

REPAIR MANUAL

DACIA COMMERCIAL

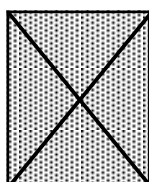
RM 503-1 MECHANICS
ENGINE: F8Q
GERBOX: NG1; NG7
TAPV: U75D; U75E; U75G

The reparation methods prescribed by the manufacturer in the present document are established subject to technical specifications in force at the document issuing date.

These are subject to modifications brought by the manufacturer at the fabrication of different assemblies, subassemblies or accessories of its vehicles.

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SPECIFICATIONS

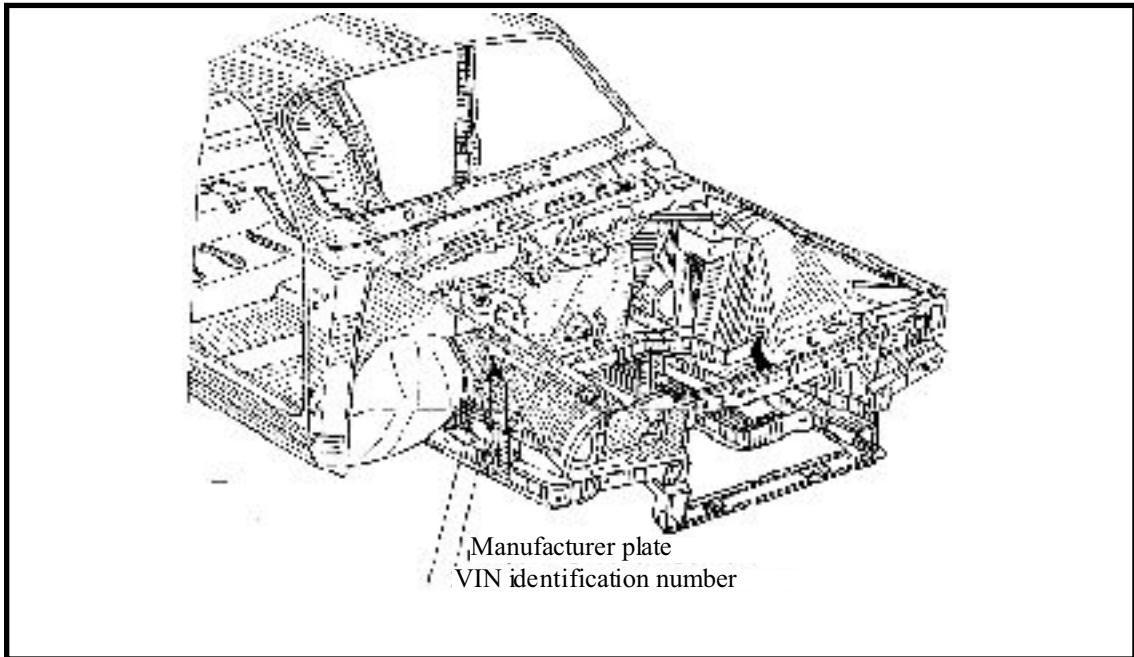
Engine – Clutch – Gearbox

01

VEHICLE			ENGINE		CLUTCH	GEARBOX
TYPE	CODE VIN	DRIVE	TYPE	CAPACITY (cm ³)		
Pick Up P	D 2611*	rear	F8Q-636	1870	200CPOV 3700	NG1-103 (50C-31)
Pick Up 4x4	D 4616*	4x4				NG7-101 (51C-02)
Drop Side P	D 2711*	rear	F8Q-636	1870	200CPOV 3700	NG1-103 (50C-31)
Drop Side 4x4	D 4716*	4x4				NG7-101 (51C-02)
Pick Up T	D 1611*	front	F8Q-636	1870	200CPOV 3700	(NG1-104) 365-18
Drop Side T	D 1711*	front	F8Q-636	1870	200 CPOV 3700	(NG1-104) 365-18
Double Cab P	D 2F71*	rear	F8Q-636	1870	200 CPOV 3700	(NG1-103) 50C-31
Double Cab T	D 1F11*	front				(NG1-104) 365-18
Double Cab 4x4	D 4F76*	4x4				(NG7-101) 51C-02

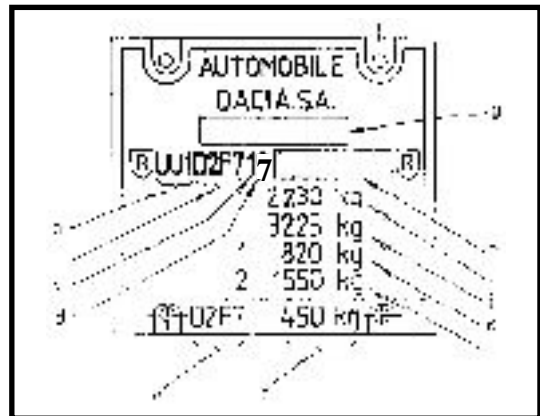
* (x or 7 or T) – this sign is showing : engine type, engine pollution norm and driving post location

UNITL THE DATE OF 26.06.2003



MANUFACTURER PLATE

- a. Manufacturer identification code;
- b. Code of the vehicle;
- c. Gearbox type code;
- d. Engine type code and driving location (according to VIN code structure);
- e. Vehicle code;
- f. Trailer maximum authorized weight without braking system;
- g. Homologation number for the importer country;
- h. VIS sign; one character for year model code + 7 characters for the chassis manufacturing number;
- i. Maximum technical admissible weight of the loaded car;
- j. Maximum admissible weight with trailer with braking system;
- k. Maximum technical admissible weight on front axle;
- l. Maximum technical admissible weight on rear axle.



SPECIFICATIONS

Vehicle identification

01

UNITL THE DATE OF 26.06.2003

VEHICLE IDENTIFICATION

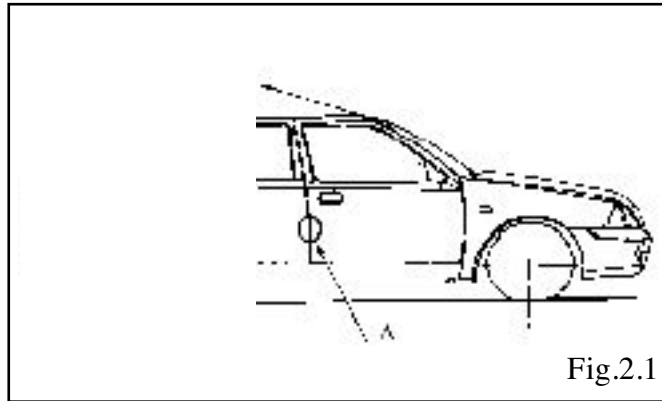
VIN IDENTIFICATION NUMBER

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
CODE	U	U	1	D	1	6	1	1	*	*	*	*	*	*	*	*	*
CODE	U	U	1	D	1	7	1	1	*	*	*	*	*	*	*	*	*
CODE	U	U	1	D	2	6	1	1	*	*	*	*	*	*	*	*	*
CODE	U	U	1	D	2	7	1	1	*	*	*	*	*	*	*	*	*
CODE	U	U	1	D	4	6	1	6	*	*	*	*	*	*	*	*	*
CODE	U	U	1	D	4	7	1	6	*	*	*	*	*	*	*	*	*
CODE	U	U	1	D	1	F	7	1	*	*	*	*	*	*	*	*	*
CODE	U	U	1	D	2	F	7	1	*	*	*	*	*	*	*	*	*
CODE	U	U	1	D	4	F	7	6	*	*	*	*	*	*	*	*	*

POSITION	CHARACTERS EXPLANATION
1 - 3	- manufacturer identification UU1 - AUTOMOBILE DACIA S.A. ROMÂNIA
4	- vehicle type D - vehicle for goods transportation
5	- engine-gearbox unit location 1 - longitudinal front engine and front drive 2 - longitudinal front engine and rear drive 4 - longitudinal front engine and four wheel drive (front drive coupling optional)
6	- carriage body type 6 - PICK UP 7 - DROP SIDE F - PICK UP, DOUBLE CAB
7	- payload location 1 - two front seats + bed body 7 - five places : 2 front places + 3 places rear bench + bed body
8	- gearbox type 1 - gearbox with 5 + 1 steps 6 - gearbox with 5 + 1 steps and 4x4 coupling
9	- engine code and vehicle driving location X - motor 1870 cm ³ with ignition by compression, combustibil (Diesel oil), type EURO 2, left hand drive 7 - engine 1870 cm ³ with ignition by compression, combustibil (Diesel oil), type EURO 3, left hand drive T - engine 1870 cm ³ with ignition by compression, combustibil (Diesel oil), type 1504, left hand drive
10	- year model code - 2 - 2002
11 - 17	- chassis manufacturing number

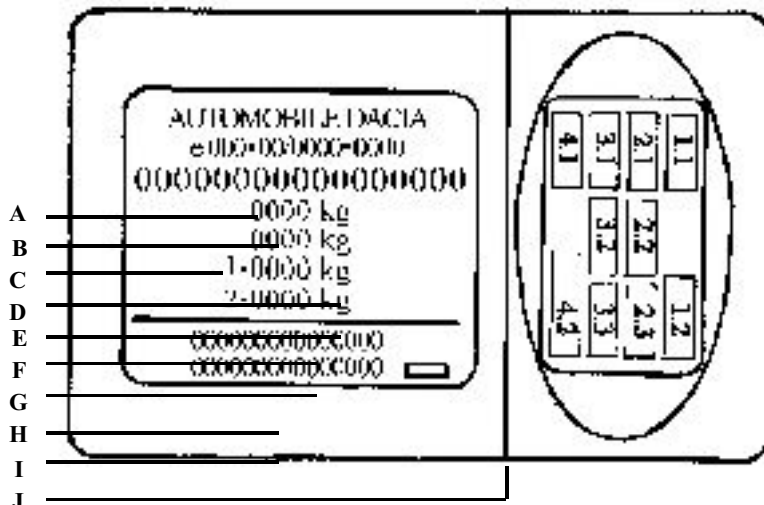
STARTING WITH THE DATE OF 26.06.2003

MANUFACTURER'S PLATE DISPOSAL TYPE SELF-ADHESIVE



STARTING WITH THE DATE OF 26.06.2003

The MANUFACTURER PLATE, self-adhesive type, has the bellow presented configuration, with two distinctive areas, presenting :manufacturer’s identification data and APV type identification data.




MANUFACTURER’S IDENTIFICATION DATA

- A. Manufacturer’s name
- B. Community reception number or homologation number.
- C. Identification number.
- D. Total authorized weight of the loaded vehicle.
- E. Total authorized running weight
- F. Total weight on front axle.
- G. Total weight on rear axle.
- H. Additional inscription.
- I. Manufacturing date inscription
- J. Consignment number.

APV IDENTIFICATION DATA

- 1.1 Code type auto APV
- 1.2 Manufacturing number
- 2.1 Equipping level code
- 2.2 Additional code for limited serial definition
- 2.3 Additional code for special serial definition
- 3.1 Carriage body color code
- 3.2 Seats upholstery code
- 3.3 Interior matching code.
- 4.1 Technical definition code
- 4.2 Optional equipping code.

Mobile jack – Protection routes

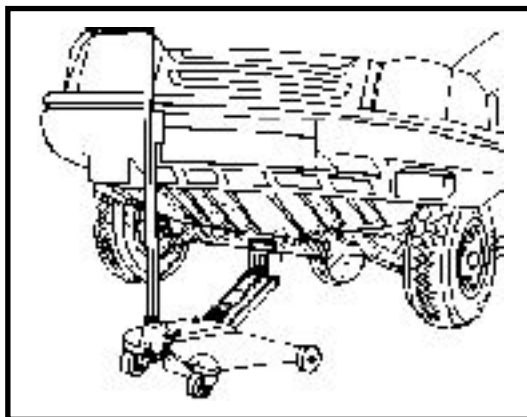
 The use of a mobile jack implies the using of protection intermediary routes.

It is absolutely forbidden to lift the vehicle using the front or rear suspension arms as supporting points.

The mobile jack is not to be used for vehicle lifting in order to perform works under the carriage body (the two columns elevator is to be used).

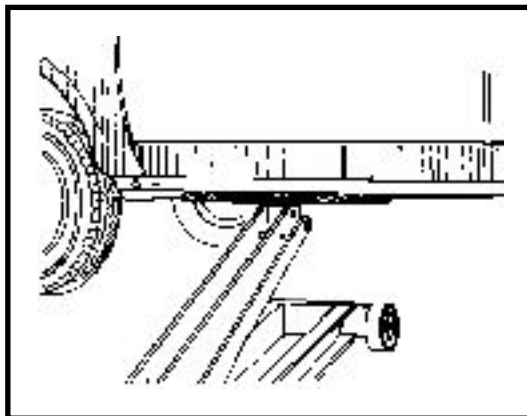
LIFTING THE FRONT PART OF THE VEHICLE

In order to lift the front of the vehicle, use the mobile jack and the protection intermediary route **Cha 280** (for protection of the body and mechanical elements) which are placed on the front longitudinal girders in the suspension arms axle.

**LATERAL LIFTING OF THE VEHICLE**

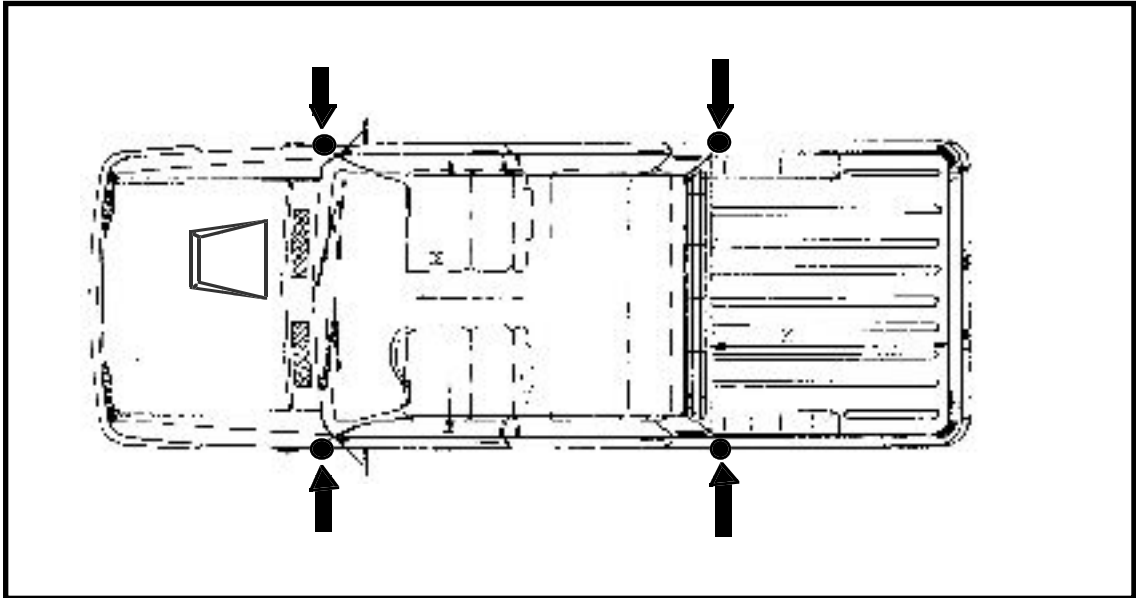
For lateral lifting of the vehicle use the mobile jack and the protection intermediary route **CHA 280**; place it under the threshold at the front door level.

The threshold edge shall be correctly positioned in the channel of the protection intermediary route.



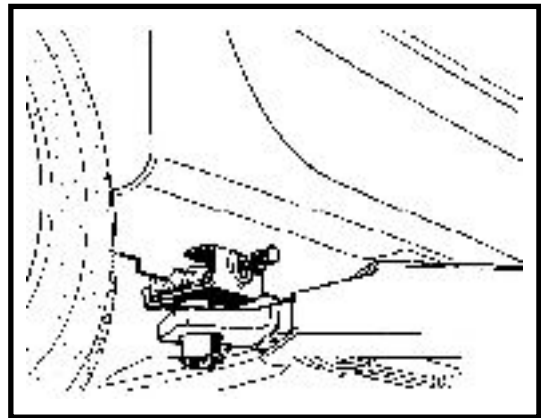
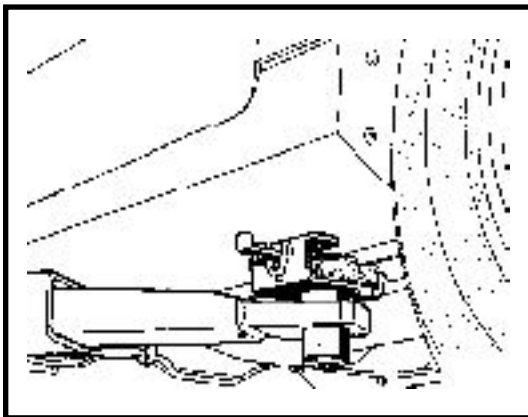
Elevator to be attached under the carriage body

For lifting, place the intermediary routes of the elevator arms in the supporting point of the vehicle inbuilt used by jack. The threshold edges shall be correctly positioned in the routes channels.



FRONT

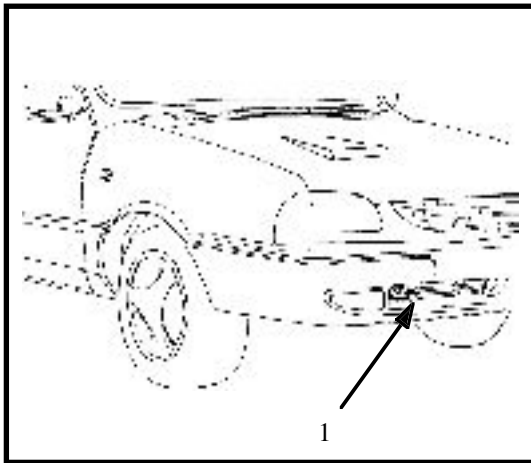
REAR



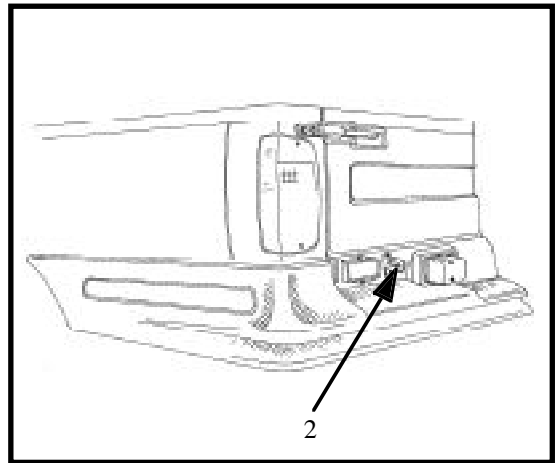
NEVER USE AS TOWING POINTS, THE TRANSMISSION AXLES (PLANETARY SHAFTS).

The towing points, front (1) or rear (2) are to be used only for vehicles hauling on wheels, by towing. These points cannot be anyhow used for drawing out the damaged vehicle from a trench (hole), or for direct or indirect vehicle lifting on a transport platform.

FRONT (right)



REAR (left)



Condition

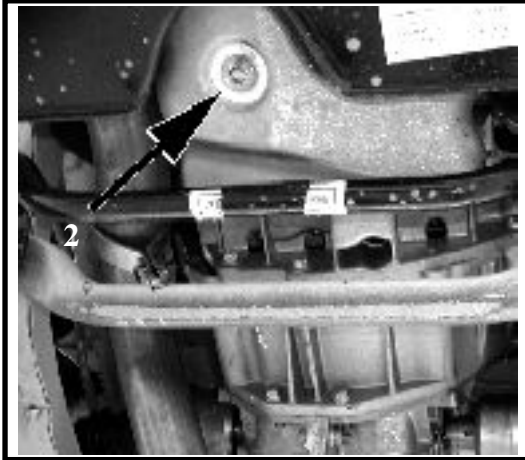
PRODUCT	PLACE WHERE IT IS USED
LUBRICATION (GREASING)	
Grease UM 170 Li Ca Pb 2M	Front transmission pinion grooves Gear box control shaft Cardan flange annular oil seal
ELF CARDREXA RNT2 or UM 185 Li 2M	Planetary transmissions
Grease UM 185 Li 2M	Front wheel steering knuckle grooves Cardan transmission Planetary transmission Front wheel bearing Suspension ball joints Rear axle differential
Grease U 95 Ca 2	Wheels bolts
Grease Li Ca Pb tip II cu MoS2 (or 20 UM Li III)	Pressure bearing guide Steering box (gear-rack, bearings) Clutch shaft grooves Pressure bearing Clutch mechanism diaphragm
Grease 22	Steering box rubber gaskets
Grease U100 Ca 4-5	Auxiliary steering connecting rod

PRODUCT	PLACE WHERE IT IS USED
SEALING	
RHODORSEAL 5661	Camshaft bearing cap no.1 and 5 Crankshaft no.1 bearing cap Planetary transmission pins
LOCTITE 518	Gearbox half crankcase Clutch casing Rear axle
KIT DURCISSEUR	Crankshaft no.1 bearing cap
LOCTITE 577	Rear driving contact thread Plug M 16- gearbox Rear axle
Sealant material 503 (mastic)	Rear axle differential
SOLDERING	
LOCTITE FRENETANCH	Flywheel attachment screws
CLEANING	
DECAPJOINT	Cylinder head gasket surface

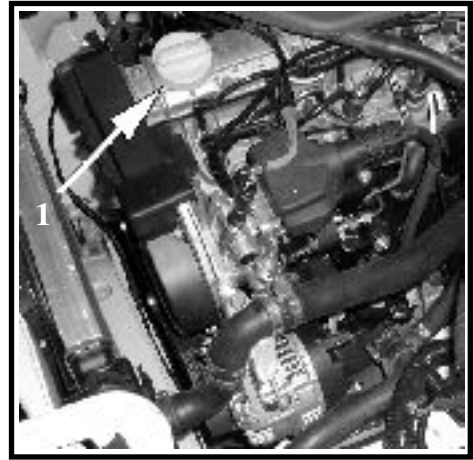
ENGINE

Necessary special tools - wrench for draining plug : MOT 1018

Draining : plug (2)

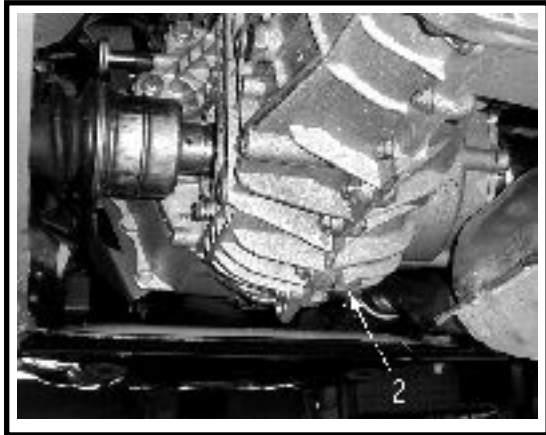


Filling : plug (1)

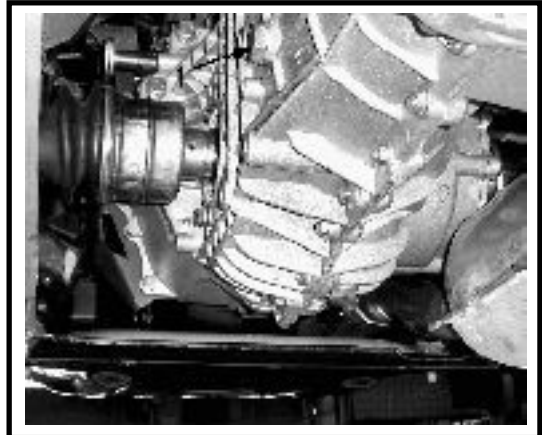


GEARBOX

Drain : plug (2)



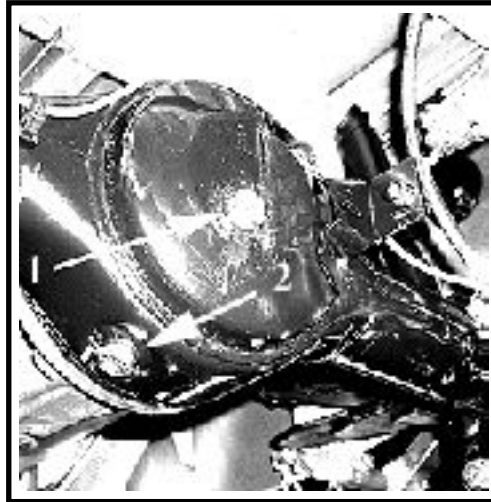
Fill : plug (1)



REAR AXLE DIFFERENTIAL

Draining: plug (2)

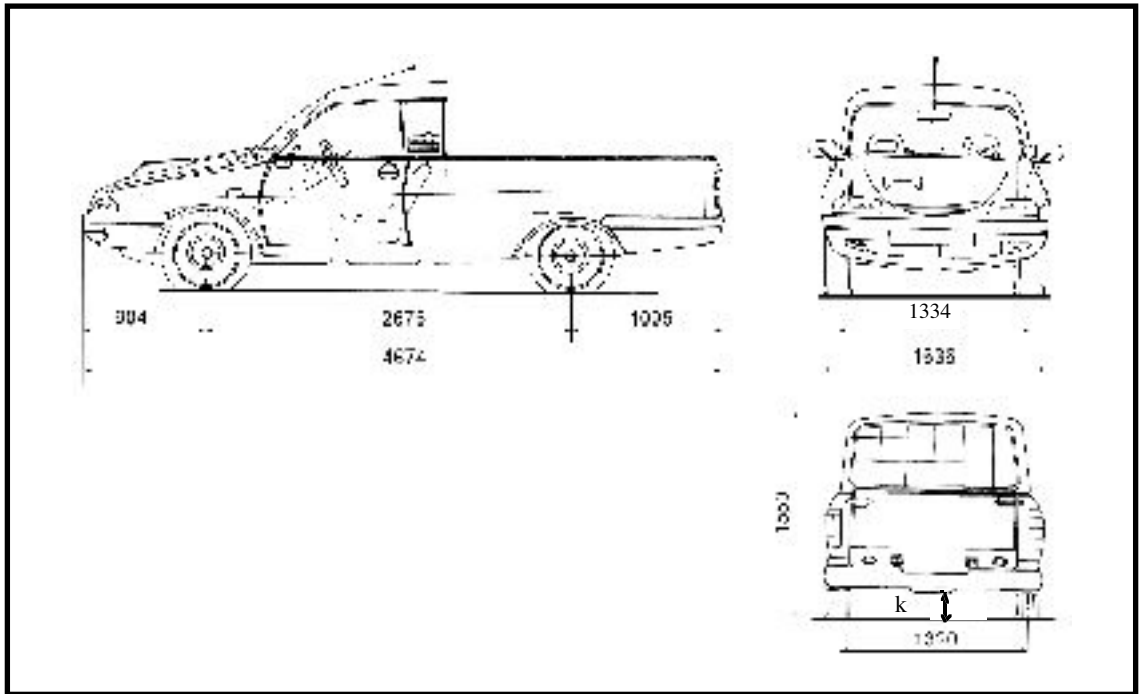
Filling: plug (1)



Dimensions

DIMENSIONS

DACIA Pick Up P, 4x4 and T



DACIA Pick Up P, 4x4 end T	
DIMENSIONS (mm)	
Total length	4674
Total width	1636
Total height:	
- Empty	1550
- Loaded	-
Axle base	2675
Front wheel track width	1334
Rear wheel track width	1320
Ground clearance(k):	
- Loaded	>140
Turn radius:	
- Between footways	5600
- Between walls	5800

WEIGHTS

DACIA Pick Up P, 4x4 and T

VEHICLES WEIGHTS	VEHICLE DENOMINATION	DACIA Pick Up P	DACIA Pick Up 4x4	DACIA Pick Up T
	DRIVE	REAR	INTEGRAL	FRONT
	VIN CODE	D 2611*	D4616*	D 1611*
1. Unloaded vehicle weight (with 75 Kg. driver):				
- on the front axle,		635	645	645
- on the rear axle,		520	530	480
- total.		1155	1175	1125
2. Deadweight (unloaded vehicle weight):				
- on the front axle,		590	600	600
- on the rear axle,		490	500	450
- total.		1080	1100	1050
3. Technical admissible maximal weight of the loaded vehicle:				
- on the front axle,		720	740	640
- on the rear axle,		1510	1510	1260
- total.		2230	2250	1900
4. Technical admissible maximal weight on each axle:				
- on the front axle,		760	760	760
- on the rear axle.		1550	1550	1300
5. Payload:				
- on seats,		150	150	150
- on bed body,		1000	1000	700
- total.		1150	1150	850

Dimensions

TOWING WEIGHTS
DACIA Pick Up P, 4x4 and T

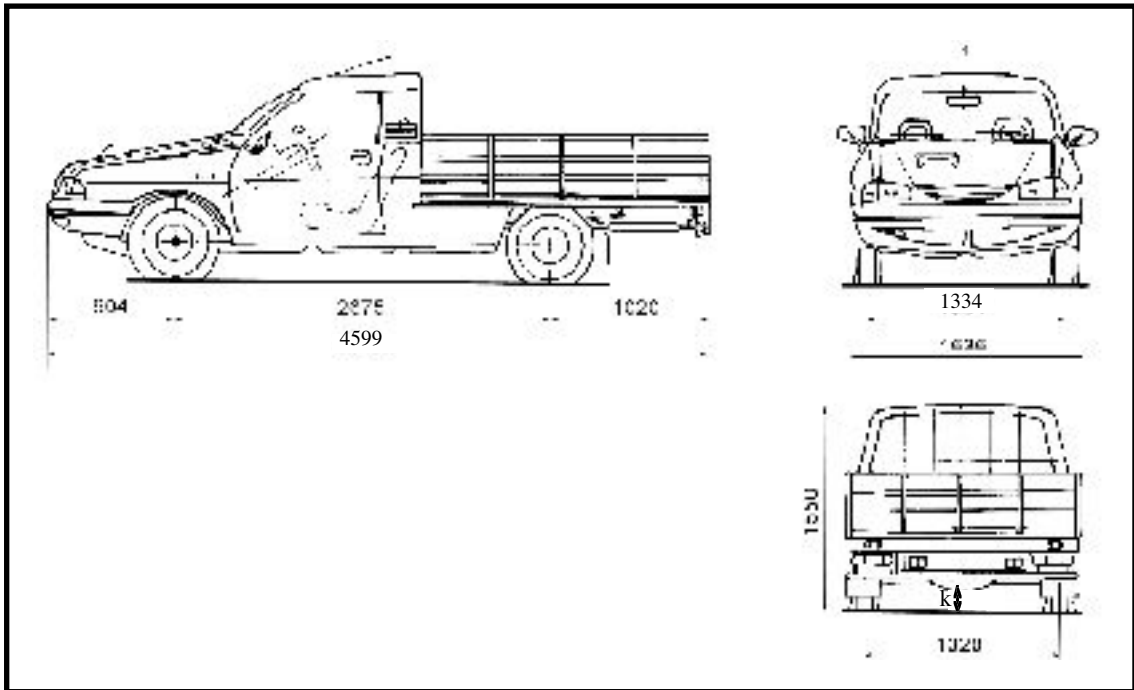
TOWING WEIGHTS	VEHICLE DENOMINATION	DACIA Pick Up P	DACIA Pick Up 4x4	DACIA Pick Up T
	DRIVE	REAR	INTEGRAL	FRONT
	VIN CODE	D 2611*	D 4616*	D 1611*
1. Technical admissible maximal weight for towing (trailer with braking system)		1095	1075	0
2. Admissible maximal weight of the assembly		3225**	3225**	not applicable
3. The vehicle is capable / is not capable for trailer towing		capable	capable	not capable
4. Towing maximal weight without braking system.		450*	450*	0
5. Technical admissible maximal weight on towing coupling point		50	50	-

