ± 0,2 bar**, the "Swirl" butterfly should be fully open.



B1HP26DC

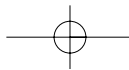


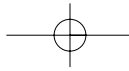
B1HP26EC



B1HP26FC

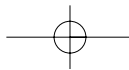
INJECTION

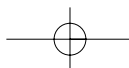




IGNITION

SPARKING PLUGS							
Vehicles		Engine	BOSCH	Electrode gap	NGK	Electrode gap	Tightening torque (m.daN)
C6	3.0i 24S	ES9A	FGR8MQPE	1 mm	PFR6E10	1 mm	Tightening : 1 ± 01 Angular tightening : 90° ± 5°





SPEEDOMETER

An E.E.C. **decree of 25 June 1976**, regulates the speed displayed by the speedometer in relation to the actual speed travelled.

This decree stipulates:

- The speed indicated by a speedometer must never be lower than the actual vehicle speed.
- Between the speed displayed «SD» and the speed travelled «ST», there must always be the following relationship:

$$ST < SD < 1.10 ST + 4 \text{ Kph}$$

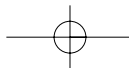
Example: For an actual speed of **100 Kph** the speed displayed by the speedometer may be between **100** and **114 Kph**.
The speed indicated by the speedometer may be influenced by:

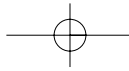
- The speedometer.
- The tyres fitted to the vehicle.
- The final drive ratio.
- The speedometer drive ratio.

Any of these components can be checked without removing them from the vehicle (*see information note N° 78-85 TT of 19 October 1978*).

NOTE: Before replacing the speedometer, check the conformity of the following points:

- The tyres fitted to the vehicle.
- The gearbox final drive ratio.
- The speedometer drive ratio.

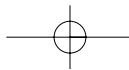


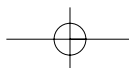


AM6 AUTOMATIC GEARBOX SPECIFICATIONS

Vehicle	Engine	Gearbox type	Sequence	Torque ratio	Drive ratio
C6	ES9A	AM6	20 GH 07	15 x 53	49 X 52
	DT17BTED4		20 GG 07		54 X 47

CLUTCH
GEARBOX
TRANSMISSION



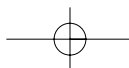


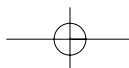
PROCEDURE PRIOR TO OPERATIONS: AM6 AUTOMATIC GEARBOX

Engines: ES9A - DT17BTED4

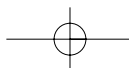
<p>If a gearbox malfunction occurs, there are two possible configurations depending on the seriousness of the fault:</p> <ul style="list-style-type: none"> - Gearbox in back-up mode with a replacement programme of <i>(the fault values are taken in substitution)</i>. - Gearbox in back-up mode with an emergency programme <i>(3rd hydraulic)</i>. <p>WARNING: In the emergency programme, an impact is felt when changing P/R or N/R.</p> <p>Reception of the customer. Discuss with the customer, to find out all the malfunction symptoms.</p> <p>Oil quality. If the gearbox has suffered a serious fault resulting in a malfunction or the destruction of a clutch, the oil will overheat and become contaminated with impurities: the oil is said to be «burnt». This is characterised by a black colour and the presence of an unpleasant smell.</p> <p>ESSENTIAL: The gearbox must be replaced.</p>	<p>Oil level.</p> <p>Preliminary conditions:</p> <ul style="list-style-type: none"> - Vehicle horizontal, parking brake off. - Check that the gearbox is not in back-up mode <i>(using a diagnostic tool)</i>. - The oil temperature should be 60°C (+8, -2) <i>(using a diagnostic tool)</i>. - Press on the brake pedal, change through all the gears. - Place the gear lever in position P. <p>With the engine running at idle, without power consumers <i>(aircon, heating, etc.)</i>:</p> <ul style="list-style-type: none"> - Remove the oil level plug. <p>The oil should flow out, then drip-drip. Refit the oil level plug <i>(the oil level is correct)</i>. The oil does not flow out through the oil level plug <i>(see operation: drain fill - bleed the gearbox)</i>.</p>
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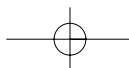
**CLUTCH
GEARBOX
TRANSMISSION**





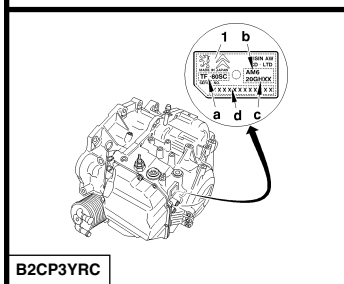
PRECAUTIONS TO BE TAKEN : AM6 AUTOMATIC GEARBOX	
Engines: ES9A - DT17BTED4	
Precautions to be taken	
<p>Towing. The front of the vehicle must be raised in order to be towed. If the front of the vehicle cannot be raised.</p> <p>IMPERATIVE:</p> <ul style="list-style-type: none"> - Put gear lever in position «N». - Do not add any oil. - Do not exceed 70 km/h (45 mph) over a distance of 100 km (60 miles) maximum. <p>Driving. Never drive with the ignition switched off.</p> <p>NOTE: The automatic gearbox is only lubricated when the engine is running.</p> <p>Repairs on electrical components. Do not disconnect:</p> <ul style="list-style-type: none"> - The battery when the engine is running. - The ECU when the ignition is switched on. <p>Before reconnecting a switch, check:</p> <ul style="list-style-type: none"> - The condition of the various contacts (<i>for deformation, corrosion etc.</i>) - The presence and condition of the mechanical locking. 	<p>When performing electrical checks:</p> <ul style="list-style-type: none"> - The battery should be correctly charged. - Never use a voltage source higher than 16V. - Never use a test lamp. <p>Repairs on mechanical components. Never place the gearbox on the ground without protection. Do not use the unions on the gearbox as handles for moving the gearbox. It is imperative that the converter retaining peg should be in place when removing the gearbox. It is imperative to use the centring pegs to couple the gearbox on the engine. Remove the converter retaining peg before coupling the gearbox on the engine.</p>





AM6 AUTOMATIC GEARBOX: GENERAL SPECIFICATIONS

Engines: ES9A - DT17BTED4



B2CP3YRC

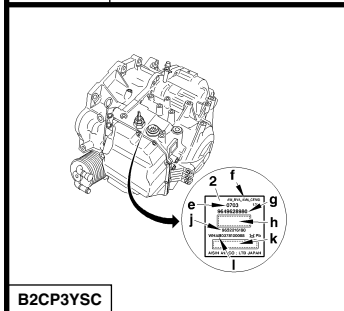
Identification.

(1) identification plate (*riveted on the casing*)

- "a" Type of automatic gearbox (AISIN)
- "b" Type of automatic gearbox (PSA)
- "c" Component marking
- "d" Serial no.

(2) identification label (*affixed on the ECU*)

- "e" Date of manufacture
- "f" Homologation code (PSA)
- "g" ECU no. (PSA)
- "h" Bar code (PSA)
- "j" Gearbox no. (PSA)
- "k" Bar code (AISIN)
- "l" Serial no.



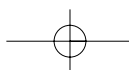
B2CP3YSC

Specifications

Weight : 93 kg (*approx.*).
Torque capacity : 33 m.daN.

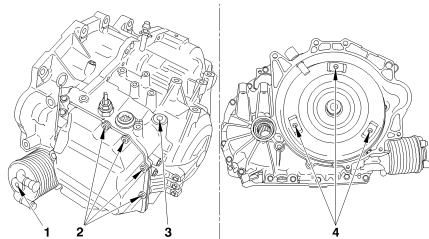
CLUTCH
GEARBOX
TRANSMISSION



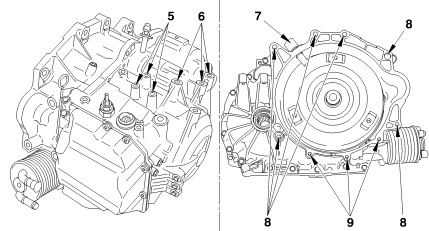


AM6 GEARBOX: TIGHTENING TORQUES

Engines: ES9A - DT17BTED4



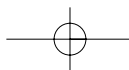
B2CP42WD

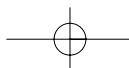


B2CP42XD

1	Automatic gearbox heat exchanger	4,2 ± 0,4
2	Hydraulic valve block casing	1,5 ± 0,2
3	Filler plug	4 ± 0,4
4	Torque converter screw [(ES9 3 screw) (DT17 6 screw)]	
	Pre-tightening	2 ± 0,2
	Slackening	100°
	Tightening	6 ± 0,6
5	Sleeve stop	3,5 ± 0,3
6	Gearbox support	5,5 ± 0,5
7	Engine speed sensor (ES9J4)	0,8 ± 0,1
8	Fixing of gearbox on cylinder block	6 ± 0,6
9	Closing panel fixing	2 ± 0,2

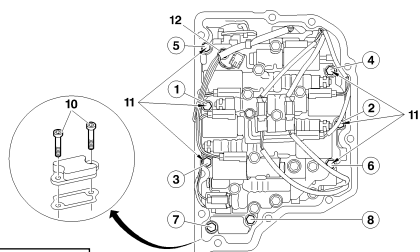
CLUTCH
GEARBOX
TRANSMISSION



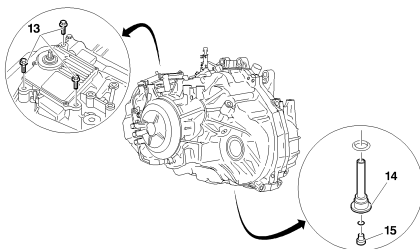


AM6 GEARBOX: TIGHTENING TORQUES

Engines: ES9A - DT17BTED4



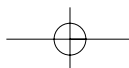
B2CP42YD

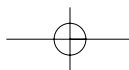


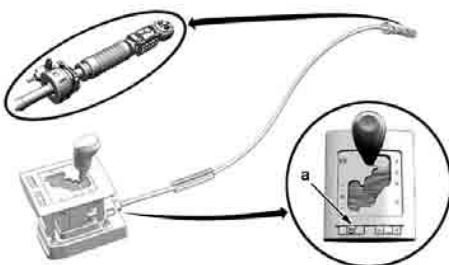
B2CP42ZD

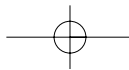
12	Oil induction cover	1 ± 0,1
11	Hydraulic valve block <i>(in the order indicated)</i>	1 ± 0,1
12	Oil temperature sensor tightening plate	1 ± 0,1
13	ECU screws	2,5 ± 0,2
14	Oil drain and overflow plug	1 ± 0,1
15	Oil level plug	4,8 ± 0,5

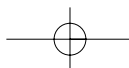
CLUTCH
GEARBOX
TRANSMISSION





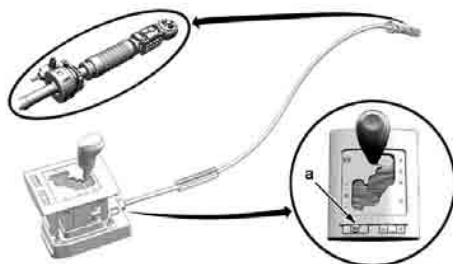
AM6 GEARBOX CONTROLS	
Engines: ES9A - DT17BTED4	
 <p style="font-size: small; margin-top: 10px;">B2CP430D</p>	<p>The gear selector is guided by the shape of the stepped gate and by a retaining spring which pulls it to the left hand side.</p> <p>The gear control has 5 positions:</p> <ul style="list-style-type: none"> - Position "P": parking (<i>locking and immobilisation of the vehicle</i>). - Position "R": reverse gear. - Position "N": neutral. - Position "D": drive (<i>for use of the 6 gears in autoadaptive automatic operation</i>). - Position "M": manual (<i>this position allows the driver to select his gears in one-touch mode by pulling "M -" or pushing "M +" on the gear selector</i>). <p>NOTE: Only positions "P" or "N" authorise starting of the engine.</p> <p>In position "M", the selection is enabled by an electronic sensor located close to the gear selector:</p> <ul style="list-style-type: none"> - The variation of flux necessary to affect the sensor cells is obtained by a magnet on the lever opposite the cells, provoking the changes of status. - The information on this is transmitted to the gearbox ECU.





AM6 GEARBOX CONTROLS

Engines: ES9A - DT17BTED4



NOTE: The vehicle is equipped with «**shift lock**». It is necessary to switch on the ignition and press the brake pedal to release the selection lever from position "P".

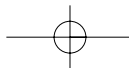
The switch "a" positioned on the gear control panel allows the driver to choose one of the following **3 driving programmes**:

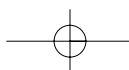
- **Normal programme:** The normal programme operates in the absence of any other selection being made (*auto-adaptive mode ; eco law*).
- **Sport programme:** The sport programme permits a more dynamic driving style, with greater performances and acceleration.
- **Snow programme:** The snow programme facilitates moving off and traction on ground that has limited adhesion.

To revert to the **normal** programme, you have to press a **second time** on the **sport** or **snow** switch.

B2CP430D

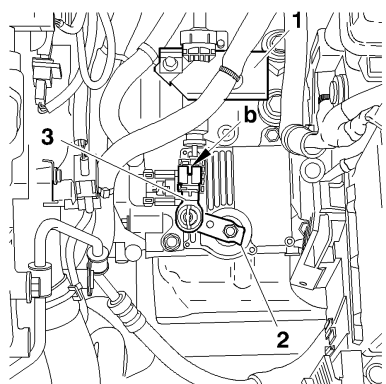
CLUTCH
GEARBOX
TRANSMISSION





AM6 GEARBOX CONTROLS

Engines: ES9A - DT17BTED4



Gearbox end.

The automatic gearbox is controlled by a cable.

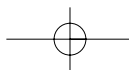
“b” Push-button in pushed-in position

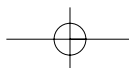
- (1) Sleeve stop
- (2) Control lever with ball-joint
- (3) Automatic adjustment

Automatic adjustment:

- Pull out button “b” to adjust the control.
- Push in button “b” to lock the adjustment of the control.

B2CP431C





AM6 GEARBOX CONTROLS: «SHIFT LOCK» FUNCTION

Engines: ES9A - DT17BTED4



C5FP0RBC



C5FP0RCD

IMPERATIVE: Respect the safety and cleanliness requirements, with reference to the brochure: «Recommendations-Precautions».

The «**shift lock**» is a system that locks the gear selection lever in position «**P**».

Unlocking the «SHIFT LOCK» (normal operation).

Switch on the ignition.
Press the brake pedal and keep it pressed.
Move the gear selection lever out of position «**P**».

Unlocking the «SHIFT LOCK» (with an operating fault).

Should it be impossible to unlock the «**shift lock**» with the «**Normal operation**» method.

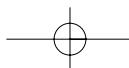
The fault may originate from one of the following components:

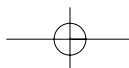
- «**Shift lock**».
- Gear lever position switch.
- Automatic gearbox ECU.
- Electrical harness.
- Battery voltage.

Operations to be performed.

Unclip the cover (1).
Unlock the «**shift lock**» by pressing at "a" with the aid of a screwdriver (*screwdriver with a minimum length of 150 mm*).
Move the gear selection lever out of position "P".

CLUTCH
GEARBOX
TRANSMISSION





PROCEDURE FOR INITIALISATION OF THE AUTOMATIC GEARBOX ECU

NOTE: For all these operations, follow the procedure in the diagnostic tool.

Replacement of the automatic gearbox without replacement of the ECU.

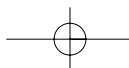
Carry out the following operations:

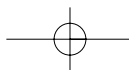
- Initialisation of the neutral position of the gear selection lever position sensor.
- Initialisation of the adaptation of the oil pressure regulators and electrovalves.
- Initialisation of the autoadaptatives.
- Resetting the oil usage counter to zero.

Replacement of the automatic gearbox ECU.

Carry out the following operations:

- Read the value of the gearbox oil usage counter from the old ECU.
- Write the value of the oil usage counter into the new ECU.
- Initialisation of the neutral position of the gear selection lever position sensor.
- Initialisation of the adaptation of the oil pressure regulators and electrovalves.
- Initialisation of the autoadaptatives.





PROCEDURE FOR INITIALISATION OF THE AUTOMATIC GEARBOX ECU

Replacement of the automatic gearbox and of the automatic gearbox ECU.

Carry out the following operations:

- Initialisation of the autoadaptatives.
- Resetting the oil usage counter to zero.
- Initialisation of the adaptation of the oil pressure regulators and electrovalves.

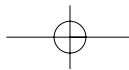
Draining of the automatic gearbox oil.

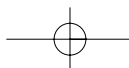
Carry out the following operations:

- Initialisation of the adaptation of the oil pressure regulators and electrovalves.
- Resetting the oil usage counter to zero.

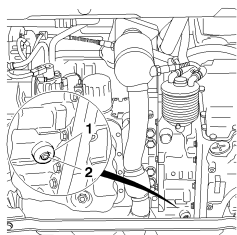
NOTE: If downloading the automatic gearbox ECU, there is no specific operation, follow the procedure in the diagnostic tool.

IMPERATIVE: For a certain time, having carried out an ECU initialisation procedure, one may obtain gear changing quality that is more or less good (*adaptation of the ECU parameters to the gearbox*). To improve the quality, it is necessary to perform a road test with frequent changing through the gears (*auto-adaptive laws*).

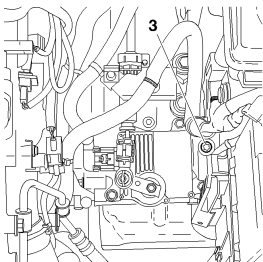




DRAINING, FILLING AND TOPPING UP THE AM6 AUTOMATIC GEARBOX



B1BP317C



B2CP3WZC

Tool.

[1] Filling cylinder

: (-).0340

Respect the safety and cleanliness requirements.

Draining.

IMPERATIVE: Draining of the gearbox must be done with the oil hot (*60°C minimum*), in order to ensure that the impurities in suspension in the oil are eliminated.

NOTE: Drainage is only partial, as the torque converter cannot be drained totally.
Raise the vehicle.

Remove:

- The oil level plug (2) by means of the **Torx** spanner.
- The drain plug (1) using a **hexagonal** spanner.

NOTE : Around **3 litres** of oil should flow out.

Filling.

Fit the drain plug (1) (*with a new seal*).

Tighten the plug (1) to

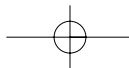
: 5 ± 1 mdaN.

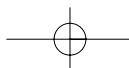
Remove:

- The air filter housing.
- The oil filler plug (3).

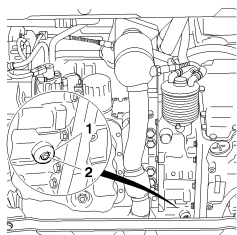
Use tool [1].

CLUTCH
GEARBOX
TRANSMISSION





DRAINING, FILLING AND TOPPING UP THE AM6 AUTOMATIC GEARBOX



B1BP317C

WARNING: Do not take account of the information mentioned on tool [1].

Oil capacity for a dry gearbox: **7 litres (approx.)**.

Type of oil: **JWS 3309 ESSO (red in colour)**.

Volume of oil remaining after draining: **4 litres (approx.)**.

Quantity of oil to be added: **3 litres (approx.)**.

Refit the filler plug **(3)** (with a new seal).

Tighten the plug **(3)** to **: 4 ± 1 mdaN**.

Initialise the oil usage counter (follow the procedure in the diagnostic tool).

Checking the oil level.

Prior conditions:

- Vehicle in a horizontal position.
- Check that the gearbox is not in back-up mode.

Remove the filler plug **(3)**.

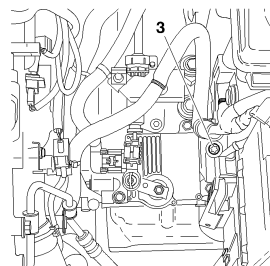
Add **0.5 litre** of extra oil into the gearbox.

Press the brake, change through all the gears.

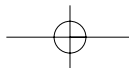
Gear lever in position "P".

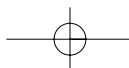
Engine running, at idle:

- Oil temperature **60°C (+ 8 ; - 2)** (parameter measures with a diagnostic tool).
- Remove the level plug **(2)**.

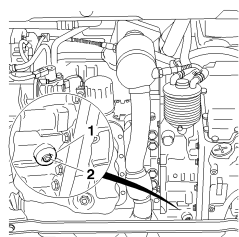


B2CP3WZC





DRAINING, FILLING AND TOPPING UP THE AM6 AUTOMATIC GEARBOX



B1BP317C

Thread of oil, then "drip-drip".

Refit the level plug (2).

Tighten the plug (2) to

: $0.8 \pm 0,1$ mdaN.

"drip-drip" or nothing.

Refit the level plug (2).

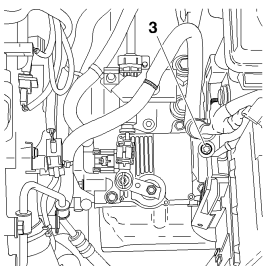
Stop the engine.

Add **0.5 litre** of extra oil into the gearbox.

Repeat the topping-up procedure.

NOTE: The level is correct when the thread of oil becomes "drip-drip".

CLUTCH
GEARBOX
TRANSMISSION



B2CP3WZC

Refit the level plug (2) *(with a new seal)*.

Tighten the plug (2) to

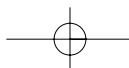
: $0.8 \pm 0,1$ mdaN.

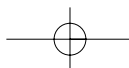
Refit the filler plug (3) *(with a new seal)*.

Tighten the plug (3) to

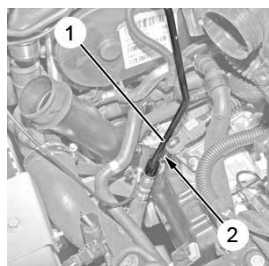
: 4 ± 1 mdaN.

A level of oil that is too high can have the following consequences: Abnormal overheating of the oil, leaks of oil causing a level which is too low resulting in destruction of the gearbox.





CHECKING THE OIL PRESSURE IN THE AM6 AUTOMATIC GEARBOX



B2CP45FC

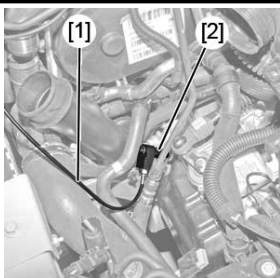
Tools.

- | | | |
|--------------------------------------|--------------|----------------|
| [1] Flexible pipe and pressure gauge | : 4601- TF1 | Toolkit 4601-T |
| [2] Flexible union | : (-).0336.X | Toolkit 8010-T |

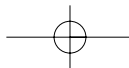
IMPERATIVE: Respect the safety and cleanliness requirements.

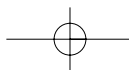
Preliminary operations.

- Remove the air filter housing.
- Move aside the pipe (1).
- Remove the screw (2).
- Screw in the tool [2] in place of the screw (2).

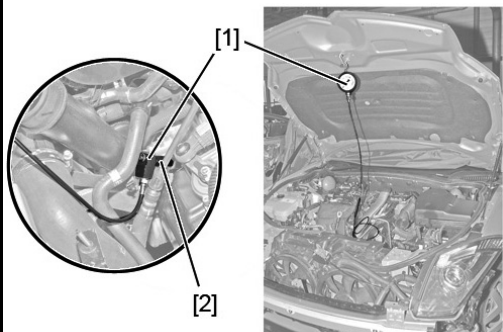


B2CP45GC





CHECKING THE OIL PRESSURE IN THE AM6 AUTOMATIC GEARBOX



B1BP3END

WARNING: Clean the flexible pipe of the tool [1] each time before use; the different automatic gearbox oils cannot be intermixed.

Fit the tool [1] on the tool [2].

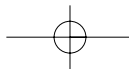
Perform the following operations:

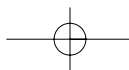
- Raise the vehicle, wheels hanging.
- Apply the parking brake.
- Start the engine.
- Check the oil pressure.

WARNING: Wait for the gearbox oil to reach a temperature between 58°C and 68°C. Check the level of oil in the gearbox (*see corresponding operation*).

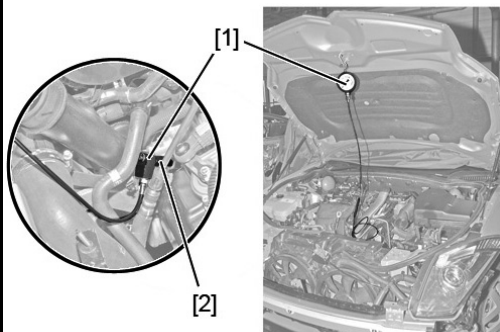
NOTE: Check the temperature of the oil using the diagnostic tool in parameter measures.

Gear lever position	: D.
Engine speed	: Idling.
Principal oil pressure	: 3.7 to 4.2 bars.





CHECKING THE OIL PRESSURE IN THE AM6 AUTOMATIC GEARBOX



B1BP3END

Checking the torque converter.

WARNING: This check has to be of short duration (*2 seconds*), as it causes a rapid rise in the temperature of the oil in the automatic gearbox.

Respect the following checking conditions:

- Engine at operating temperature.
- Gear lever in position **D**.
- Press on the brake pedal.
- Accelerate the engine to the maximum engine speed (*see below*).

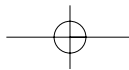
Gear lever position.	: D .
Maximum engine speed for ES9A	: 2400 ± 50 rpm .
Maximum engine speed for DT17	: 2600 ± 50 rpm .

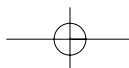
Diagnosis:

- If the maximum engine speed obtained is lower than the value indicated, the torque converter is the cause.
- If the maximum engine speed obtained is higher than the value indicated, the automatic gearbox is the cause (*slipping*).

Additional operations.

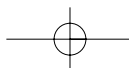
- Remove tools [1] and [2].
- Refit the screw (2), with a new seal.
- Reposition the pipe (1).
- Refit the air filter housing.

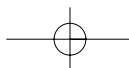




TRANSMISSION							
			Tightening torques (m.daN)		Gearbox oil seal mandrels		
Vehicle	Gearbox	Engines	Driveshaft bearing	Driveshaft nut	Right	Left	Tool kit
C6	AM6	ES9A - DT17BTED4	2 ± 0,2	34,5 ± 2	(-).0336.U	(-).0336.V	8010-T
					(-).0336.W (1)		
(1) Guide for fitting driveshaft seal.							
Tightening torques (m.daN) of the wheel bolts							
CITROËN		ES9AI DT17BTED4		Steel Alloy		9 ± 1	

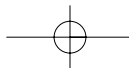
CLUTCH
GEARBOX
TRANSMISSION

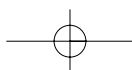




AXLES
SUSPENSION
STEERING

WHEEL AND TYRES				
		3.0i 24S		2,7 24V
Engine plate		XFV		UHZ
Tyre/circumference	S	225/55 R17 97W/2,071 m	245/45 R18 100W/2,065m	245/45 R18 100W/2,065m
Type		Michelin PRIMACY		
Wheel	T			
	A	7 J17-CH5-32	8 J18-CH5-33	8 J18-CH5-33
Name of rim		SATURNE	SAN MARIN 2	SAN MARIN 2
Normal operating pressure: front/rear		2,4/2,4	2,4/2,4	2,4/2,4
Pressure for maximum load : front/rear		2,6/2,6	2,4/2,4	2,6/2,6
Pressure: loaded, high speed: front/rear		2,4/2,4	2,4/2,4	2,6/2,6
Tyre	S	225/55 R17 97W		
Spare wheel	T	7 J17-5-32		
Normal operating pressure		2,6	2,4	2,6
Pressure for maximum load		2,6	2,4	2,6
Pressure: loaded, high speed				
<p>S = Standard fitting. T = Steel wheel. A = Alloy wheel. NOTE: The label indicating the recommended tyre pressures is affixed to the front LH door pillar.</p>				

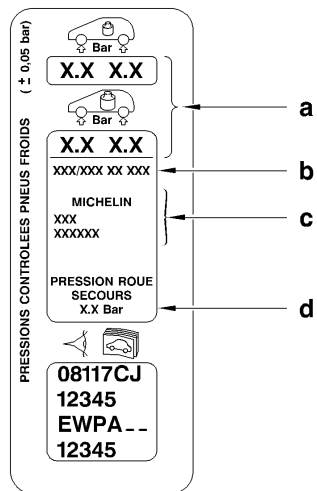




AXLES
SUSPENSION
STEERING

WHEEL AND TYRES

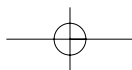
Identification of inflation pressures

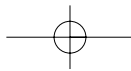


NOTE: The label indicating the recommended tyre pressures is affixed to the front LH door pillar.

- «a» Recommended tyre inflation pressures (*empty and under load*)
- «b» Tyre specifications
- «c» Type of tyres
- «d» Recommended inflation pressure for the spare wheel

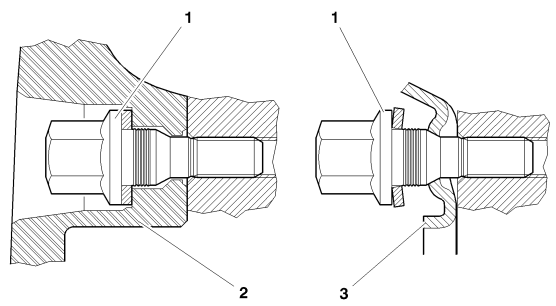
B2GP01FD





WHEEL AND TYRES

Identification of the wheel bolts



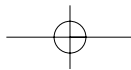
- (1) Wheel bolt (*all rim types*)
- (2) Light alloy wheel
- (3) Steel aluminium wheel

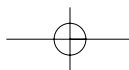
NOTE: If mixed fixing bolts are fitted on steel wheels, the shoulders of the bolts remain free.

Tightening torques for the wheel bolts.

9 ± 1 m.daN

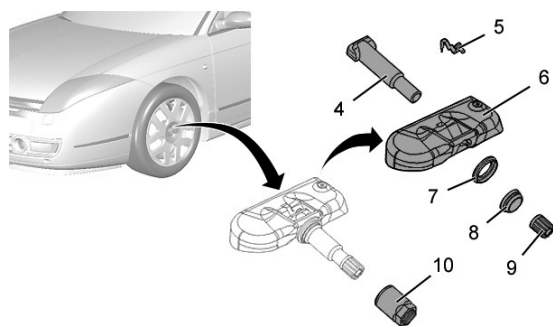
B2GP00JD





WHEEL AND TYRES

Deflation detection system



- | | |
|-------------------------|----------|
| (4) Valve | (8) Seal |
| (5) Antenna | (9) Cap |
| (6) HF transmitter unit | (10) Nut |
| (7) Washer | |

Composition.

A **SIEMENS HF** transmitter module (6) integral to each wheel in the place of the valve, each including a lithium battery.

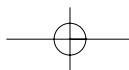
An **HF** receiver in the communication module under the dashboard.

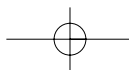
WARNING: Each time a tyre is replaced, it is necessary to replace the valve (4).

WARNING: Each time a wheel rim is replaced, it is necessary to replace the seal (8).

WARNING: Each time a transmitter module is changed, it is necessary to have the replacement recognised by the deflation detection tool ECU, using a diagnostic tool.

B2GP01ND





CHECKING AND ADJUSTING VEHICLE HEIGHT

Reference heights: REFERENCE = Ignition switched on

IMPERATIVE: Respect the safety and cleanliness requirements.

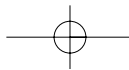
Tools.

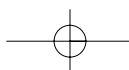
- | | |
|---|----------|
| [1] Gauge for measuring radius of wheels (<i>5 bolts</i>) | : 9801-T |
| [2] Gauge for height under bodyshell | : 2305-T |
| [3] LEXIA station | : 4171-T |
| [4] PROXIA station | : 4165-T |

Preliminary operations.

- Check the tyre pressures.
- Place the vehicle on a **4 column lift**.
- Switch on the ignition.
- Release the parking brake.
- Put the vehicle in the high position.
- Put the vehicle in the normal height position (*driving height*).

During: During the measuring, do not move the vehicle.



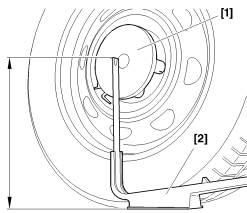
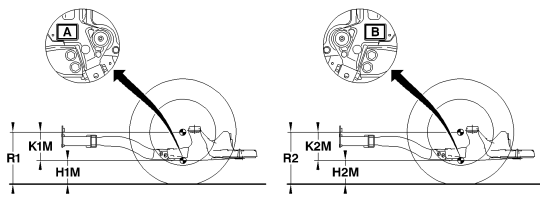
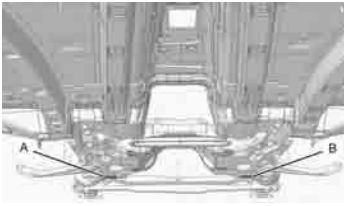


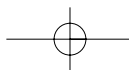
AXLES
SUSPENSION
STEERING

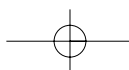
CHECKING AND ADJUSTING VEHICLE HEIGHT

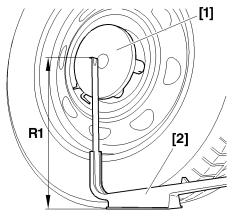
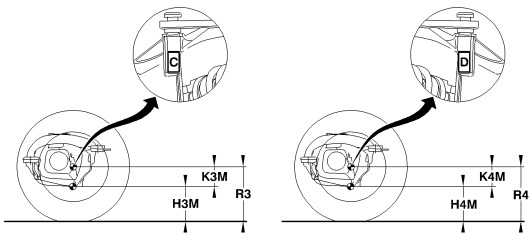
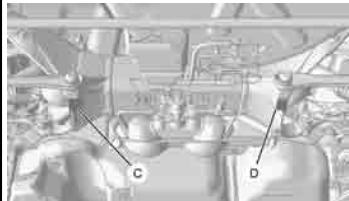
Warning: During measurement of reference heights: Do not switch off the ignition

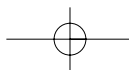
Reference heights: REFERENCE = Ignition switched on

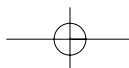
Measuring the front wheel radiuses	Measuring the front heights	
		
<p>B3CP0AQD</p>	<p>B3CP0ARD</p>	<p>B3CP0ASD</p>
<p>Place the tool [1] on the wheel fixing bolts. Measure the wheel radiuses using tool [2].</p>	<p>Measure, using tool [2].</p> <p>The front LH height H1M: Measure between the ground and zone A under the front subframe. The front RH height H2M: Measure between the ground and zone B under the front subframe.</p>	





CHECKING AND ADJUSTING VEHICLE HEIGHT		
Reference heights: REFERENCE = Ignition switched on		
Measuring the rear wheel radiuses	Measuring the rear heights	
 <p>B3CP06AC</p>	 <p>B3CP0ATD</p>	
<p>Place the tool [1] on the wheel fixing bolts. Measure the wheel radiuses using tool [2].</p>	<p>Measure, using tool [2].</p> <p>The rear LH height H3M: Measure between the ground and zone C under the rear axle crossmember. The rear RH height H4M: Measure between the ground and zone D under the rear axle crossmember.</p>	
		 <p>B3CP0AUD</p>





CHECKING AND ADJUSTING VEHICLE HEIGHT

Reference heights: REFERENCE = Ignition switched on

Adjusting the heights.

Calculate the following values:

- Front LH : $K1M = R1 - H1M.$
- Front RH : $K2M = R2 - H2M.$
- Rear LH : $K3M = R3 - H3M.$
- Rear RH : $K4M = R4 - H4M.$

Connect the diagnostic tool [3] or [4] to the vehicle's diagnostic socket.

Switch on the ignition.

Perform a global test.

Go into the menu.

Variable damping.

Adjustment of vehicle reference heights.

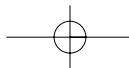
Enter the values **K1M**, **K2M**, **K3M** and **K4M** in the diagnostic tool.

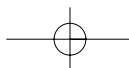
WARNING: The values should consist of 4 figures: Example: $K1 = 160 \text{ mm}$ - enter the value 0160.

Checking the heights after adjustment.

Check the heights:

- Front LH : $K1 = 160 \pm 6 \text{ mm.}$
- Front RH : $K2 = 160 \pm 6 \text{ mm.}$
- Rear LH : $K3 = 111 \pm 6 \text{ mm.}$
- Rear RH : $K4 = 111 \pm 6 \text{ mm.}$





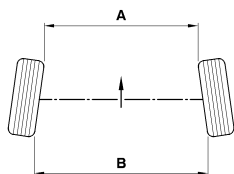
VALUES FOR CHECKING AND ADJUSTING AXLE GEOMETRIES

IMPERATIVE: Respect the safety and cleanliness requirements.

Tools.

- [1] Gauge for measuring radius of wheels (**5 bolts**) : 9801-T
- [2] Gauge for height under bodyshell : 2305-T

WARNING: «Check and adjust the axle geometries at reference height».



NOTE: Front of vehicle (following the arrow).

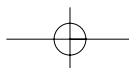
Conditions for checking and adjusting.

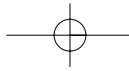
- Check the tyre pressures.
- Place the vehicle on a **4 column lift**.
- Check and adjust if necessary the vehicle heights (*see corresponding operation*).
- Steering rack locked at its zero point (*see corresponding operation*).
- Switch off the ignition before removing the tools from the wheels.
- Lower the vehicle.
- Start the engine.
- Put the vehicle in the high position.
- Put the vehicle in the normal height position (*driving height*).
- Stop the engine.
- Switch on the ignition.
- Check and adjust the front and rear axle geometries at reference height.