**** By reducing the bed payload with 100 Kg.**

Dimensions

DIMENSIONS

DACIA Drop Side P, 4x4 and T



DACIA Drop Side P, T 4x4	
DIMENSIONS (mm)	
Total length	4599
Total width	1636
Total height:	
- Empty	1550
- Loaded	-
Axle base	2675
Front wheel track width	1334
Rear wheel track width	1320
Ground clearance (k):	
- Loaded	> 140
Turn radius:	
- Between footways	5600
- Between walls	5800

Dimensions

WEIGHTS

DACIA Drop Side P, 4x4 and T

VEHICLES WEIGHTS	VEHICLE DENOMINATION	DACIA Drop Side P	DACIA Drop Side 4x4	DACIA Drop Side T
	DRIVE	REAR	INTEGRAL	FRONT
	VIN CODE	D 2711*	D 4716*	D 1711*
1. Unloaded vehicle weight (with 75 Kg. driver):				
- on the front axle,		635	645	645
- on the rear axle,		555	565	510
- total.		1190	1210	1155
2. Deadweight (unloaded vehicle weight):				
- on the front axle,		590	600	600
- on the rear axle,		525	535	480
- total.		1115	1135	1080
3. Technical admissible maximal weight of the loaded vehicle:				
- on the front axle,		690	690	690
- on the rear axle,		1540	1540	1240
- total.		2230	2230	1930
4. Technical admissible maximal weight on each axle:				
- on the front axle,		760	760	760
- on the rear axle.		1550	1550	1300
5. Payload:				
- on seats,		150	150	150
- on bed body,		965	945	150
- total.		1115	1095	700

TOWING WEIGHTS

DACIA Drop Side P, 4x4 and T

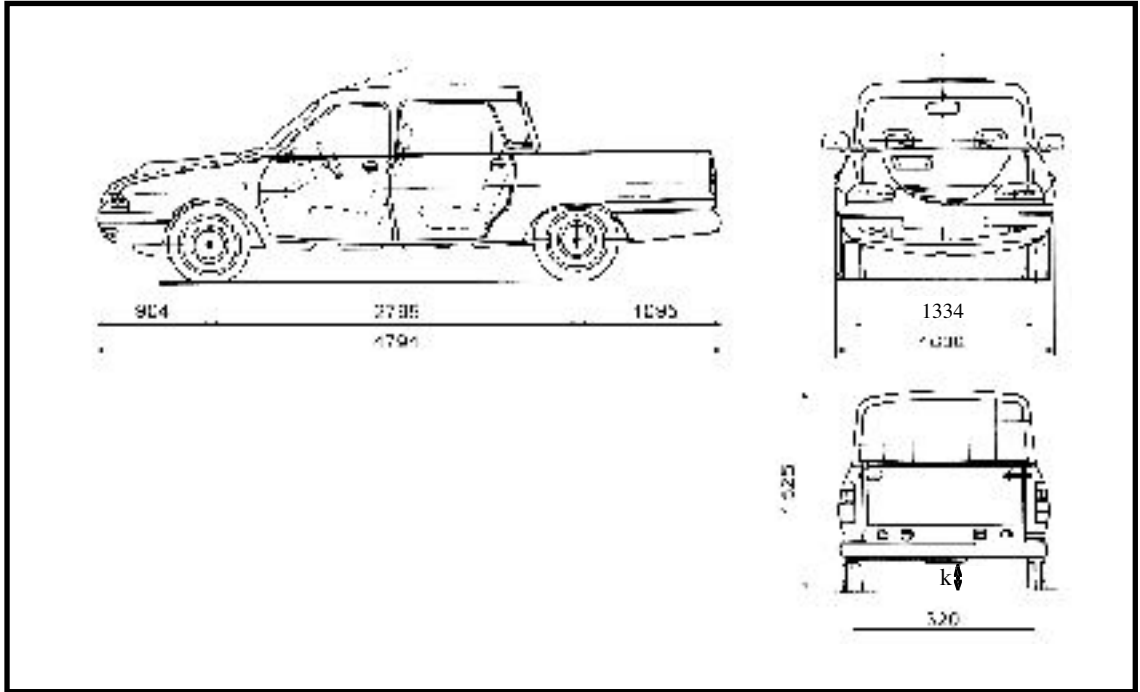
TOWING WEIGHTS	VEHICLE DENOMINATION	DACIA Drop Side P	DACIA Drop Side 4x4	DACIA Drop Side T
	DRIVE	REAR	INTEGRAL	FRONT
	VIN CODE	D 2711*	D 4716*	D 1711*
1. Technical admissible maximal weight for towing (trailer with braking system)		1060	1040	0
2. Admissible maximal weight of the assembly		3225**	3225**	not applicable
3. The vehicle is capable / is not capable for trailer towing		capable	capable	not capable
4. Towing maximal weight without braking system		450*	450*	0
5. Technical admissible maximal weight on towing coupling point		50	50	-

** By reducing the bed payload with 100 Kg.

Dimensions

DIMENSIONS

DACIA Double Cab P, 4x4 and T



DACIA Double Cab P, 4x4 'i T	
DIMENSIONS (mm)	
Total length	4794
Total width	1636
Total height:	
- Empty	1525
- Loaded	-
Axle base	2795
Front wheel track width	1334/1312
Rear wheel track width	1320
Ground clearance (k):	
- Loaded	>140
Turn radius:	
- Between footways	5600
- Between walls	5800

WEIGHTS

DACIA Double Cab P, 4x4 and T

VEHICLES WEIGHTS	VEHICLE DENOMINATION	DACIA Double Cab P	DACIA Double Cab 4x4	DACIA Double Cab T
	DRIVE	REAR	INTEGRAL	FRONT
	VIN CODE	D 2F71*	D 4F76*	D 1F71*
1. Unloaded vehicle weight (with 75 Kg. driver):				
- on the front axle,		680	690	690
- on the rear axle,		570	580	530
- total.		1250	1270	1120
2. Deadweight (unloaded vehicle weight):				
- on the front axle,		635	645	645
- on the rear axle,		540	550	500
- total.		1175	1195	1145
3. Technical admissible maximal weight of the loaded vehicle:				
- on the front axle,		710	730	710
- on the rear axle,		1520	1520	1260
- total.		2230	2250	1970
4. Technical admissible maximal weight on each axle:				
- on the front axle,		820	820	820
- on the rear axle.		1550	1550	1300
5. Payload:				
- on seats,		375	375	375
- on bed body,		680	680	450
- total.		1055	1055	825

Dimensions

TOWING WEIGHTS

DACIA Double Cab P, 4x4 and T

TOWING WEIGHTS	VEHICLE DENOMINATION	DACIA Double Cab P	DACIA Double Cab 4x4	DACIA Double Cab T
	DRIVE	REAR	INTEGRAL	FRONT
	VIN CODE	D 2F71*	D 4F76*	D 1F71*
1. Technical admissible maximal weight for towing (trailer with braking system)		1095	1075	0
2. Admissible maximal weight of the assembly		3225**	3225**	not applicable
3. The vehicle is capable / is not capable for trailer towing		capable	capable	not applicable
4. Towing maximal weight without braking system		450**	450**	0
5. Technical admissible maximal weight on towing coupling point		50	50	-

**** By reducing the bed payload with 100 Kg.**

DENOMINATION	QUALITY	CAPACITY (liters)
Engine oil Dacia Oil Diesel	SAE API 10W40 ACEA B3 CF	4,6*
Gearbox oil DACIA OIL SUPERGEAR	SAE 80 W 90/GL5	2,3
The rear axle group oil DACIA OIL SUPERGEAR	SAE 80 W 90 / GL5	2
Brake fluid	SAE J 1703 DOT 4	0,450
Cooling fluid **	Type D - GLACEOLRX	6

* To be adjusted at dipstick

** Mixture : 50% concentrated anti-freeze + 50% distilled water.

Wheels and tires

VEHICLE TYPE	RIMS	TIRES	ROLLING CIRCUMFERENCE (mm)	PRESSURE (bar) (1)	
				FRONT	REAR
DACIA Pick Up TP1 4x4 DACIA Drop Side TP1 4x4 DACIA Double Cab TP1 4x4	5 J 14	175 R 14 PR 8	1920 ± 25	2,0	4,5

(1) Using maximum loading, wheels on ground.

- Tightening moment of the wheels screws: **9 daNm**.
- Rim axial run out: **maxim 1,2 mm**.
- Rim radial run out: **maxim 1,2 mm**.

ATTENTION!

The increase of tire temperature during running implies a growth of the tire pressure with 0.2 – 0.3 bars compared with the prescribed values.

In case of checking the tires pressure immediately after vehicle driving, consider this growth of pressure.

FRONT BRAKES

Brake caliper bore diameter (for aerated brake disk)	Φ 54 mm
Disk thickness aerated	20 mm
Minimal disk thickness aerated	19 mm
Brake pad thickness (the support included)	14 mm
Minimal brake pad thickness (the support included)	7 mm
Disk axial run out, measured at → 215 mm	0,1 mm

REAR BRAKES

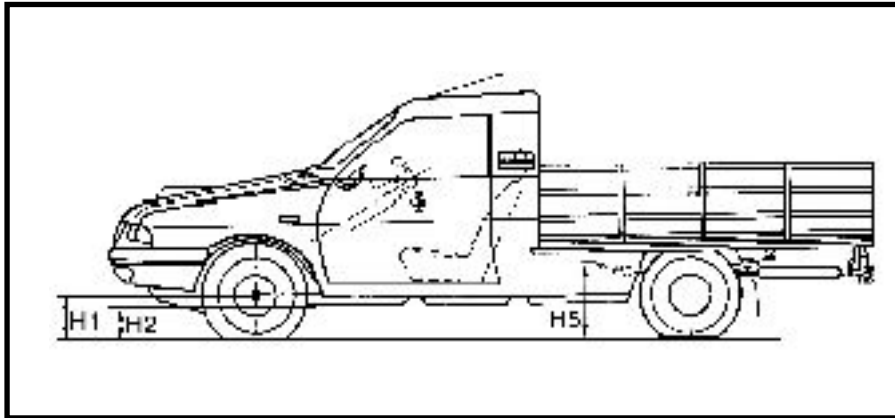
Wheel braking cylinder diameter	Φ 25,4 mm
New drum diamete	Φ 254 mm
Maximum drum diameter after grinding	Φ 255 mm
Braking lining width	50 mm
Braking lining thickness	5 mm
Minimal accepted braking lining height above rivets	0,5 mm

MAIN BRAKE CYLINDER

Type of main brake cylinder	Tandem master cylinder with ICP by pass included
Inner diameter	Φ 22,2 mm
Stroke - primary piston - secondary piston	min. 19 mm min. 13 mm

- **Brake fluid reservoir** - double without level warning.
- **Pressure reducing valve** - for parallel circuit.
- **Brake fluid** - norm SAE J 1703 DOT4.
- **Servobrake** - master vac 8"

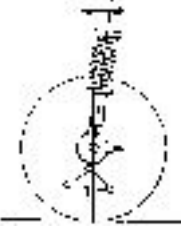
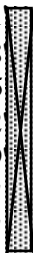



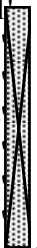
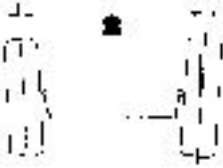
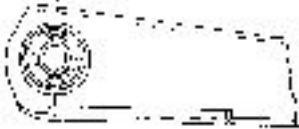
224 mm

VALUES UNDER CARRIAGE BODY CONDITIONING THE ADJUSTMENT OPERATIONS OF THE STEERING ANGLES.

- H1** – the distance measured from the wheels center to the ground
H2 – the distance measured from the longitudinal girder lower part to the ground
H5 – the distance measured from the joint axis of the front leaf spring to the ground, measured in the area of the lower arm attachment.

C – this value is showing the position where the rack must reach in order to obtain the middle point for the steering rack.

COMMERCIAL U 75 DRIVE (1304, 1307)

ANGLES	VALUES	POSITION OF THE VEHICLE		ADJUSTMENTS
		1304	1307	
 <p>CASTER</p>	<p>1° 11' </p> <p>1° 28'</p> <p>1° 45' ± 30'</p> <p>2° 02'</p> <p>2° 19'</p> <p>2° 36'</p> <p>2° 52'</p> <p>Maximum Left / Right difference = 1°</p>	<p>H5 - H2 = 260</p> <p>H5 - H2 = 250</p> <p>H5 - H2 = 240</p> <p>H5 - H2 = 230</p> <p>H5 - H2 = 220</p> <p>H5 - H2 = 210</p> <p>H5 - H2 = 200</p>	<p>H5 - H2 = 265</p> <p>H5 - H2 = 255</p> <p>H5 - H2 = 245</p> <p>H5 - H2 = 235</p> <p>H5 - H2 = 225</p> <p>H5 - H2 = 215</p> <p>H5 - H2 = 205</p>	Adjustable by modification of the tie-rod length from previous mounting
 <p>CAMBER</p>	<p>1° 22' </p> <p>1° 21'</p> <p>1° 20'</p> <p>1° 18' ± 30'</p> <p>1° 17'</p> <p>1° 15'</p> <p>1° 14'</p> <p>Maximum Left / Right difference = 1°</p>	<p>H1 - H2 = 66</p> <p>H1 - H2 = 62</p> <p>H1 - H2 = 58</p> <p>H1 - H2 = 54</p> <p>H1 - H2 = 51</p> <p>H1 - H2 = 47</p> <p>H1 - H2 = 43</p>	<p>H1 - H2 = 66</p> <p>H1 - H2 = 62</p> <p>H1 - H2 = 58</p> <p>H1 - H2 = 54</p> <p>H1 - H2 = 51</p> <p>H1 - H2 = 47</p> <p>H1 - H2 = 43</p>	Not adjustable
 <p>BALL JOINT</p>	<p>8° 01' </p> <p>8° 02'</p> <p>8° 03' ± 30'</p> <p>8° 04'</p> <p>8° 05'</p> <p>8° 07'</p> <p>8° 08'</p> <p>Maximum Left / Right difference = 1°</p>	<p>H1 - H2 = 66</p> <p>H1 - H2 = 62</p> <p>H1 - H2 = 58</p> <p>H1 - H2 = 54</p> <p>H1 - H2 = 51</p> <p>H1 - H2 = 47</p> <p>H1 - H2 = 43</p>	<p>H1 - H2 = 66</p> <p>H1 - H2 = 62</p> <p>H1 - H2 = 58</p> <p>H1 - H2 = 54</p> <p>H1 - H2 = 51</p> <p>H1 - H2 = 47</p> <p>H1 - H2 = 43</p>	Not adjustable
 <p>TOTAL PARALLELISM</p>	<p>Opening (toe-in)</p> <p>0° 10' ± 10'</p> <p>(for one wheel)</p> <p>0° 05' ± 05''</p>	Empty	Empty	Adjustable by means of the tie rods rotation
 <p>ELASTIC JOINTS BLOCKING</p>	-	Empty	Empty	

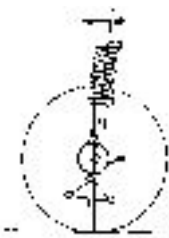




VALUES AND SETTINGS
Control values of the front axle angles

07

OTHER STEERING SYSTEM VALUES TO BE RESPECTED

ANGLES	VALUES	POSITION OF THE VEHICLE		ADJUSTMENTS
		1304	1307	
Steering box positioning	6 – 7,75 on the scale			By means of eccentrics
Steering rack central point	T.F.246 C=65mm			By means of the steering wheel rotation




COMMERCIAL U 75 / 4X4 DRIVE (1304, 1307)

ANGLES	VALUES	POSITION OF THE VEHICLE		ADJUSTMENTS
		1304	1307	
<p>CASTER</p> 	<p>1° 11' 1° 29' 1° 46' 2° 02' 2° 19' 2° 36' 2° 53'</p> <p>± 30'</p> <p>Maximum Left / Right difference = 1°</p>	<p>H5 - H2 = 260 H5 - H2 = 250 H5 - H2 = 240 H5 - H2 = 230 H5 - H2 = 220 H5 - H2 = 210 H5 - H2 = 200</p>	<p>H5 - H2 = 265 H5 - H2 = 255 H5 - H2 = 245 H5 - H2 = 235 H5 - H2 = 22 H5 - H2 = 215 H5 - H2 = 205</p>	<p>Adjustable by modification of the tie-rod length from previous mounting</p>
<p>CAMBER</p> 	<p>1° 21' 1° 20' 1° 19' 1° 18' 1° 16' 1° 15' 1° 13'</p> <p>± 30'</p> <p>Maximum Left / Right difference = 1°</p>	<p>H1 - H2 = 66 H1 - H2 = 62 H1 - H2 = 58 H1 - H2 = 54 H1 - H2 = 51 H1 - H2 = 47 H1 - H2 = 43</p>	<p>H1 - H2 = 66 H1 - H2 = 62 H1 - H2 = 58 H1 - H2 = 54 H1 - H2 = 51 H1 - H2 = 47 H1 - H2 = 43</p>	<p>Not adjustable</p>
<p>BALL JOINT</p> 	<p>8° 01' 8° 02' 8° 03' 8° 04' 8° 05' 8° 07' 8° 08'</p> <p>± 30'</p> <p>Maximum Left / Right difference = 1°</p>	<p>H1 - H2 = 66 H1 - H2 = 62 H1 - H2 = 58 H1 - H2 = 54 H1 - H2 = 51 H1 - H2 = 47 H1 - H2 = 43</p>	<p>H1 - H2 = 66 H1 - H2 = 62 H1 - H2 = 58 H1 - H2 = 54 H1 - H2 = 51 H1 - H2 = 47 H1 - H2 = 43</p>	<p>Not adjustable</p>
<p>TOTAL PARALLELISM</p> 	<p>Opening (toe-in) -0° 16' ± 10° (for one wheel -0° 08' ± 05')</p>	<p>Empty</p>	<p>Empty</p>	<p>Adjustable by means of the tie rods rotation</p>
<p>ELASTIC JOINTS BLOCKING</p> 	<p>-</p>	<p>Empty</p>	<p>Empty</p>	<p>-</p>

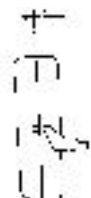
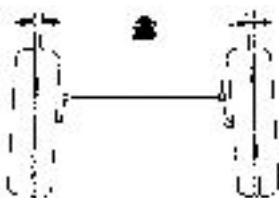

OTHER STEERING SYSTEM VALUES TO BE RESPECTED

ANGLES	VALUES	POSITION OF THE VEHICLE		ADJUSTMENTS
		1304	1307	
Steering box positioning	6 – 7,75 on the scale			By means of eccentrics
Steering rack central point	T.F.246 C=65mm			By means of the steering wheel rotation

COMMERCIAL U 75 DRIVE (1304, 1307)

ANGLES	VALUES	VEHICLE POSITION	ADJUSTMENTS
<p>CAMBER</p> 	<p>$0^{\circ} \pm 34'30''$</p>	<p>Empty</p>	<p>Not adjustable</p>
<p>PARALLELISM</p> 	<p>(For two wheels) Toe out $0^{\circ} \pm 34'30''$</p>	<p>Empty</p>	<p>Not adjustable</p>
<p>ELASTIC JOINTS BLOCKING</p> 	<p>-</p>	<p>Empty</p>	<p>-</p>

COMMERCIAL U 75 / 4 X 4 DRIVE (1304, 1307)

ANGLES	VALUES	VEHICLE POSITION	ADJUSTMENTS
<p>CAMBER</p> 	<p>$0^{\circ} \pm 19'59''$</p>	<p>Empty</p>	<p>Not adjustable</p>
<p>PARALLELISM</p> 	<p>(For two wheels) Toe out $0^{\circ} \pm 19'59''$</p>	<p>Empty</p>	<p>Not adjustable</p>
<p>ELASTIC JOINTS BLOCKING</p> 		<p>Empty</p>	

* In order to check and adjust the front axle angles values, respectively the rear axle ones, the following must be done:

- perform the tires checking concerning:
 - dimensions
 - inflating pressure
 - degree of wear
- perform the joints checking:
 - elastic joints condition
 - ball joint clearance
 - wheel bearing clearance

The vehicle must be obligatory:

- positioned with the wheels on bench rotating plates being in horizontal direction
- braked ensured
- suspension tested, for vehicle setting at its free height
- steering brought at central point and steering rack blocked in this position.

These operations are to be followed by optical device attachment on vehicle, observing the prescriptions of the steering measurement bench manufacturer

Ingredients

TYPE	UTILIZATION
RHODORSEAL 5661	Front transmission pins, bearing covers (1) and camshaft (5), bearing cover No. (1) and crankshaft
OIL 10W40 ACEA B3 API CF	Parts lubrication during mounting
LOCTITE FRENETANCH	Engine flywheel placing area on crankshaft
DÉCAPJOINT	Cleaning of the cylinder head gasket plane
KIT DURCISSEUR	Sealing of the bearing cover No.(1) crankshaft

Engine oil capacity: **4.6 liter (with filter)**

Used engine oil quality: **Dacia Oil Diesel 10W40 API CF, ACEA B3**

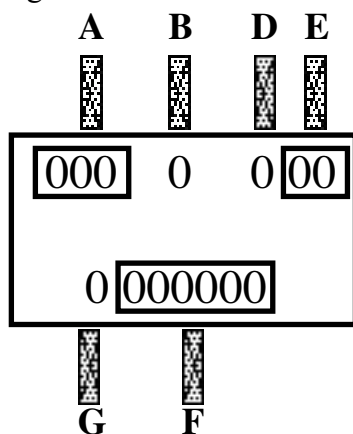
Identification

Vehicle Type		Engine	Gearbox	Cylinder capacity (cm ³)	Bore (mm)	Stroke (mm)	Volume ratio
Type	Cod VIN						
Pick Up P Drop Side P	D 2611X(7;T)* D 2711X(7;T)	F8Q-636	NG 1-103 (50C-31)	1870	80	93	21,5
Pick Up 4x4 Drop Side 4x4	D 4616X(7;T) D 4716X(7;T)		NG7-101 (51C-02)				
Pick Up T Drop Side T	D 1611X(7;T) D 1711X(7;T)		NG 1-104 (365-18)				
Double Cab P	D 2F71X(7;T)		NG 1-103 (50C-31)				
Double Cab 4x4	D 4F76X(7;T)		NG 7-101 (51C-02)				
Double Cab T	D 1F71X(7;T)		NG 1-104 (365-18)				

* X (7;T) - According to the pollution norm

“X” - Euro 96; “7” - Euro 2000; “T” - 1504.

The engine identification is performed by means of a metallic plate, which is stuck on the engine block.



- A** – engine type
- B** – engine homologation letter
- D** – “RENAULT” identity code
- E** – engine index
- F** – engine fabrication series
- G** – code for assembling factory



Oil consumption

OIL CONSUMPTION MEASURING**a) Oil filling at maximal level**

This operation is to be performed when the engine is warm (an engine fan rotation) and after a stabilization of 15 minutes, necessary to the oil complete draining into the lower crankshaft.

Check the oil at the oil-indicating rod.

Fill to the maximal level.

Seal the draining and filling taps (mark them with paint, for further checking if these have not been dismantled)

b) Customer driving time

Ask the customer to drive for about 2000 km or until the oil reaches the minimal level.

c) Refilling to the maximal level

This operation is to be performed when the engine is warm (an engine fan rotation) and after a stabilization of 15 minutes.

Check the oil at the oil-indicating rod.

Fill to the maximal level.

Write down the oil quantity and the driven mileage after filling to the maximal level.

d) Oil consumption measuring

$$\text{OIL CONSUMPTION} = \frac{\text{Oil filled quantity (liter)}}{\text{kilometers (thousand)}}$$

Oil pressure

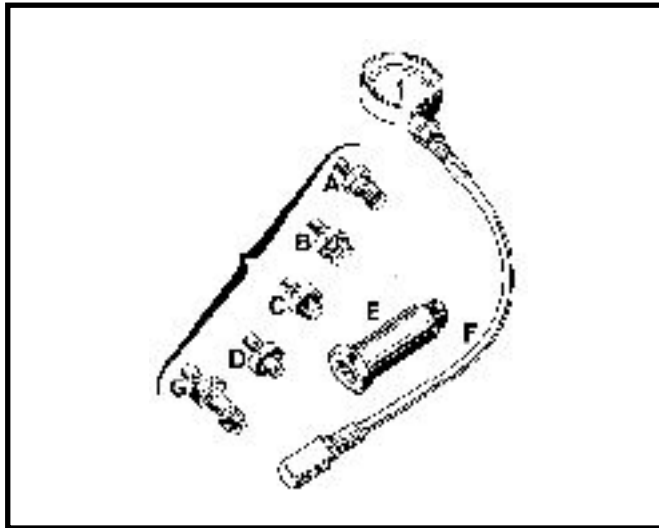
Necessary Special Tools

MOT 836 - 05

Oil pressure measuring kit

CHECKING

The oil pressure is to be checked when the engine is warm (**about 80°C**).




The pressure value should be:

1.2 bars at 1000 rpm

3.5 bars at 3000 rpm

Dismounting - Remounting engine

Necessary Special Tools	
MOT 1202 - 01	Pliers for elastic clips
MOT 1311 - 06	Connections dismounting device Pliers for clips type "CLIC"

TIGHTENING MOMENTS (daNm)	
Engine supports attachment screws	3.6
Engine elastic supports nuts	2.7
Gearbox attachment on engine:	
- upper attachment screws	4.4
- nuts	4.4
- lower attachment screws	2.1
RPM sensor	0.8
Starter attachment	4.4

The vehicle engine is to be dismounted through the engine compartment upper part by means of a mobile lifting device.

DISMOUNTING

The vehicle is to be placed on a 2-columns elevator.

The battery is to be dismounted.

The followings are to be drained:

- the cooling circuit, through water pump inlet pipe and radiator lower hose:

- the engine oil.

The followings are to be dismounted:

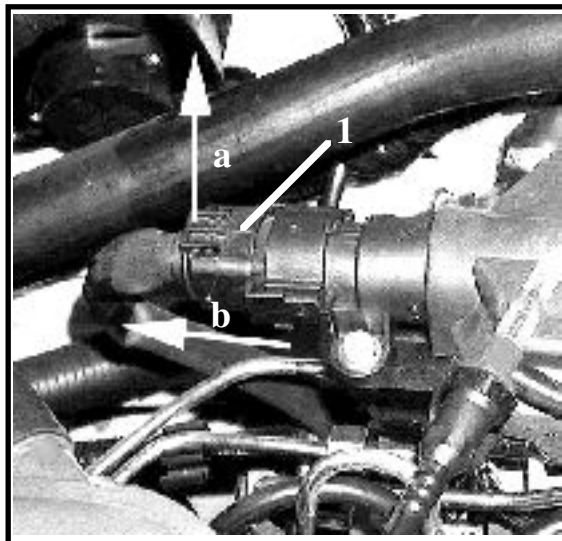
- the air filter inlet sleeve;

- the radiator.

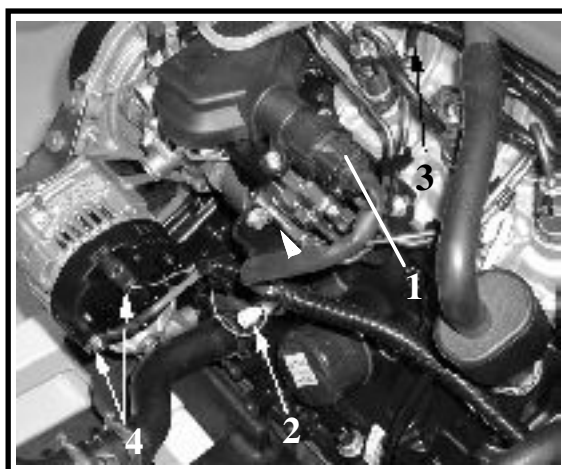
Disconnect

-the mass wire from the engine lifting clamp;

-the injection pump connector (1); lift the flap (a) by means of a screwdriver and take out the connector in the direction of arrow (b);

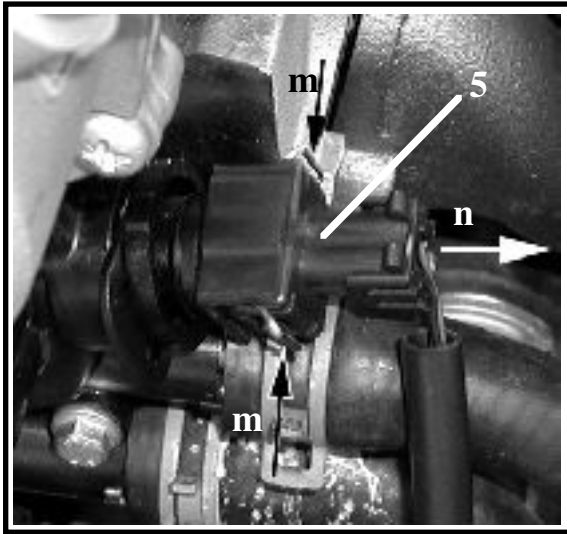


- the oil pressure transmitter connector (2);
- the pre-heating spark plugs cables (3);
- the alternator electric connections(4);

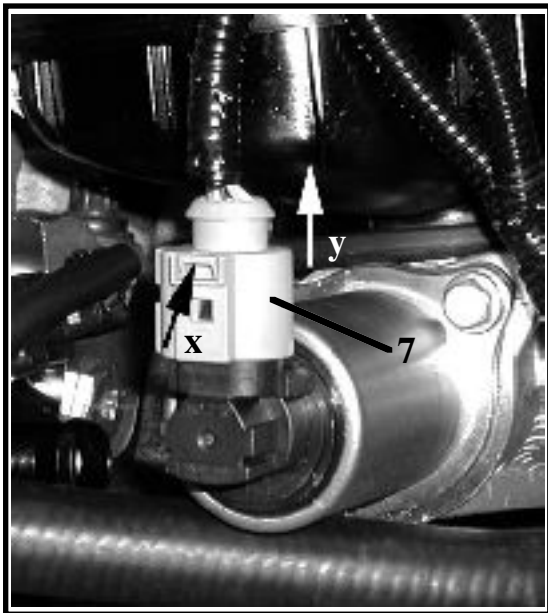


- the diesel filter connector;
- the water temperature sensor connector (5); pull the connector in the direction of the arrow (n) in the same time with clips pushing (m).