WARNING: Do not switch off the ignition during checking and adjusting of the front and rear axle geometries.

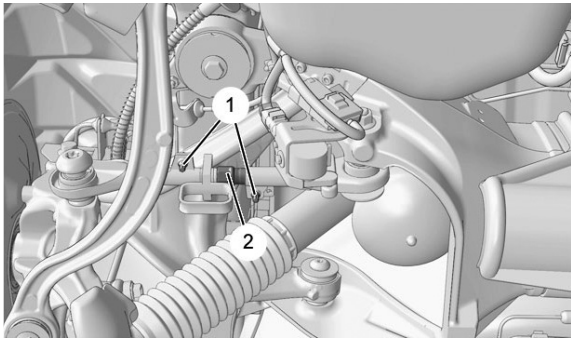
NOTE		
$A < B$ = Positive figure:	+ =	TOE-IN
$A > B$ = Negative figure:	- =	TOE-OUT

B3CP02UC





VALUES FOR CHECKING AND ADJUSTING AXLE GEOMETRIES

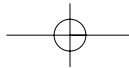


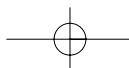
Rod for adjusting the rear tracking.

(1) Locking screw

(2) Adjusting screw

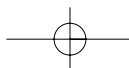
B3BP1BND

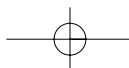




AXLES
SUSPENSION
STEERING

VALUES FOR CHECKING AND ADJUSTING AXLE GEOMETRIES							
Reference heights: REFERENCE = Ignition switched on							
Front axle				Rear axle			
Dissymmetry of lower castor : 0° 30'. Dissymmetry of lower camber : 0° 25'.				Dissymmetry of lower camber : 0° 30.			
IMPERATIVE: Distribute symmetrically, LH / RH wheel, the total tracking value.							
«Tyres: 225/55 R17»							
Front axle				Rear axle			
Vehicle	Tracking	Castor	Camber	Pivot Angle	Tracking	Camber	Push Angle
	Adjustable	Non adjustable			Adjustable	Non adjustable	
C6	mm	5° 30' ± 30'	- 0°24' ± 30	8° 40' ± 30'	4,32 ± 1	- 1° 27' ± 30'	0° ± 12'
	0°				- 0°09' ± 0°09'		
«Tyres: 245/45 R18»							
Front axle				Rear axle			
Vehicle	Tracking	Castor	Camber	Pivot Angle	Tracking	Camber	Push Angle
	Adjustable	Non adjustable			Adjustable	Non adjustable	
C6	mm	5° 30' ± 30'	- 0°24' ± 30	8° 40' ± 30'	4,58 ± 1	- 1° 27' ± 30'	0° ± 12'
	0°				- 0°09' ± 0°09'		





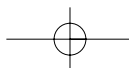
VALUES FOR CHECKING AND ADJUSTING AXLE GEOMETRIES

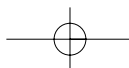
Warning: During measuring of PARKING heights: Switch off the ignition

PARKING heights: (values given AS A GUIDE only)

Front and rear PARKING heights (ignition switched off)

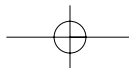
Front axle		Rear axle	
B3CP0ARD		B3CP0ATD	
Front LH: K1 = 175 ± 6 mm	Front RH: K2 = 175 ± 6 mm	Rear LH: K3 = 131 ± 6 mm	Rear RH: K4 = 131 ± 6 mm

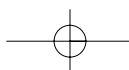






AXLES
SUSPENSION
STEERING

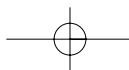
VALUES FOR CHECKING AND ADJUSTING AXLE GEOMETRIES							
PARKING heights: (values given AS A GUIDE only)							
Front and rear PARKING heights (ignition switched off)							
Front axle				Rear axle			
Dissymmetry of lower castor : 0° 30'.				Dissymmetry of lower camber : 0° 30.			
Dissymmetry of lower camber : 0° 25'.							
IMPERATIVE: Distribute symmetrically, LH / RH wheel, the total tracking value.							
«Tyres: 225/55 R17»							
Front axle				Rear axle			
Vehicle	Tracking	Castor	Camber	Pivot Angle	Tracking	Camber	Pivot Angle
	Adjustable	Non adjustable			Adjustable	Non adjustable	
C6	mm	- 2,32 ± 1	5° 30' ± 30'	- 0°30' ± 30	8° 21' ± 30'	5,13 ± 1	- 1° 54' ± 30'
	0°	- 0°18' ± 0°09'				0° 41' ± 0°09'	
«Tyres: 245/45 R18»							
Front axle				Rear axle			
Vehicle	Tracking	Castor	Camber	Pivot Angle	Tracking	Camber	Pivot Angle
	Adjustable	Non adjustable			Adjustable	Non adjustable	
C6	mm	- 2,46 ± 1	5° 30' ± 30'	- 0°30' ± 30	8° 21' ± 30'	5,43 ± 1	- 1° 54' ± 30'
	0°	- 0°18' ± 0°09'				0° 41' ± 0°09'	

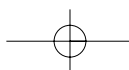




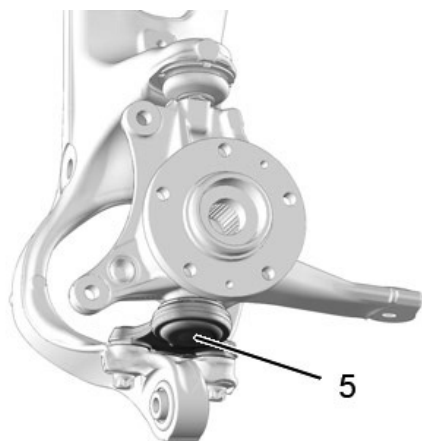
**AXLES
SUSPENSION
STEERING**

FRONT AXLE	
ES9A	<p>Front subframe.</p> <p>Front subframe in cast aluminium alloy.</p> <p>NOTE: Subframe positioned by indexing on body.</p> <p>Front subframe frame with screwed-in subframe extensions (UHZ engine).</p> <p>(1) Front subframe frame crossmember</p> <p>(2) Subframe extensions</p> <p>(3) Front subframe</p>
 <p>B3CP09BD</p>	
DT17BTED4	<p>Front subframe frame with welded subframe extensions (XFV engine).</p> <p>(3) Front subframe</p> <p>(4) Front subframe frame</p>
 <p>B3CP09LD</p>	





FRONT AXLE



B3CP09CC

Front pivot.

Front pivot fixed on the pivot support by means of an upper balljoint and a lower balljoint.

Front hub bearing:

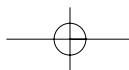
- Diameter **83 mm**.
- Bearing with double row of balls, with an integral magnetic wheel (**48 pairs of poles**).

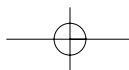
Suspension leg:

- Front axle with wheels independent, of multi-arm type.
- Travel stop: height **60 mm**.
- Anti-roll bar

Anti-roll bar		
Engines	Diameter (mm)	Colour ref.
ES9A	23,5 mm	Yellow
DT17BTED4	24 mm	Pink

NOTE: The geometry specifications are given with the values for checking and adjusting the axle geometries.





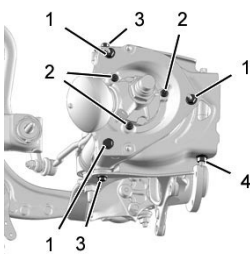
**AXLES
SUSPENSION
STEERING**

FRONT AXLE: TIGHTENING TORQUES

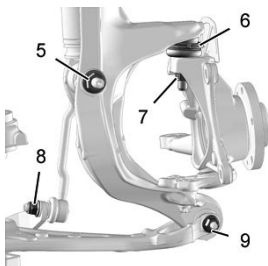
Engines: ES9A - DT17BTED4

Suspension leg

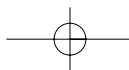
1	Body suspension upper support	2,6 ± 0,3
2	Front suspension cylinder on Suspension upper support	2,4 ± 0,3
3	Suspension upper arm on Suspension upper support	4,5 ± 0,6
4	Suspension upper arm on Pivot support	8,5 ± 0,8
5	Front anti-roll bar rod on Pivot support	20,5 ± 2
6	Pivot upper balljoint on Pivot support	15 ± 1,5
7	Pivot upper balljoint nut	6 ± 0,6
8	Front anti-roll bar rod on Front anti-roll bar	5 ± 0,5
9	Suspension lower arm on Pivot support	7,5 ± 1,1

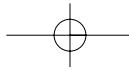


B3CP09DC



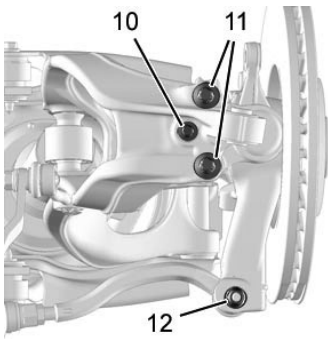
B3CP09EC



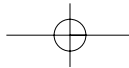


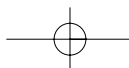
**AXLES
SUSPENSION
STEERING**

FRONT AXLE: TIGHTENING TORQUES		
Engines: ES9A - DT17BTED4		
Suspension leg		
10	Pivot lower balljoint on Pivot support	6,5 ± 0,9
11	Pivot lower balljoint on Pivot support	17 ± 1,7
12	Steering rack balljoint on Front pivot	3,5 ± 0,3



B3CP09FC



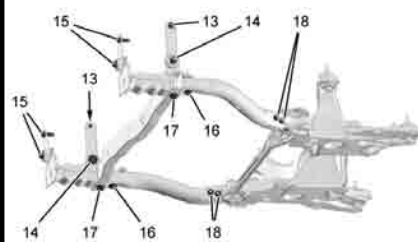


**AXLES
SUSPENSION
STEERING**

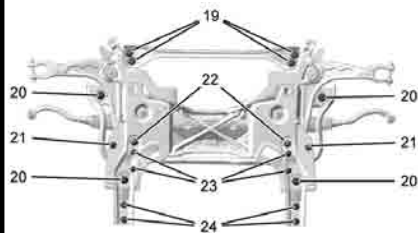
FRONT AXLE: TIGHTENING TORQUES

Engines: ES9A - DT17BTED4

Front subframe

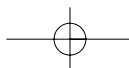


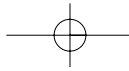
B3CP09GD



B3CP09HD

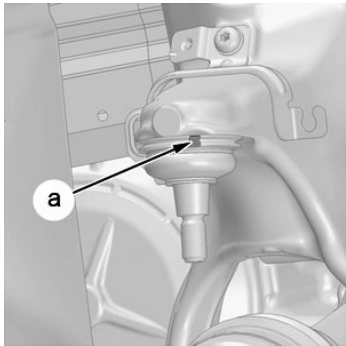
13	Front subframe frame tie-bar on Body	5 ± 0,7
14	Front subframe frame tie-bar on Front subframe frame	6,5 ± 0,9
15	Front absorber support tie-bar	6,5 ± 0,9
16	Front subframe frame on Subframe extension	10 ± 1
17	Front subframe frame crossmember	10 ± 1
18	Subframe extension on Front subframe	5,5 ± 0,5
19	Front subframe stabiliser bar	12,5 ± 1,2
20	Front subframe on Body	14 ± 1,4
21	Suspension lower arm on Front subframe	6,5 ± 0,6
22	Suspension lower arm on Front subframe	11 ± 1,1
23	Front anti-roll bar bearing on Front subframe	4,5 ± 0,6
24	Body yoke	10 ± 1



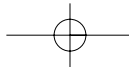


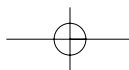
AXLES
SUSPENSION
STEERING

FRONT AXLE: TIGHTENING TORQUES		
Engines: ES9A - DT17BTED4		
Front subframe		
25	Suspension lower arm support on Front subframe	6,5 ± 0,9
26	Suspension lower arm on Front subframe	12,3 ± 1,2

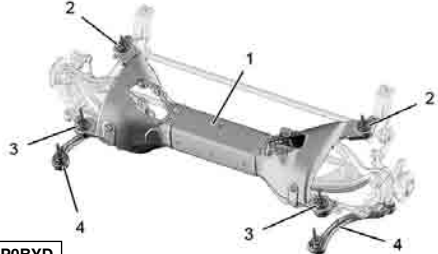
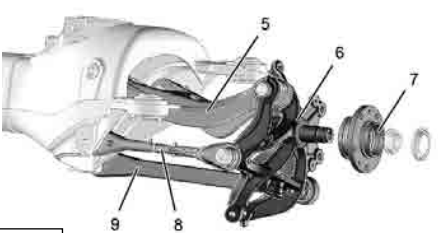


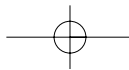
B3CP09TC

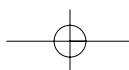




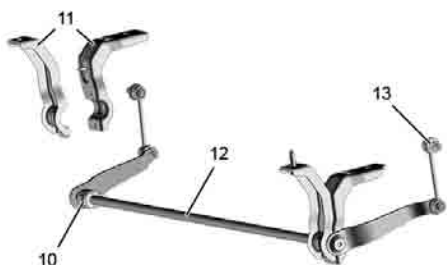
AXLES
 SUSPENSION
 STEERING

REAR AXLE	
<p>Rear axle</p>  <p>B3DP0BYD</p>	<p>(1) Rear axle crossmember (2) Rear axle crossmember rear rubber bush (3) Rear axle crossmember front rubber bush (4) Suspension longitudinal arm</p> <p>NOTE: Rear axle in cast aluminium alloy, of multi-arm type.</p>
<p>Rear pivot</p>  <p>B3DP0BZD</p>	<p>(5) Suspension upper arm (6) Rear pivot (7) Hub-bearing (8) Tracking adjustment rod (9) Suspension lower arm</p> <p>Hub-bearing: - The rear hub-bearing is equipped with an ABS radial target (48 pairs of poles).</p> <p>Stub axle: - Diameter 32 mm. - The stub axle, joined onto the rear pivot, is not separable.</p> <p>IMPERATIVE: The rear hub-bearing must not be placed in proximity to a source of magnetism or of pollution by metal particles. Components must be clean and free from any signs of abnormal wear or damage.</p>





REAR AXLE



- (10) Rear anti-roll bar bearing
- (11) Rear anti-roll bar bearing half-support
- (12) Rear anti-roll bar
- (13) Rear anti-roll bar rod

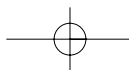
NOTE: The rear anti-roll bar bearings are not separable.

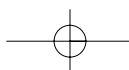
Anti-roll bar		
Engines	Diameter (mm)	Colour ref.
ES9A - DT17BTED4	20,6	Orange

Vehicle geometry.

NOTE: The geometry specifications are given with the values for checking and adjusting the axle geometries.

B3BP1AED

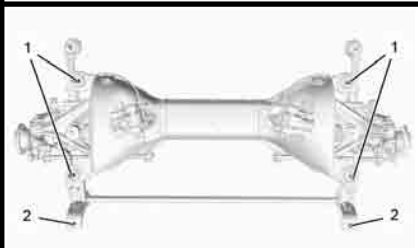




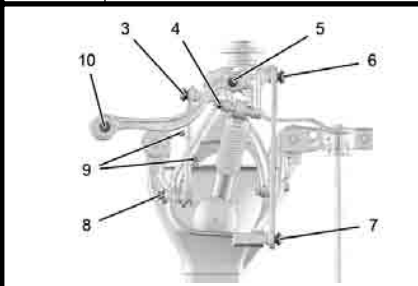
**AXLES
SUSPENSION
STEERING**

REAR AXLE: TIGHTENING TORQUES

Engines: ES9A - DT17BTED4

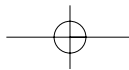


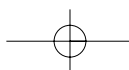
B3DP0BUD



B3DP0BVD

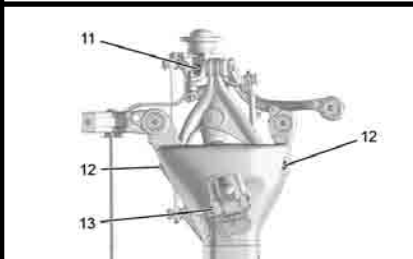
Engines: ES9A - DT17BTED4		
1	Rear axle crossmember on Body	7,5 ± 0,7
2	Rear anti-roll bar bearing on Body	7 ± 0,7
3	Tracking adjustment rod on Rear pivot	
4	Rear suspension cylinder on Rear pivot	
5	Suspension longitudinal arm on Rear pivot	
6	Suspension lower arm on Rear pivot	
7	Suspension lower arm on Rear axle crossmember	
8	Tracking adjustment rod on Rear axle crossmember	
9	Locking of tracking adjustment rod	1 ± 0,2
10	Suspension longitudinal arm on Body	3,3 ± 0,3
	Pre-tightening	
	Angular tightening	150° ± 5°



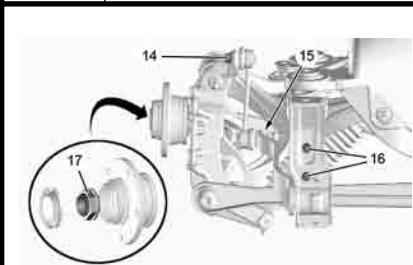


AXLES
SUSPENSION
STEERING

REAR AXLE: TIGHTENING TORQUES

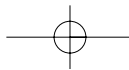


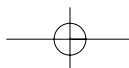
B3DP0BWD



B3DP0BXD

Engines: ES9A - DT17BTED4		
11	Suspension upper arm on Rear pivot	7 ± 0,7
12	Suspension upper arm on Rear axle crossmember	
13	Rear suspension cylinder on Rear axle crossmember	
14	Rear anti-roll bar rod on Rear pivot	4 ± 0,6
15	Rear anti-roll bar rod on Rear anti-roll bar	
16	Rear anti-roll bar bearing half support	1,8 ± 0,4
17	Rear hub-bearing nut	25 ± 2

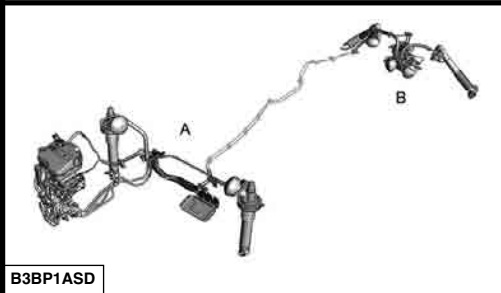




**AXLES
SUSPENSION
STEERING**

ACTIVE SUSPENSION WITH VARIABLE DAMPING

Location of components

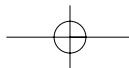
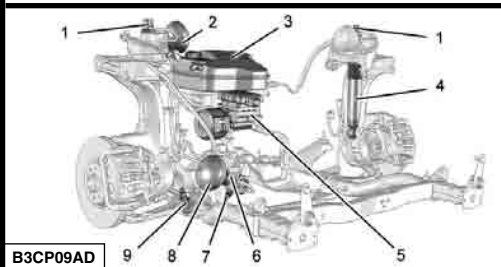


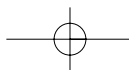
A: Front suspension
B: Rear suspension

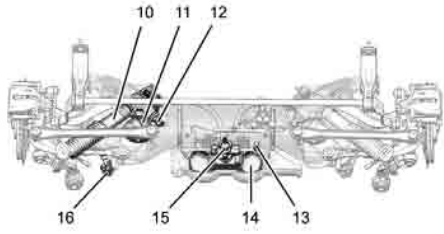
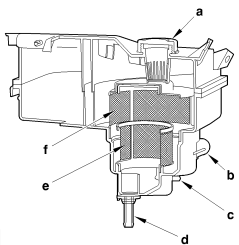
NOTE: The rear stiffness regulator is equipped with two accumulators.