Dismounting - Remounting engine

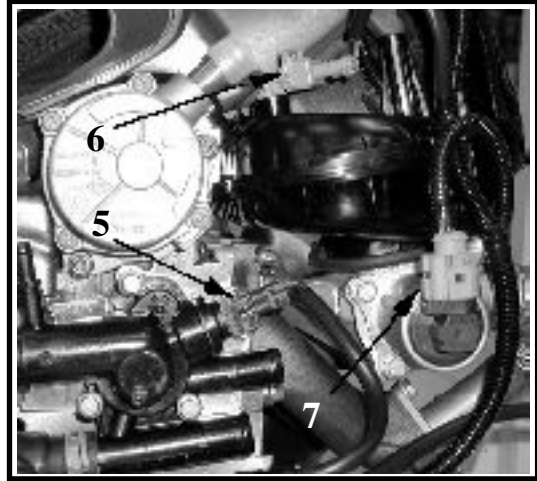


- the temperature sensor connector (6) ;
- the EGR connector (7) : push the valve in the direction of the arrow (x) and pull the connector in the direction of the arrow (y) ;

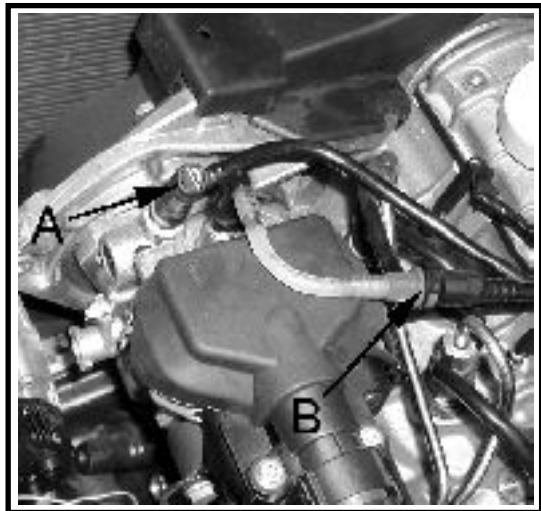


- The RPM sensor connector.

The wiring attachment clip on the clutch crankcase is to be dismantled.



Dismount the supply connections (A) and fuel return (B).



Remove from clips the fuel ducts from the air filter casing and from the distribution crankcase.

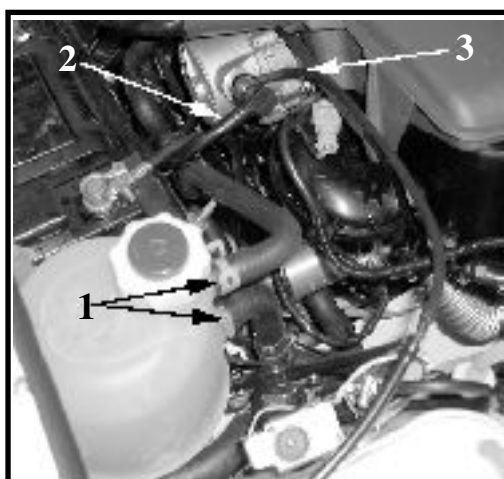
Dismount the air filter casing.

Dismounting - Remounting engine



Disconnect :

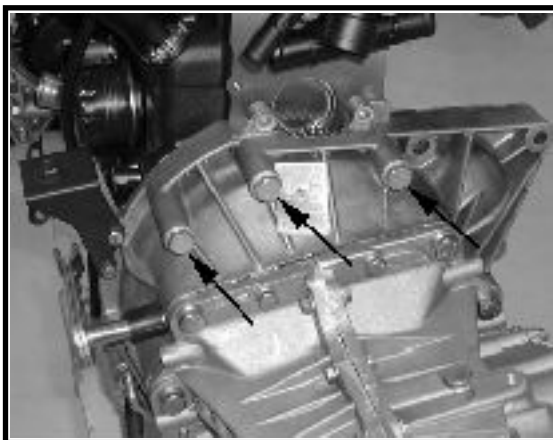
- the hoses (1) from the expansion vessel;
 - the servobrake connection (2);
 - the connection (3) of the vacuum tank (4 X 4 vehicles);
 - the climate control hoses from the thermostat box by means of the pliers
- MOT 1202-01.**



Dismount the starter (see chapter 16 “ Starter “).

Dismount the RPM sensor from the clutch crankcase of the gearbox

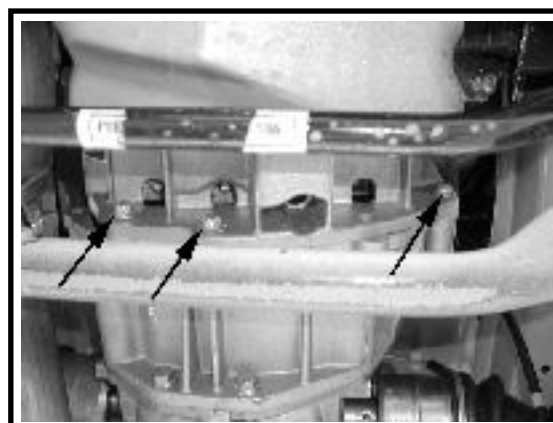
Dismount the upper attachment screws of the gearbox on the engine.



Dismount the side attachment nuts of the gearbox on the engine.

Lift the vehicle by means of the elevator
Dismount the engine shield.

Dismount the lower attachment screws of the gearbox on the engine.



Dismount the attachment nuts of the descent tube on the exhaust manifold.

Dismount the attachment clamp of the descent tube on the engine.

Dismount the elastic supports nuts of the engine.



REMOUNTING

Perform the dismounting operations in the reverse order.

Perform the cooling circuit filling and purging (see **chapter 19 “ Filling and purging ”**).

Perform the engine oil filling



Sustain the gearbox by means of a jack.

Fix the lifting device on the engine lifting supports.

Move forward the engine and lift it.

Place the engine on a support.

Engine fitting - unfitting

For the replacement of the standard engine, the following operations are to be performed:

DISMOUNTING

The followings are to be dismantled:

- the air filter;
- the alternator, the belt and its tightening device;
- the alternator support;
- the oil rod and its guide;
- the clutch disk and mechanism;
- the engine flywheel;
- the high pressure pipes;
- the injection pump gear;
- the injection pump, the injectors and the port-injectors;
- the vacuum pump;
- the water pump pipe;
- the water pump;
- the pre-heating sparking plugs;
- the E.G.R. assembly;
- the intake and exhaust collectors;
- the distribution crankshafts;
- the oil filter;
- the thermostat box;
- the camshaft gear;
- the crankshaft gear and pulley;
- the distribution belt tightening roller;
- the oil mono-contact.


REMountING

The worn or damaged parts are to be replaced.

Perform the dismantling operations in the reverse order.

The attachment screws and nuts are to be tightened according to the required moment.

Tightening moments

TIGHTENING MOMENTS (daNm)		
Alternator attachment screws		
- M 10		3.8
- M 8		1.9
Injectors supply pipes (high pressure)		2.5
Injection pipe attachment.....		2.5
Injection pump pulley nut		5.5
Intake – exhaust manifold fixing		2.7
Air filter attachment		0.8
Port – injectors		7
Incandescent sparking plugs		1.5 ÷ 2
E.G.R. attachment		0.8
Gases tube attachment on exhaust manifold		1.9
Water pump pipe attachment		3.8
Camshaft gear screw		5
Cylinder head cover nuts.....		1.2
Camshaft bearing covers screws.....		2
Engine flywheel screws.....		5 ÷ 5.5
Lower crankcase screws.....		1.2 ÷ 1.5
Connection rods covers screws.....		4.5 ÷ 5
Bearing covers screws.....		6.5
Crankshaft pulley screw.....		2 + 115° ± 15°
Water pump attachment screws.....		1.6
Water pump pulley screws.....		2
Oil pump attachment screws.....		2 ÷ 2.5
Distribution belt tensioning nut.....		5
Starter attachment screws		4.4
Clutch mechanisme attachment screws		5

Characteristics

CYLINDER HEAD

The cylinder head is aluminum made and it is provided with turbulence chambers.

Cylinder head height = 159.5 ± 0.2 mm.

The cylinder head is not to be rectified.

The maximal deformation of the gasket plane is **0.05 mm**.

Cylinder head moments will be respected the described method (see chapter 10 "Dis-mounting - Remounting").

TURBULENCE CHAMBERS

- over-height compared with the cylinder head:

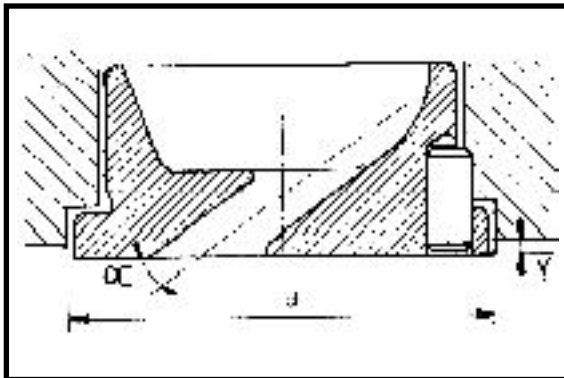
$$y = 0.01 \div 0.04 \text{ mm};$$

- cylinder head slot diameter (d):

$$d = 37.5 \text{ mm}$$

- channel angle compared with the cylinder head (\acute{a}):

$$\acute{a} = 35^\circ$$



CYLINDER HEAD GASKET

The cylinderhead gasket (E) thickness varies according to the pistons maximal over-height, as follows:

A. A two-holes gasket is to be used for an over-height lower than **0.613 mm**

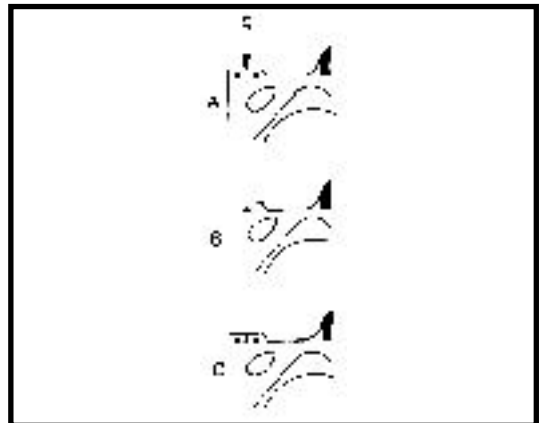
E = 1.4 mm.

B. A one-hole gasket is to be used for an over-height within **0.613 mm** (inclusive) and **0.767 mm** (exclusive).

E = 1.5 mm.

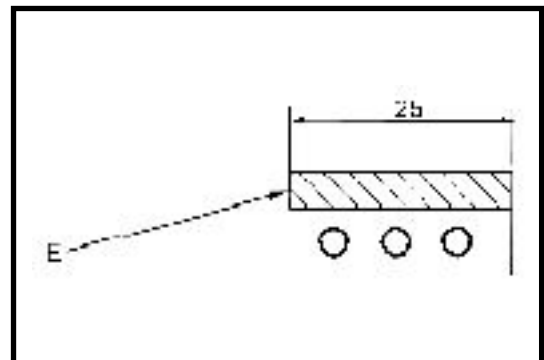
C. A three-holes gasket is to be used for an over-height higher than **0.767 mm**

E = 1.6 mm.

**NOTICE:**

The necessary holes for the gasket thickness identification are placed in a 25-mm" area as against its edge. Any other hole is not to be taken into consideration, in case it is placed out of the above-mentioned area.

The gasket thickness identification mark (R) may be seen even with the cylinder head mounted.



Characteristics

The cylinder head gasket thickness is to be obligatory recalculated according to the pistons over-height in case one of the following elements is replaced:

- crankshaft,
- cylinders crankcase,
- connecting rods
- pistons.

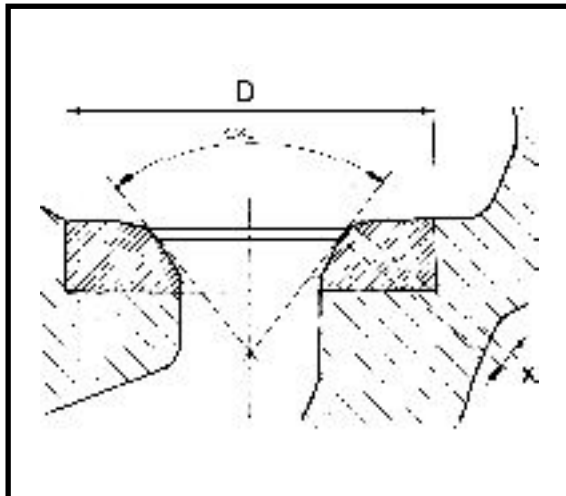
Otherwise the cylinder head gasket is to be replaced with a same thickness one.

VALVES

Valve rod diameter	8 mm
Sealing face angle: - intake - exhaust	120° 90°
Tray diameter: - intake - exhaust	35.2 ± 0.1 mm 31.5 ± 0.1 mm

VALVES SEATS

Sealing face angle (á): - intake - exhaust	120° 90°
Sealing face width (X):	1.8 mm
External diameter (D): - intake - exhaust	36.8 mm 32.6 mm

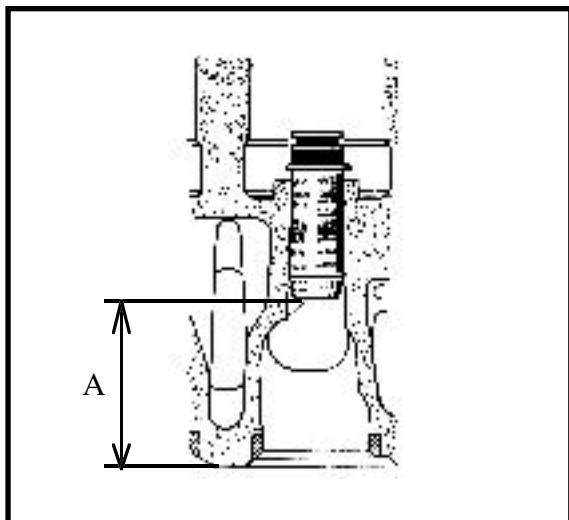


Characteristics

VALVES GUIDES

The valves guides are identical for both intake and exhaust. They are provided with oil-rings for sealing the valves rods.

Internal diameter	8 mm
External diameter	13 mm
- nominal	13 mm
- repair (marked with 2 channels)	13.30 mm
Guides position as against the gasket plane (A)	43.25 mm
Cylinder head bore for guide	12.9 mm
- nominal	12.9 mm
- repair	13.20 mm



VALVES SPRINGS

The valves springs are identical for both intake and exhaust.

Length in free state	47.2 mm
Length under a load of:	
- 23 ± 2 daNm	37.9 mm
- 70.5 ± 3.5 daNm	27.4 mm
Length of the stuck coils	25.77 mm
Coil diameter	4 mm
Internal diameter	21.5 mm

CAMSHAFT

The engine is provided with a camshaft having the cams on its head, mounted in the cylinder head and driven by the distribution belt .

The camshaft cams operate the valves by tappets

Replacing the tappets, only with cold engine, regulates the thermal clearance.

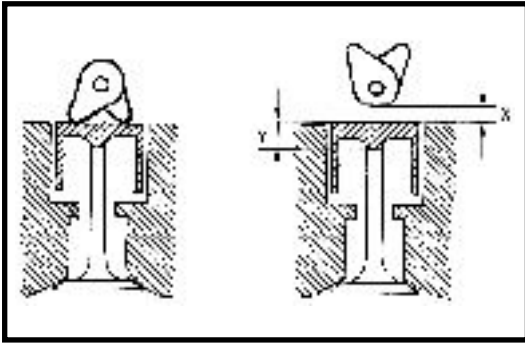
Thermal clearance values:

- intake: **0.20 ± 0.05 mm,**
- exhaust: **0.40 ± 0.05 mm.**

Axial cleaance (mm)	0,05 ÷ 0,13			
Number of bearings	5			
Distribution diagram	ADA	ÎÎA	ADE	ÎÎE
	- 2°	45°	45°	- 4°

TAPPETS

The tappet with conform thickness (y) is to be chosen for getting the thermal clearance.



As spare parts, there are 24 classes of tappets, with thickness (y) within **7.550** and **8.150 mm**.

The thickness increases every **0.025 mm**.

Tappets external diameter:

35 $^{+0.01}_{-0.04}$ mm.

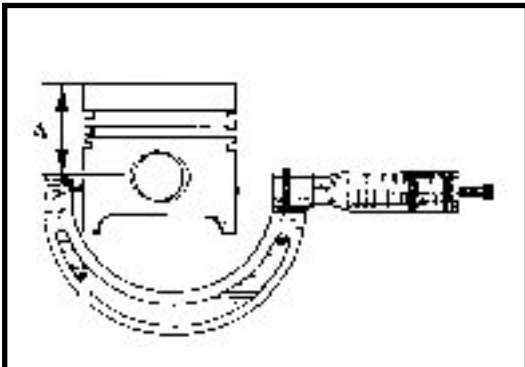
PISTONS

As spare part, there is only one class (M).

The piston is to be mounted: with the turbulence chamber towards the oil filter.

The pistons diameter (**D**) is to be measured at a distance **A = 60 mm** from the piston head.

D = 80 mm.

**BOLTS**

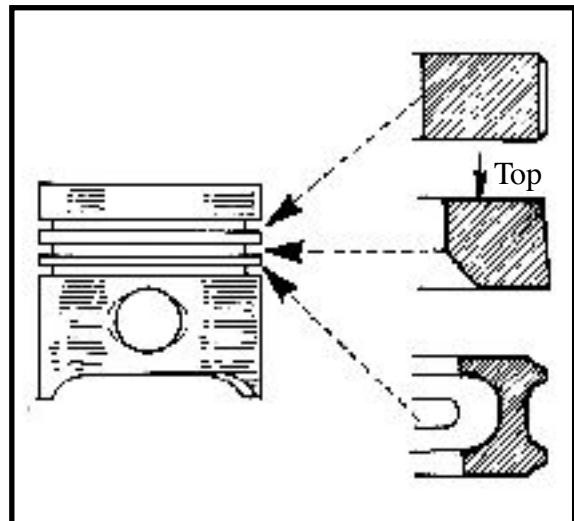
The bolts are freely mounted in the connecting rod and piston. They are axially kept by means of a security device.

Length (mm)	63
Internal diameter (mm)	13.3
External diameter (mm)	24

RINGS

Thickness (mm)	
- Compression ring	2
- Sealing ring	2
- Oiling ring	3

The rings are to be mounted with the mark “TOP” towards the piston head and the grooves separated at **120°**.



Characteristics

CONNECTING RODS

Connectingrod side clearance: $0.22 \div 0.40$ mm.

The connecting rod end is bushed.

The bushes are not to be replaced.

NOTICE: *The connecting rods and their covers are not to be marked by means of punches, but by permanent markers.*

CRANKSHAFT

Number of bearings	5
Bearings nominal diameter (mm)	54.795 ± 0.01
Pressure gauges nominal diameter (mm)	$48 \div 0.02 / \div 0$
Axial clearance (mm)	$0.07 \div 0.23$
Axial half-bearings thickness (mm)	2.30; 2.35; 2.40; 2.45

OIL PUMP

The oil pump is with gear wheels type, driven by means of a chain by the crankshaft.

Oil minimal pressure at 80°C (bars):

- at 1000 rpm.....1.2

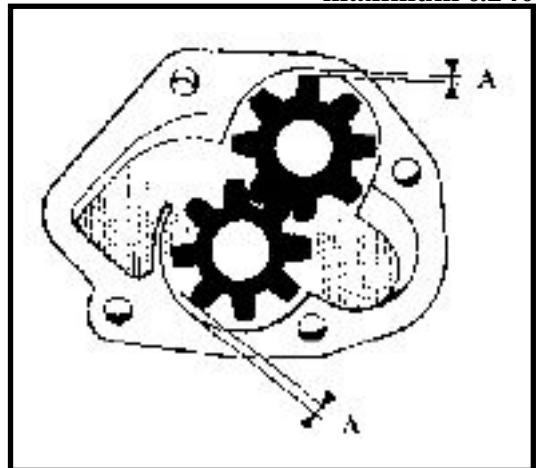
- at 3000 rpm.....3.5

Pistons coolers valves opening pressure: 2.2 ± 0.2 bars.

The followings are to be checked:

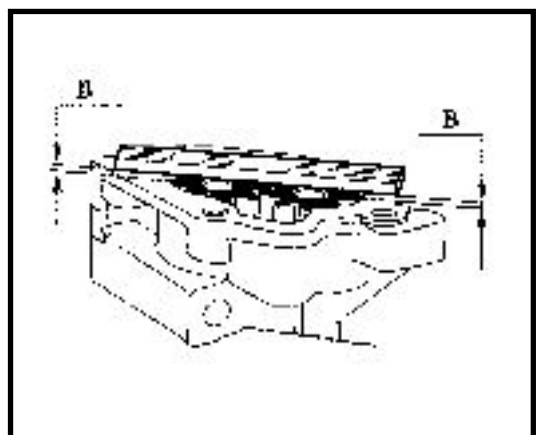
- Clearance A (mm): - **minimum 0.100**

- **maximum 0.240**



- Clearance B (mm): - **minimum 0.020**

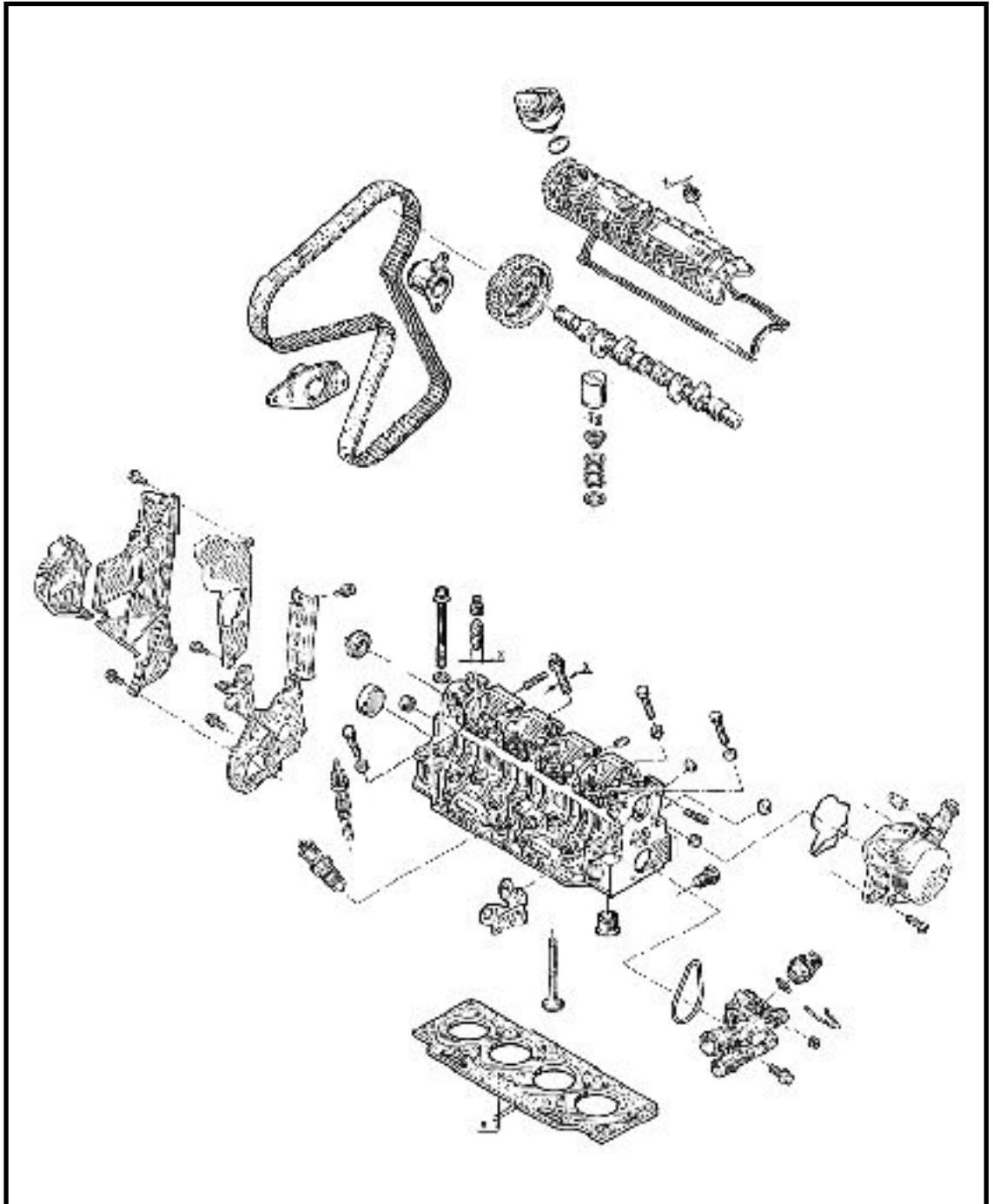
- **maximum 0.085**



SERVICE CODE	DENOMINATION
MOT 251-01	Comparing support
MOT 252-01	Plate for over-height pistons measurement
MOT 582	Flywheel immobilizing sector
MOT 799-01	Camshaft gear immobilizing device
MOT 988-02	Camshaft sealing mounting device
MOT 990-03	Crankshaft sealing mounting device towards distribution
MOT 991-01	Crankshaft sealing mounting device towards flywheel
MOT 997-01	Port – injectors mounting – dismantling device
MOT 1054	Rod for engine pressing-on.
MOT 1200-01	Injection pump pulley maintaining device
MOT 1520	Injection pump blocking rod E.P.I.C.
MOT 1522	Injection pump blocking pulley E.P.I.C.
MOT 1525	Injection pump pulley extractor
MOT 1485-01	Pistons coolers dismantling device
MOT 1516-01	Pistons coolers mounting device (used with MOT 1516)
MOT 1492	Connecting rods bearings device
MOT 1493	Bearings mounting device
MOT 1505	Belts tension measurement device
MOT 1202-01	Pliers for elastic clips
MOT 1516	Mounting device for pistons coolers
MOT 1566	Wrench for mounting/dismantling high-pressure ducts

Dismounting - Remounting

CYLINDER HEAD



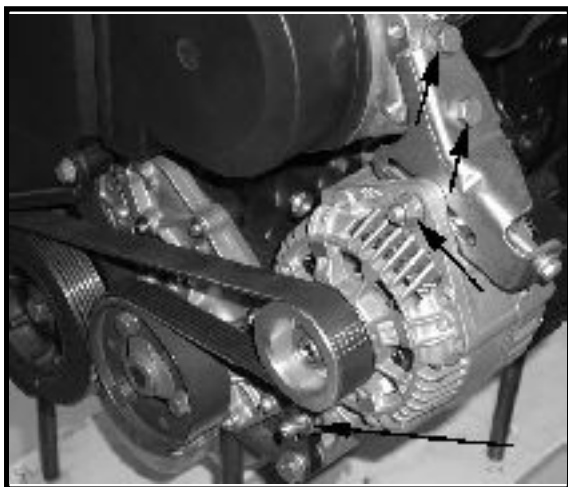
Dismounting - Remounting

DISMOUNTING

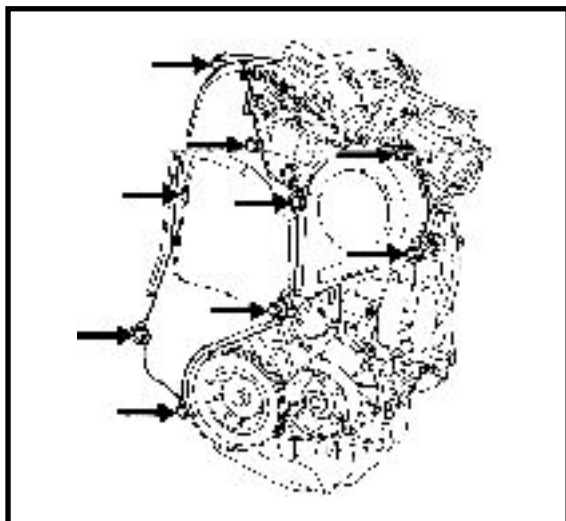
- drain the oil from the engine.
- drain the cooling fluid.

The followings are to be dismounted:

- the air filter,
- the oil vapors recycling system hoses,
- the alternator belt and its tensioning device,



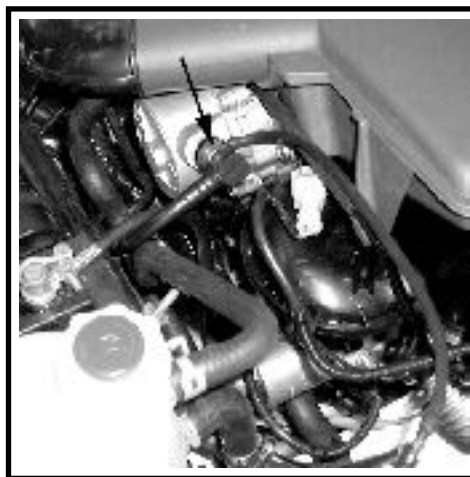
- the alternator,
- the distribution crankcases,



- the distribution belt (see **Chapter 11 “Distribution Belt”**).

The followings are to be dismounted:

- the injectors supplying pipes,
- the incandescent sparking plugs supplying wires,
- the injection pump (see **Chapter 13 “Injection Pump”**),
- the depression hose off the vacuum pump,



- the intake and exhaust manifold,
- the camshaft gear,
- the cylinder head cover.