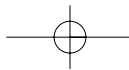
- (1) Variable damping suspension actuator
- (2) Front suspension accumulator
- (3) LDS fluid reservoir
- (4) Front suspension cylinder
- (5) Built-in Hydro-electronic Interface (BHI)
- (6) Front stiffness regulator
- (7) Suspension pressure sensor
- (8) Front stiffness regulator accumulator
- (9) Wheel travel sensor

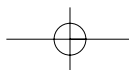
Front axle





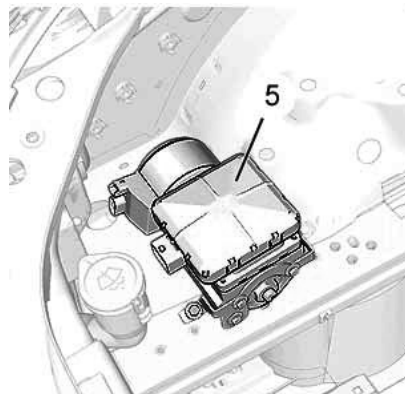
ACTIVE SUSPENSION WITH VARIABLE DAMPING	
<p style="text-align: center;">Rear axle</p>  <p style="text-align: center;">B3DP0BSD</p>	<p>(10) Rear suspension cylinder (11) Rear suspension accumulator (12) Variable damping suspension actuator (13) Suspension pressure sensor (14) Rear stiffness regulator accumulator (15) Rear stiffness regulator (16) Wheel travel sensor</p> <p>Source of pressure. Features. Hydraulic fluid : LDS TOTAL H50126. The LDS fluid orange in colour is 100% synthetic. Capacity of the hydraulic circuit : 6.3 litres.</p> <p>NOTE: LDS: Liquide Direction Suspension (<i>steering/suspension fluid</i>).</p> <p>«a» LDS fluid reservoir filler (<i>cap</i>) «b» Suction (BHI) (<i>power steering pump</i>) «c» Return (<i>stiffness regulators</i>) «d» Return (<i>power steering pump</i>) «e» Return (<i>filter</i>) «f» Suction (<i>filter</i>)</p> <p>The level of the LDS fluid must be checked with the vehicle in the low position (<i>refer to the procedure «Depressurisation: suspension circuit»</i>).</p>
<p style="text-align: center;">LDS fluid reservoir</p>  <p style="text-align: center;">B4BP01SD</p>	





ACTIVE SUSPENSION WITH VARIABLE DAMPING

Built-in Hydro-electronic Interface (BHI)



B3BP1A1C

Composition of the Built-in Hydro-electronic Interface:

- An electric motor.
- A pump with **5 pistons**.
- **4** electrovalves.
- **2** non-return valves.
- A pressure limiter.
- An anti-pulse accumulator.
- A filter.
- The suspension ECU.

Features of variable damping suspension.

Variable damping suspension ECU (CSS).

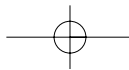
The ECU (CSS) is located in the engine compartment, in the ECU tray.

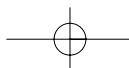
The ECU (CSS) manages the different damping laws, as a function of the information delivered by the following components:

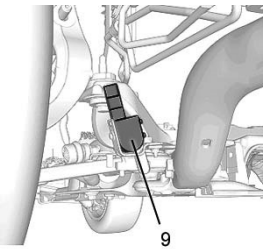
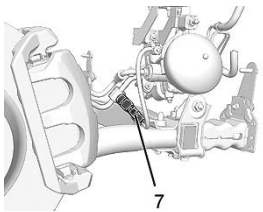
- The **4** wheel travel sensors.
- The **2** suspension pressure sensors.
- The speed of the vehicle.
- The speed of rotation of the steering wheel.

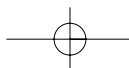
The suspension ECU (CSS) pilots the following components:

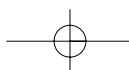
- The **4** variable damping suspension actuators.
- The Built-in Hydro-electronic Interface (BHI).





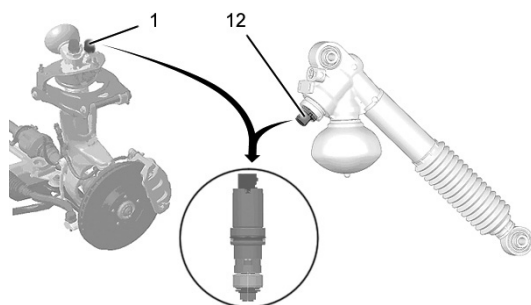
ACTIVE SUSPENSION WITH VARIABLE DAMPING	
<p style="text-align: center;">Wheel travel sensor</p>  <p style="text-align: center;">9</p> <p><small>B3BP19ZC</small></p>	<p>(9) Front RH wheel travel sensor</p> <p>The wheel travel sensor defines the angular position of the suspension lower arm.</p> <p>Identification of the sensors:</p> <ul style="list-style-type: none"> - Front RH wheel travel sensor : Yellow. - Front LH wheel travel sensor : Red. - Rear RH wheel travel sensor : Green. - Rear LH wheel travel sensor : Blue.
<p style="text-align: center;">Suspension pressure sensor</p>  <p style="text-align: center;">7</p> <p><small>B3BP19YC</small></p>	<p>IMPERATIVE: Before operating on a wheel travel sensor, uncouple its rod so as not to go past the maximum angular travel (<i>see corresponding operation</i>).</p> <p>The suspension pressure sensors (7) informs the suspension ECU (CSS) of the pressure in the hydraulic high pressure pipes of the front suspension. The sensor (13) informs the suspension ECU (CSS) of the pressure in the hydraulic high pressure pipes of the rear suspension.</p>





ACTIVE SUSPENSION WITH VARIABLE DAMPING

Variable damping suspension actuator



B3BP1A0D

Each suspension cylinder has a variable damping suspension actuator.

- (1) Variable damping suspension actuators (*front*)
- (12) Variable damping suspension actuators (*rear*)

Anti-roll bars:

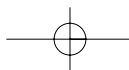
Front anti-roll bar.

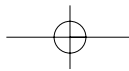
ES9A : Diameter 23.5 mm **Yellow**.

DT17BTED4 : Diameter 24 mm **Pink**.

Rear anti-roll bar.

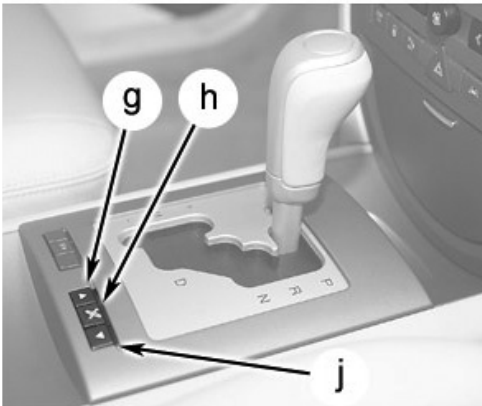
ES9A and DT17BTED4 : Diameter 20.6 mm **Orange**.





ACTIVE SUSPENSION WITH VARIABLE DAMPING

One-touch control for body height

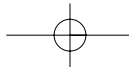


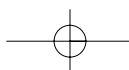
«g» One-touch control to raise body height

«h» Sport mode activation/deactivation switch

«j» One-touch control to lower body height

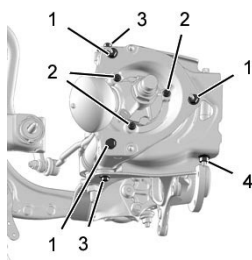
C5FP0R8C



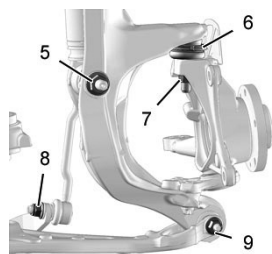


**AXLES
SUSPENSION
STEERING**

SUSPENSION: TIGHTENING TORQUES

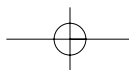


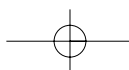
B3CP09DC



B3CP09EC

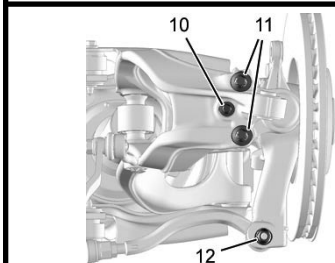
Front suspension		
1	Body suspension upper support	2,6 ± 0,3
2	Front suspension cylinder on Suspension upper support	2,4 ± 0,3
3	Suspension upper arm on Suspension upper support	4,5 ± 0,6
4	Suspension upper arm on Pivot support	8,5 ± 0,8
5	Suspension upper arm on Pivot support	20,5 ± 2
6	Pivot upper balljoint on Pivot support	15 ± 1,5
7	Pivot upper balljoint nut	6 ± 0,6
8	Front anti-roll bar rod on Front anti-roll bar	5 ± 0,5
9	Suspension lower arm on Pivot support	7,5 ± 1,1



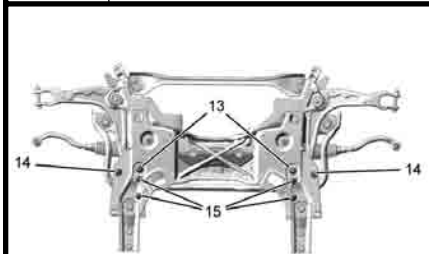


**AXLES
SUSPENSION
STEERING**

SUSPENSION: TIGHTENING TORQUES

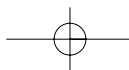


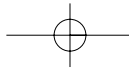
B3CP09FC



B3CP09WD

10	Front pivot lower balljoint on Pivot support	6,5 ± 0,9
11	Front pivot lower balljoint on Pivot support	17 ± 1,7
12	Steering rack balljoint on Front pivot	3,5 ± 0,3
13	Rear fixing of suspension lower arm on Front subframe	11 ± 1,1
14	Rear fixing of suspension lower arm on Front subframe	6,5 ± 0,6
15	Fixing of front anti-roll bar bearing on Front subframe	4,5 ± 0,4

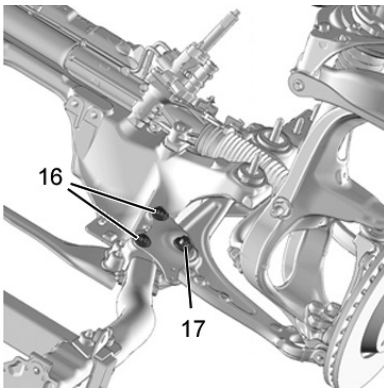




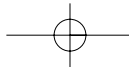
AXLES
SUSPENSION
STEERING

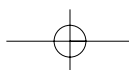
SUSPENSION: TIGHTENING TORQUES

16	Fixing of suspension lower arm support on Front subframe	$8 \pm 0,8$
17	Front fixing of suspension lower arm on Front subframe	$12,3 \pm 1,2$



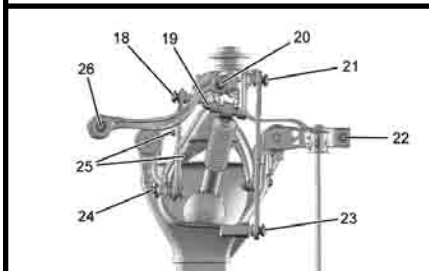
B3CP09XD



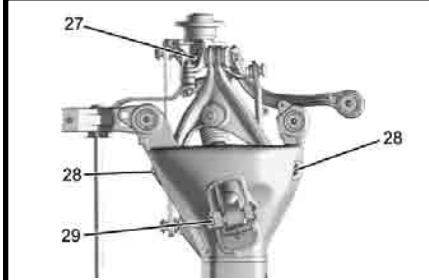


AXLES
SUSPENSION
STEERING

SUSPENSION: TIGHTENING TORQUES

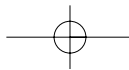


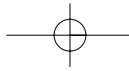
B3DP0CPD



B3DP0CQD

Rear suspension		
18	Tracking adjustment rod on Rear pivot	7 ± 0,7
19	Lower fixing of rear suspension cylinder on Rear pivot	
20	Suspension longitudinal arm on Rear pivot	
21	Suspension lower arm on Rear pivot	7,5 ± 0,7
22	Rear anti-roll bar bearing on Body	
23	Suspension lower arm on Rear axle crossmember	7 ± 0,7
24	Tracking adjustment rod on Rear axle crossmember	
25	Screw for locking of tracking adjustment rod	
26	Suspension longitudinal arm on Body	3,3 ± 0,3 150° ± 5°
	Pre-tightening Angular tightening	
27	Suspension upper arm on Rear pivot	7 ± 0,7
28	Suspension upper arm on Rear axle crossmember	
29	Upper fixing of rear suspension cylinder on Rear axle crossmember	

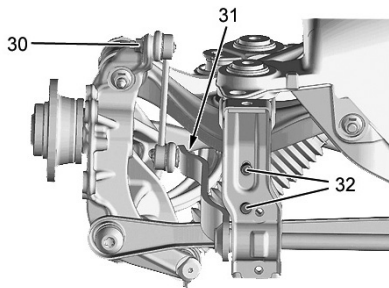




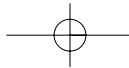
**AXLES
SUSPENSION
STEERING**

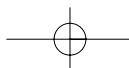
SUSPENSION: TIGHTENING TORQUES

Rear suspension		
30	Upper fixing of rear anti-roll bar rod on Rear pivot	
31	Lower fixing of rear anti-roll bar rod on Rear anti-roll bar	4 ± 0,6
32	Fixing of rear anti-roll bar half-bearing	1,8 ± 0,4

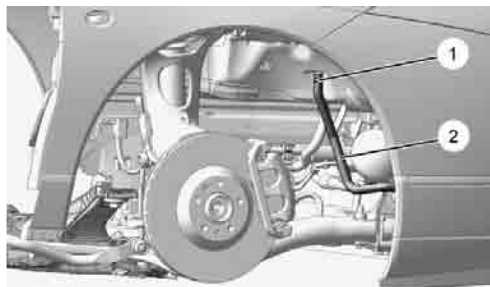


B3DP0CRD





DRAINING, FILLING AND BLEEDING THE HYDRAULIC SUSPENSION/STEERING CIRCUIT



B3FP7HED

- Tools.**
- [1] Pliers for clic clips : 4121-T
 - [2] LEXIA diagnostic tool : 4171-T
 - [3] PROXIA diagnostic tool : 4165-T

- [1] Pliers for clic clips
- [2] LEXIA diagnostic tool
- [3] PROXIA diagnostic tool

Draining.

- Start the engine.
- Place the vehicle in the low position.
- Stop the engine.
- Raise and support the vehicle, wheels hanging.

WARNING: The LDS fluid reservoir is pressurised.

Open the cap of the LDS fluid reservoir.

Remove:

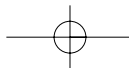
- The front RH wheel.
- The front RH splash-shield.

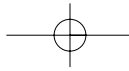
Remove the clip (1) using tool [1].

Uncouple the hose (2) from the LDS fluid reservoir.

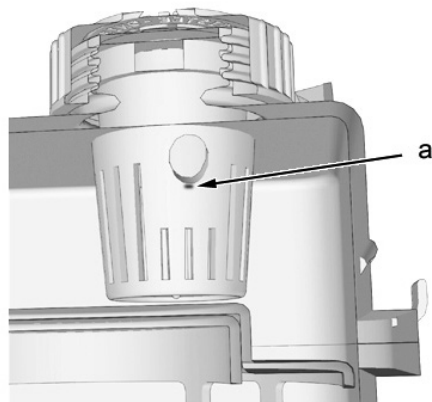
Drain the LDS fluid reservoir.

IMPERATIVE: Any LDS fluid recovered must not be re-used.





DRAINING, FILLING AND BLEEDING THE HYDRAULIC SUSPENSION/STEERING CIRCUIT



B3FP7HFD

Filling.

Couple the hose (2) on the LDS fluid reservoir.

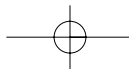
Refit:

- The clip (1).
- The front RH splash-shield.
- The front RH wheel.

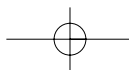
Lower the vehicle.

"a" maximum level for the LDS fluid

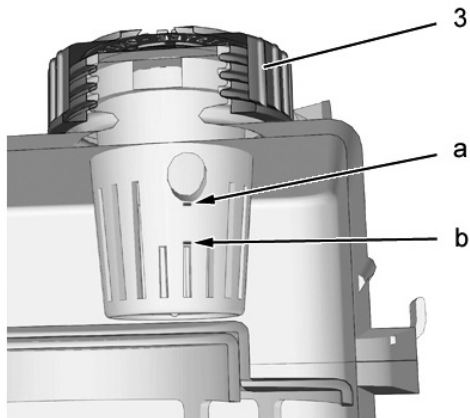
Fill the LDS fluid reservoir up to the maximum level for the LDS fluid "a".



AXLES
SUSPENSION
STEERING



DRAINING, FILLING AND BLEEDING THE HYDRAULIC SUSPENSION/STEERING CIRCUIT

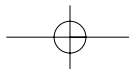


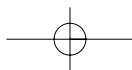
B3FP7HGD

Bleeding.

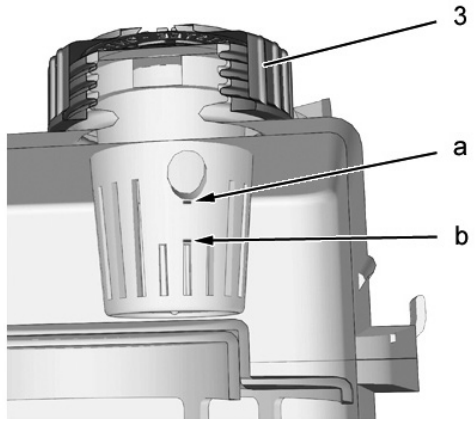
Connect tool [2] or [3] to the vehicle's diagnostic socket.
Switch on the ignition.
Perform a global test.
Go into the menu:
- Variable damping.
- Bleeding the suspension circuit.
Follow the instructions on the screen.
Apply a pressure of **0.5 bar** in the **LDS** fluid reservoir (using a tool **FACOM 920**).

Start the engine.
Wait for the vehicle height to stabilise.
Place the vehicle in the high position.
Place the vehicle in the low position.
Move the steering in each direction, from lock to lock.
Stop the engine.
Check the **LDS** fluid level.





DRAINING, FILLING AND BLEEDING THE HYDRAULIC SUSPENSION/STEERING CIRCUIT



B3FP7HGD

Checking and topping up the LDS fluid level.

NOTE: Checking the **LDS** fluid level is done with the vehicle in the forced low position (*hydraulic suspension circuit depressurised*).

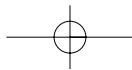
"a" Maximum level for the **LDS** fluid

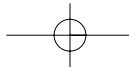
"b" Minimum level for the **LDS** fluid

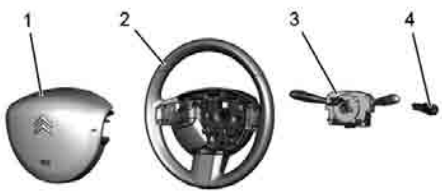
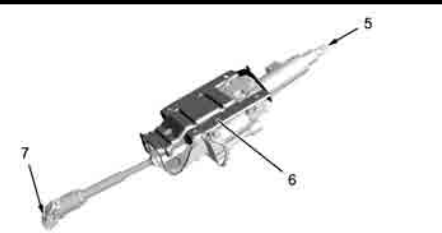
Open the cap (3).

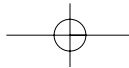
If necessary, add **LDS** fluid up to the maximum level "a".

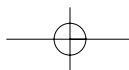
IMPERATIVE: A container of **LDS** that has been opened must be sealed and kept in a clean place. A container of **LDS** has to be used up within two weeks of opening, after which any unused **LDS** fluid must be disposed of.





POWER STEERING SPECIFICATIONS	
<p>Top of column</p>  <p>C5FP0U2D</p>	<ul style="list-style-type: none">(1) Driver's airbag(2) Steering wheel(3) Controls under the steering wheel(4) Steering lock(5) Fixing of steering wheel on the shaft of the steering column
<p>Steering column</p>  <p>B3EP17SD</p>	<ul style="list-style-type: none">(6) Steering column support(7) Fixing of steering cardan on the distributor valve stem

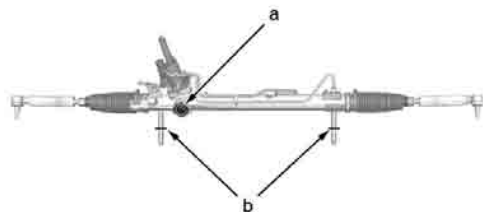




AXLES
 SUSPENSION
 STEERING

POWER STEERING SPECIFICATIONS

Steering mechanism



B3EP17TD

The steering mechanism with integral ram is fixed on the front subframe by **two** studs. The steering assistance valve has groove technology.

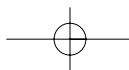
The hydraulic supply and return pipes are fixed on the steering assistance valve by means of a flange.

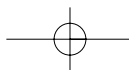
The adjustment of the steering push-rod is via a screw plug «a».

IMPERATIVE: The toothed washers «b» must be placed between the steering mechanism and the front subframe.

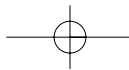
Engines ES9A/DT17BTED4.

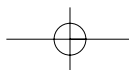
Steering rack travel	: 90 mm x 2.
Number of teeth on the distributor valve pinion	: 9.
Steering ratio	: 1/61,26.
Number of rotations of steering wheel (<i>from lock to lock</i>)	: 2,94.
Inner angle of lock	: 37°25'.
Outer angle of lock	: 31°36'.





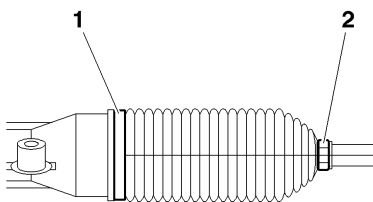
POWER STEERING SPECIFICATIONS	
Steering assistance circuit	
	<p>(8) Steering assistance valve (9) Steering mechanism with integral ram (10) Low pressure piping (11) High pressure piping (12) Power steering pump (13) LDS fluid reservoir</p> <p>LDS fluid reservoir. The LDS fluid reservoir supplies the suspension circuit as well as the steering assistance circuit (<i>fluid: LDS TOTAL H50126</i>).</p> <p>Steering assistance pump with constant flow (engines: ES9A, DT17). The power steering pump is driven by the accessories belt. A stepper motor incorporated in the steering assistance valve modulates the steering assistance as a function of the vehicle speed.</p> <p>Regulation pressure : 115 ± 5 bars. Diameter of the pulley of the power steering pump. Engine ES9A : 128 mm. Diameter of the pulley of the power steering pump. Engine DT17BTED4 : 100 mm.</p>
B3EP17UD	



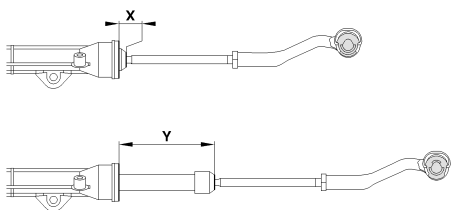


**AXLES
SUSPENSION
STEERING**

POWER STEERING SPECIFICATIONS



B3EP13UC



B3EP13VD

Setting the steering rack mid-point.

IMPERATIVE: Respect the precautions to be taken prior to any operation (*refer to the brochure "Recommendations-precautions"*).

Preliminary operation.

Raise and support the vehicle on **2-column lift**.

Remove (*on the RH side*):

- The clip **(1)**.
- The clip **(2)**.

Detach the steering rack protection gaiter.

Setting.

Turn the steering wheel to full **LH** lock.

Measure the dimension **X**.

Turn the steering wheel to full **RH** lock.

Measure the dimension **Y**.

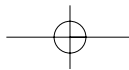
Calculate the dimension **L = (Y - X) : 2**.

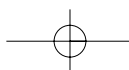
Position the steering rack to the dimension "**L**" (*mid point of the steering rack*).

Additional operation.

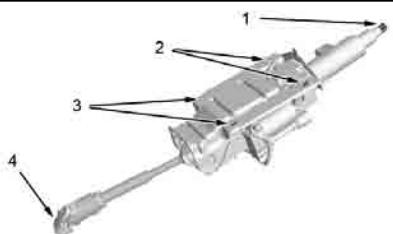
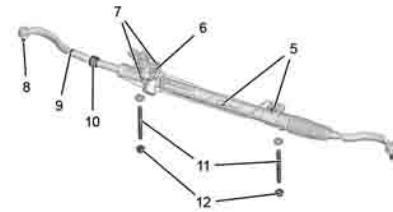
Refit:

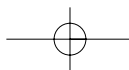
- The protection gaiter.
- The clip **(2)**.
- The clip **(1)** (*new*).

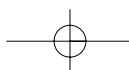




AXLES
SUSPENSION
STEERING

POWER STEERING: TIGHTENING TORQUES			
Steering column	Engines: ES9A - DT17BTED4		
 <p>B3EP17GD</p>	1	Steering wheel bolt	3,3 ± 0,5
	2	Upper nuts	2 ± 0,3
	3	Lower nuts	2 ± 0,3
	4	Fixing of steering cardan on valve stem	2 ± 0,3
	5	Union of hydraulic pipe on ram	1,4 ± 0,35
	6	Fixing of supply pipes bracket on distributor valve	0,8 ± 0,1
	7	Fixing of distributor valve on steering mechanism	2 ± 0,2
	8	Steering ball-joint nut	3,5 ± 1
	9	Locking nut for adjustment of steering track rods	5,3 ± 0,8
	10	Fixing of steering rack ball-joint	9,0 ± 0,9
	11	Steering mechanism stud	0,9 ± 0,2
	12	Steering mechanism nut	14 ± 1,4
 <p>B3EP17HD</p>			

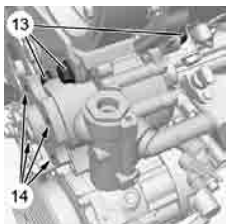




**AXLES
SUSPENSION
STEERING**

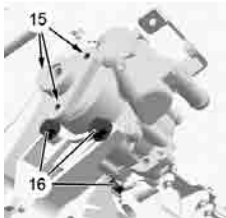
POWER STEERING: TIGHTENING TORQUES

**Steering assistance pump:
ES9A engine**



B3EP17JC

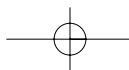
**Steering assistance pump:
DT17BTED4 engine**

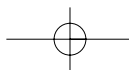


B3EP17KC

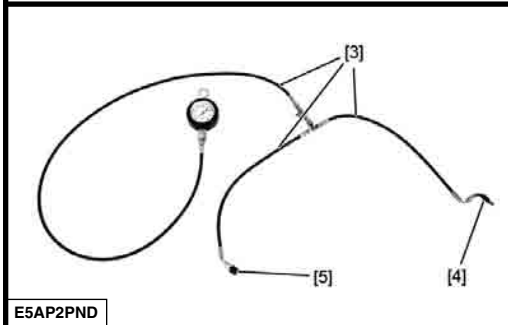
Engines: ES9A - DT17BTED4

13	Fixation of steering assistance pump on support	2,5 ± 0,6
14	Fixation of pulley on steering assistance pump	0,8 ± 0,2
15	Fixation of pulley on steering assistance pump	2,2 ± 0,3
16	Fixation of steering assistance pump on support	2 ± 0,3

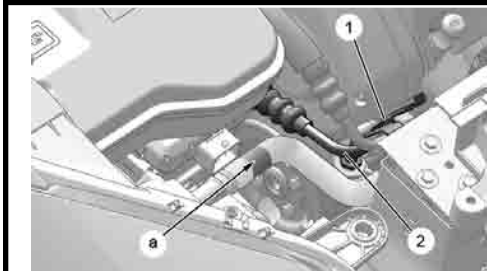




CHECKING THE STEERING ASSISTANCE PRESSURE (ES9A ENGINE)



E5AP2PND



B1BP3GPD

Tools.

- [1] Pipe spanner : FACOM 18.17
- [2] Set of 2 hose clamps : 4153-T
- [3] Pressure checking assembly :
- [3a] Pressure gauge : (-).0710.AZ
- [3b] Checking tube: Pressure gauge to tap : (-).0710.B1
- [3c] Checking tube: High pressure pipe to tap : (-).0710.B2
- [3d] Checking tube: High pressure pump to tap : (-).0710.B3
- [3e] 3-way tap : (-).0710.C
- [4] Union : (-).0710.E1Z
- [5] Union : (-).0710.E2Z
- [6] Plug for checking sealing of the steering valve : (-).0410.N

Precautions to be taken.

Work with care to avoid entry of polluting particles.

NOTE: Correct operation of the system requires the LDS fluid and the hydraulic components to be perfectly clean.

Check:

- The level of the LDS fluid (*see procedure: drain-fill-bleed the suspension circuit*).
- The condition of the piping and unions.

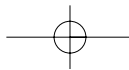
Using the tools.

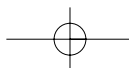
Prepare the checking assembly [3], [4] and [5].

Remove the bracket (1).

Clamp the pipe at "a", using tool [2].

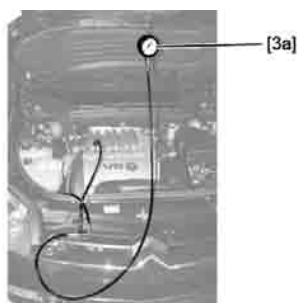
Uncouple and move aside the piping (2), using tool [1].





AXLES
SUSPENSION
STEERING

CHECKING THE STEERING ASSISTANCE PRESSURE (ES9A ENGINE)



B1BP3GQD

Attach the tool [3a].

Do up:

- The union [5] on the pipe (2).
 - The union [4] on the steering assistance pump.
- Connect the assembly [3] to the unions [4] and [5].

Tighten all the unions.

Remove the tool [2].

Open the tap [3e].

Start the engine and allow it to run for **5 seconds**.

Stop the engine.

Move the steering several times in each direction.

Check that there are no leaks.



B1BP3GRD

Checking the steering assistance pump pressure.

Start the engine.

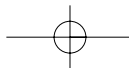
Close the tap [3e] for **5 seconds**.

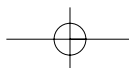
Open the tap [3e].

Accelerate between **1200 and 1500 rpm**, the pressure should be : **115 ± 5 bars**.

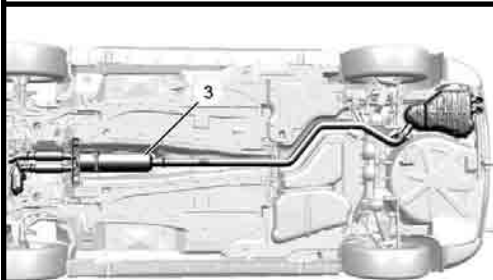
Stop the engine.

If the steering assistance pump pressure is correct, check the sealing of the valve.

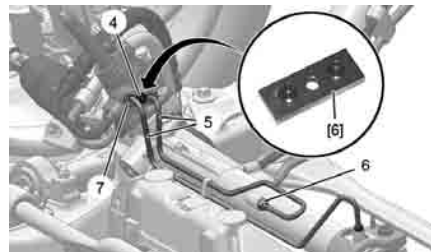




CHECKING THE STEERING ASSISTANCE PRESSURE (ES9A ENGINE)



B1JP08WD



B3EP185D

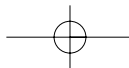
Checking the valve sealing.

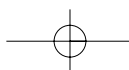
Remove the exhaust line (3).
 Move aside the heat shield from the steering mechanism.
 Slacken the union (6) on the power steering ram.

Remove:
 - The screw (4).
 - The bracket (7).

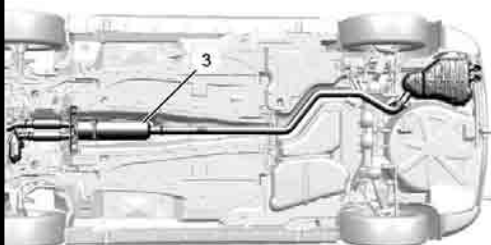
Uncouple the two supply pipes (5) from the distributor valve, and move them aside.
 Fit on the distributor valve the tool [6], tighten the screw to: **0,8 ± 0,1 m.daN**.
 Couple two pipes at the outlets of the pipes (5).
 Move the steering slowly from lock to lock, to drain the ram.
 Collect the **LDS** fluid in a tray.
 Refit the exhaust line (3).
 Open the tap [3e].
 Start the engine.
 Hold the engine speed between **1200 and 1500 rpm**.
 Hold the steering at full lock to the right, then at full lock to the left.
 The pressure should adjust to **: 115 ± 5 bars**.

AXLES
 SUSPENSION
 STEERING





CHECKING THE STEERING ASSISTANCE PRESSURE (ES9A ENGINE)



B1JP08WD

Remove:

- The exhaust line (3).
- The tool [6].

Couple the two supply pipes (5) on the distributor valve.

Refit:

- The bracket (7).
- The screw (4), tighten to $0,8 \pm 0,1$ m.daN.

Retighten the union (6) on the power steering ram; tighten to $1,4 \pm 0,35$ m.daN.

Refit the exhaust line (3).

Pinch the pipe at "a", using tool [2].

Remove:

- The assembly [3].
- The union [5] on the pipe (2).
- The union [4] on the steering assistance pump.

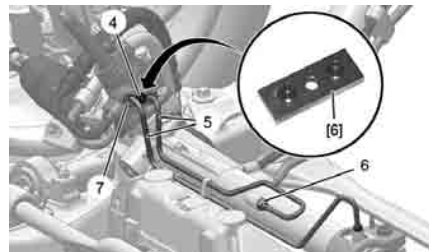
Couple the pipe (2), using tool [1].

Tighten the pipe (2) to $2 \pm 0,2$ m.daN.

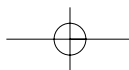
Refit the bracket (1).

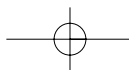
Bleed the hydraulic steering assistance circuit (*see corresponding operation*).

Top up the level of the LDS fluid (*see procedure: drain-fill-bleed the suspension circuit*).



B3EP185D





BLEEDING THE HYDRAULIC STEERING ASSISTANCE CIRCUIT

Precautions to be taken.

Proceed with care so as to prevent any entry of polluting particles.

IMPERATIVE: Respect the safety and cleanliness requirements.

IMPERATIVE: Fill the LDS fluid reservoir with new fluid: TOTAL LDS.

Bleeding.

Check the level and top up the **LDS** fluid (*see procedure: drain-fill-bleed the suspension circuit*).

Apply a pressure of **0.5 bar** in the **LDS** fluid reservoir (*using tool FACOM 920*).

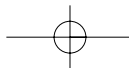
Start the engine.

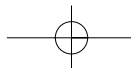
Wait for the vehicle height to stabilise.

Move the steering in each direction, from lock to lock.

Stop the engine.

Check the level and top up the **LDS** fluid (*see procedure: drain-fill-bleed the suspension circuit*).



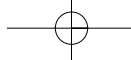


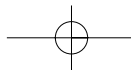
BRAKES

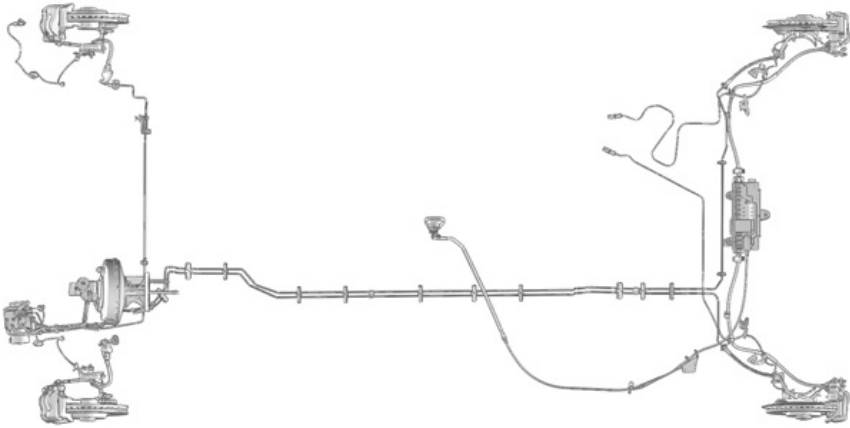
BRAKE SPECIFICATIONS			
		3.0i 24S	2,7 24S
Engine plate		ES9A	DT17BTED4
FT	Master cylinder/diameter/travel		23,8 / 19,8/20,2/AFU (1)
	Amplifier/supplier/type		254 / TEVES / AMCT / AFT (2)
	Supplier/type/piston diameter		TRW / C II 40 + 45 WE - 30-12 PE / 40 et 45
	Disc diameter	Ventilated	330
	Disc thickness/min. thickness		30/28
	Brake pad grade		JURID-966 (with wear warning lamps)
RR	Caliper/supplier/type/piston diameter		TRW / C38 HR-PEX / 38
	Disc diameter	Ventilated	302
	Disc thickness/min. thickness		22/20
	Brake pad grade		GALFER / G4555

(1) **AFU** = Emergency braking assistance.