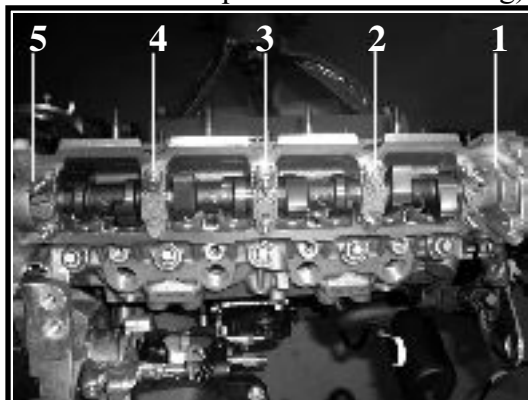
The cylinder head attachment screws are to be unscrewed.

The cylinder head is to be dismounted without rotate it (the cylinder head is centered by means of two bushes (C)).

Dismounting - Remounting

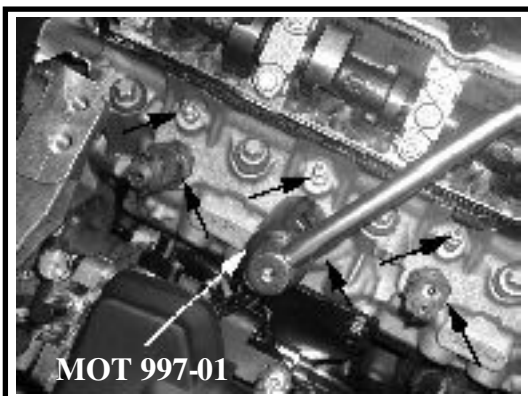


The camshaft bearing covers are to be dismounted (the covers order and direction are to be marked prior their dismounting).

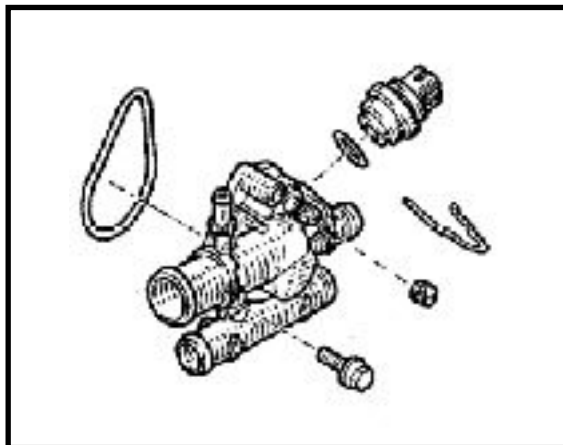


The followings are to be dismounted:

- the camshaft,
- the tappets (they are to be marked as against the cylinder head),
- the injectors, by means of the MOT 997-01 device,



- the incandescent sparking plugs,
- the turbulence chambers,
- the thermostat support.



The following are to be dismounted:

- the valves springs,
- the valves,
- the valves oil sealing rings.

In order to get a right tightening of the cylinder head screws, the oil that may be in the cylinder head fixing holes is to be extracted by means of a syringe.

WARNING!

Avoid foreign materials introduction into the oil grooves, otherwise the latter will clog, and the camshaft will quickly breakdown.

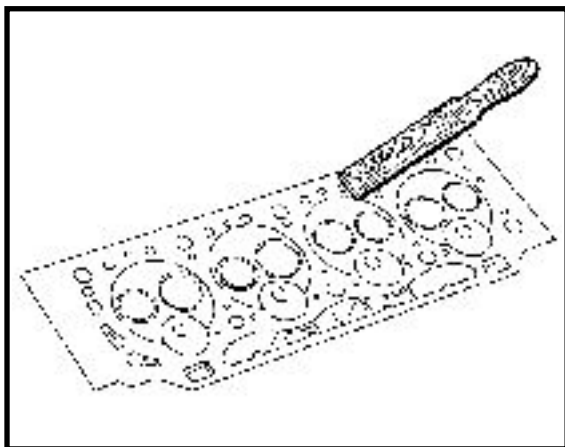
It is very important not to scratch the gasket seating face.

The **DECAPJOINT** is to be used for cleaning the gasket possible stuck bits.

Spread out the substance on the area to be cleaned, wait for about 10 minutes, and clean with a wooden spatula.

During this operation, wear protection gloves.

Dismounting - Remounting



The cylinder head flatness is checked by means of a ruler and a kit of gauges.

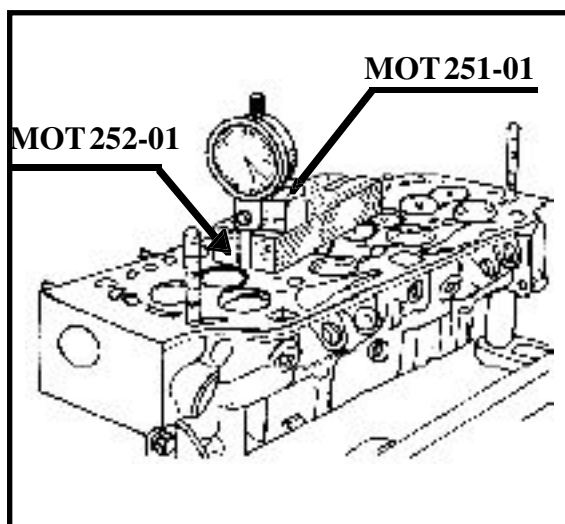
Maximal permitted deformation: 0.05 mm.

The cylinder head is not to be rectified.

REMOUNTING

The new valves are to be placed on position; the valves return as against the gasket plane is to be checked by means of the **MOT 251-01** and **MOT 252-01** devices, as follows:

- intake: 0.85 ± 0.09 mm
- exhaust: 0.97 ± 0.09 mm



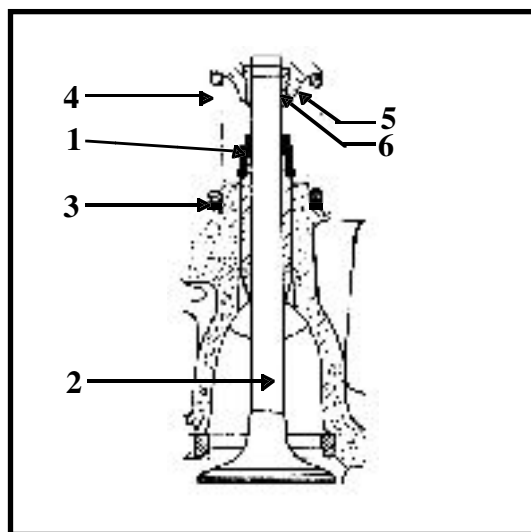
The valves are to be run-in on their seats.

The valves are to be marked as against the cylinder head.

The parts are to be oiled with engine oil.

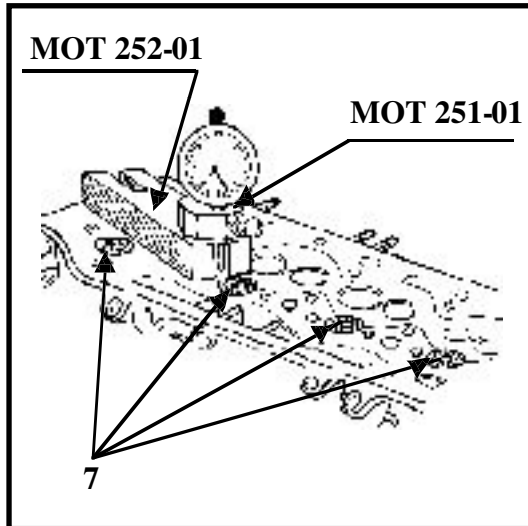
The followings are to be mounted in order:

- the valves oil-sealing rings (1), by means of a **12 mm** tubular wrench,
- the valves (2),
- the lower hoods (3),
- the valve springs (4), (are identical for both intake and exhaust),
- the upper hoods (5),
- the half-cones (6).



Dismounting - Remounting

The turbulence chambers (7) are to be mounted.



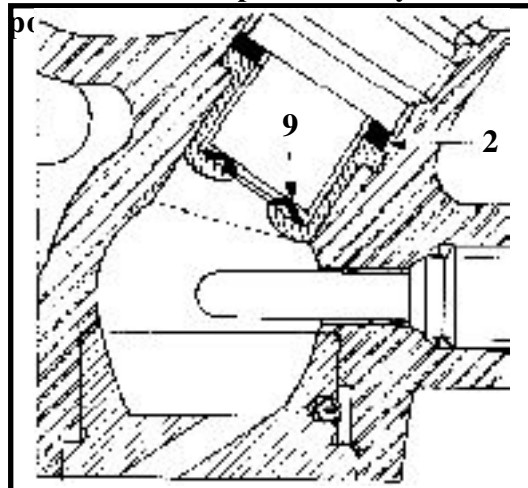
Their over-height is to be checked by means of the devices MOT 251-01 and MOT 252-01:

$$x = 0.01 \div 0.04 \text{ mm}$$

The incandescent sparking plugs are to be mounted and tightened at a moment of

$$1.5 \div 2 \text{ daNm}$$

The anti-flame washers (9) are to be mounted observing their orientation. The anti-flame washers (9) and the gas-kets are to be replaced every time the



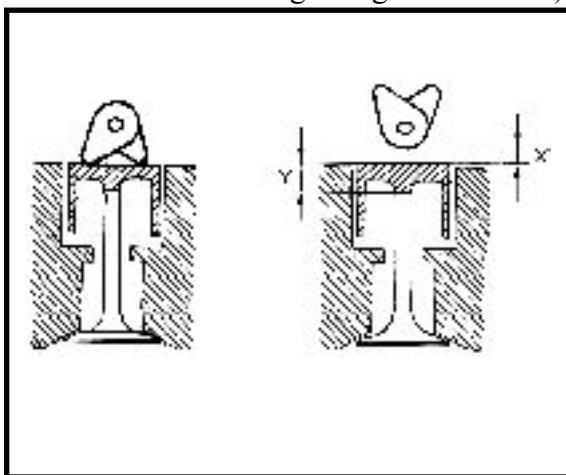
The port-injectors are to be mounted and tightened at a moment of (6.5 ÷ 7.5 daNm)
The thermostat support is to be mounted.



Dismounting - Remounting

THERMAL CLEARANCE
ADJUSTMENT

This operation is to be performed only when the engine is cold. The method “In balance” is used when checking the valves clearance (the cylinder valves at the end of the exhaust and the beginning of the intake).



Cylinder valves in balance	Cylinder valves to be checked
1	4
3	2
4	1
2	3

The measured values are to be compared with the reference ones:

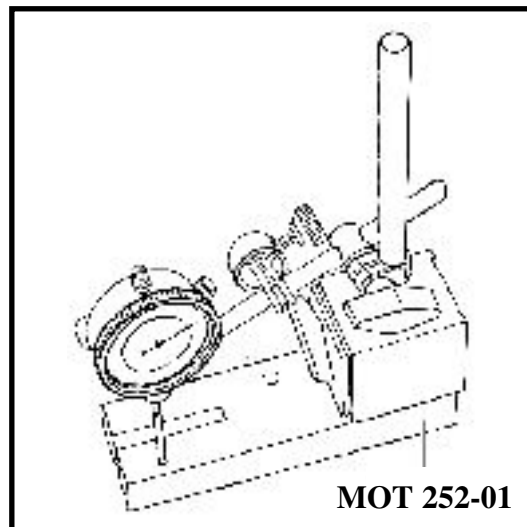
- intake: 0.20 mm
- exhaust: 0.40 mm

In case the clearance (x) is not according to the requirements, the respective tappet is to be replaced with one having the adequate thickness (y).

The value (y) squares with the tappet class (there are 24 classes).

The value (y) is to be measured by a **MOT 252-01** plate, a magnetic plate support, and a comparing gauge with a precision of **0.001 mm**.

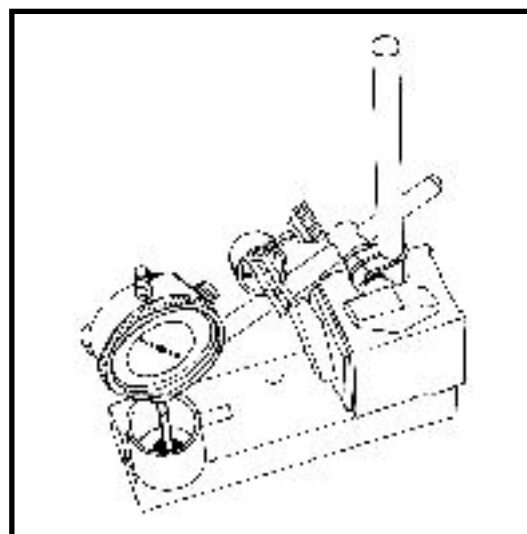
The comparing gauge is to be set on “zero”.



MOT 252-01

The comparing feeler is to be lifted (not to modify the assembly position).

The tappet is to be introduced and the value (y) is to be measured.



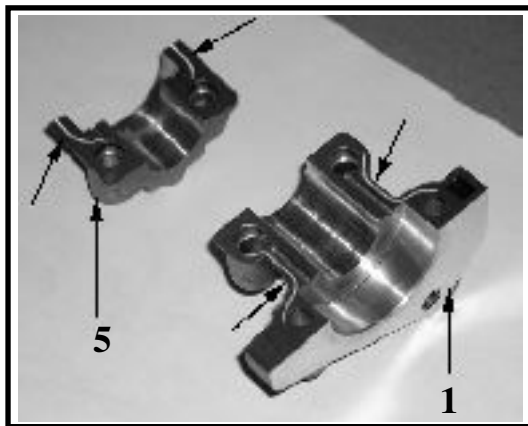
The value (y) varies every **0.025 mm**, from **7.550** to **8.150**.

Dismounting - Remounting

The following are to be mounted:

- the camshaft,
- the camshaft bearings covers, observing the marking performed during the dismounting.

A thin layer of **RHODORSEAL 5661** is to be applied on the bearings covers (1) and (5), according to the drawing indications.



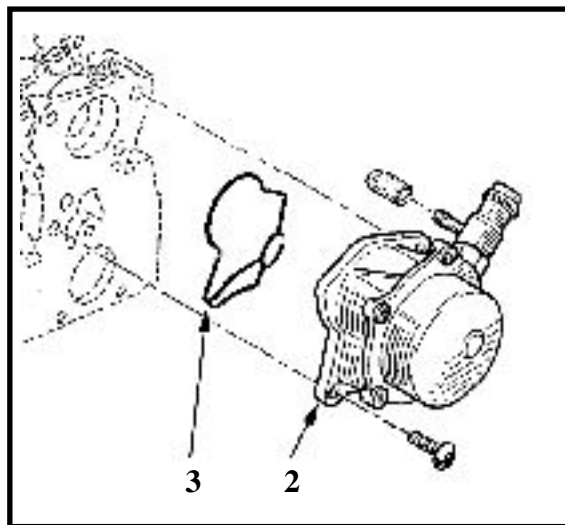
The pistons are to be positioned so that neither of them is on its upper dead point, in order to avoid the contact with the valves, during the camshaft covers tightening (the blocking mark on the crankshaft is to be horizontally positioned).

The camshaft bearings covers screws are to be progressively tightened at a required moment of (2 daNm).

The camshaft axial clearance is to be checked; the clearance should be within 0.05 and 0.13 mm

The followings are to be mounted:

- the vacuum pump (2) and its gasket (3),



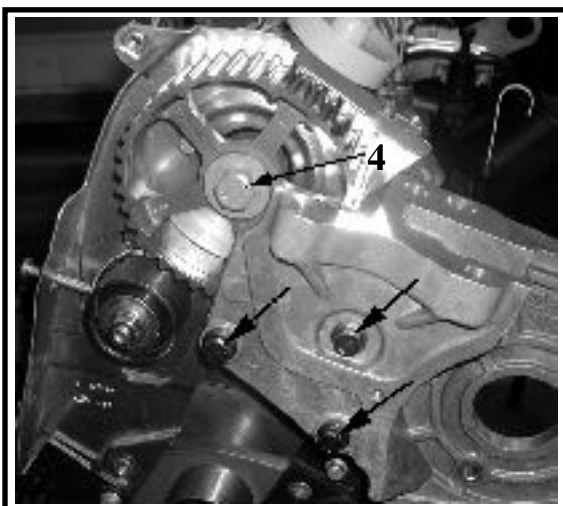
- the camshaft-sealing gasket, by means of the **MOT 988-02** device.



Dismounting - Remounting

- the camshaft gear – its screw (4) is to be tightened at a required moment of 5 daNm.

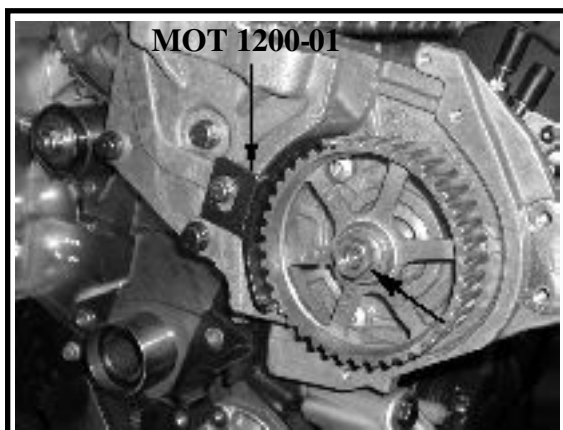
- the injection pump support – its screws are to be tightened at a required moment of (2.5 daNm),



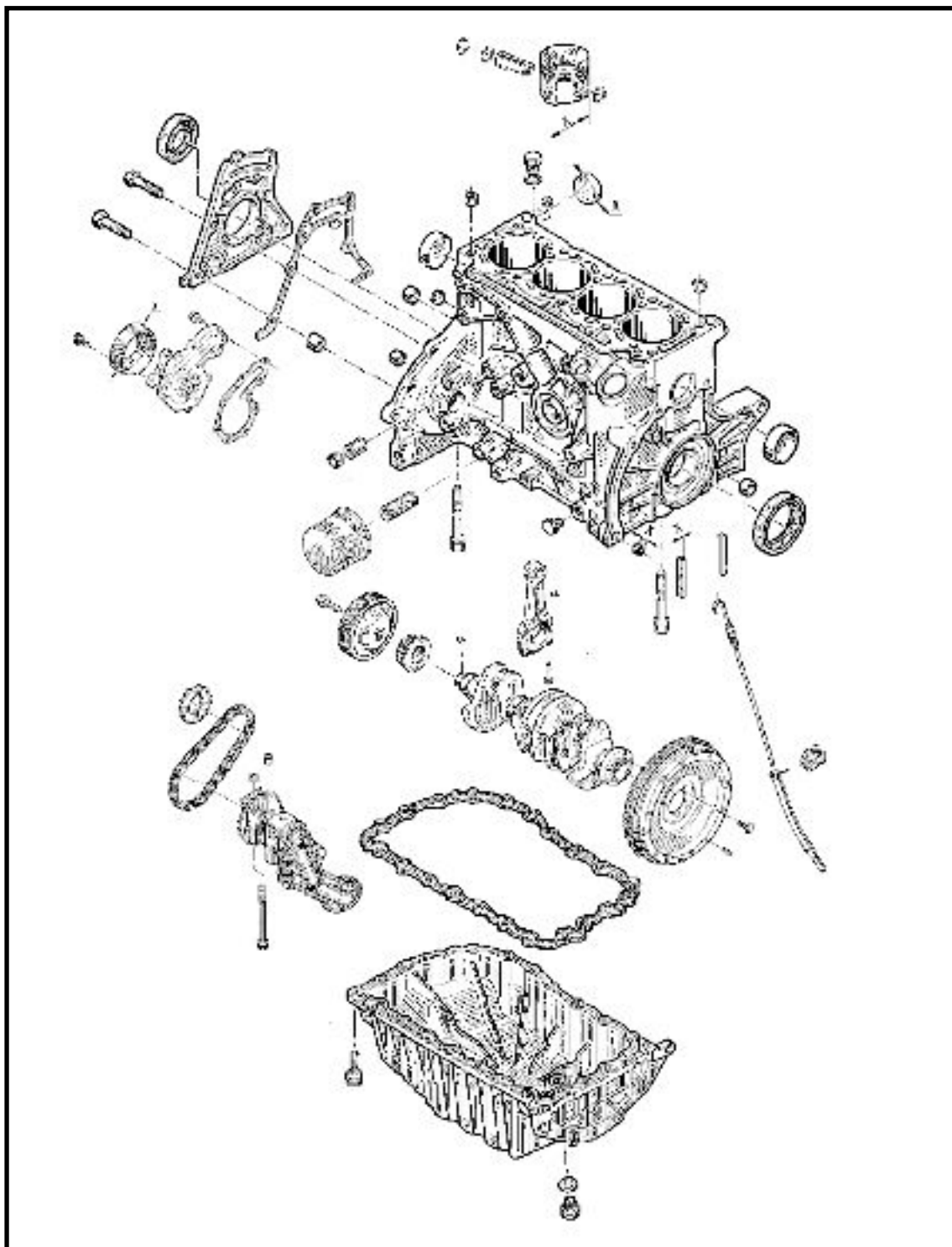
- the injection pump – the screws are to be progressively screwed by hand and then tightened at 2.5 daNm (see Chapter 13 “Injection Pump”),

- the cylinder head cover;

- the injectors pipes, the injection pump gear – it is to be immobilized by means of the MOT 1200-01 device and its nut is to be tightened at 5.5 daNm.



CYLINDERS CRANKCASE

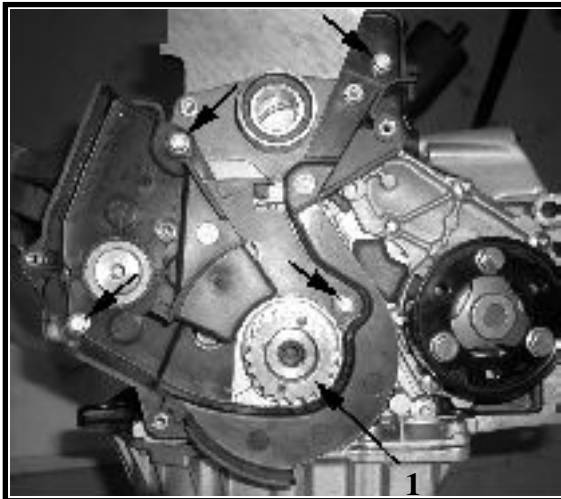


CYLINDERS CRANKCASE

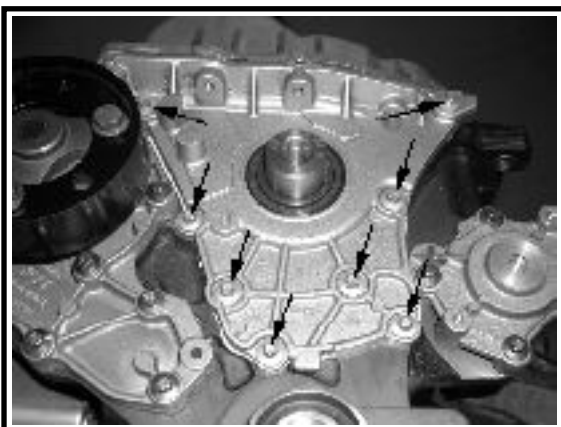
DISMOUNTING

The following are to be dismounted:

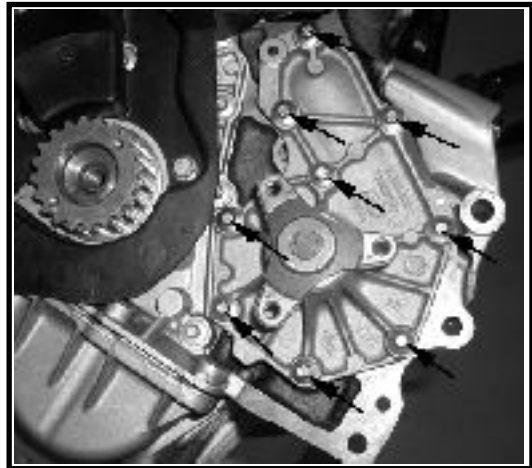
- the clutch,
- the engine flywheel (it is immobilized by means of the MOT 582),
- the lower crankcase,
- the crankshaft gear,
- the distribution belt lower protection plate,
- the distribution with oil-sealing ring crankcase,



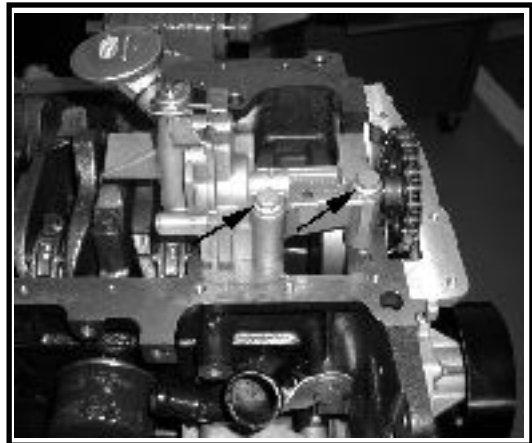
- the crankshaft sealing gasket support,



- the water pump,



- the oil pump (the two attachment screws are to be unscrewed and the pump is to be turned over).



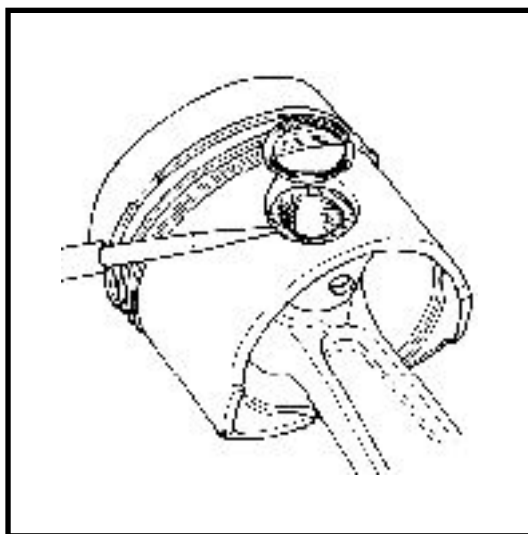
- Mark the connecting rod covers compared with the connecting rod body.

Dismounting - Remounting

The following are to be dismounted:

- the connecting rod covers and bearings,
- the pistons – connecting rod assembly (the pistons are to be marked as against the cylinders
- No.1 towards the flywheel),
- the bearings covers and bearings,
- the bearing No.1 oil-sealing ring,
- the crankshaft and the bearing for axial clearance adjustment
- the bearings on the cylinders crankcase.

The piston axle-maintaining locks are to be extracted and the connecting rods are to be dismounted (the axle is freely mounted in the piston and connecting rod).

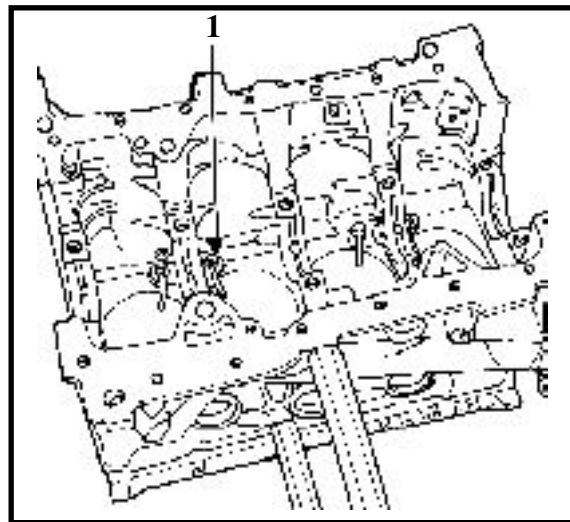


The rings are to be dismounted.

PISTONS COOLERS REPLACEMENT

COOLERS DISMOUNTING

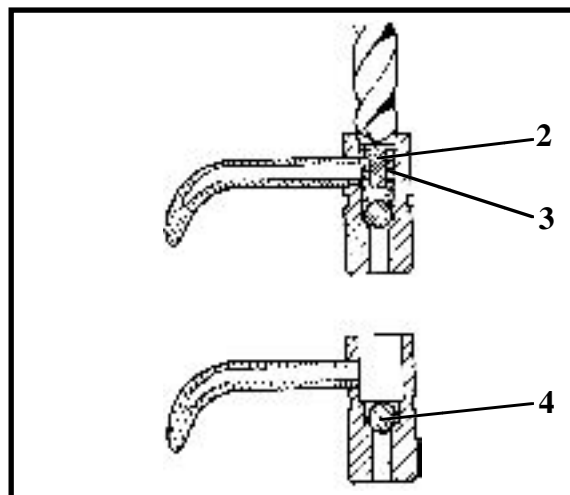
- the cooler (1) is to be drilled with a $\varnothing 7$ mm drill,



- extract the stopper (2) and spring (3).

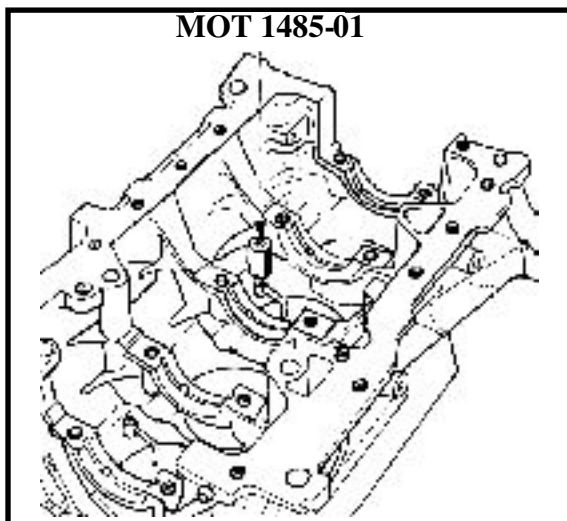
NOTICE:

The ball (4) is not to be extracted in order to avoid the splinter entering the oil circuit.



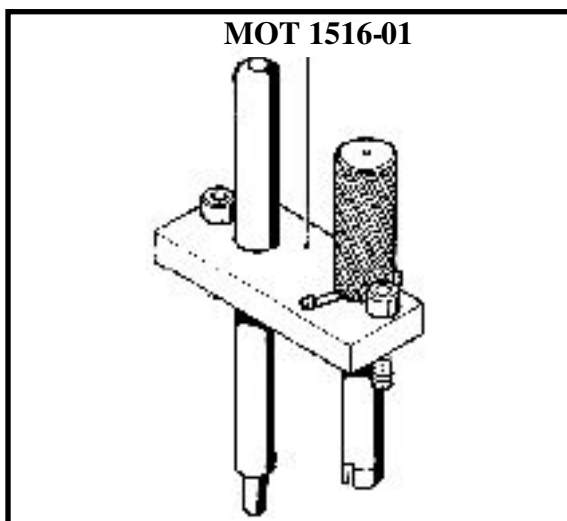
The remained splinter is to be removed by means of a brush.

The **MOT1485-01** is to be screwed in the cooler and the latter is to be extracted.



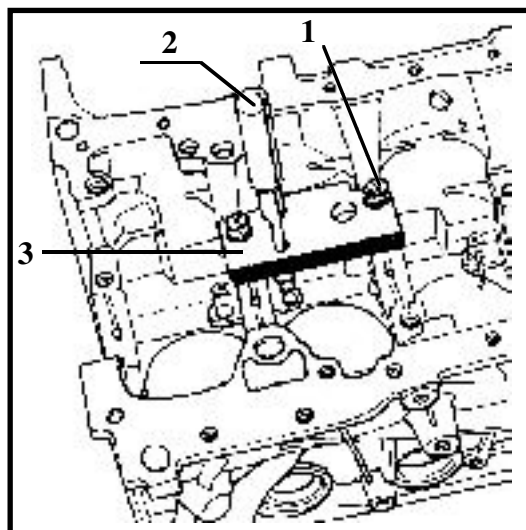
PISTONS COOLERS MOUNTING

The cooler mounting is performed by means of the **MOT 1516-01** device.



The **MOT 1516-01** device plate (3) is to be mounted on the cylinders crankcase and centered by means of the centering device (2).

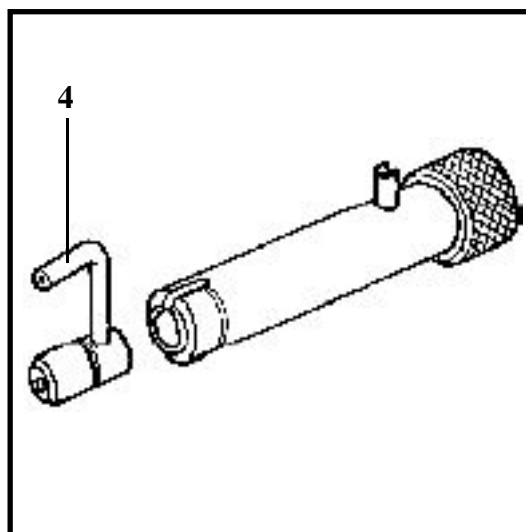
The screws (1) are to be tightened then the centering device is to be removed.



The cooler is introduced in the device rod.

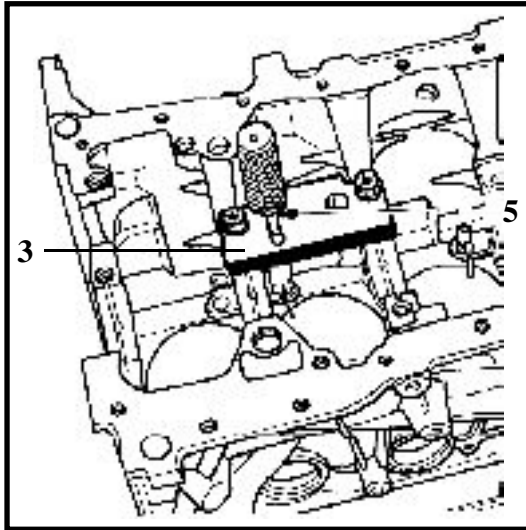
NOTICE:

Pay attention when mounting the cooler; the end (4) is to be directed towards the cylinder center.

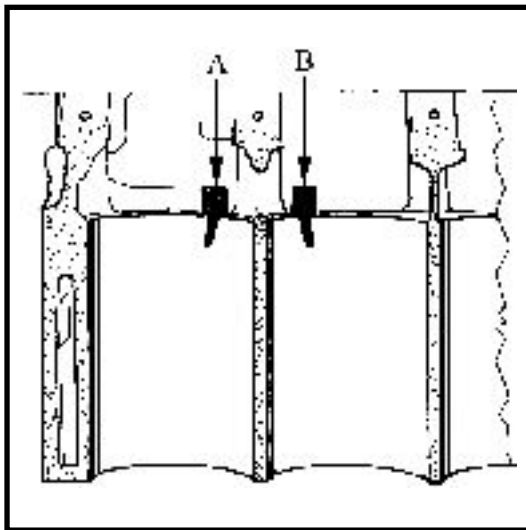


The cooler is to be positioned again and again, until the pressing rod shoulder (5) contacts the plate (3).

Dismounting - Remounting



Pay attention to the coolers direction.



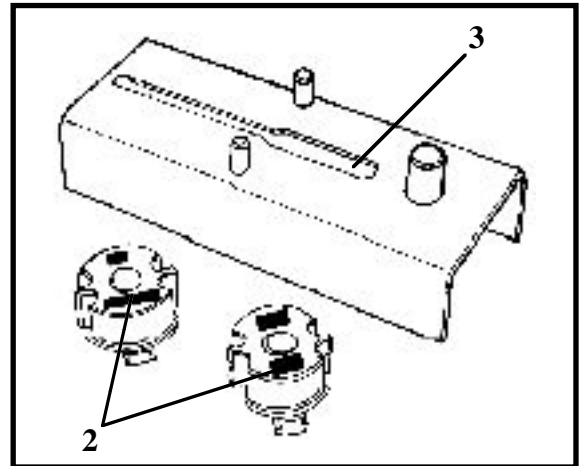
A: coolersdirection for cylinders 2 and 4.
B: coolers direction for cylinders 1 and 3.

REMountING

The cylinders crankcase gasket areas and the crankshaft oiling grooves are to be cleaned.

The connecting rod bearings are identical and they are not provided with groin.

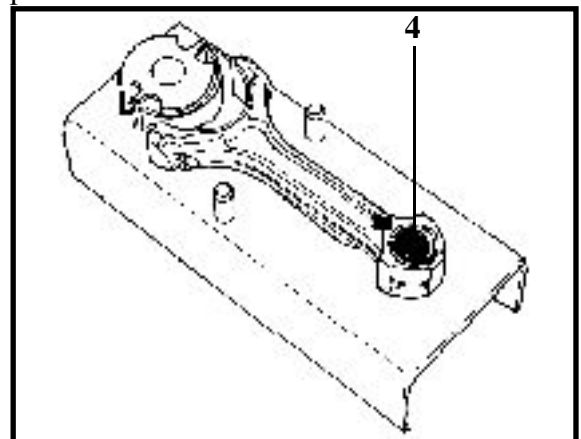
They are to be mounted by means of the **MOT 1492** device.



The bearing support (1) is to be chosen according to the engineshown in position(2).

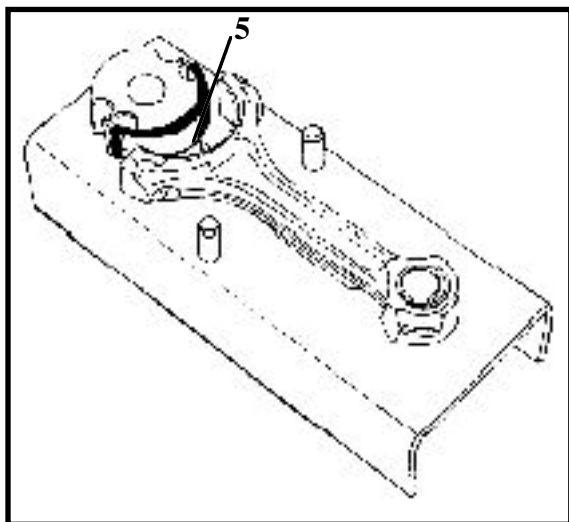
The bearing support is to be mounted in the device slot (3).

The connecting rod is to be mounted on the device so that the lower part of the connecting rod leg (4) contacts the centering part.

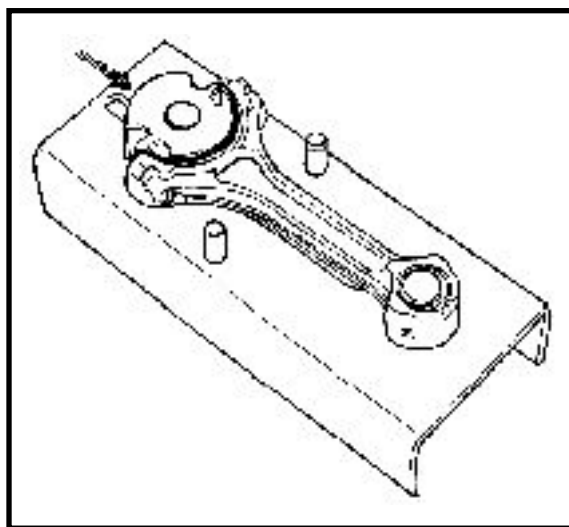


Dismounting - Remounting

The bearing (5) is to be placed on the bearing support (see the following drawing).



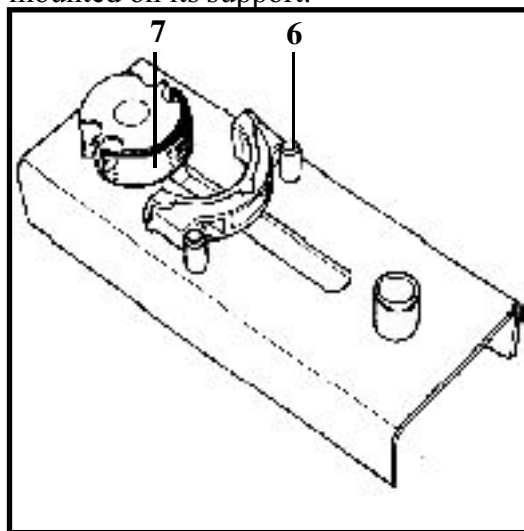
The bearing support is moved according to the arrow so that the bearing hits the connecting rod.



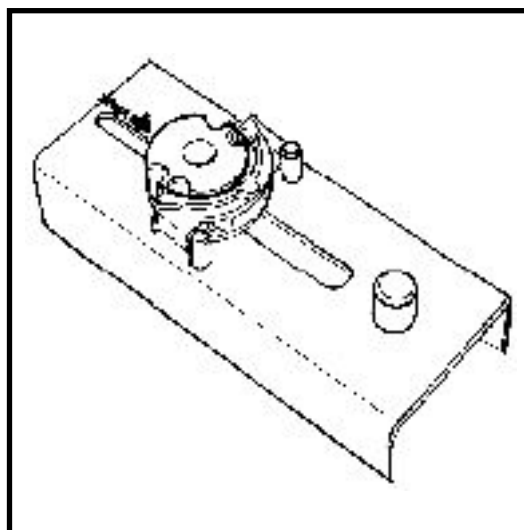
The same operations are to be performed for all the other connecting rods.

The followings are to be performed when mounting the connecting rods covers bearings:

The connecting rod cover is to be placed on the support so that the latter hits the two studs (6) then the bearing (7) is to be mounted on its support.



The bearing support is moved according to the arrow so that the bearing hits the cover.



The pistons are to be mounted with the bolts and connecting rods.

Dismounting - Remounting

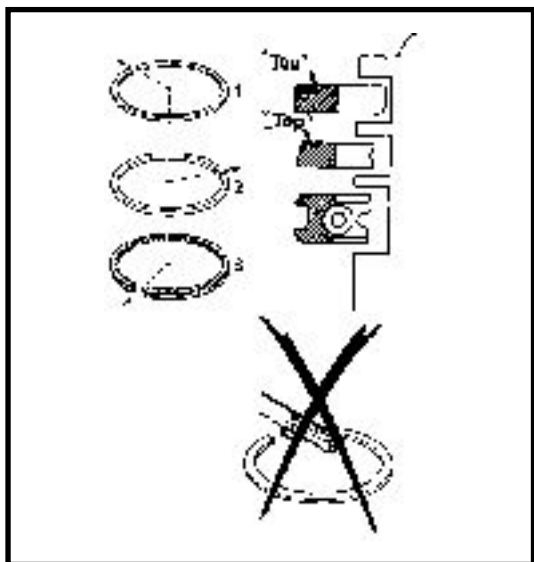
The axle / piston keeping locks are to be mounted.

The rings are to be mounted on the piston as follows:

- the oiling ring (3),
- the sealing ring (2) with the "TOP" mark upward,
- the compression ring (1) with the "TOP" mark upward.

The rings are to be positioned at 120° from one another, with the oiling ring slot in front of one of its channel full.

The ring slot is not to be adjusted.

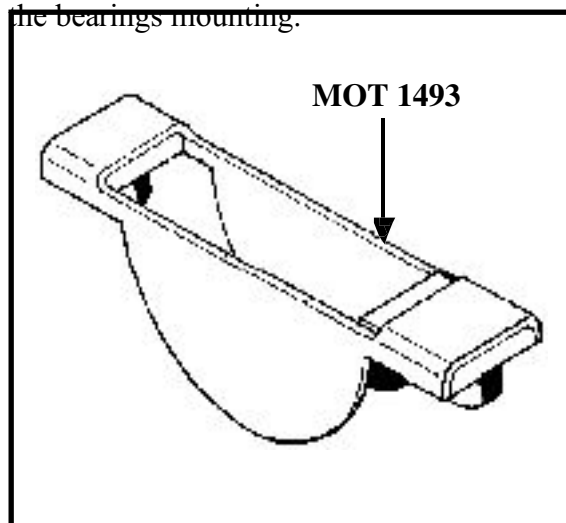


The rings – piston – connecting rod assembly is to be oiled and mounted in the cylinders crankcase so that the turbulence chamber is directed towards the oil filter

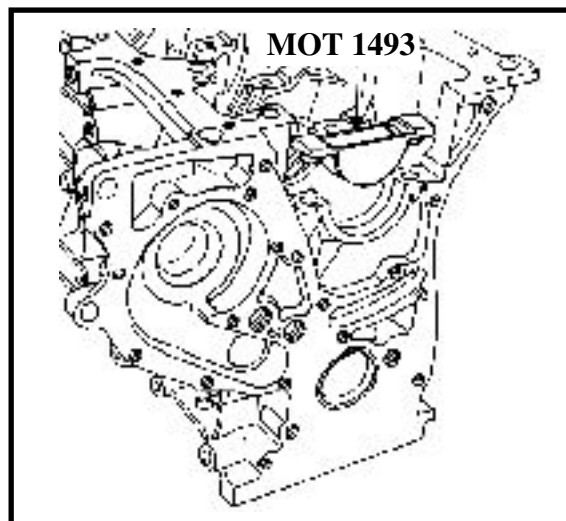
The bearings are not provided with groins

The bearings to be mounted in the cylinder crankcase are provided with oiling holes.

The MOT 1493 device is to be used for the bearings mounting.

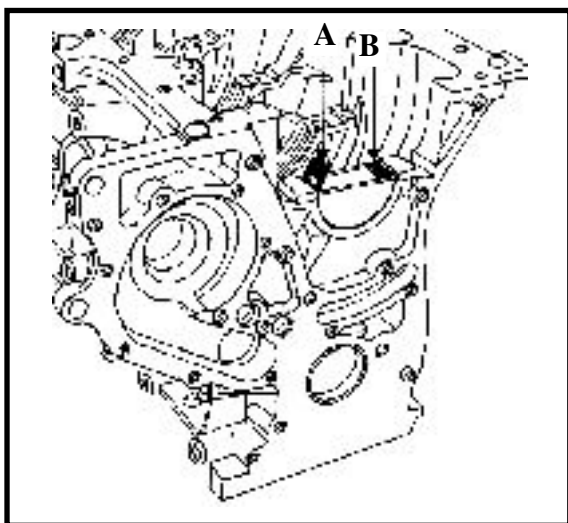


The MOT 1493 device is placed on the cylinders crankcase.



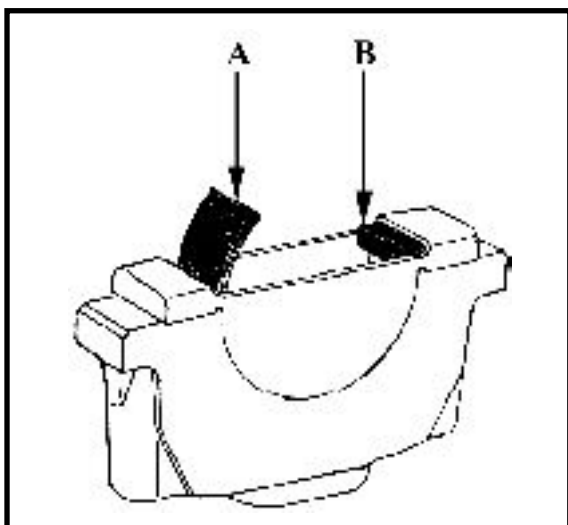
Dismounting - Remounting

The bearing is to be mounted in the **MOT 1493** device. Then the bearing is to be pushed on the point (A) until it hits the point (B) of the device.



The **MOT 1493** device is to be placed on the bearing cover.

The bearing is to be mounted in the device. Then the bearing is to be pushed on the point (A) until it hits the point (B) of the **MOT 1493** device



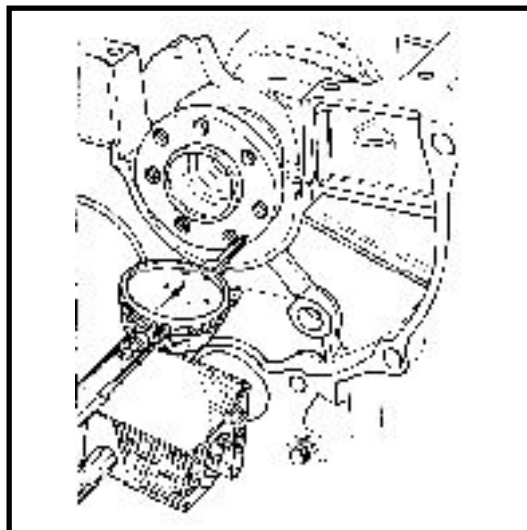
The oiled crankshaft and the axial bearings are to be mounted (at bearing No.2).

The bearing-covers (3), (4) and (5) are to be mounted and tightened at **6.5 daNm**.

The crankshaft axial clearance (j) is to be checked:

$$j = 0.07 \div 0.23 \text{ mm}$$

The axial bearings may have: **2.30, 2.35, 2.40 and 2.45 mm**.



The followings are to be mounted:

- **the bearing cover (2); then it is to be tightened at a required moment of (6.5 daNm),**

- the connecting rod covers; then they to be tightened at **4.5 ÷ 5 daNm**.

The bearing (1) is to be sealed by silicon injection.

a) Mounting of the gaskets

- If the channel thickness is lower to 5 mm, a 5.1 - mm thickness gasket is to be used.

- If the channel thickness is greater than 5 mm, a 6 - mm thickness gasket is to be used.

The gaskets are to be mounted with channel towards exterior.

b) Silicon injection

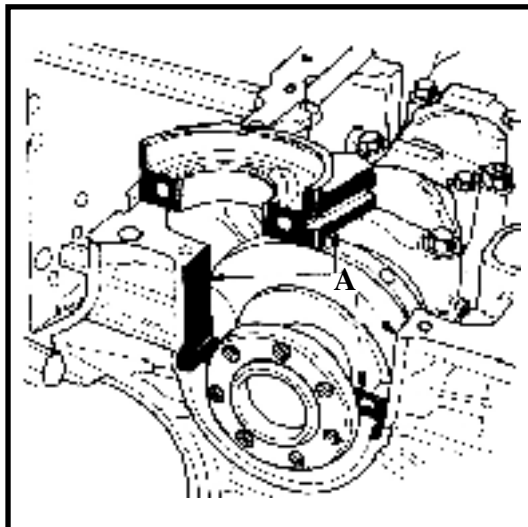
The necessary kit for this operation includes a **50 ml** syringe and a **5 ml** tube of **DURCISSEUR**.

Dismounting - Remounting

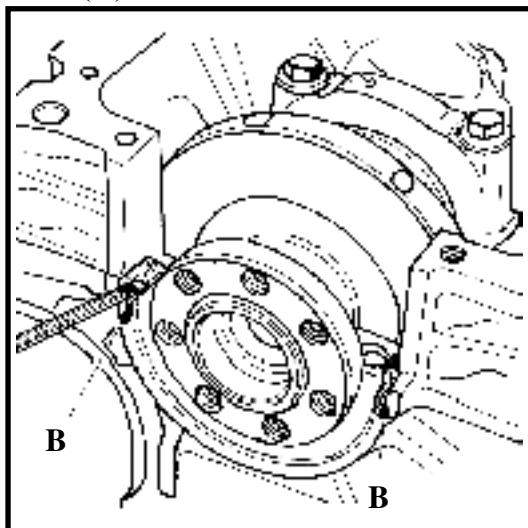
IMPORTANT:

The injection is to last at least 5 minutes, in order to avoid the syringe mixture polymerization.

The cylinders crankcase and the bearing cover areas (A) are to be cleaned and degreased with thinner.



A thin layer of **RHODORSEAL 5661** is to be applied on the cylinders crankcase areas (B).

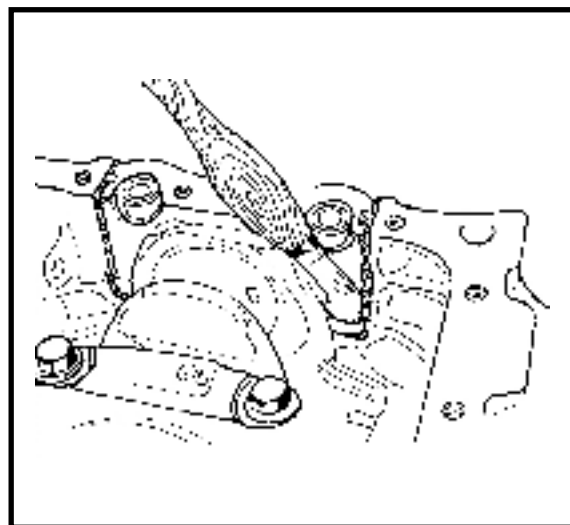
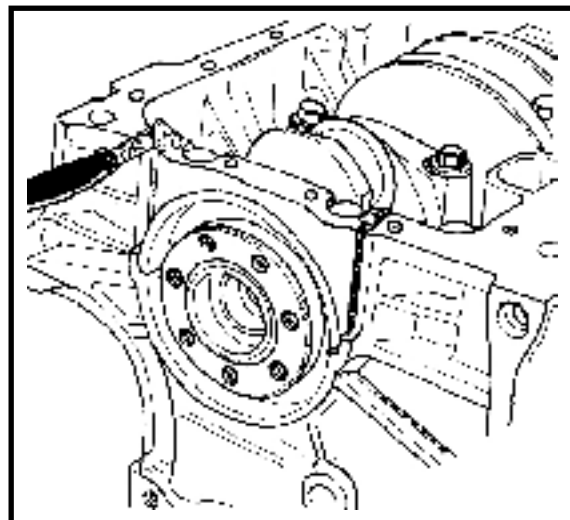


The bearing cover (1) is to be mounted and tightened at **6.5 daNm**.

Thirty milliliters (30 ml) of **RHODORSEAL 5661** are to be mixed with one third (1/3) of the tube of **DURCISSEUR** until obtaining a homogeneous mixture.

The mixture is to be introduced into the syringe and then slowly injected into the bearing cover grooves so that the sealing between the bearing cover and the cylinders crankcase is perfect.

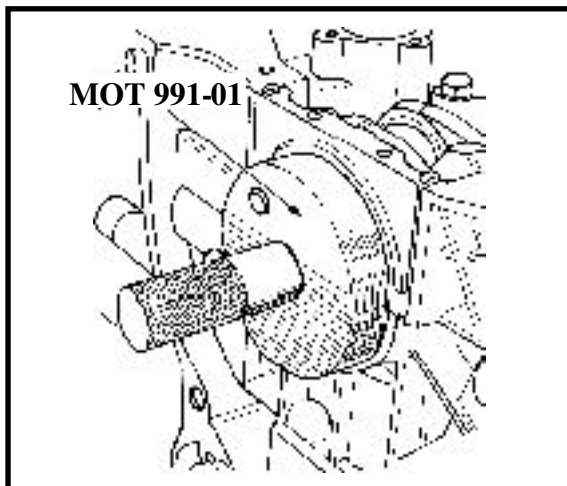
Wait for the mixture polymerization and remove the excess.



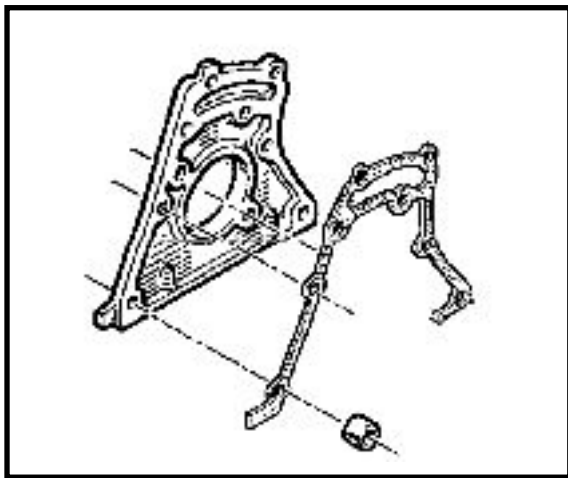
Dismounting - Remounting

The assembly rotation is to be checked.

The bearing (1) oil-sealing ring is to be mounted by means of the device **MOT 991-01**.



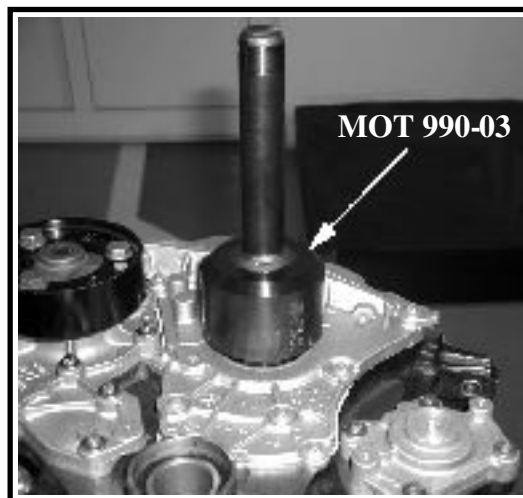
The crankshaft cover centering bushes are to be checked on the distribution side.



The support is to be mounted with a new gasket.

The crankshaft oil-sealing ring on the distribution side is to be oiled.

The oil-sealing ring is to be mounted by means of the device **MOT 990-03**.



The oil pump centering bushes presence is to be checked.

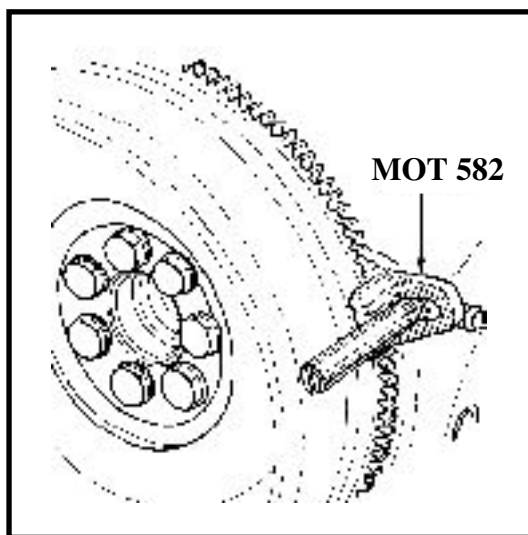
The oil pump is to be mounted and the attachment screws are to be tightened at a required moment of $2 \div 2.5 \text{ daNm}$.



Dismounting - Remounting

The engine flywheel supporting area on the crankshaft is to be lubricated with **LOCTITE AUTOFORM**.

The geared sector **MOT 582** is to be dismounted.



The screws are to be tightened at a required moment of $(5 \div 5.5 \text{ daNm})$.

The geared sector **MOT 582** is to be dismounted.

The clutch is to be mounted (see the **Chapter 20 "The Clutch"**) and its attachment screws are to be tightened at **2 daNm**.

The lower crankcase is to be provided with a new gasket; its screws are to be tightened at a required moment of $(1.2 \div 1.5 \text{ daNm})$.

CYLINDER HEAD REMOUNTING

- **The followings are to be mounted:**
- **The cylinder head centering bushes;**
- **The cylinder head gasket.**

NOTICE:

In case of replacing one of the following elements

- *the crankshaft,*
- *the cylinders crankcase,*
- *the connecting rods,*
- *the piston,*

it is obligatory to recalculate the cylinder head gasket thickness according to the pistons area. Otherwise the cylinder head gasket is to be replaced with an identical one.

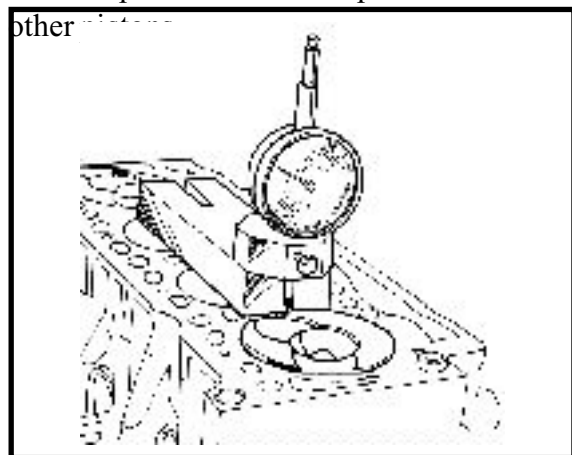
In order to establish the gasket thickness the pistons over-height is to be measured by means of the devices **MOT 251-01** and **MOT 252-01**.

The calamine is to be removed from the pistons head.

The crankshaft is to be rotated towards the running direction and the piston (1) and its upper dead point.

The piston over-height is to be measured.

The operation is to be repeated for all the other pistons.



NOTICE

The measurements are to be performed on the engine longitudinal axe, in order to avoid the errors caused by the piston turning over.

IMPORTANT!

ONLY THE MAXIMAL OVER-HEIGHT IS TO BE TAKEN INTO CONSIDERATION.

The followings are to be used to get a maximal over-height of the piston:

- less than **0.613 mm** a two-holes gasket is to be used (thickness 1.4 mm),
- within **0.613 mm** (inclusive) and **0.767 mm** (inclusive): a one-hole gasket is to be used (thickness 1.5 mm),
- higher than **0.767 mm**: a three-holes gasket is to be used (thickness 1.6 mm).

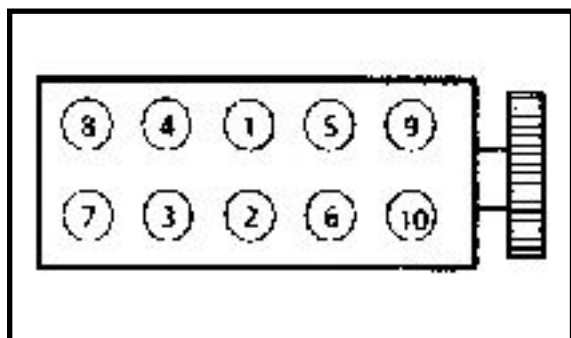
The pistons are to be brought at half-stroke, in order to avoid the contact with their valves.