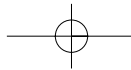
(2) **AFT** = Automatic lighting of hazard lamps under emergency braking.

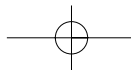




BRAKING SYSTEM: GENERAL SPECIFICATIONS	
Braking circuit	Braking system
	<p>Braking circuit in the form of an X.</p> <p>Disc brakes at the front and at the rear <i>(vehicles all types)</i>:</p> <ul style="list-style-type: none"> - The front brake discs are ventilated. - The rear brake discs are ventilated. <p>Electric parking brake (FSE) acting via cables on the rear wheels.</p> <p>The compensator and main brake limiter functions are assured by the ABS REF systems. ESP is fitted as standard on the entire range.</p> <p>NOTE: - REF (EBD) = Electronic Brakeforce Distribution. - ESP = Electronic Stability Programme.</p>

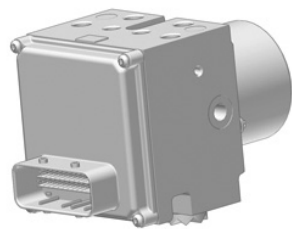
B3FP7GED





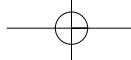
BRAKING SYSTEM: GENERAL SPECIFICATIONS

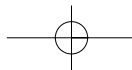
ABS/ESP hydraulic valve block



B3FP7GFC

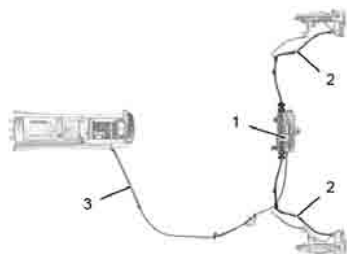
Components	Supplier	Reference	Observations
Hydraulic valve block	TRW	ESP VSC 440	Located on the front LH chassis member: 4 regulation channels
ECU			25-way connector Integral to the hydraulic valve block
Front wheel sensor	SIEMENS VDO		2-way black connector The sensors, of inductive type, are fitted on the pivot Air gap non-adjustable: 0.25 to 1.65 mm
Rear wheel sensor			2-way black connector The sensors, of inductive type, are fitted on the pivot Air gap non-adjustable: 0.23 to 1.35 mm
Front pivot bearing	NSK		The hub has a bearing with integral magnetic wheel (48 pairs of poles)
Rear hub bearing			The rear hub-bearing has a radial ABS target (48 pairs of poles)





BRAKING SYSTEM: GENERAL SPECIFICATIONS

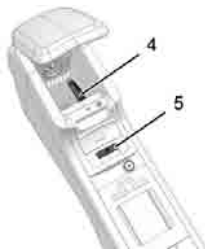
Parking brake



B3FP7GDD

- (1) Electrically-controlled parking brake system (FSE)
- (2) Parking brake cables
- (3) Cable for manual unlocking of the electric parking brake (FSE).

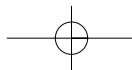
WARNING: It is forbidden to open the electric parking brake system in After Sales. If a malfunctioning of the electric parking brake is diagnosed, it is necessary to replace it. Changing of the parking brake cables does not necessitate opening of the electric parking brake system (see corresponding operation).

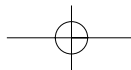


C5FP0T8C

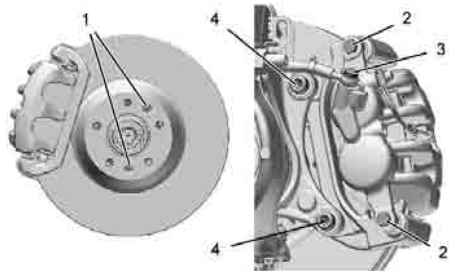
- (4) Handle for manual unlocking of the electric parking brake (FSE)
- (5) Switch for the electric parking brake (FSE)

If it is impossible to release the electric parking brake, a handle (4) located in the front central armrest will mechanically unlock the electric parking brake.

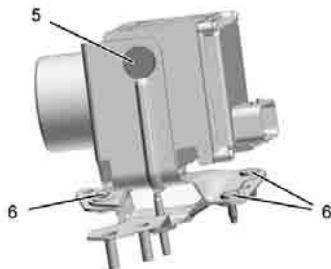




TIGHTENING TORQUES: BRAKING SYSTEM



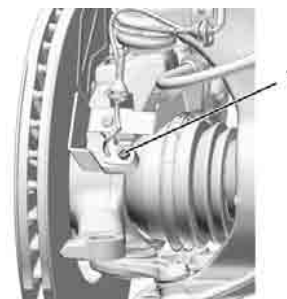
B3FP7HMD



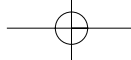
B3FP7HND

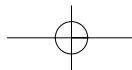
Front brakes

1	Front brake disc	1 ± 0,1
2	Yoke on brake caliper	3 ± 0,2
3	Unions on brake piping	4 ± 0,5
4	Front brake caliper	11,5 ± 1
5	Hydraulic valve block on intermediate support	0,8 ± 0,2
6	Intermediate support on support	
7	Front wheel sensor	0,8 ± 0,1

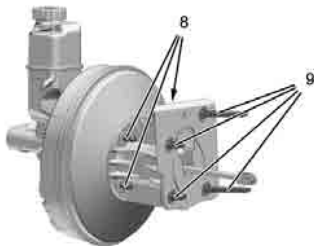


B3FP7HPD





TIGHTENING TORQUES: BRAKING SYSTEM

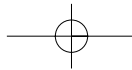


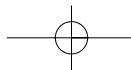
B3FP7HQD



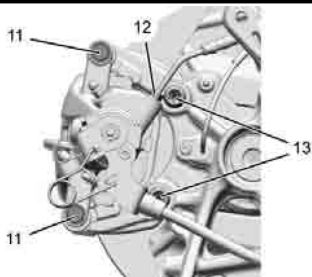
B3FP7HRD

Braking amplifier		
8	Braking amplifier on support	2,1 ± 0,3
9	Support on bulkhead	
10	Master-cylinder	

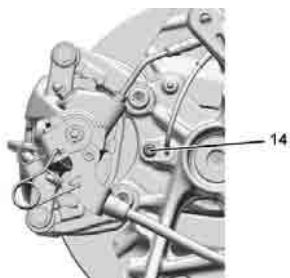




TIGHTENING TORQUES: BRAKING SYSTEM

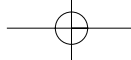


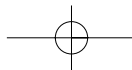
B3FP7HSD



B3FP7HTD

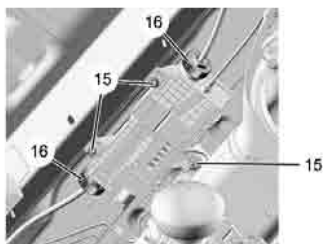
Rear brakes		
11	Rear brake caliper	3,5 ± 0,3
12	Unions on brake piping	1,5 ± 0,1
13	Rear brake caliper support	10,8 ± 1
14	Rear wheel sensor	0,8 ± 0,1





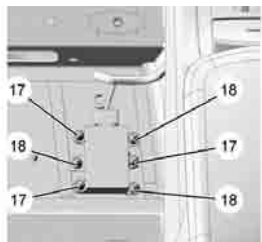
TIGHTENING TORQUES: BRAKING SYSTEM

Parking brake



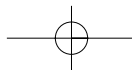
B3FP7HUD

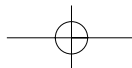
Gyrometer/accelerometer sensor



B3FP7HVD

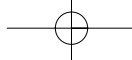
15	Electric parking brake system (FSE)	0,4 ± 0,06
16	Nut for parking brake cables	6 ± 0,6
17	Gyrometer/accelerometer sensor on support	0,9 ± 0,1
18	Sensor support on body	0,4 ± 0,06

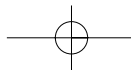




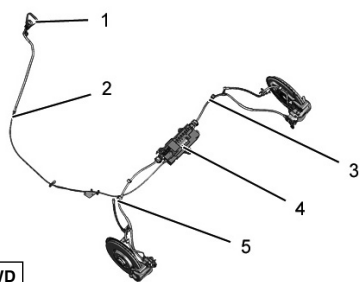
VALUES FOR CHECKING AND ADJUSTING THE BRAKING SYSTEM

Front brakes		Rear brakes	
Engines	ES9A - DT17BTED4	Engines	ES9A - DT17BTED4
Type	Ventilated brake discs	Type	Ventilated brake discs
Diameter (mm)	330	Diameter (mm)	302
Nominal thickness (mm)	30	Nominal thickness (mm)	22
Minimum thickness (mm)	28	Minimum thickness (mm)	20
Difference in maximum thickness on same circumference (mm)	0,01	Difference in maximum thickness on same circumference (mm)	0,01
Maximum run-out (mm)	0,05	Maximum run-out (mm)	0,05
Front brake pads (engines all types)		Rear brake pads (engines all types)	
Nominal thickness (mm)	13	Nominal thickness (mm)	11,15
Minimum thickness (mm)	3	Minimum thickness (mm)	2





GENERAL FEATURES OF ELECTRIC PARKING BRAKE



B3FP7HWD

Presentation.

(6) Electric parking brake control

"a" Parking brake warning lamp

Functioning of the electric parking brake.

To apply the parking brake:

Prior conditions:

- Vehicle stationary or not.
- Ignition switched on.
- Engine running or not.

Pull and release the control **(6)**.

NOTE: The parking brake can be activated when the vehicle is moving, at whatever speed, but only if the control **(6)** is kept pulled, the parking brake being deactivated as soon as the control **(6)** is released.

NOTE: The electric parking brake has an **"anti-lock"** system for limiting the locking of the wheels and guaranteeing vehicle stability if the parking brake is actioned while the vehicle is moving.

To release the parking brake:

Prior conditions:

- Vehicle stationary.
- Gear lever in position **P**.
- Ignition switched on.
- Engine running.

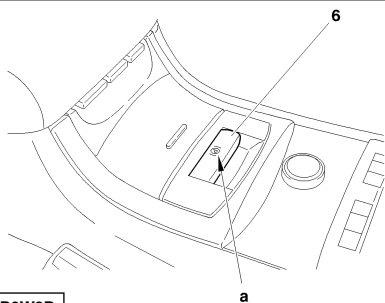
Press on the brake pedal.

Pull and release the control **(6)**.

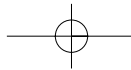
Parking brake warning lamp:

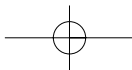
Condition for the warning lamp **"a"** coming on:

- Electric parking brake activated or incorrectly deactivated.
- Malfunctioning of the electric parking brake.

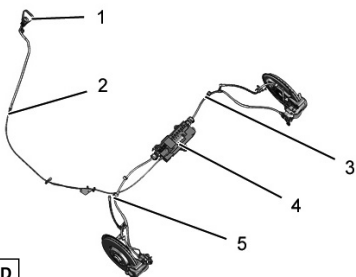


C5FP0W3D





GENERAL FEATURES OF ELECTRIC PARKING BRAKE



B3FP7HWD

Presentation.

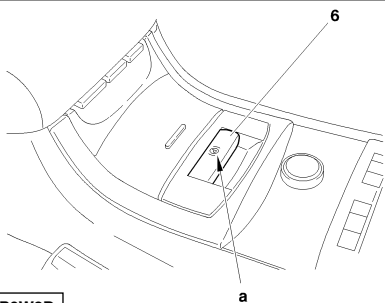
- (1) Handle for manual unlocking of the electric parking brake (FSE)
- (2) Cable for manual unlocking of the electric parking brake
- (3) Rear RH cable of the electric parking brake
- (4) Electric parking brake system (FSE)
- (5) Rear LH cable of the electric parking brake
- (6) Electric parking brake control

"a" Parking brake warning lamp

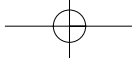
Normal functioning of the electric parking brake.

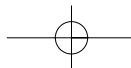
Applying the parking brake.

- Prior conditions:
- Vehicle stationary or not.
 - Ignition switched on.
 - Engine running or not.
- Pull and release the control (6).

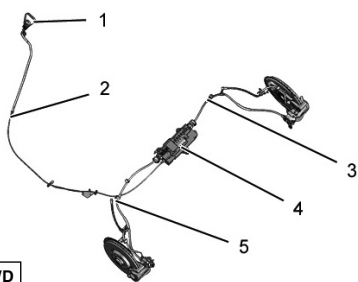


C5FP0W3D





GENERAL FEATURES OF ELECTRIC PARKING BRAKE



B3FP7HWD

NOTE: The parking brake can be activated when the vehicle is moving, at whatever speed, but only if the control (6) is kept pulled, the parking brake being deactivated as soon as the control (6) is released.

NOTE: The electric parking brake has an "anti-lock" system for limiting the locking of the wheels and guaranteeing vehicle stability if the parking brake is actioned while the vehicle is moving.

Releasing the parking brake.

Prior conditions:

- Vehicle stationary.
- Gear lever in position P.
- Ignition switched on.
- Engine running.

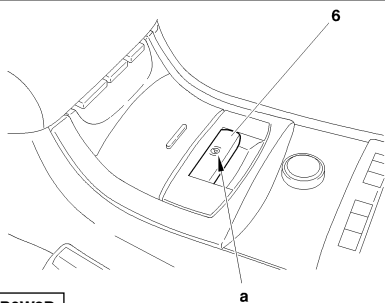
Press on the brake pedal.

Pull and release the control (6).

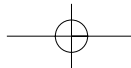
Parking brake warning lamp.

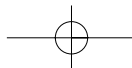
Condition for the warning lamp "a" coming on:

- Electric parking brake activated or incorrectly deactivated.
- Malfunctioning of the electric parking brake.

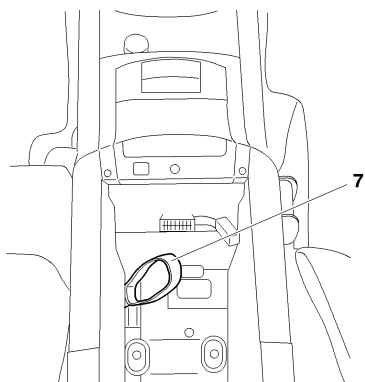


C5FP0W3D





GENERAL FEATURES OF ELECTRIC PARKING BRAKE



C5FP0W4D

Releasing of the electric parking brake (*with a fault*).

NOTE: Impossible to release the parking brake with the method "Normal functioning".

The fault may be caused by the following components:

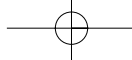
- Battery voltage.
- Malfunctioning of the electric parking brake system.

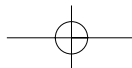
Open the central armrest.

Pull on the handle (7) located on the plastic part of the central armrest in order to release the parking brake mechanically.

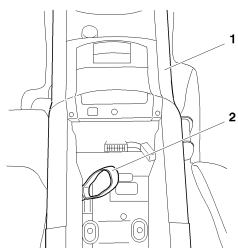
WARNING: This control does not permit application of the parking brake.

WARNING: It is forbidden to open up the electric parking brake system.





ELECTRIC PARKING BRAKE SYSTEM



C5FP0VVV

Removing-refitting the electric parking brake system.

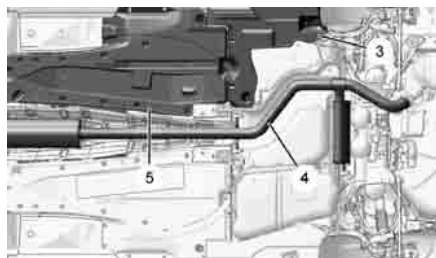
IMPERATIVE: Respect the safety and cleanliness requirements.

WARNING: Before disconnecting the battery, partially open the door windows.

Removing.

IMPERATIVE: Disconnect the battery prior to operating on the parking brake cables.

IMPERATIVE: Perform a manual unlocking of the parking brake, using the handle located in the central armrest, before operating on the parking brake cables.



B1JP08XD

Disconnect the battery.

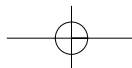
Raise and support the vehicle, wheels hanging.

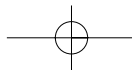
Remove the central console (1) (*see corresponding operation*).

Uncouple the handle (2) from the manual unlocking cable of the electric parking brake.

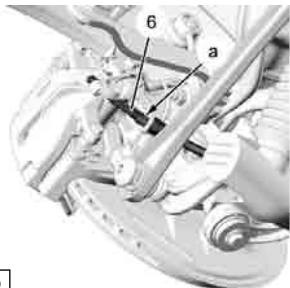
Remove:

- The exhaust line (4) (*ES9A engine*).
- The protection (5).
- The protection (3).





ELECTRIC PARKING BRAKE SYSTEM



B3FP7HHD

Uncouple the parking brake cable (6) from the brake caliper (*on each side*).

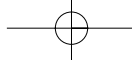
Unclip the parking brake cable at "a" (*on each side*).

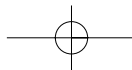
Detach the brake cables from their attachments on the bodywork.



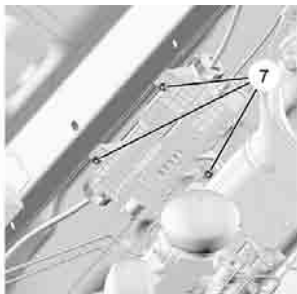
B3FP7HJD

Extract the manual unlocking cable of the electric parking brake from its location at "b".





ELECTRIC PARKING BRAKE SYSTEM



B3FP7HKD

Slacken the nuts (7).
Remove the electric parking brake system assembly.

Refitting.

Refit the electric parking brake system assembly.
Tighten the nuts (7) : **0,4 ± 0,1 m.daN.**
Attach the brake cables on their attachments on the bodywork.
Clip the parking brake cable, at "a" (on each side).
Couple the parking brake cable (6) on the brake caliper (on each side).

IMPERATIVE: Position the shim (8) (thickness 3 mm) at "c" (on each side).

Engage the manual unlocking cable of the electric parking brake in its location at "b".
Couple the handle (2) to the parking brake cable.
Refit the central console (1) (see corresponding operation).

Refit:

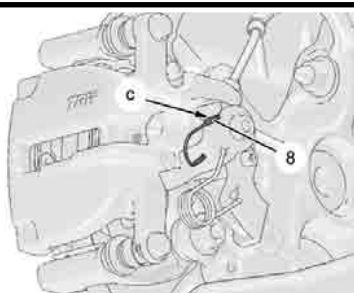
- The protections (5) and (3).
- The exhaust line (4) (ES9A engine).