The cylinder head is to be centered on the two centering bushes.

The cylinder head screws are to be tightened at the required moment and oiled, observing the following method:

CYLINDER HEAD TIGHTENING METHOD

1. GASKET PRE-SETTING



The cylinder head screws are to be tightened at 3 daNm, then at an angle of $80^\circ \pm 4^\circ$, observing the order indicated in the drawing. Wait for 3 minutes.

2. CYLINDER HEAD TIGHTENING

The screws 1 and 2 are to be totally unscrewed and tightened at 2.5 daNm, then at an angle of $213^\circ \pm 7^\circ$.

The same is to be done for the screws 3-4, 5-6, 7-8 and 9-10.

The cylinder head is not to be re-tightened.

The distribution belt is to be mounted and tensioned at 61 ± 5 Hz (see Chapter 11 “The Distribution Belt”).


The nut of the tightening roller is to be obligatory tightened at 5 daNm.

Perform the pressing-on of the injection pump. (see Chapter 13 “Injection Pump Pressing-on”).

Then, the followings are to be mounted:

- the distribution covers,
- the crankshaft pulley – its screw is to be tightened at 2 daNm then at an angle of $115^\circ \pm 15^\circ$,
- the intake-exhaust manifold - its screws are to be tightened at 2.7 daNm
- the alternator and its belt – the alternator belt is to be tensioned at 127 ± 5 Hz (see Chapter 16 “Alternator”).

Lower crankcase

TIGHTENING MOMENTS (daNm)	
Lower crankcase attachment screws	1.5
Cross-tie attachment screws.....	5.7
Attachment screws of the anti-rolling bar on longitudinal girders.....	2

DISMOUNTING

The vehicle is to be placed on a two-columns elevator.

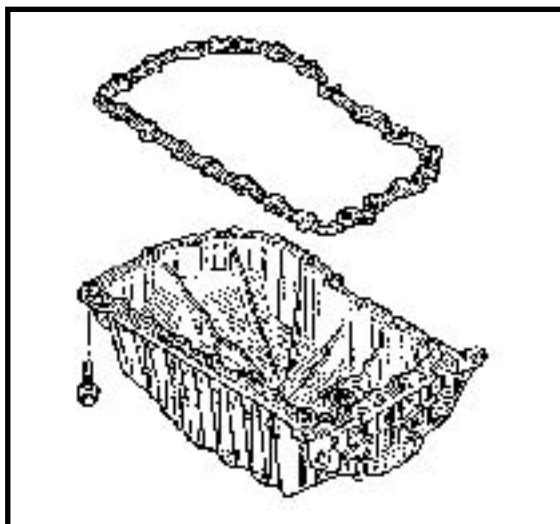
The battery is to be dismantled.

The oil is to be drained from the motor.

The following are to be dismantled:

- the engine shield,
- the engine shield cross-tie,
- the attachment screws of the anti-rolling bar on longitudinal girders.

The lower crankcase attachment screws are to be dismantled.


**REMountING**

The lower crankcase is to be cleaned.

The lower crankcase is to be mounted with a new gasket.

Perform the dismantling operations in the reverse order.

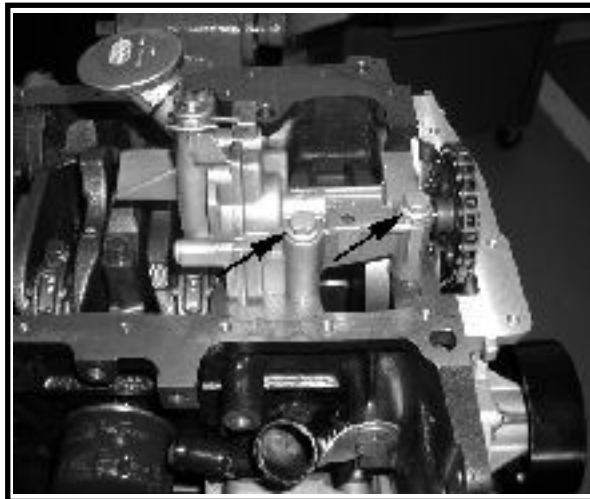
The engine is to be filled with oil (**Dacia Oil Diesel 10W40 API CF**).

TIGHTENING MOMENTS (daNm)	
Oil pump attachment screws	2 ÷ 2,5

DISMOUNTING

The followings are to be dismantled:

- the lower crankcase (see Chapter 10 “Lower Crankcase”),
- the two attachment screws of the oil pump on the cylinders crankcase.



The oil pump is turned over, the driving chain is to be extracted from the gear, and the pump is to be dismantled.

The oil pump cover is to be dismantled.

The oil pump gear clearance is to be checked (see Chapter 10 “Characteristics”).

REMountING

Perform the dismantling operations in the reverse order.

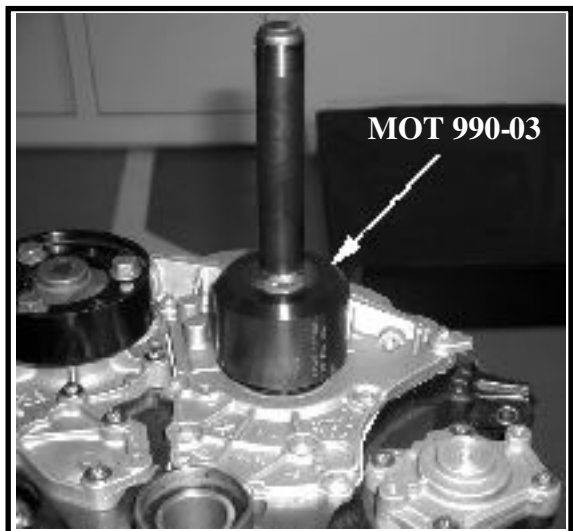
The engine is to be filled with oil.

The oil pressure at 80° is to be checked.

- at 1000 rpm.....1.2 bars
- at 3000 rpm3.5 bars

Necessary Special Tools	
MOT 1054	Engine pressing-on rod
MOT 990-03	Crankshaft sealing gasket mounting device towards distribution
MOT 1505	Belts tension measurement device

TIGHTENING MOMENTS (daNm) 	
Crankcase pulley screw	2+115°±15°
Distribution belt tensioning roller nut	5
Alternator attachment screw	1,9



GASKET REPLACEMENT

DISMOUNTING

The distribution belt is to be dismantled (see Chapter “Distribution Belt”)

The gear is to be dismantled from the crankshaft.

The crankshaft-sealing gasket is to be extracted.

REMountING

The new sealing gasket is to be mounted by means of the device **MOT 990-03**.

The distribution belt is to be mounted (see the method described in the Chapter “Distribution Belt”).

Necessary Special Tools	
MOT 991-01	Crankshaft sealing mounting device towards flywheel
MOT 582	Flywheel immobilization sector

TIGHTENING MOMENTS (daNm)	ⓧ
Engine flywheel attachment screws5 ÷ 5.5	
Clutch attachment screws..... 2	
Gearbox attachment screws on engine	
- upper attachment 4.4	
- lower attachment2.1	

GASKET REPLACEMENT

This operation is to be performed after dismantling the gearbox, the clutch, and the engine flywheel.

DISMOUNTING

The gearbox is to be dismantled from the vehicle (see Chapter 21 “Dismounting-Remounting Of The Gearbox”).

The clutch is to be dismantled (see Chapter 20 “Clutch Dismounting-Remounting”).

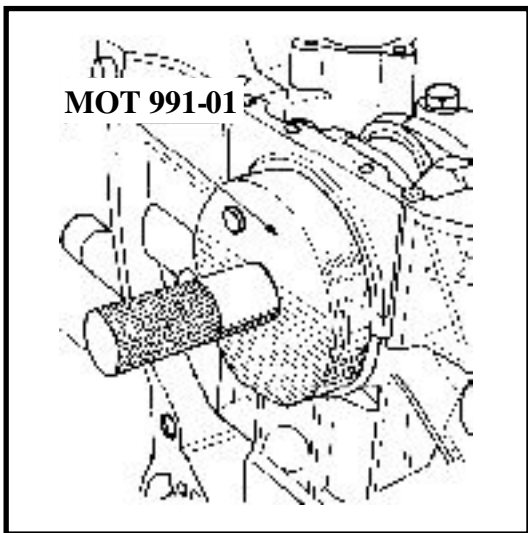
The engine flywheel attachment screws are to be dismantled (immobilized by means of the device MOT 582).

The crankcase-sealing gasket is to be extracted.

The gasket housing is to be cleaned.

REMountING

The new sealing gasket is to be mounted by means of the device MOT 991-01.



The holes thread of the flywheel attachment screws is to be cleaned with a dry gaze.

The flywheel seating area on the crankshaft is to be degreased.

The engine flywheel is to be mounted and to be immobilized with MOT 582.

The flywheel seating area is to be applied with LOCTITE AUTOFORM.

The stopping sector MOT 582 is to be dismantled.

The holes thread of the flywheel attachment screws is to be cleaned with a dry gaze.

Engine set replacing

Necessary Special Tools	
MOT 251-01	Comparing support
MOT 252-01	Comparing support plate
MOT 1054	Engine pressing-on rod
MOT 1505	Belts tension measurement device

TIGHTENING MOMENTS (daNm) 

Connecting rods attachment screws	4.5 ÷ 5
Injectors supplying pipes	2.5
Crankcase pulley screw	2 + 115 ± 15°
Distribution belt tensioning roller nut.....	5
Oil pump attachment screws.....	2 ÷ 2.5

DISMOUNTING

The vehicle is to be placed on a two-columns elevator.

The battery is to be dismantled.

The oil is to be drained from the motor.

The cooling fluid is to be drained.

The lower crankcase is to be dismantled (see Chapter 10 “Lower Crankshaft”).

The oil pump attachment screw is to be dismantled and the pump is to be extracted by turning it over.

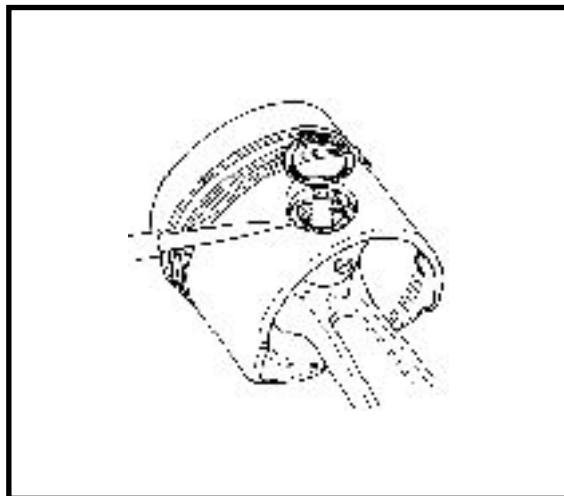
The cylinder head is to be dismantled (see Chapter 10 “Cylinder Head Dismounting-Remounting”).

The connecting rods covers are to be dismantled.

The connecting rods covers are to be marked as against the connecting rods bodies.

The pistons-connecting rods assembly is to be dismantled.

The axle piston-maintaining locks are to be extracted and the connecting rods are to be dismantled.



REMONTARE

The bearings are to be mounted on the connecting rods bodies and covers (see the method described in Chapter 10 “Cylinders Crankcase Dismounting-Remounting”).

The pistons and the bolts – pistons are to be mounted.

The axle gear-maintaining locks securities are to be mounted.

The pistons rings are to be mounted observing the order:

- the oiling ring,
- the sealing ring with the mark “TOP” upward,
- the compression ring with the mark “TOP” upward.

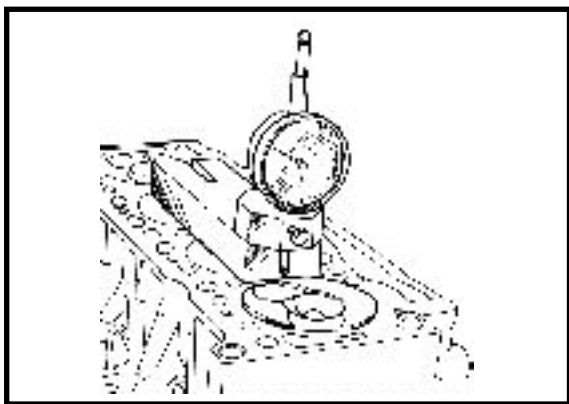
The rings are to be positioned at 120° from one another.

Engine set replacing

The rings – piston – connecting rod assembly is to be lubricated with engine oil and mounted in the cylinders crankcase, with the turbulence chamber towards the oil filter.

The connecting rods cover are to be mounted, observing the dismantling marks and the screws are to be tightened at the required moment (4.5 ÷ 5 daNm)

The piston over-height is to be measured by means of the devices **MOT 521-01** and **MOT 252 – 01**, in order to calculate the thickness of the cylinder head.

**NOTICE:**

The measurements are to be performed on the engine longitudinal axle in order to eliminate the errors caused by the piston turning over.

IMPORTANT:

ONLY THE MAXIMAL OVER-HEIGHT IS TO BE TAKEN INTO CONSIDERATION.

For a piston maximal over-height:

- less than 0.613 mm : a two – holes gasket is to be used for identification (thickness 1.4 mm),

- within 0.613 mm (inclusive) and 0.767 mm (inclusive): a one-hole gasket is to be used for identification (thickness 1.5 mm),

- higher than 0.767 mm: a three-holes gasket is to be used for identification (thickness 1.6 mm)

The cylinder head is to be mounted (see the Chapter 10 “Dismounting- Re-mounting”).

The oil pump is to be mounted and the attachment screws are to be tightened at the required moment.

The lower crankcase is to be mounted (see the Chapter 10 “Lower Carter”).

The distribution belt is to be mounted (see Chapter 11 “Distribution Belt”).

The alternator belt is to be mounted (see Chapter 16 “Alternator”).

The engine is to be filled with oil Dacia Oil Diesel 10W40 API CF.

The cooling circuit is to be purged and filled with cooling fluid **GLECEOL Rx type D** (see Chapter 19 “Filling - Purging”).

Distribution belt

Necessary Special Tools

MOT 1054	Engine pressing-on rod
MOT 1505	Belt tensioning measurement device

TIGHTENING MOMENTS (daNm) 

Crankshaft pulley screw	2 + 115°
Tensioning roller nut	5

DISMOUNTING

Place the vehicle on a two-columns elevator.

Disconnect the battery.

Drain the cooling circuit by the radiator lower hose.

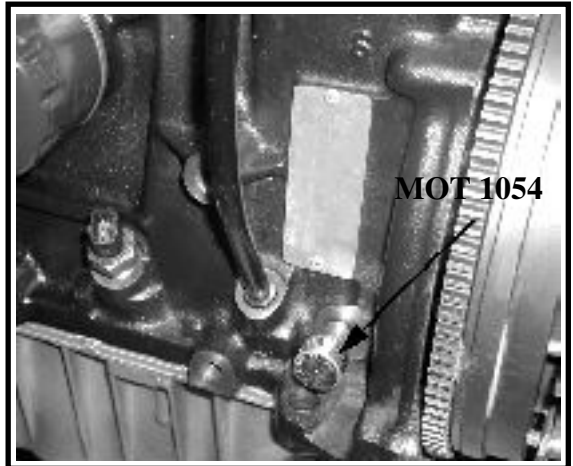
Dismount the radiator.

Dismount the accessories belt (see chapter 16 “Alternator”).

Rotate the crankshaft in order to line up the mark from the camshaft gear with the pressing-on window (C).

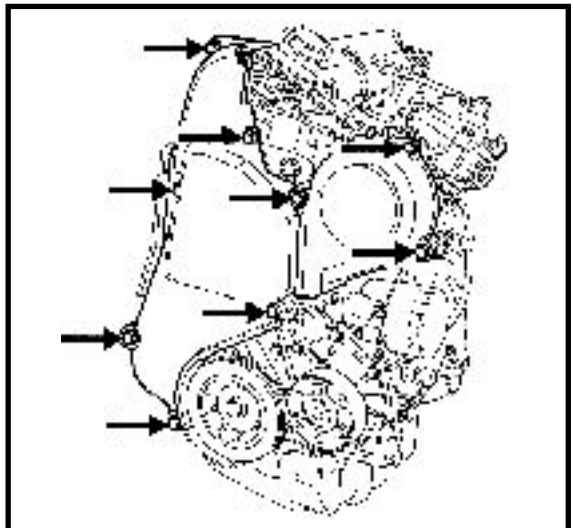


Mount the engine pressing-on rod MOT 1054.



Dismount :

- the crankshaft pulley,
- the support of the fuel return pipe,
- the distribution crankcases.



Distribution belt

Dismount the tensioning roller and remove the distribution belt.

NOTICE :

An unscrewing more than one rotation of the tensioning roller may lead to its falling from the pivoting screw.

REMOUNTING

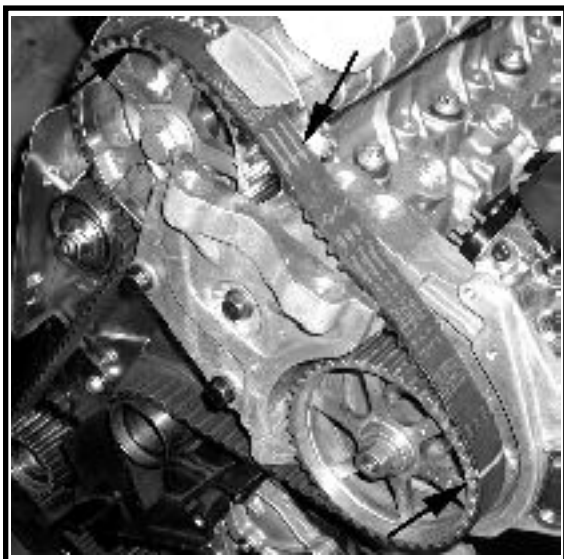
Check if the rod **MOT 1054** is correctly mounted.

Mount a new distribution belt, observing the rotation direction shown by the arrows back of the belt.

The belt has marked on the external part three marks and one mark on the internal side for pressing-on; the internal mark is off one external mark.

Line up the internal mark from the belt with the mark from the crankshaft gear.

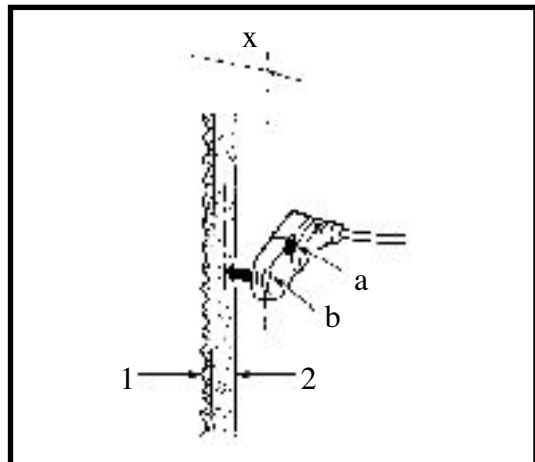
Then, line up the marks from the crankshaft gear and the injection pump gear with the corresponding marks from the belt.



Tighten the distribution belt by screwing a screw (A) in the lower distribution crankcase.

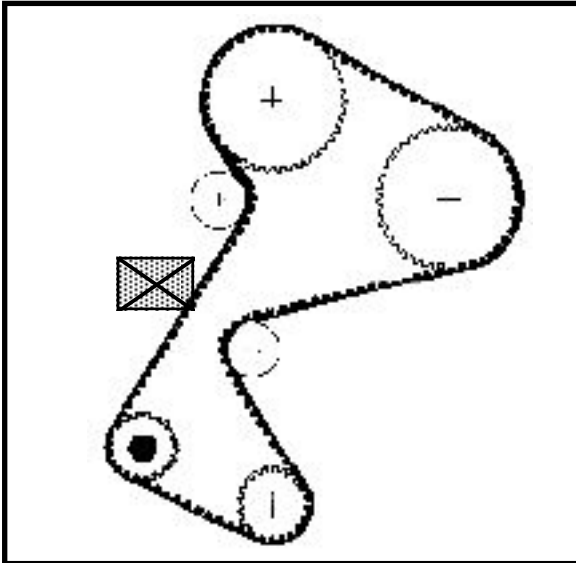


Place one of the two captors (a) or (b) of the **MOT 1505** device reading head at a distance $x = 5 - 10$ mm of belt in the position shown in the drawing.

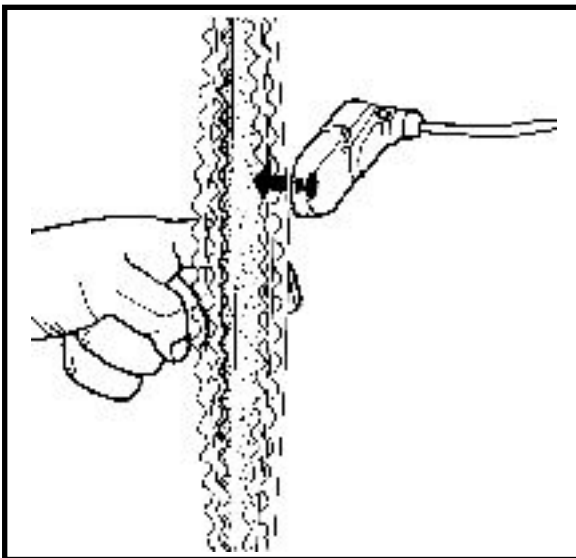


The measurement may be performed on any of the belt face (1) or (2), subject that both captors are not to be in the same time in front of the belt during measurement.

Distribution belt



Make vibrating the belt by means of a finger.



The measurement is validated by a device “bip”

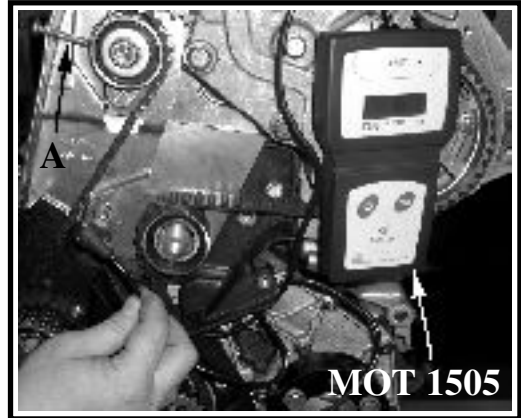
Tighten the belt until obtaining the value $T_1 = 68 \pm 3 \text{ Hz}$.

Block the tensioning roller.

Rotate then, four turns the crankshaft and position again the distribution at the upper dead point.

Unblock the tensioning roller.

Tighten again the distribution belt (acting upon the A screw) until obtaining the value $T_2 = 61 \pm 5 \text{ Hz}$.



The tensioning roller nut is to be obligatory tightened at **5 daNm**. If not, this may unloose risking the engine damage.

Remount the crankshaft pulley and obligatory tighten its screw at a moment of **2 daNm** plus an angle of $115^\circ \pm 15^\circ$.

Check the injection pump pressing-on (see chapter 13 “Injection Pump Pressing-on”)

Remount the other elements performing the dismantling operations in the reverse order.

Mount and tension the accessories belt (see chapter 16 “Alternator”)

Perform the filling and purging of the cooling circuit (see chapter 19 “Cooling circuit filling – purging”).

NOTE:

Once a belt is dismantled it cannot be remounted.

Cylinder head gasket

Necessary Special Tools

MOT 251-01	Comparing support
MOT 252-02	Measurement plate for pistons over-height
MOT 1054	Engine pressing-on rod
MOT 1505	Belt tensioning measurement device
MOT 1202-01	Pliers for elastic collars
	Wrench for angle tightening

TIGHTENING MOMENTS (daNm) 

Tensioning roller nut	5
Crankshaft pulley screw	2+115°±15°

DISMOUNTING

Place the vehicle on a two-columns elevator.

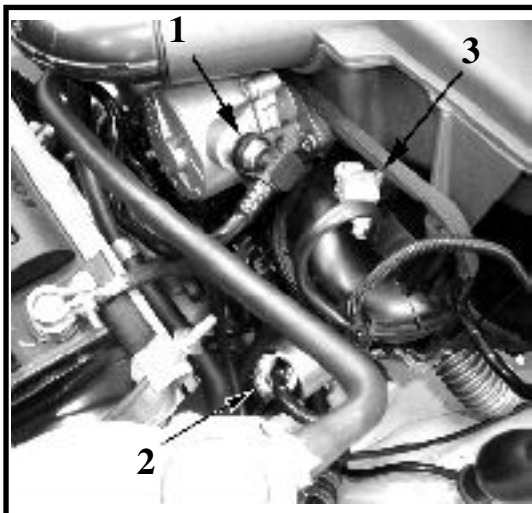
Disconnect the battery.

Dismount the distribution belt (see chapter 11 “ Distribution belt “)

Drain the cooling circuit by the water pump inlet pipe

Dismount :

- the exhaust descent pipe,
- the vacuum pump connection(1),



- disconnect the connector (2) of the electric valve E.G.R. and the connector (3) of the air temperature sensor,

- the hoses and the connector of the water temperature sensor from the thermostat box,

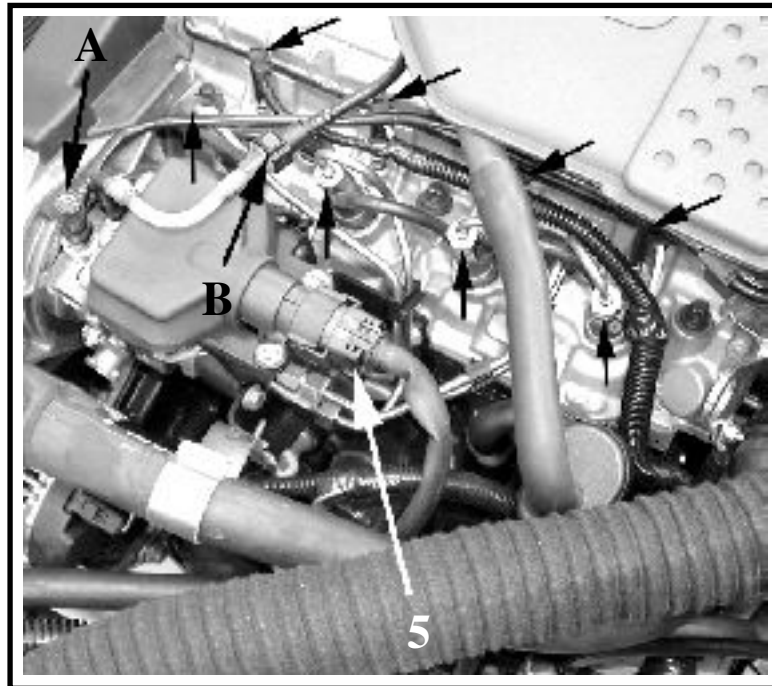


- the air intake connection,
- the connection for oil vapor recycling ,
- detach from clips the fuel pipes from the air filter case,
- dismount the air filter assembly,

Disconnect :

- the supply wires of the pre-heating spark plugs,
- the injectors connectors and the injection pump connector (5),
- the fuel supply and return connections in (A) and (B),
- the resistance connector for diesel heating from the diesel filter.

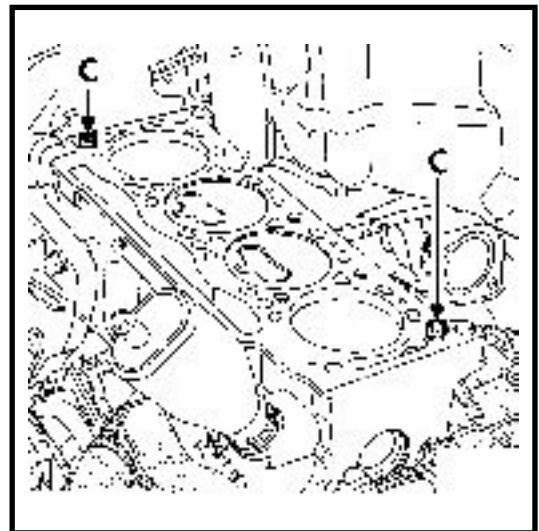
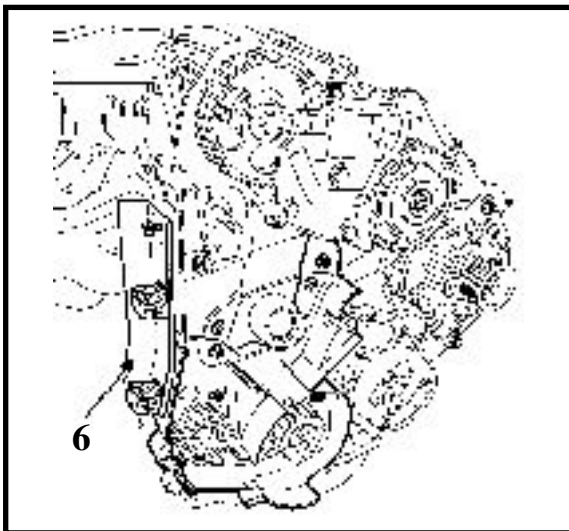
Cylinder head gasket



Dismount the fuel return pipe support (6).

Loosen the attachment screws of the distribution lower crankcase in order to facilitate the cylinder head dismounting.

Remove by lifting, the cylinder head but without rotating it, because it is centered by means of two bushings (C).



The following are to be dismantled:

- the alternator driving belt tightener,
- the cylinder head screws.

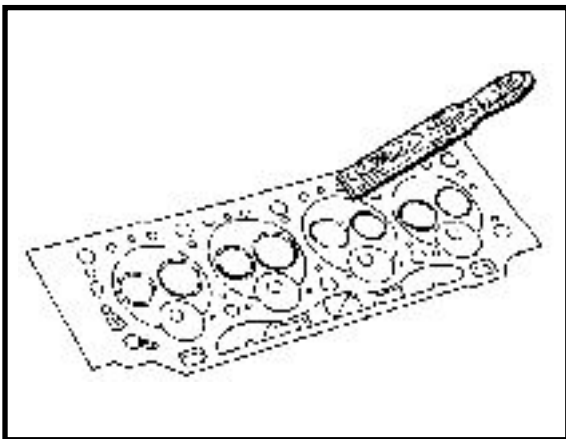
Cylinder head gasket

Protect the oil grooves to avoid impurity penetration (addition); penetration of addition in the oil grooves may govern their clogging and consequently induce a fast failure of the crankshaft.

It is very important not to scratch the gasket seating face.

The **DECAPJOINT** is to be used for cleaning the gasket possible stuck bits.

Spread out the substance on the area to be cleaned, wait for about 10 minutes, and clean with a wooden spatula.



During cleaning operation, protection gloves are to be worn.

The cylinder head flatness is checked by means of a ruler and a kit of gauges.