Reconnect the battery.

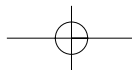
Apply and release the electric parking brake.
Check the functioning of the electric parking brake.

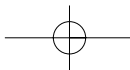
NOTE: Remove the shim (8) from the brake calipers.

IMPERATIVE: Perform the operations that are necessary following a reconnection of the battery (see corresponding operation).

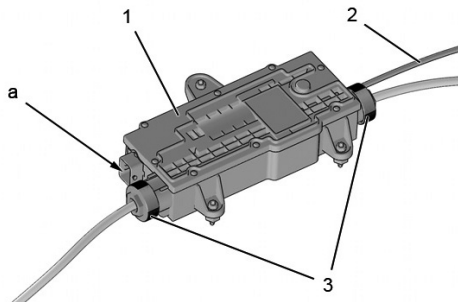


B3FP7HLD





ELECTRIC PARKING BRAKE CABLES



B3FP7HXD

Removing-refitting the parking brake cables.

IMPERATIVE: Respect the safety and cleanliness requirements.

WARNING: Before disconnecting the battery, partially open the door windows.

Removing.

IMPERATIVE: Disconnect the battery prior to operating on the parking brake cables.
IMPERATIVE: Perform a manual unlocking of the parking brake, using the handle located in the central armrest, before operating on the parking brake cables.

Disconnect the battery.
Raise and support the vehicle, wheels hanging.

IMPERATIVE: Do not introduce any foreign body into the electric parking brake system.

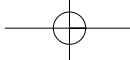
Remove the electric parking brake system (*see corresponding operation*).

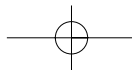
"a" connector

(1) electric parking brake system (FSE)

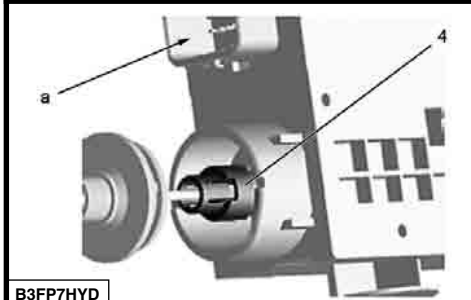
(2) manual unlocking cable

Undo the nuts (3).





ELECTRIC PARKING BRAKE CABLES

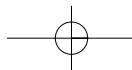
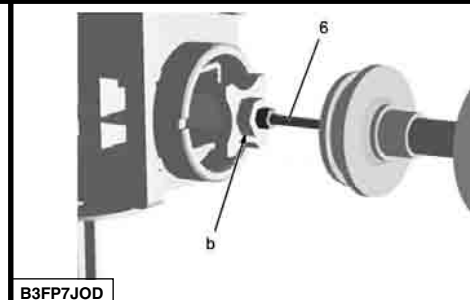
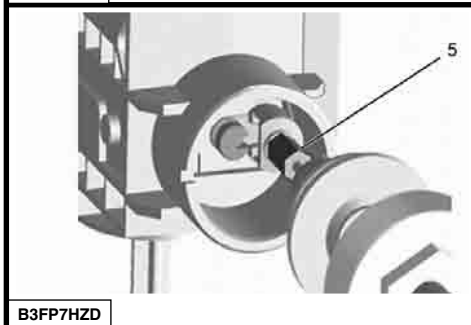


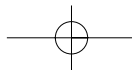
Connector end.

Unclip and push back the ring (4).
Uncouple the parking brake cable (5).

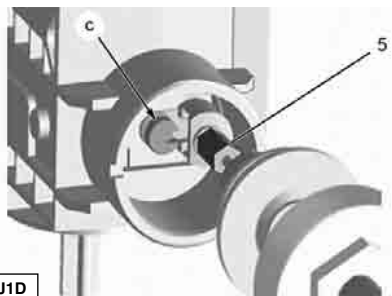
Manual unlocking cable end.

Do up at «b».
Uncouple the parking brake cable.

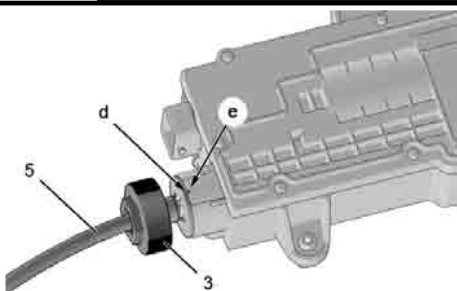




ELECTRIC PARKING BRAKE CABLES



B3FP7J1D



B3FP7J2D

Refitting.

Connector end.

Clip the parking brake cable (5) at «c».

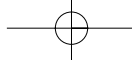
Clip the ring (4).

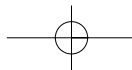
NOTE: Align the pin «d» with the notch «e».

Do up the nut (3).

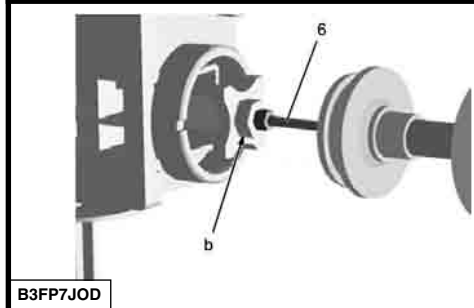
Tighten the nut (3) to

: 0,6 ± 0,1 m.daN.

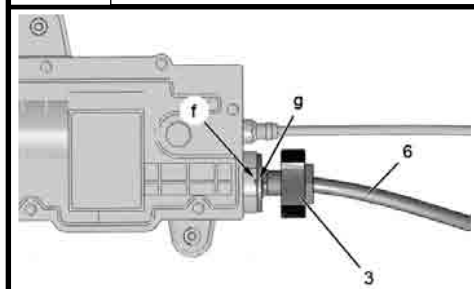




ELECTRIC PARKING BRAKE CABLES



B3FP7JOD



B3FP7J3D

Manual unlocking cable end.

NOTE: Grease the cable worm (6).

Engage the parking brake cable (6) into the electric parking brake system.

Do up **3 turns** anti-clockwise at "b".

NOTE: Align the pin "g" with the notch "f".

Do up the nut (3).

Tighten the nut (3) to **: 0,6 ± 0,1 m.daN.**

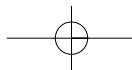
Refit the electric parking brake system (*see corresponding operation*).

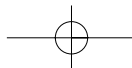
Reconnect the battery.

Apply and release the electric parking brake.

Check the functioning of the electric parking brake.

IMPERATIVE: Perform the operations that are necessary following a reconnection of the battery (*see corresponding operation*).





BRAKE FLUID CHECKS

IMPERATIVE: Respect the safety and cleanliness requirements.

WARNING: Brake fluid is toxic to health. Avoid any contact with your skin or with your eyes. If there is contact with your eyes, rinse immediately with copious amounts of water for several minutes.

WARNING: Brake fluid is highly corrosive to paintwork. If there is spillage onto the bodywork, clean the surface immediately.

Tools: Brake fluid tester (*):

Supplier	Reference	Type
SURETEST	TLF	Measures the boiling point of brake fluid
DOW AUTOMOTIVE	BETATEST	
FACOM OUTILLAGE	DF.16	
EBT	06.1	Measures the rate of hydrometry of brake fluid

(*) The list not exhaustive, refer to the catalogue "Tools and Equipment".

Checks.

Remove the filter of the brake fluid reservoir.

IMPERATIVE: Any pollution of the brake fluid is forbidden. The brake fluid should be limpid and free of suspended matter or sediments.

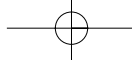
Check the brake fluid, following the method recommended by the supplier of the testing equipment.

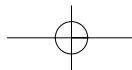
Test values:

Brake fluid	Minimum boiling point «Humid»
DOT 3	140°C
DOT 4	155°C
SUPER DOT 4	180°C
DOT 5	

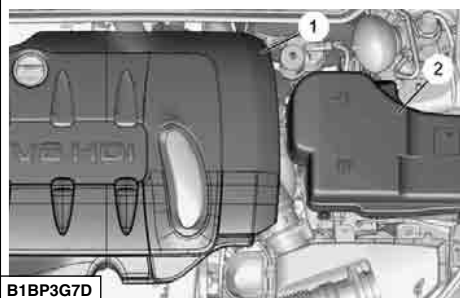
NOTE: If the tested value is lower than the minimum "humid" boiling point or within a tolerance of +10 % of this value, replace the brake fluid (see corresponding operation).

IMPERATIVE: Use exclusively the hydraulic fluids that are approved and recommended.

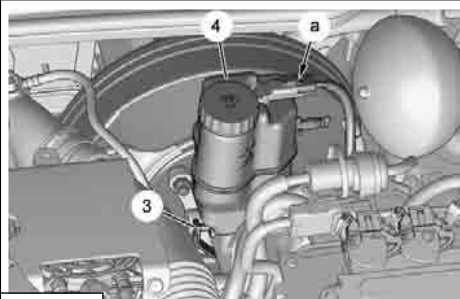




DRAINING, FILLING AND BLEEDING THE BRAKING SYSTEM



B1BP3G7D



B3FP7H3D

- [1] Generic bleeding apparatus
- [2] LEXIA station
- [3] PROXIA station

Tools.

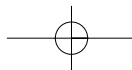
- : «LURO» or similar
- : 4171-T
- : 4165-T

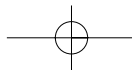
NOTE: Bleeding of the secondary braking circuit is done with the help of diagnostic tools [2] or [3].

Draining the brake fluid reservoir.

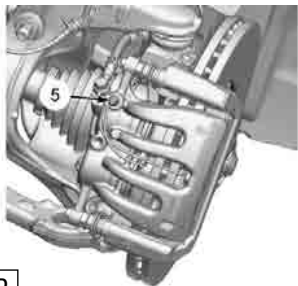
- Disconnect the battery.
- Remove the engine cover (1) and the lid (2).
- Disconnect the connector «a».
- Take out the filter of the brake fluid reservoir (4).
- Drain the brake fluid reservoir (1) to the maximum extent (*if necessary, use a clean syringe*).
- Remove the pin (3) and the brake fluid reservoir (4).
- Clean the brake fluid reservoir (4).
- Refit the brake fluid reservoir (4), the pin (3) and the filter of the brake fluid reservoir.
- Reconnect the connector.
- Reconnect the battery.

IMPERATIVE: Perform the operations that are necessary following a reconnection of the battery (*see corresponding operation*).





DRAINING, FILLING AND BLEEDING THE BRAKING SYSTEM



B3FP7H4D



B3FP7H5D

Filling the braking circuit.

WARNING: Use only the approved and recommended hydraulic fluids.

IMPERATIVE: Only use new brake fluid that has not emulsified; avoid any introduction of impurities into the hydraulic circuit.

Fill the brake fluid reservoir (4).

Bleeding the primary braking circuit.

WARNING: During the bleed operations: take care to maintain the level of the brake fluid in the reservoir, keep it topped up.

WARNING: The ABS system must not be in action during the bleed operation.

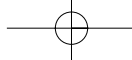
WARNING: Respect the sequence for the opening of the bleed screws.

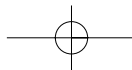
Front brake caliper : Bleed screw (5).

Rear brake caliper : Bleed screw (6).

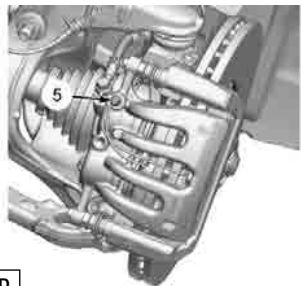
Bleed each brake caliper, proceeding in the following sequence:

- Front LH wheel.
- Front RH wheel.
- Rear LH wheel.
- Rear RH wheel.





DRAINING, FILLING AND BLEEDING THE BRAKING SYSTEM



B3FP7H4D

Using the bleeding apparatus.

Connect the bleeding apparatus [1] on the brake fluid reservoir (4).
Adjust the apparatus pressure to **2 bars**.

For each brake circuit:

- Connect a transparent tube onto the bleed screw.
- Submerge the other end of the tube in a clean container.
- Open the bleed screw.
- Wait until the fluid is flowing out without air bubbles.
- Close the bleed screw.
- Remove the bleeding apparatus.
- Check the brake fluid level (*should be between «DANGER» level and «MAXI» level*).
- Fill if necessary with the approved and recommended synthetic brake fluid.

Without bleeding apparatus.

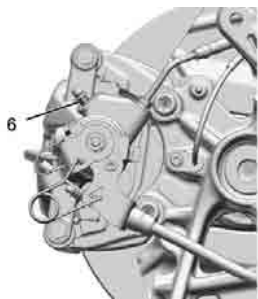
NOTE: Two operators are necessary.

For each brake circuit:

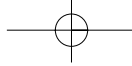
- Apply the brake pedal to place the circuit under pressure.
- Connect a transparent tube onto the bleed screw.
- Submerge the other end of the tube in a clean container.
- Open the bleed screw.
- Wait until the fluid is flowing out without air bubbles.
- Close the bleed screw.

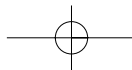
NOTE: Recommence the process a **second time** if that is necessary.

- Check the brake fluid level (*should be between «DANGER» level and «MAXI» level*).
- Fill if necessary with the approved and recommended synthetic brake fluid.

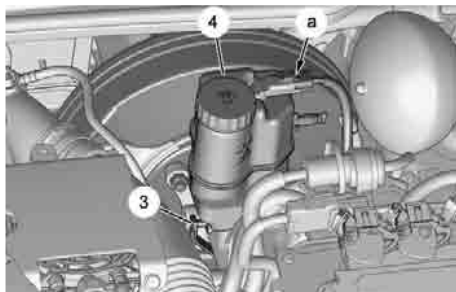


B3FP7H5D





DRAINING, FILLING AND BLEEDING THE BRAKING SYSTEM



B3FP7H3D

Bleeding the secondary braking system.

WARNING: During the bleeding operation, take care to maintain the level of brake fluid in the reservoir and to top it up.

NOTE: Connect the bleeding apparatus [1] on the brake fluid reservoir (4).

Use the diagnostic tools [2] or [3].

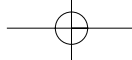
Select the menu **ESP VSC 440**.

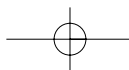
Bleed sequence: Menu **ESP**.

- Front LH wheel.
- Front RH wheel.
- Rear LH wheel.
- Rear RH wheel.

Follow the instructions given by the diagnostic tool.

At the end of the bleeding programme, check the brake fluid level and top up, if necessary. Check the brake pedal travel (*no lengthening*), if not satisfactory repeat the bleeding procedure.





SAFETY REQUIREMENTS: ACTIVE SUSPENSION WITH VARIABLE DAMPING

All operations on the hydraulic suspension circuit must be performed in conformity with the following requirements and regulations:

Authorities competent in matters of health:

- Accident prevention.
- Environmental protection.

WARNING: Operations should be carried out by specialised personnel who have had training in the safety requirements and precautions to be taken.

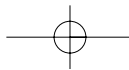
Safety requirements.

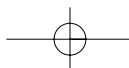
ESSENTIAL: In view of the special features of the hydraulic suspension system, observe the requirements below, before undertaking any repair.

IMPERATIVE: Depending on the operation to be carried out, respect the requirements for supporting and securing the vehicle.

HYDRAULICS

Wheels hanging	Wheels not hanging		
	Vehicle on the ground	Vehicle on 4-column lift	
2-column lift or secure the vehicle on 4 axle stands	Depressurisation of the circuit <i>(see corresponding operation)</i>	Checking and adjusting of heights <i>(switch on ignition)</i>	Other operations <i>(depressurisation of the hydraulic circuit)</i>





SAFETY REQUIREMENTS: ACTIVE SUSPENSION WITH VARIABLE DAMPING

During the operation.

Wait for the pressure in the hydraulic circuit to fall fully before disconnecting the unions on the following components (*risk of sudden sinking of the vehicle*):

- Built-in Hydro-electronic Interface (BHI).
- Front suspension cylinder.
- Rear suspension cylinder.
- Front stiffness regulator.
- Rear stiffness regulator.
- Suspension pressure sensors.

IMPERATIVE: Do not operate on the hydraulic circuit without making the pressure drop (*see corresponding operation*).

Engine running.

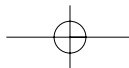
Do not operate on the hydraulic suspension circuit.

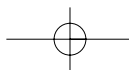
Always remain out of range of any possible projections of fluid, as these could cause serious injuries.

NOTE: In the event of contact of **LDS** fluid with the eyes, rinse them with copious amounts of water and seek specialist advice.

NOTE: In the event of lengthy contact of **LDS** fluid with the skin, wash it with soap and water.

WARNING: After the engine has stopped, wait 30 seconds before commencing any operation.





SAFETY REQUIREMENTS: ACTIVE SUSPENSION WITH VARIABLE DAMPING

IMPERATIVE: Do not remain underneath the vehicle during an operation to adjust vehicle heights or during actuator (*electrovalve*) tests.

IMPERATIVE: Any deforming of the wheel travel sensor supports is forbidden. If there is any deformation found, replace the component.

Cleanliness requirements.

WARNING: Non-respect of the cleanliness requirements may cause a contamination of the circuit and a malfunctioning of the suspension.

Preliminary operations.

The work area must be kept clean and uncluttered.

The technician must wear clean overalls.

Components being stored during the repair must be protected from dust.

The tooling required for an operation on the suspension system should always be cleaned prior to the operation.

During the operation:

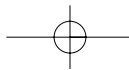
- Before operating on the suspension circuit, proceed to clean the hydraulic components and unions.

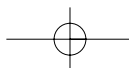
IMPERATIVE: Approved cleaner: SODIMAC degreaser.

IMPERATIVE: After a dismantling, immediately blank the hydraulic components and unions with plugs. The plugs should be used for one operation only.

Any component that has been removed must be plugged and placed in a clean plastic bag.

IMPERATIVE: After a dismantling, any cleaning using compressed air or products is strictly prohibited. Any LDS fluid that is collected must not be re-used. Any topping-up must be done with new fluid.





SUSPENSION SPHERES: GENERAL SPECIFICATION



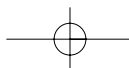
Each suspension sphere is identified at "**a**", by one number and two letters, marked in bold characters:

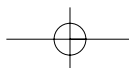
- The number consists of **2 digits**, corresponding to the nitrogen pressure inside the suspension sphere.
- The **two letters** identify the location of the suspension sphere.

Other information marked on the suspension sphere:

- Day of the year of manufacture.
- Year of manufacture.
- Time of manufacture.
- Factory no. of the suspension sphere.

B3BP1BJD





SUSPENSION SPHERES: SPECIFICATION - IDENTIFICATION

Specifications.