Maximal permitted deformation: **0.05 mm**.

The cylinder head is not to be rectified.

Measurement of the pistons over-height.

The calamine is to be removed from the pistons head.

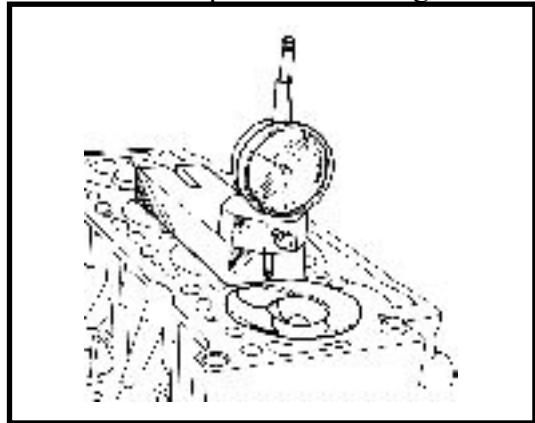
The crankshaft is to be rotated towards the running direction for bringing the piston (1) at its upper dead point.

Place the **MOT 252-01** device on the piston.

Place the **MOT251-01** device provided with a comparing device on the support plate of the **MOT 252-01**.

Place the comparing gauge feeler in contact with the cylinders crankcase and look for the piston upper dead point.

Measure the pistons over-height.



NOTICE:

The measurements are to be performed on the engine longitudinal axe, in order to avoid the errors caused by the piston turning over.

ONLY THE PISTON MAXIMAL OVER-HEIGHT IS TO BE TAKEN INTO CONSIDERATION.

The followings are to be used to get a maximal over-height of the piston:

- less than **0.613 mm**: a cylinder head gasket provided with two identification holes.

- between **0.613 mm** and **0.767 mm**, a cylinder head gasket with one identification hole is to be used

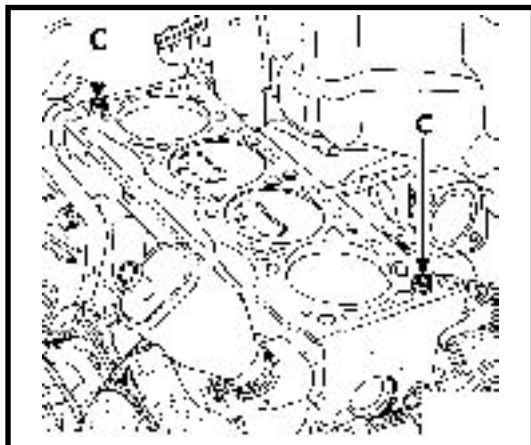
- higher than **0.767 mm**: a cylinder head gasket provided with three identification holes.

Cylinder head gasket

REMountING

Mount the corresponding new cylinder head gasket (according to the maximal over-height).

This is centered by means of two centering bushings (C).



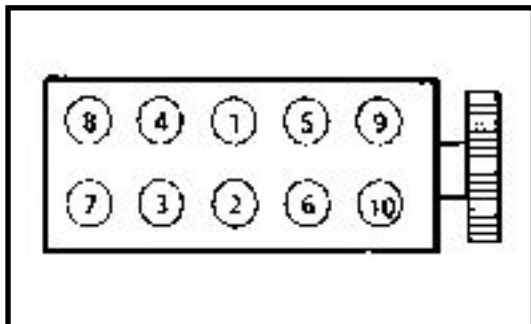
The pistons are obligatory positioned so that neither one is at the upper dead point, in order to avoid the contact with the valves during cylinder head tightening.

The cylinder head is to be centered on the two centering bushings.

The cylinder head gasket is to be tightened as follows:

1. GASKET PRE-SETTING

The cylinder head screws are to be tightened at **3 daNm**, then at an angle of $80^\circ \pm 4^\circ$, observing the order indicated in the drawing.



Wait for 3 minutes, as stabilizing time.

2. CYLINDER HEAD TIGHTENING

The cylinder head tightening is to be performed consecutively for the screws group

1-2, 3-4, 5-6, 7-8 and 9-10

- The screws 1- 2 are to be totally unscrewed.

- Tighten the 1-2 screws at **2.5 daNm**, then at an angle of $213^\circ \pm 7^\circ$.

- Repeat the dismounting and tightening operation for the screws group 3-4, 5-6, 7-8 and 9-10.

The cylinder head is not to be re-tightened.

NOTICE:

In order to get a right tightening of the cylinder head screws, the oil that may be in the cylinder head fixing holes is to be extracted by means of a syringe.


Before mounting, the screws thread and head are to be lubricated with engine oil.

Mount the distribution belt (see **chapter 11 “ Distribution belt “**)

For remounting perform the dismounting operations in the reverse order.

Fill and purge the cooling circuit (see **chapter 19 “ Filling – Purging “**).

Intake manifold

TIGHTENING MOMENTS (daNm)	
Collectors attachment nuts	2.7
Air filter case attachment	0.8
Exhaust gases pipe flange screws	1.9

DISMOUNTING

Place the vehicle on a two-columns elevator.

Disconnect the battery.

Dismount under the vehicle, the two attachment nuts of the downward pipe on the exhaust manifold.

Dismount the downlead pipe attachment clamp on the engine.

Detach from clips the fuel pipes from the air filter case (1).

Dismount the three nuts and the attachment screw of the air filter case (2) on the intake manifold.

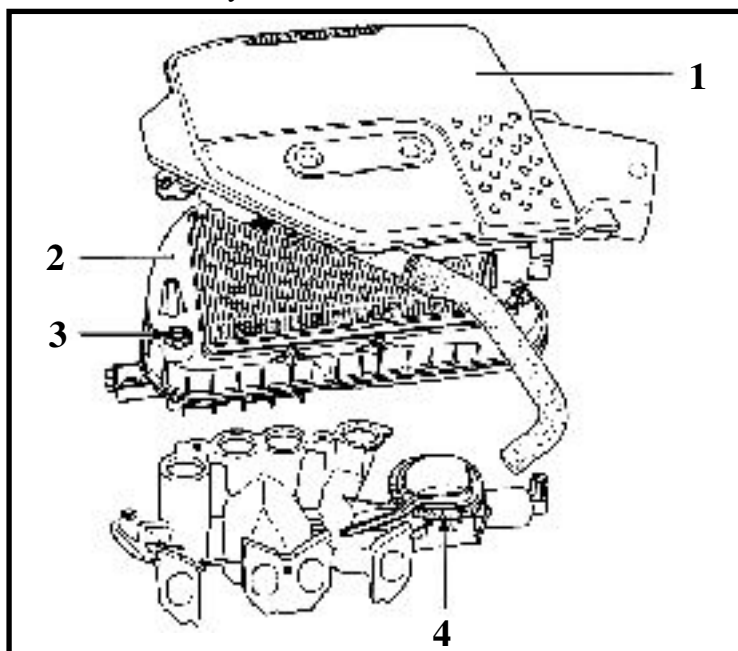
Disconnect the oil vapors recycling connection.

Dismount the air filter case attachment screw on the engine lifting support.

Disconnect:

- sensor of air temperature connector
- E.G.R. connector
- sensor of water temperature connector

Remove the air filter assembly.



Dismount the exhaust gases recycling pipe.

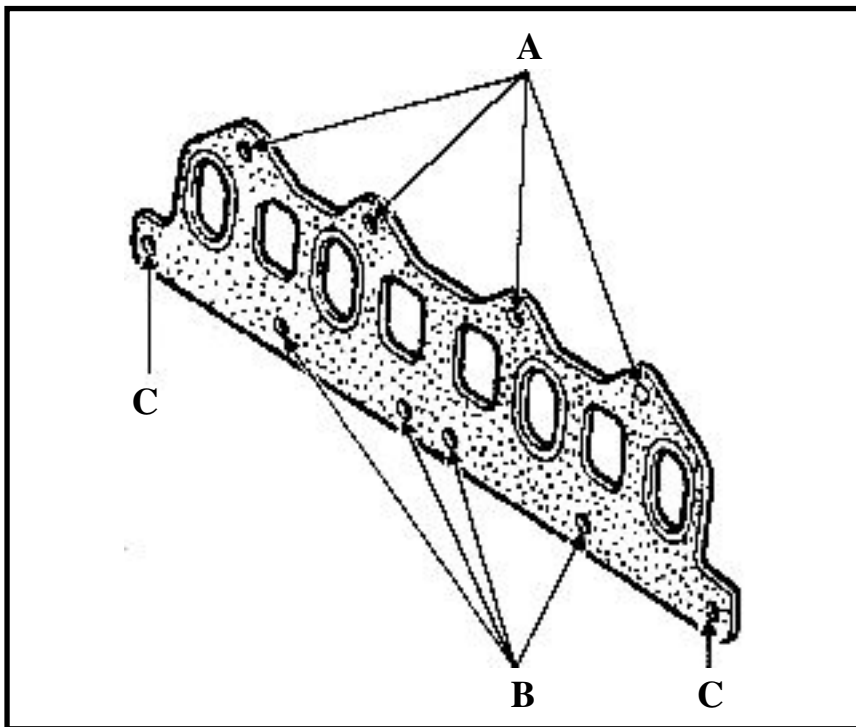
Dismount the diesel return hose support attached on the distribution casing.

Dismount by means of a ratchet wrench and an extension, the following:

- the upper attachment nuts (**A**) of the intake manifold and exhaust manifold
- the lower attachment nuts (**B**) of the manifolds
- the attachment nuts (**C**) of the exhaust manifold.

Recover the washers.

Dismount the two manifolds (intake and exhaust).



REMOUNTING

Tighten the attachment nuts of the two manifolds at the required moment (**2.7 daNm**).

Replace and correctly place the gaskets (**3**) and (**4**).

Perform the dismounting operations in the reverse order.

Fuel stop in case of collision

PURPOSE

The hazard sensor interrupts the fuel supply in case of an accident, thus avoiding the fire hazard due to the fuel losses.

OPERATION

The hazard sensor (1) is placed in the engine compartment, mounted on the left shock absorber column.



In case of hazard, the sensor ball leaves its lodgement, thus stopping the injection relay supply (+); the latter supplies the injection computer, the injection pump and the E.G.R. electric valve (exhaust gases recycling). Therefore the pump will neither intake the fuel nor will generate high pressure.

The hazard of fire generated by diesel oil projection is thus excluded.

HAZARD SENSOR RE-STARTING

The upper part of the hazard sensor is to be pushed to re-position the ball into its lodgement and thus to re-start the sensor.

Vehicle	Gearbox	Engine						De-pollution standards
		Type	Index	Bore (mm)	Stroke (mm)	Cylinder-capacity (cm ³)	Compression ratio	
Pick Up Drop Side Double Cab	NG 1 NG 7	F8Q	636	80	93	1870	21.5/1	EURO'96

Rotation (rpm)			Smoke opacity	
Idle running	Maximal (unloaded)	Maximal (loaded)	Homologation value	Legal maximum
825 ± 50	5175 ± 50	4600 ± 100	1.0 m ⁻¹ (33%)	2.5 m ⁻¹ (64%)

Denomination	Particularities
Injection pump	LUCAS DIESEL E.P.I.C. Electronic rotary pump, provided with: - increased flow electric valve, - decreased flow electric valve, - advance electric valve, - STOP electric valve, - flow rotor axial position captor (solid), - advance cam position captor (solid).
Pump pressing on	Pressing on by means of the rod MOT 1520
Increased flow electric valve	Resistance: 31 ± 2 Ohms
Decreased flow electric valve	Resistance: 31 ± 2 Ohms
Advance electric valve	Resistance: 31 ± 2 Ohms
STOP electric valve	Resistance: 1.39 ± 0.1 Ohms
Advance cam position captor	Resistance: 52 ± 4 Ohms
Flow slide position captor	Resistance: 41 ± 4 Ohms
Diesel oil temperature captor	Integrated in pump Resistance: 2716 ± 60 Ohms at 20°C
Injection computer	Electronic checking unit (U.C.E.) – 90 ways
Injectors	LUCAS RDNOSDC 6751 II Tare: 125 ÷ 140 bars
Port-injectors	LUCAS LCR 67354 Port-injector tightening: 7daNm Port-injector tightening on cylinder head: 7daNm

Characteristics

Denomination	Particularities
Discharge lines	ϕ External: 6 mm ϕ Internal: 2.5 mm Length: 300 mm
Pre-heating relay	NAGARES BRE /6-12 Controlled by computer
Pre-heating plugs	BERU Resistance: 0.6 Ω Tightening moment: 2 daNm
Acceleration potentiometer	CTS Double track potentiometer
Engine rotation (RPM) sensor	MGI Resistance \cup 760 Ω at 20 °C
Absolute pressure sensor	Inserted in computer
E.G.R. valve	PIERBURG Electric valve with inseted wheel and position captor Valve resistance: $8 \pm 0.5 \Omega$ at 20 °C Resistance: 4 K Ω at 20 °C

Temperature (°C) $\pm 1^\circ$	-10	25	50	80
Air temperature sensor (resistance in Ohms)	10454 8623	2175 1928	857 763	325 292
Water temperature sensor (resistance in Ohms)	13588 11332	2364 2140	850 773	290 275

The pump E.P.I.C. (Electronic Programmed Injection Checking) is an electronic distributive injection pump. The following elements are placed on the pump:

- advance electric valve (A),
- increased flow electric valve (B),
- decreased flow electric valve (C),
- STOP electric valve (D),
- flow rotor axial position captor (solid) (E),
- advance cam angular position captor (solid) (F),
- diesel oil temperature probe (solid, placed in the pump body).

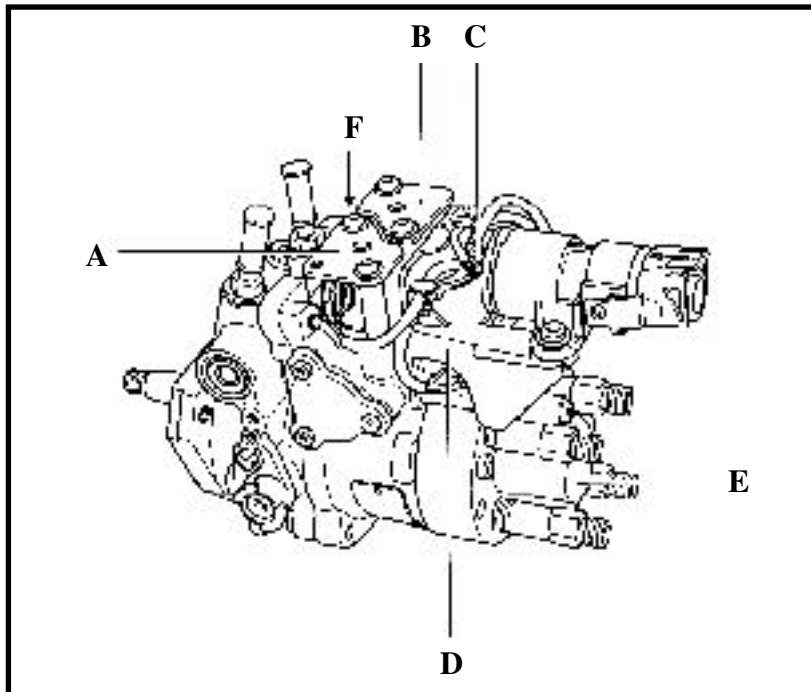
The increased flow electric valve and the advance one constitute a common body and one cannot separate them. They are placed on the pump upper part.

The decreased flow electric valve and the STOP one constitute a common body and one cannot separate them. They are placed on the pump lower part (at its back).

One cannot dismount the two captors (the flow and advance ones) since the injection computer is to memorise their position. This operation is to be performed only on an injection bench.

The injection pump E.P.I.C. is connected to an U.C.E. injection calculator (Electronic Checking Unit). The latter calculates the flow and the advance and controls the electric valves accordingly. The U.C.E. calculator also controls the exhaust gases recycling (E.G.R.).

The cleanliness rules are to be observed both prior and during any intervention on the E.P.I.C. system.



Particularities

The engine is to be started and idle run after each intervention on the injection system.

The possible diesel oil losses are to be checked.

When cutting the contact the engine may run 1 – 2 seconds longer before stopping.

When repairing or dismantling the injection pump, the supply connections, the return and the high-pressure ones are to be covered with new adequate obturators, in order to avoid impurities entering into the injection circuit.

COMPULSORY CLEANLINESS RULES TO BE OBSERVED WHEN INTERVENING ON E.P.I.C. INJECTION SYSTEM

The E.P.I.C. system (Electronic Programmed Injection Checking) is very sensitive to polluting agents. The polluting agents entering into the injection system may cause the followings:

- the E.P.I.C. system damages or definitive breakdown,
- the elements gripping or unsealing.

Any post-selling intervention on the injection system is to be performed in perfect cleanliness conditions. It means that no impurities - small as they may be - are allowed to enter the system or the circuits, during the dismantling or through the fuel connections.

The followings may constitute polluting agents:

- metallic or plastic chips,
- paint,
- hard paper, brushes, paper, clothes, gauze fibres,
- foreign bodies (hair for instance),
- ambient dust particles.

ATTENTION!

It is definitely forbidden to clean the engine with a high-pressure water jet, due to the connectors damaging hazard. Moreover, the wet connectors may cause electric connections troubles.

COMPULSORY RULES TO BE OBSERVED WHEN INTERVENING ON E.P.I.C. INJECTION SYSTEM

- Make sure there are enough available obturator caps. The caps are all single use.
- Make sure there are enough available plastic bags. They are to be hermetically closed every time the dismantled parts are to be stocked, in order to protect the latter from any impurities. The bags are all single use.
- Make sure there are enough available cleaning un-shred cloths. Gauze or common shredding cloths using is definitely forbidden, since they may cause polluting agents entering into the fuel circuit.

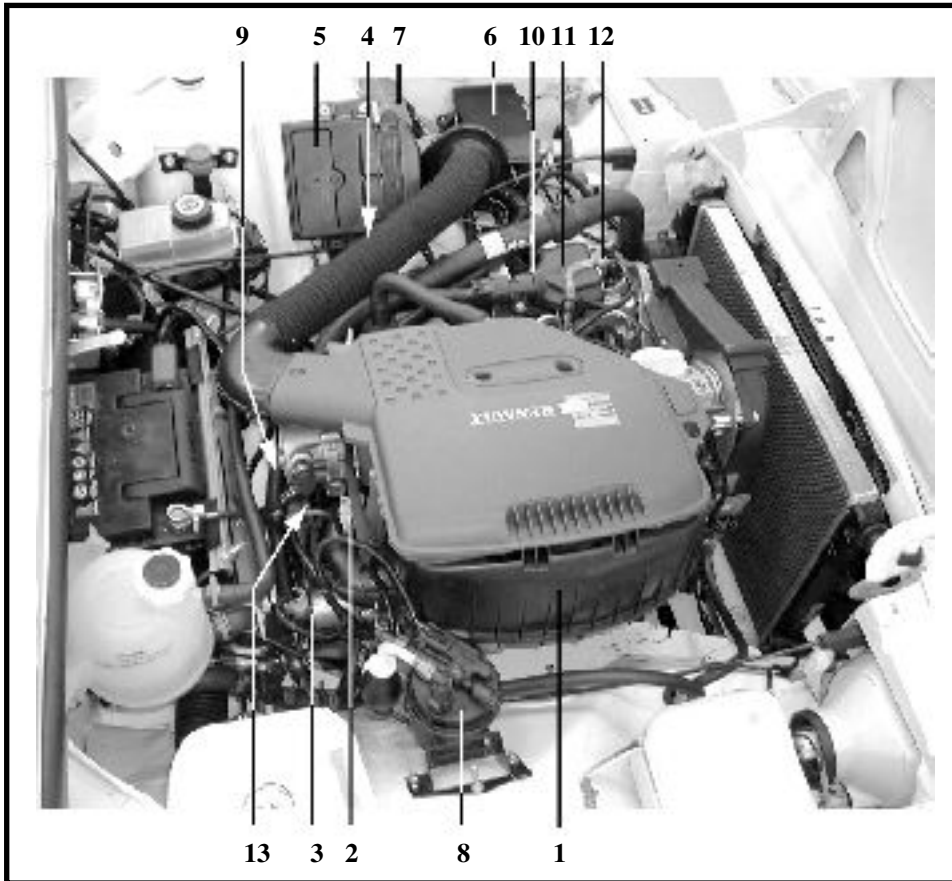
COMPULSORY CLEANLINESS RULES TO BE OBSERVED WHEN OPENING THE FUEL CIRCUIT

- A brand new diluter is to be used for any intervention (impurities-free).
- A brand new and clean brush is to be used for any intervention.
- The parts to be dismantled, the Special Tools to be used and the working-bench are to be thinner-cleaned by means of a brush.

- The cleaned parts are to be compressed air blown.
- The hands are to be washed prior and during any intervention, if necessary.
- Only LATEX protection gloves are to be used.

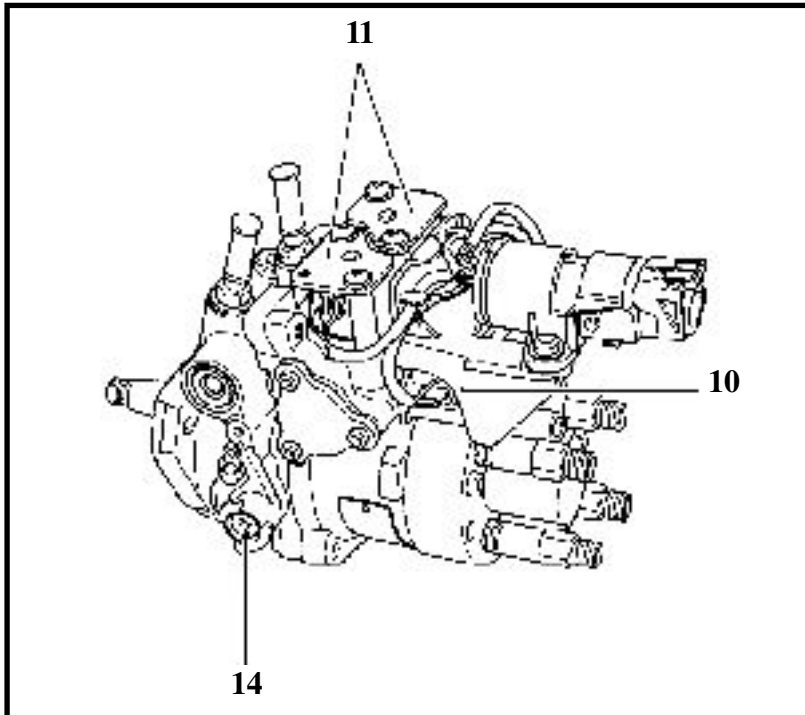
RULES TO BE OBSERVED DURING THE INTERVENTIONS

- As soon as the supplying circuit is opened, its connections are to be obstructed with adequate caps, in order to avoid impurities (dirt) entering into the circuit. The caps are all single use.
 - The parts stocking bags are to be hermetically closed, even when they are to be soon re-opened as the ambient air is a polluting factor.
 - After having obstructed all their orifices with obturator caps, all the injection system dismantled elements are to be stocked in hermetic bags.
 - After having opened the fuel circuit, the use of brushes, diluter and common gauze is definitely forbidden.
 - In case of replacing a worn element with a new one, the latter is to be unpacked only when mounting it.



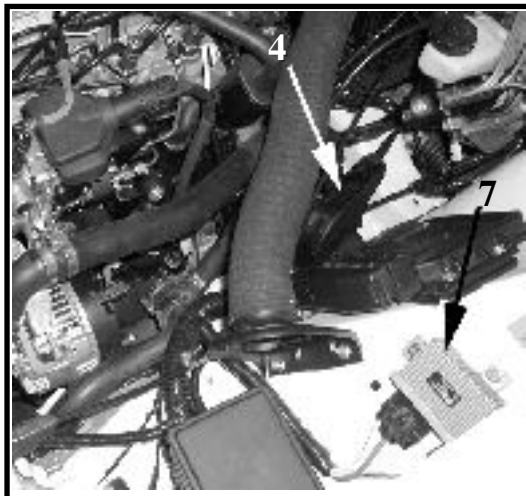
1. Air filter
2. Intake air temperature sensor
3. E.G.R. Electric valve (exhaust gases recycling)
4. Acceleration pedal position potentiometer
5. U.C.E. Injection computer
6. Injection relay
7. Pre-heating relay
8. Fuel filter
9. Engine rotation (RPM) sensor
10. STOP and decreased flow electric valves
11. Advance and increased flow electric valves
12. E.P.I.C. Injection pump
13. Cooling fluid temperature sensor

Elements location



- 2. Intake air temperature sensor
- 3. E.G.R. Electric valve (exhaust gases recycling)
- 4. Acceleration pedal position potentiometer
- 7. Pre-heating relay

- 10. STOP and decreased flow electric valves
- 11. Advance and increased flow electric valves
- 13. Cooling fluid temperature sensor
- 14. Injection pump pressing on rod orifice



The U.C.E. injection computer permanently checks the system sensor transmitted parameters. The U.C.E. computer controls the electric valves according to these parameters and to the memorised reference values. It also permanently checks the obtained results and performs all their necessary corrections.

The E.P.I.C. injection pump is a rotary distributor type one. The supplying pump intakes the diesel oil. The latter is brought to the so-called “transfer pressure” in the pump body. The transfer pressure is obtained by means of the plunger little pistons. Rollers in contact with a cams ring drive these pistons.

The precisely processed cams ring determines the injection beginning moment and its duration.

The injection computer determines the cams ring position by means of the advance electric valve, thus modifying the plunger pistons movement beginning moment.

The cam position captor permanently informs the computer about the injection beginning moment.

The plunger pistons stroke defines the injected diesel oil quantity towards each cylinder.

The two electric valves (increased and decreased flow) allow the modification of this stroke, therefore of the injected diesel oil quantity.

The flow rotor axial positioning captor permanently informs the computer about the injected diesel oil quantity.

The diesel oil is then sent to the distributive pump area, which determines the cylinder to be supplied. A rotary piston assures this function.

The engine operation steps are as follows:

Pre-starting (prior the start-up)

The system performs the following checking between the contact putting ON moment and the engine start-up one:

- rotor maximal stop position,
- advance piston minimal stop position,
- increased and decreased flow electric valves operation,
- advance electric valve operation.

Starting (engine start-up)

The computer controls a certain position of the pump rotor and the STOP electric valve supplying during the engine start-up, namely starter driving.

Normal operation

The computer modifies the diesel oil flow accordingly, by means of the increased and decreased flow electric valves. The flow is adjusted or cut in case of sudden acceleration or deceleration, according to the memorised reference parameters.

Engine stop

The computer controls the STOP electric valve closure, then the engine rotation evolution when cutting the contact. The computer drives the decreased flow electric valve until the engine STOP, in case the rotation does not suddenly decrease.

INJECTION INDICATOR OPERATION (PRE-HEATING)

The instrument panel injection indicator (luminous), lights under the following situations:

- when putting the contact ON, the injection indicator lights and remains lit during the pre-heating step, then turns off.
- the indicator lights in case of injection system failure.

The indicator flashes for few seconds during the pre-heating step, signalling a breakdown presence from the contact putting ON.

Injection indicator lighting possible causes

- computer or injection pump supplying trouble,
- damaged rotation sensor,
- pump internal memory device damage,
- damage:
 - acceleration pedal position potentiometer,
 - increased flow electric valve damage,
 - decreased flow electric valve damage,
 - STOP electric valve damage,
 - cam position captor damage,
 - computer damage.

The anti-starting code is to be permanently memorised by the injection computer, otherwise the latter does not operate.

INJECTION COMPUTER REPLACEMENT

When delivered, the new injection computers are un-coded. In case of computer replacement, the new one is to memorise the anti-starting code. Then the anti-starting function viability is to be checked, by putting the contact ON for few seconds (**See Chapter 82 “Anti-starting” for details**).

ANTI-STARTING OPERATION CHECKING

The key is to be taken out the contact and, 10 seconds after; the indicator is to flash once per second. **See Chapter 82 “Anti-starting”** in case of checking the engine starting-up impossibility.

IDLE RUNNING ROTATION CORRECTION ACCORDING TO WATER TEMPERATURE

The idle running rotation is to be increased and sustained at **900 rpm** for a cooling fluid temperature of **- 23°C**.

CORRECTION ACCORDING TO THE ELECTRIC BALANCE

This correction purpose is to compensate the voltage drop, caused by other consumers operation when the battery is low-loaded.

To perform the voltage drop compensation, the idle running rotation is to be increased, thus allowing the alternator higher rotation and the battery voltage consequent increasing.

Lower the voltage, higher the correction is.

The correction is thus viable and starts when the battery voltage drops under **12 Volts**. The idle running rotation is to be stabilized at maximum **900 rpm**.

**IDLE RUNNING ROTATION CORRECTION
IN CASE OF POTENTIOMETER DAMAGE**

In case one of the acceleration pedal potentiometer tracks is damaged, the idle running rotation is to be maintained at **1000 rpm**.

In case both acceleration pedal potentiometer tracks are damaged, the idle running rotation is to be maintained at **1300 rpm**.

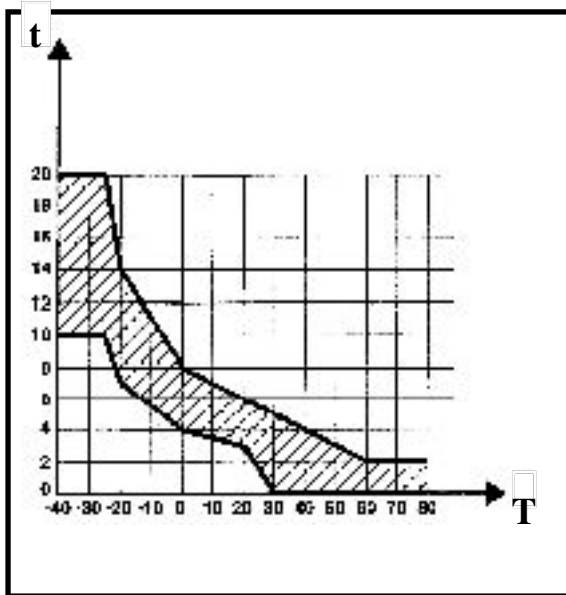
The pre / post-heating function is controlled by means of the pre-heating relay.

PRE / POST-HEATING OPERATION PRINCIPLE

1. Putting the contact – “Pre-heating”

a. Variable pre-heating

The indicator lighting time and the plugs supplying one depends upon the cooling fluid temperature and the atmospheric pressure.