The «**slimline**» accumulators are grey in colour.

NOTE: Recharging the «**slimline**» accumulators with nitrogen is impossible.

Volume of nitrogen : **385 ± 15 cc.**

Suspension cylinder accumulators (front).

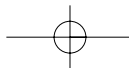
Engine version	Suspension sphere marking	Pressure rating (bars)
ES9A	GO	50
DT17BTED4		

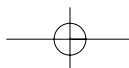
Suspension cylinder accumulators (rear).

Engine version	Suspension sphere marking	Pressure rating (bars)
ES9A	KS	40
DT17BTED4		

NOTE: The dampers are integral to the suspension cylinders (**AMVAR** cartridge). (*)

(*) **AMVAR** = Amortissement Variable (*variable damping*).





SUSPENSION SPHERES: SPECIFICATION - IDENTIFICATION

Stiffness regulator accumulators (front).

NOTE: The dampers are integral to the hydractive regulator.

Engine version	Suspension sphere marking	Pressure rating (bars)
ES9A	KR	70
DT17BTED4		

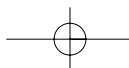
Stiffness regulator accumulators (rear).

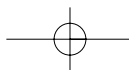
NOTE: The dampers are integral to the hydractive regulator.

Engine version	Suspension sphere marking	Pressure rating (bars)
ES9A	KS	40
DT17BTED4		

The suspension cylinders on the same axle have to be equipped with the same type of suspension accumulators.

IMPORTANT: Tightening torque for the suspension accumulators : 2,7 ± 0,5 m.daN.





DE-PRESSURISING THE HYDRAULIC SUSPENSION CIRCUIT

Tools.

[1] PROXIA station : 4165-T
[2] LEXIA station : 4171-T

De-pressurisation.

NOTE: It is possible to de-pressurise the suspension by individual axle.

Using a diagnostic tool.

Start the engine.
Place the height control in the «**LOW**» position.
Wait for the vehicle height to reach the position required.
Stop the engine.
Connect the diagnostic tool [1] or [2] to the vehicle's diagnostic socket.
Switch on the ignition.

Carry out a global test.

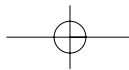
Go into the menu:
- Suspension.
- De-pressurisation.
Follow the instructions displayed on the screen.
Wait for the vehicle's suspension to sink completely.
NOTE: This operation takes around **3 minutes**.
Switch off the ignition.
Disconnect the battery.

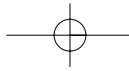
Without a diagnostic tool.

IMPERATIVE: Any LDS fluid that is collected must not be re-used.

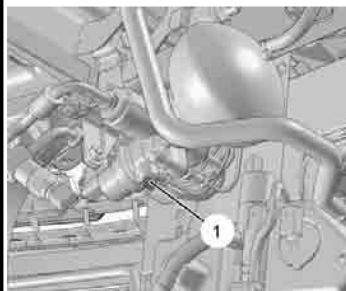
NOTE: Collect the **LDS** fluid in order to keep the work area clean.
Respect the environment.

Start the engine.
Place the height control in the «**LOW**» position.
Stop the engine.





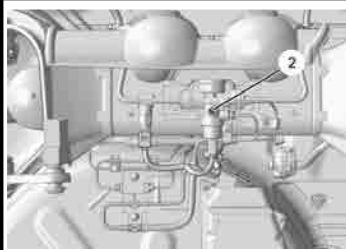
DE-PRESSURISING THE HYDRAULIC SUSPENSION CIRCUIT



B3BP1BED

Front suspension: Undo the pressure release screw **(1)** by **one turn**.

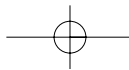
Wait for the pressure in the hydraulic circuit to drop fully.

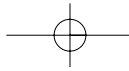


B3FP7HDD

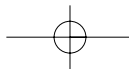
Rear suspension: Undo the pressure release screw **(2)** by **one turn**.

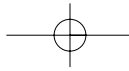
Wait for the pressure in the hydraulic circuit to drop fully.





AIR CONDITIONING R 134.a (HFC)						
Vehicle	Engine version	Date	Refrigerant Refill (± 25 gr)	Compressor		
				Variable capacity	Oil quantity cc	Oil reference
C6	ES9A	12/05 →	625	SD 7 C16	135	SP 10
	DT17BTED4		525			





SPECIAL FEATURES: AIR CONDITIONING SYSTEM

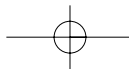
Compressor

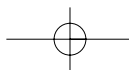
The variable capacity air conditioning compressor has external control.
The internal pneumatic valve is replaced by an external electrovalve.

Condenser

The condenser has a cylinder incorporating the function of aircon fluid reservoir and with integral filtering cartridge.

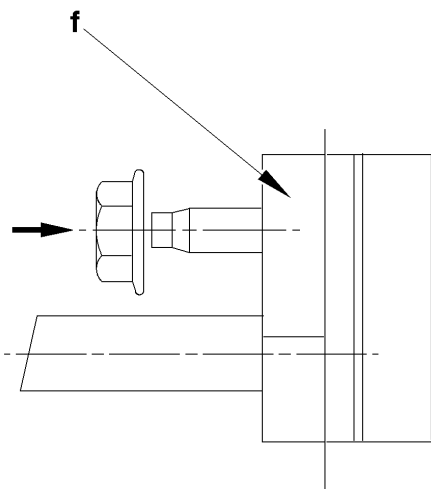
NOTE: The filtering cartridge is not interchangeable.





SPECIAL FEATURES: AIR CONDITIONING SYSTEM

Tightening



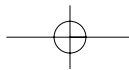
Requirements for fitting the inlet and outlet brackets:

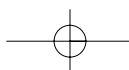
- Aircon compressor.
- Aircon condenser.
- Aircon pressure reducer valve.

IMPERATIVE: Assembly requirement: the bracket(s) «f» must be against their interface(s) before the nut(s) are tightened.

IMPERATIVE: Respect the tightening torques.

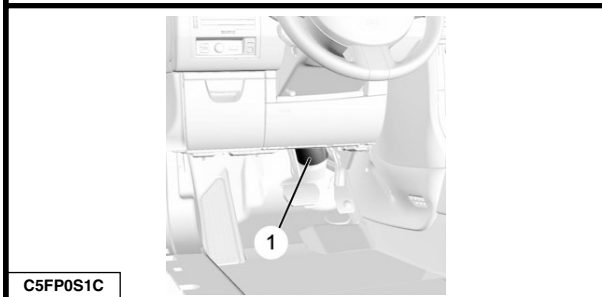
C5HP1CWC





SPECIAL FEATURES: AIR CONDITIONING SYSTEM (R 134.a)

Pollen filter



The pollen filter is located on the driver's side under the dashboard to the right of the steering column.

IMPERATIVE: Respect the safety and cleanliness requirements.

Removing.

Remove the trim (1) under the dashboard (*driver's side*).

Release the tab at "b".

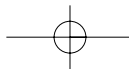
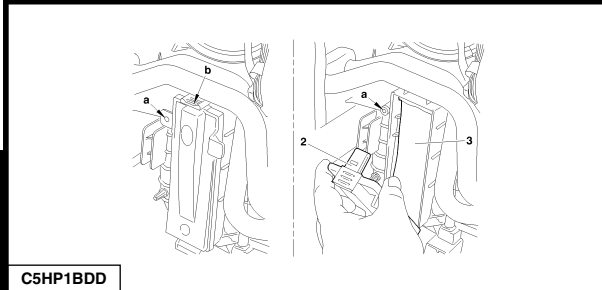
Tilt, lift and remove the cover (2).

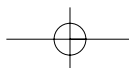
Remove the pollen filter (3).

NOTE: If the tab "b" is damaged, position a screw for soft materials at "a".

Refitting.

Refit the various components in reverse order to removal.





SPECIAL FEATURES: AIR CONDITIONING SYSTEM (R 134.a)

Compressor lubricant

ESSENTIAL: The compressor lubricant is extremely hygroscopic; always use FRESH oil.

Checking the compressor oil level

There are three specific cases:

- 1) Repairs to a system without leaks.
- 2) Slow leak.
- 3) Fast leak.

1) Repairing a system without leaks.

a) - Using draining/recovery equipment not fitted with an oil decanter.

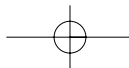
- Drain the system as slowly as possible via the **LOW PRESSURE** valve, so as not to lose any oil.
- No more oil should be added when filling the system with **R 134.a** fluid.

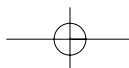
b) - Using draining/filling equipment fitted with an oil decanter.

- Drain the **R 134.a** fluid from the system in accordance with the instructions in the equipment handbook.
- Measure the amount of oil recovered.
- Add the same amount of **NEW** oil when filling the system with **R 134.a** fluid.

c) - Replacing a compressor.

- Remove the old compressor, drain it and measure the oil quantity.
- Drain the new compressor (*supplied full*), so that the same amount of **NEW** oil is left in the compressor as was in the old compressor.
- No more oil should be added when filling the system with **R 134.a** fluid.





SPECIAL FEATURES: AIR CONDITIONING SYSTEM (R 134.a)

Checking the compressor oil level (continued)

2) Slow leak.

Slow leaks do not lead to oil loss, therefore the same procedure should be followed as if there was no leak at all.

3) Fast leak.

This type of leak causes both oil loss as well as allowing air to enter the system.

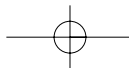
It is therefore necessary to:

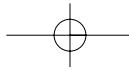
- Replace the dryer.
- Drain as much oil as possible (*when replacing the faulty component*).



Either before or during filling of the system with **R 134.a** fluid, introduce **80 cc** of **NEW** oil into the system.

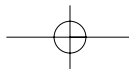
If changing one of the following components, add as below:

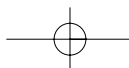
- | | |
|--|----------------------------|
| - A drying bottle | : 15 cc of compressor oil. |
| - A condenser or an evaporator | : 20 cc of compressor oil. |
| - A high pressure or low pressure pipe | : 5 cc of compressor oil. |
| - A drying cartridge | : 15 cc of compressor oil. |





CHECKING THE EFFICIENCY OF THE AIR CONDITIONING SYSTEM	
Equipment: EXXOTest	Equipment: VALEO
Tooling (tools and Equipment flash). Exxo clim : 2.4.2-1. Method of use : See instructions.	Tooling. Clim test 2 : 4372-T. Method of use : See instructions.
	
E5AP2N4D	E5AP2N5D





CHECKING THE EFFICIENCY OF THE AIR CONDITIONING SYSTEM

Testing procedure.

Checking.

Position the equipment - **Exxoclim** or **Clim test 2** - (*see instructions*).

Preliminary operations.

Close all the front air vents.

Start the engine.

Open the front air vent.

Activate the «**air conditioning**» control.

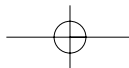
Position the air distribution control to «**frontal flow**».

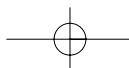
Activate the «**air recirculation**» control.

Positions of the air conditioning controls:

- Temperature control on maximum cold (**LH and RH**).
- Blower control in maximum speed position.

Let the air conditioning operate for **5 minutes**.





CHECKING THE EFFICIENCY OF THE AIR CONDITIONING SYSTEM

Reminder (for information)

Under-cooling.

The under-cooling represents the difference between the condensation temperature and the aircon fluid temperature at the aircon condenser outlet. The under-cooling gives the quantity of aircon fluid (*in the liquid state*) in the air conditioning circuit.

Values for under-cooling (SR).

Values	Origins	Solutions
SR < 2°C	Lack of aircon fluid in the aircon condenser	Add some aircon fluid
2°C < SR < 4°C	Lack of aircon fluid in the aircon condenser	
4°C < SR < 10°C/12°C	Correct quantity	
SR > 10°C/12°C	Excess aircon fluid in the aircon condenser	Remove some aircon fluid
SR > 15°C		

Over-heating.

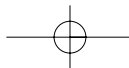
The over-heating represents the difference between the aircon fluid temperature at the evaporator outlet and the evaporation temperature. The over-heating gives the quantity of aircon fluid (*in the liquid state*) in the air conditioning circuit

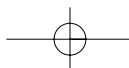
Values for over-heating (SC).

Values	Origins	Solutions
2° < SC < 15°C	Correct quantity	
SC > 15°C	Lack of aircon fluid in the cooling circuit	Add some aircon fluid
SC < 2°C	Excess aircon fluid in the cooling circuit	Remove some aircon fluid

Blown air temperature.

The blown air temperature should be between 2°C and 10°C.



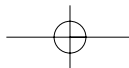


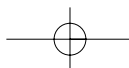
CHECKING THE EFFICIENCY OF THE AIR CONDITIONING SYSTEM

Aircon circuit diagnosis table (for information)

Principal problem	Symptom	Possible causes
The aircon compressor does not turn or stops suddenly	The clutch of the aircon compressor does not engage, or disengages suddenly	Aircon compressor clutch
		Lack of aircon fluid in the aircon circuit
		Aircon pressostat
		Aircon evaporator sensor
		Electrical circuit (<i>wiring, fuses, etc.</i>)
	The clutch of the aircon compressor remains engaged and stops suddenly	Auxiliaries drive belt
		Aircon compressor
		Filtering and drying cartridge
		Aircon pressure reducer
		Leak of aircon fluid
Aircon compressor clutch		

AIR
CONDITIONING

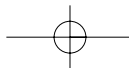


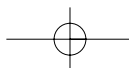


CHECKING THE EFFICIENCY OF THE AIR CONDITIONING SYSTEM

Aircon circuit diagnosis table (for information)

Principal problem	Symptom	Possible causes
The aircon compressor makes an abnormal noise	The clutch of the aircon compressor remains engaged	Incorrect adjustment of the aircon compressor clutch
		Aircon fluid quantity
		Aircon compressor defective
		Lack of aircon fluid in the aircon circuit
		Aircon compressor valves defective
	The clutch of the aircon compressor remains engaged and slips	Aircon compressor clutch
Auxiliaries drive belt		

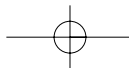


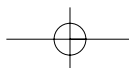


CHECKING THE EFFICIENCY OF THE AIR CONDITIONING SYSTEM

Aircon circuit diagnosis table (for information)

Principal problem	Symptom	Possible causes
Abnormal levels of pressure	Low pressure and high pressure too high	Aircon pressure reducer defective Duct clogged
	Low pressure too high and high pressure too low	Aircon compressor seal defective
	Low pressure too low and high pressure too high too high	Aircon evaporator sensor defective
		Aircon pressure reducer jammed
		Filtering and drying cartridge obstructed Duct clogged
	Low pressure and high pressure too low	Duct clogged
		Aircon pressure reducer jammed
		Lack of aircon fluid in the aircon circuit Aircon compressor defective



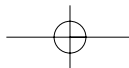


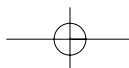
CHECKING THE EFFICIENCY OF THE AIR CONDITIONING SYSTEM

Aircon circuit diagnosis table (for information)

Principal problem	Symptom	Possible causes
Abnormal levels of pressure	Low pressure normal and high pressure too high	Presence of air in the aircon circuit
	Low pressure normal and high pressure too low	Aircon pressostat defective Evaporator sensor defective
	Low pressure too high and high pressure normal	Aircon pressure reducer jammed open
	Low pressure too low and high pressure normal	Filtering and drying cartridge saturated or clogged Aircon pressure reducer iced up
Air conditioning operating in back-up mode	Under cooling too weak	Lack of aircon fluid
	Under cooling excessive	Excess aircon fluid
		Filtering and drying cartridge clogged

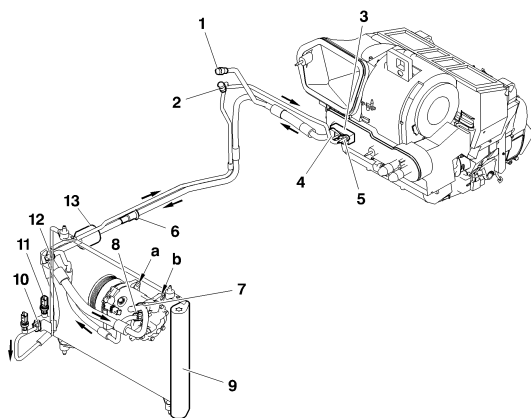
NOTE: In all cases, measure the excessive heating (SC) and the blow air temperature.





AIR CONDITIONING SYSTEM R.134.a

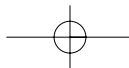
Engine: ES9A

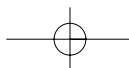


Tightening torques (m.daN).

- | | |
|---|-----------------------|
| (1) High pressure valve | |
| (2) Low pressure valve | |
| (3) Pressure reducer | |
| (4) Pressure reducer outlet, tighten to | : 0,6 |
| (5) Pressure reducer inlet, tighten to | : 0,6 |
| (6) Clickfit union, tool | : 8005-T.A Black |
| (7) Compressor inlet, tighten to | : 0,7 |
| (8) Compressor outlet, tighten to | : 0,7 |
| (9) Filtering cartridge | : Not interchangeable |
| (10) Condenser outlet, tighten to | : 0,6 |
| (11) Pressostat, tighten to | : 0,6 |
| (12) Condenser inlet, tighten to | : 0,6 |
| (13) Buffer capacity | |
| «a» Compressor front support | : 3,9 |
| «b» Compressor rear support | : 2,5 |

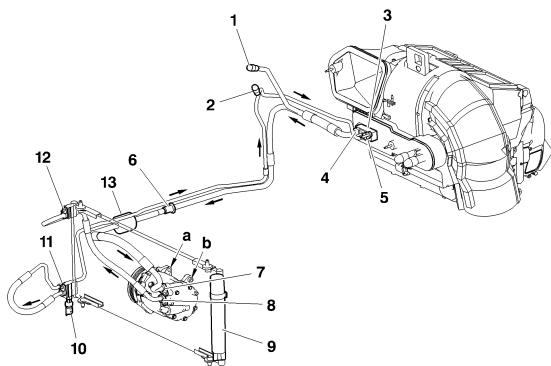
C5HP1E0P





AIR CONDITIONING SYSTEM R.134.a

Engine: DT17BTED4



Tightening torques (m.daN).

- (1) High pressure valve
- (2) Low pressure valve
- (3) Pressure reducer
- (4) Pressure reducer outlet, tighten to : 0,6
- (5) Pressure reducer inlet, tighten to : 0,6
- (6) Clickfit union, tool : 8005-T.A Black
- (7) Compressor inlet, tighten to : 0,7
- (8) Compressor outlet, tighten to : 0,7
- (9) Filtering cartridge : Not interchangeable
- (10) Condenser outlet, tighten to : 0,6
- (11) Pressostat, tighten to : 0,6
- (12) Condenser inlet, tighten to : 0,6
- (13) Buffer capacity

- «a» Compressor front support : 3,9
- «b» Compressor rear support : 2,5

C5HP1DRP