The injection indicator lighting time is never to overcome **15 seconds** in any case.

b. Fixed pre-heating

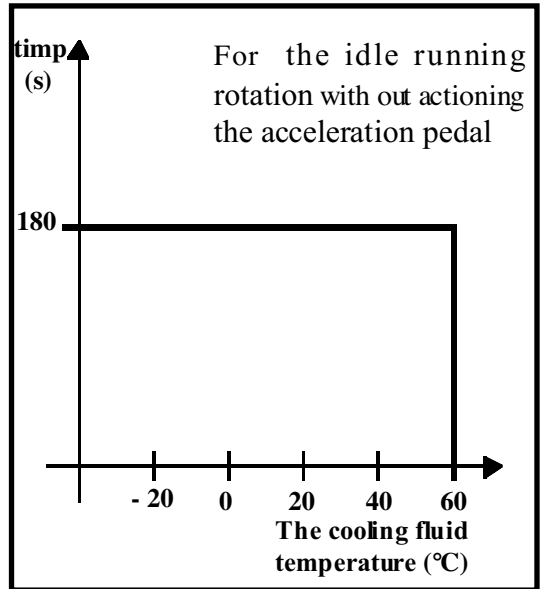
The plugs remain under supplying for a fixed while of **15 seconds**, after the engine stopping.

2. Starting (Starting-up)

The plugs are supplied during the start-up (starter operation).

3. Started engine – “Pre-heating”

The plugs are continuously supplied during this step, according to the cooling fluid temperature and the flow slide position.

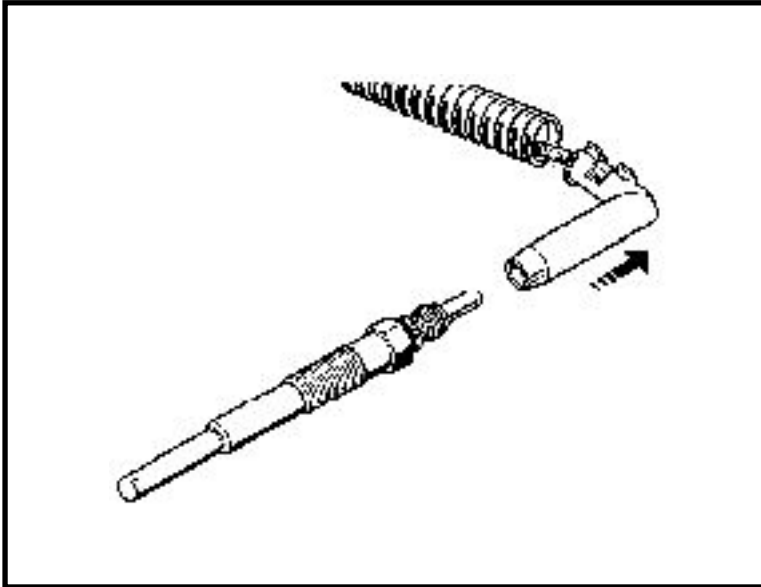


For the idle running rotation with out actioning the acceleration pedal

PUMP SUPPLY

Pre / Post –heating control

In case the cooling fluid temperature sensor is damaged, the plugs are supplied as a result of a calculated temperature according to the air temperature timing.



In any case the plugs are not to be supplied longer than **180 seconds**.

Injectors

TIGHTENING MOMENTS (daNm)

Port-injectors on cylinder head	7
High pressure pipes nuts	2.5

DISMOUNTING**STRICTLY OSERVE THE CLEANLINES RULES !**

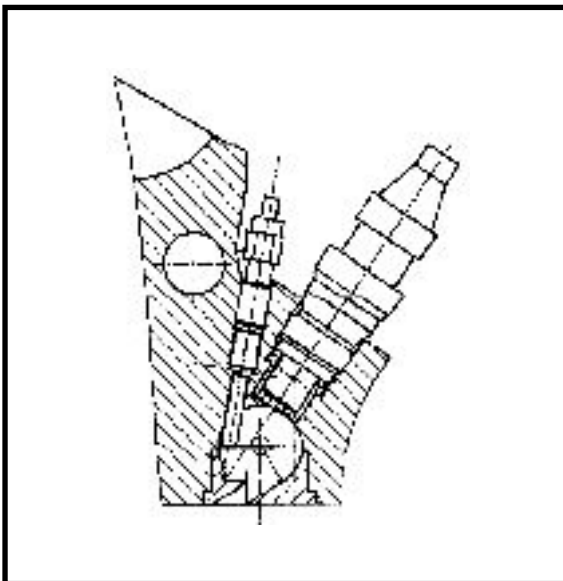
The battery is to be disconnected.

The followings are to be dismantled:

- the high pressure pipes,
- the injectors.

The supplying orifices and the injectors' tops are to be compulsorily obstructed with caps.

Take all the necessary protection steps to avoid the diesel oil projection on the electric parts, otherwise operation troubles may occur.

**REMOUNTING**

The anti-flame washers and the under-injectors sealing gaskets are to be replaced.

The followings are to be mounted:

- the injectors,
- the high pressure pipes.

The pipes fixing nuts are to be mounted.

The followings are to be tightened at moment:

- the injectors,
- the pipes.

The engine is to be started and left in idle running in order to check the diesel oil possible losses.

Decreased flow electric valve and stop electric valve

TIGHTENING MOMENTS



Electric valves attachment screws 6 ± 0.6 Nm
 High pressure pipes nuts 2.5 ± 0.2 daNm

DECREASED FLOW AND
 STOPPING
 ELECTRIC VALVES
 DISMOUNTING

These electric valves are placed at the E.P.I.C. injection pump lower part and are not to be separately dismantled.

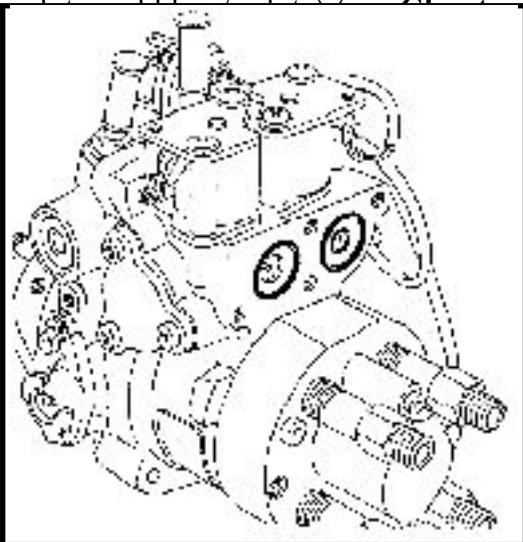
**STRICTLY OSERVE THE
 CLEANLINESS RULES !**

The following are to be disconnected:

- the battery,
- the pump electric connector.

The electric connector attachment screws are to be dismantled from the connector support.

The decreased flow and the STOP electric valves' wires are to be dismantled from the connector (red /



The wires in the connector are to be marked.

The electric valves block four attachment screws on the electric valves support are to be unscrewed beginning the external ones.

BEWARE OF CLEANLINESS !

The electric valves block and the plastic support are to be dismantled.

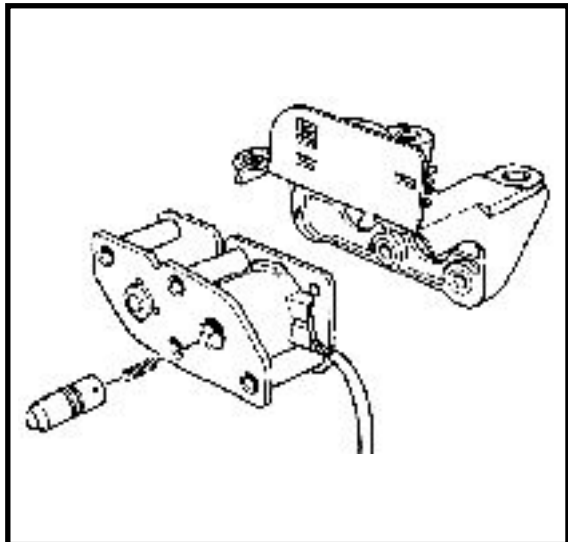
ATTENTION !

The STOP electric valve core is not associated with the valve itself. Moreover, the core is pushed by the spring mounted behind it.

The three gaskets are to be dismantled.

The electric valves placing areas are to be cleaned with an un-shredding cloth, with no detergents or air blowing.

The injection pump is to be cleaned in the same way.



Decreased flow electric valve and stop electric valve

REMOUNTING

The worn gaskets are to be replaced with new ones.

The new gaskets are to be placed on the pump cover. The gaskets are to be diesel oil soaked for a better adherence on their lodgements.

The electric valves and their supports are to be placed near their lodgements, holding them by hand (ATTENTION: the electric valve gaskets, core or springs are not to fall down).

The two internal attachmentscrews are to be simultaneously screwed without tightening, so that the electric valves lodge onto the pump body.

The two external attachment screws are to be screwed, too.

The four screws are to be tightened at moment (**$6 \pm 0.6 \text{ Nm}$**).

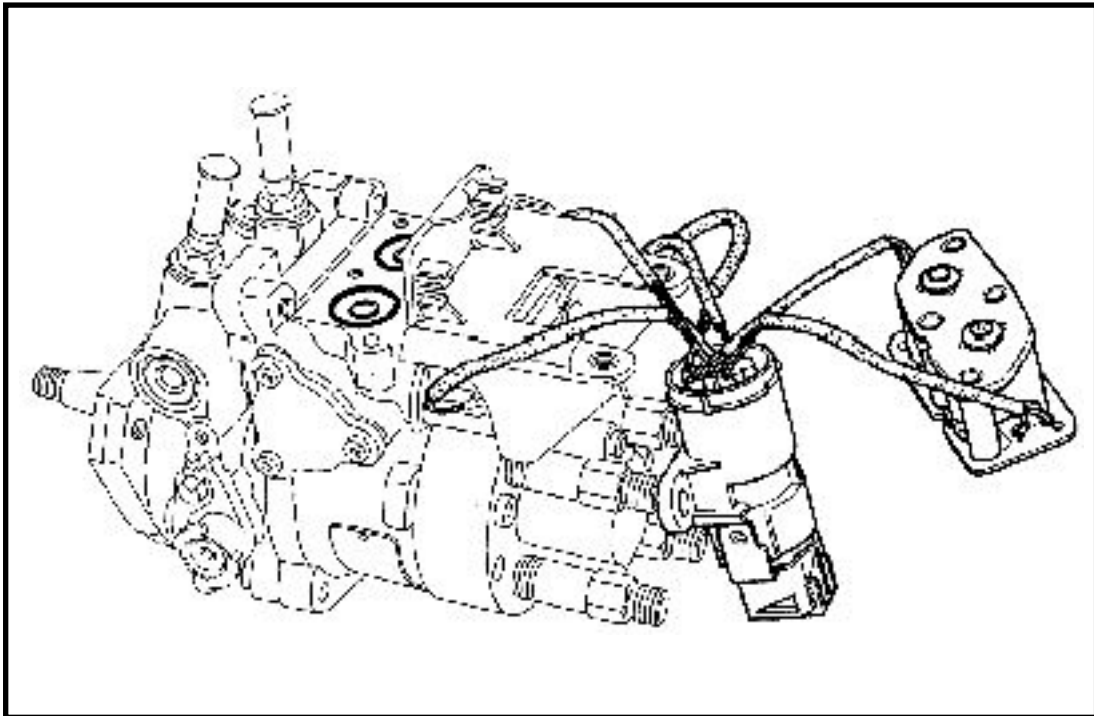
Pay attention when remounting the plugs and the connector: first, the plugs are to be mounted into the intermediary part, in order to get the best catching, then the rest of the connector is to be remounted (see **Chapter 13 “Pump Connector”**).

For all the other remounting operations, it is to be proceeded in reverse the dismounting.

The engine is to be started and left in idle running for checking the possible diesel oil losses.

NOTICE:

The STOP electric valve core pairs its body. In case of replacing the STOP electric valve, pay attention - the new one is to be identical (same item).


TIGHTENING MOMENTS (Nm)


Electric valves attachment screws	6 ± 0.6
-----------------------------------	-------------

**INCREASED FLOW AND ADVANCE
ELECTRIC VALVES
DISMOUNTING**

The increased flow electric valve and the advance one are placed on the E.P.I.C. injection pump upper part and are not to be separately replaced.

**STRICTLY OBSERVE THE
CLEANLINESS RULES !**

The followings are to be disconnected:

- the battery,
- the pump electric connector.

The electric connector attachment screws are to be unscrewed from the connector support.

The electric valves four plugs are to be taken out from the connector (see Chapter 13 “Pump Connector”).

Their position in the connector is to be marked.

The electric valves block four sustaining screws are to be un-tightened beginning the external ones.

BEWARE OF CLEANLINESS !

The electric valves block is to be dismantled and the four gaskets are to be removed.

The electric valves placing areas are to be cleaned with an un-shredding cloth.

The gaskets placing areas on pump or electric valves are not to be detergent cleaned or air blown.

REMOUNTING

The worn gaskets are to be replaced with new ones.

The new gaskets are to be placed on the pump body (they are not to be placed on the electric valves).

The electric valves block is to be positioned and the internal and external screws are to be tightened.

The electric valves four attachment screws are to be screwed and tightened at moment.

Pay attention when remounting the plugs and the connector: first, the plugs are to be mounted into the intermediary part, in order to get the best catching, then the rest of the connector is to be remounted (see Chapter 13 “Pump Connector”).

For all the other remounting operations, it is to be proceeded in reverse the dismounting.

The engine is to be started and left in idle running for checking the possible diesel oil losses.

SPECIAL TOOLS

ELE 1044-01 Connectors clips dismantling device

INJECTION PUMP CONNECTOR DISMOUNTING

**STRICTLY OSERVE THE
CLEANLNESS RULES !**

In order to dismantle the connector, the following are to be dismantled in order:

- the black port-connector (A),
- the intermediary plate with plugs (B),
- the wiring sustaining white clip (C),
- the intermediary part (D),
- the plugs (E), freeing the blocking pins by means of the device **ELE 1044-01** and simultaneously pulling the wire.

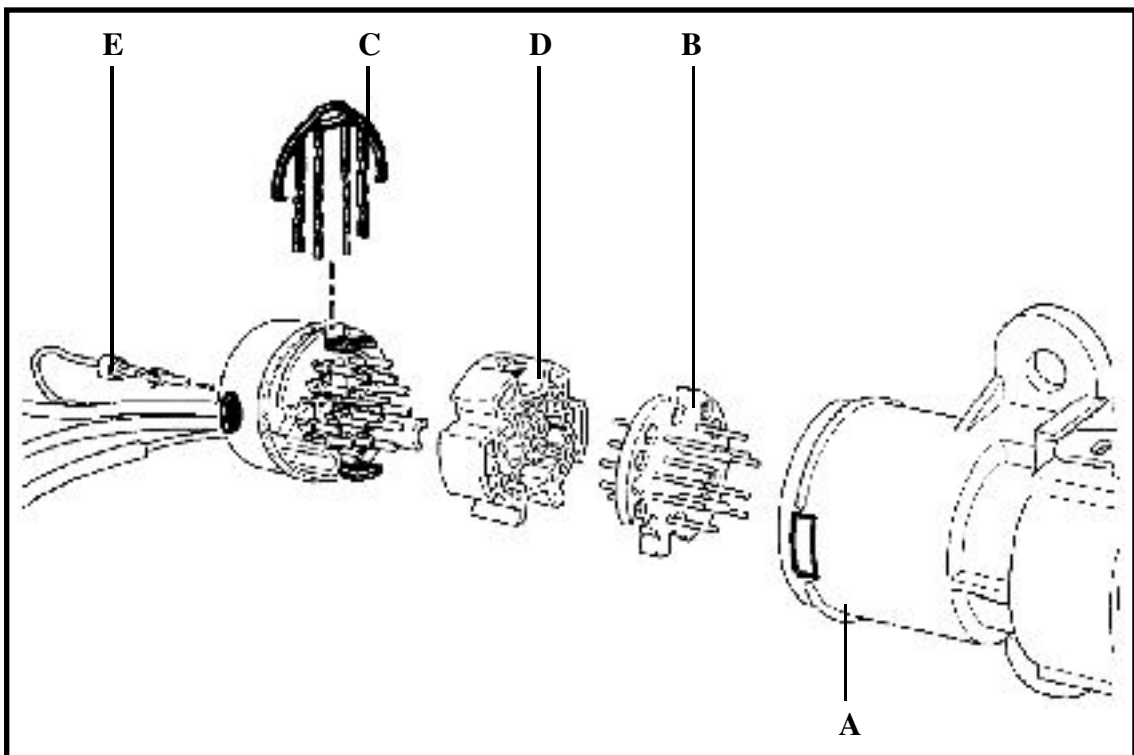
REMOUNTING

The wires are to be reconnected (the plugs are to be pushed until blocking then slightly pulled for a good fixing).

The followings are to be remounted:

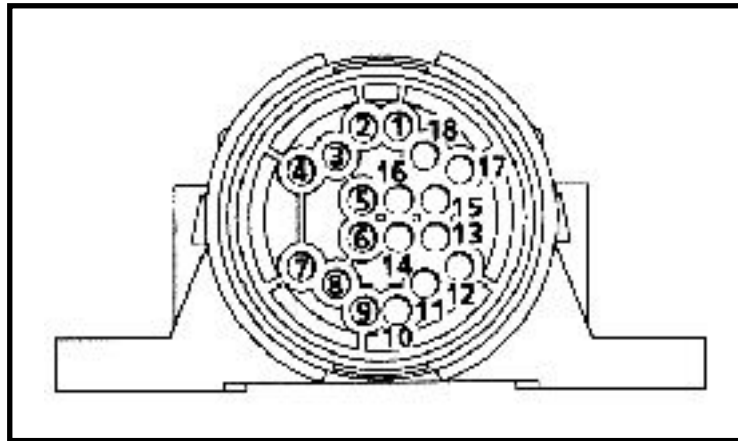
- the intermediary part (D),
- the wiring sustaining white clip (C),
- the intermediary plate with plugs (B),

The assembly is to be re-positioned onto the black port-connector.



Injection pump connector

Plugs marking (positioning).



Marking towards the pump	Marking towards the wiring	Marking on computer	Wire function	Wire colour
1	-	-	-	-
2	-	-	-	-
3	13	13	Advance slide position captor position signal	Green
4	12	15	Advance slide position captor position starting	Red
5			Flow slide position captor position starting	Red
6	11	30	STOP electric valve control	White-Red
7	10	14	Flow slide position captor position signal	Yellow
8	9	12	Flow slide position captor position compensation	White
9	8	51	Pump memory link	Orange
10	7	67	Diesel oil temperature common wire and pump	Blue
11	6	36	memory Diesel oil temperature in pump	Brown
12	5	60	Increased flow electric valve control	White-Black
13	4	+ AVC	Increased flow electric valve supply	White-Black
14			STOP electric valve supply	White-Red
15			Advance electric valve supply	White-Green
16			Decreased flow electric valve supply	White-Blue
17	3	89	Advance electric valve control	White-Green
18	2	90	Decreased flow electric valve control	White-Blue
-	1	9	Screening	-

TIGHTENING MOMENTS (daNm) 	
Closing plate	0.55 ± 0.05
Injection pump back support	2.2 ± 0.3

CLOSING PLATE GASKET REPLACING

STRICTLY OSERVE THE CLEANLINES RULES !

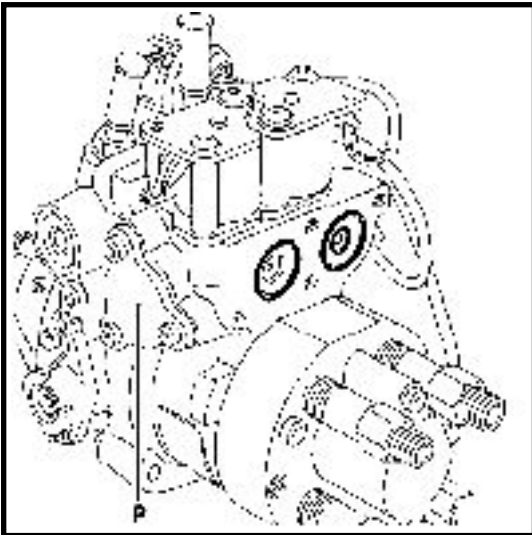
The battery is to be disconnected.

The closing plate attachment screws are to be dismantled (P).

The gasket is to be replaced.

The diesel oil spots are to be wiped put with an un-shredding cloth.

The closing plate is to be remounted and the screws are to be tightened at the required moment.



INJECTION PUMP BACK SUPPORT REPLACING

NOTICE:

The back support following dismantling – mounting method is to be observed in case of cylinder head replacing.



DISMOUNTING

The back support is to be dismantled prior dismantling the pump attachment screws, placed behind the driving pulley.

REMOUNTING

The pump attachment screws are to be repositioned on their place.

The back support is to be repositioned and the screws are to be screwed until approaching.

The followings are to be tightened:

- the pump attachment screws,
- the back support screws.

Injection pump

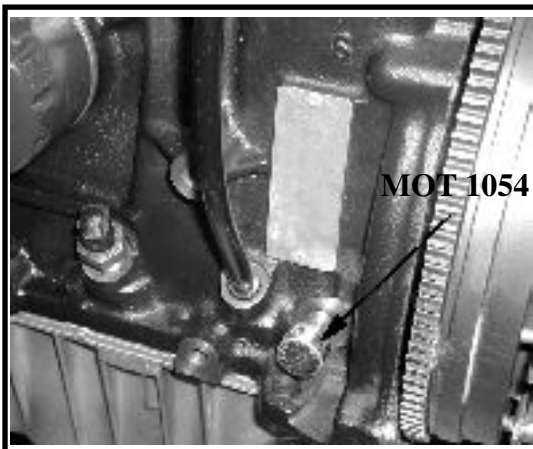
SPECIAL TOOLS	
MOT 1200-01	Pulley sustaining device
MOT 1054	Engine pressing on rod
MOT 1520	Injection pump pressing rod
MOT 1522	Injection pump pressing on knurling tool
MOT 1525	Pulley extractor

TIGHTENING MOMENTS (daNm) 	
Injectors pipes nuts	2.5 ± 0.6
Back support screws	2.2 ± 0.3
Pump attachment screws	2.5 ± 0.3
Pulley screws	5.5 ± 0.5

DISMOUNTING

STRICTLY OSERVE THE CLEANLINESS RULES !

The battery is to be disconnected.
 The engine is to be fixed at its upper dead point (P.M.S.) by means of the rod MOT 1054 (see Chapter 11 “Distribution Belt”).



The following are to be dismantled:

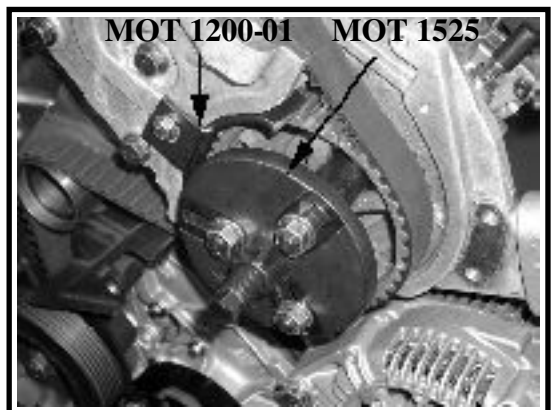
- the pump pulley crankcase,
- the high pressure pipes,
- the injection pump back support,
- the diesel oil supply and return pipes.

All the open canalisations are to be caps obstructed.

The pump electric connector is to be disconnected.

The MOT 1200-01 device is to be installed for the pump pulley blocking.

The pulley-fixing nut is to be mounted.



The **MOT 1525** is to be mounted and the pump shaft pulley is to be depressed.

The pump three attachment screws are to be unscrewed between the pulley arms.

The injection pump is to be dismantled after unscrewing all its attachment screws.

The pump is to be stocked into a hermetically closed plastic bag in order to protect it from any impurity.

REMOUNTING

The torric gasket on the pump driving shaft is to be replaced.

IMPORTANT:

The rod MOT 1520 is to be compulsorily kept cleaned and under perfect conditions.

The pump blocking rod is to be positioned by turning the pump shaft by means of the knurling tool **MOT 1522** (see **Chapter 13 “Pump Pressing on”**).

The injection pump is to be remounted.

The pump three attachment screws on its support are to be hand-screwed, without tightening.

The pump attachment screws and the back support fixing ones are to be tightened at moment.

ATTENTION!

The pump attachment screws tightening is very important. All screws are to be hand-screwed and then tightened at the required moment.

The high-pressure pipes are to be mounted. Thenuts are to be hand-screwed then tightened at moment.

The injections is to be blocked (see **Chapter 13 “Pump pressing on”**)

ATTENTION!

Not to forget to dismantle the engine rod and the pump pressing-on one.

Start and let the engine under idle running condition for checking the possible diesel oil losses.

Injection pump pressing on

SPECIAL TOOLS

MOT 1200-01	Pulley sustaining device
MOT 1054	Engine pressing on rod
MOT 1520	Injection pump pressing on rod
MOT 1522	Injection pump pressing on knurling tool
MOT 1525	Pulley extractor

TIGHTENING MOMENTS



Pump pulley nut	5.5 ± 0.5 daNm
Pump pressing on rod lodge obstructer	5 Nm

INJECTION PUMP PRESSING ON

A complete pump pressing on is necessary for checking the blocking itself.

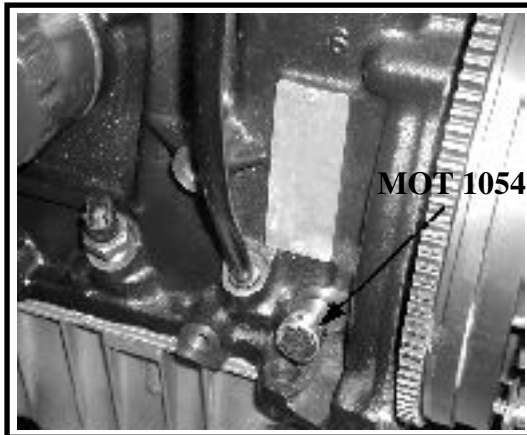
ATTENTION!

The engine is never to be turned anti-clockwise.

The injection pump pulley crankcase is to be dismantled.

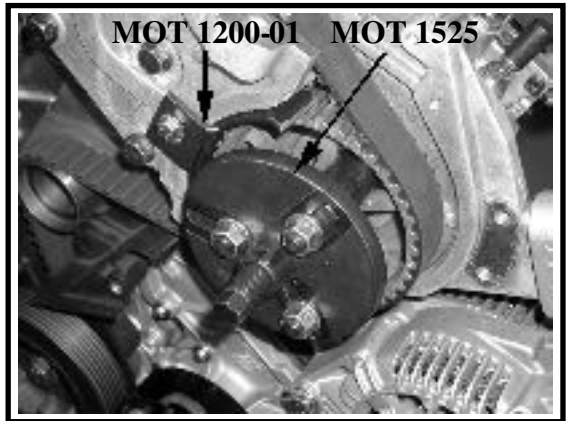
The engine is to be brought at its upper dead point (PMS) and blocked on this position by means of the rod **MOT 1054**.

The injection pump pulley-blocking device **MOT 1200-01** is to be fixed.

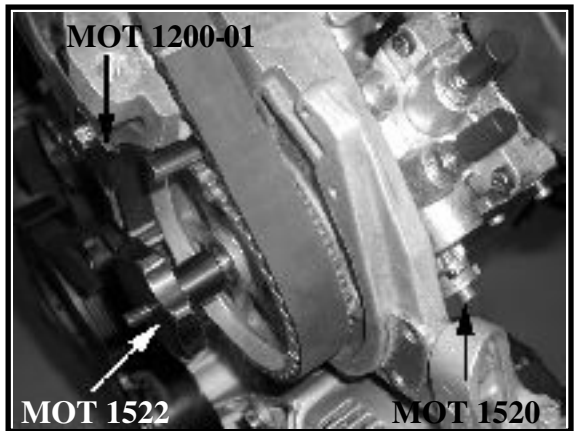


The injection pump driving shaft nut is to be unscrewed

The pulley is to be moved on the pump shaft by means of the pulley extractor **MOT 1525**.



The pressing on knurling tool **MOT 1522** is to be mounted on the pump driving shaft end.



Injection pump pressing on

Place a vessel under the pump for recovering the diesel oil. The pressing on cap is to be taken out from the pump orifice.

ATTENTION!

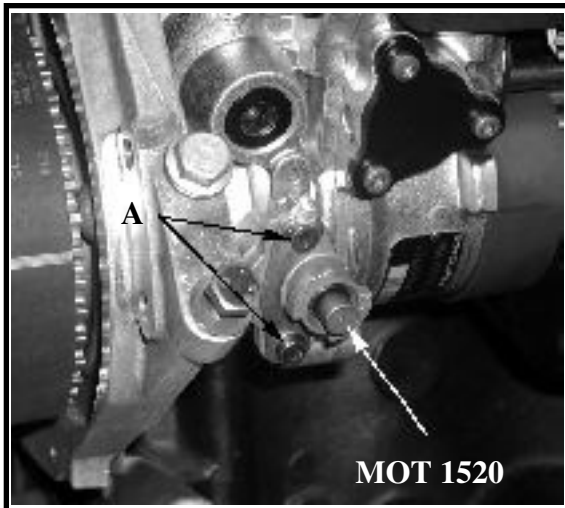
There is an important diesel quantity in the injection pump and its connections.

Rotate the pump in the direction of its turning by acting upon the knurl **MOT 1522**, in order to obtain the pressing-on position (the hole from the pump shaft must reach in front of the pressing-on orifice).

It is forbidden acting upon the screws (A).

ATTENTION !

Any unscrewing of any of these screws implies the pump placing on the reparation bench.



By slightly screwing the rod **MOT 1520**, the pressing on rod maximal entering point into the pump is looked for.

When reaching this position the rod blocks the pump shaft.

The knurling tool **MOT 1522** is to be taken out.

When reaching this position the nut on the pump driving shaft is to be tightened in order to block the pinion.

The blocking device **MOT 1200-01** is to be dismantled.

The rods **MOT 1054** and **MOT 1520** are to be taken out from the engine and injection pump.

The pressing on orifices caps are to be mounted.

The injection pump pinion cover is to be remounted.

ATTENTION !

Not to forget to take out the injection pump and engine blocking rods.

The engine is to be started and left under idle running condition for checking the possible diesel oil losses.

IMPORTANT:

The rods MOT 1520 and MOT 1054 are to be compulsorily kept cleaned and in good condition.

The fuel filter is placed in the engine compartment, on the right front part wing lining. It is removable allowing the filtering element replacement. The filter also includes a diesel oil heating resistance.

DISMOUNTING

STRICTLY OSERVE THE CLEANLINES RULES !

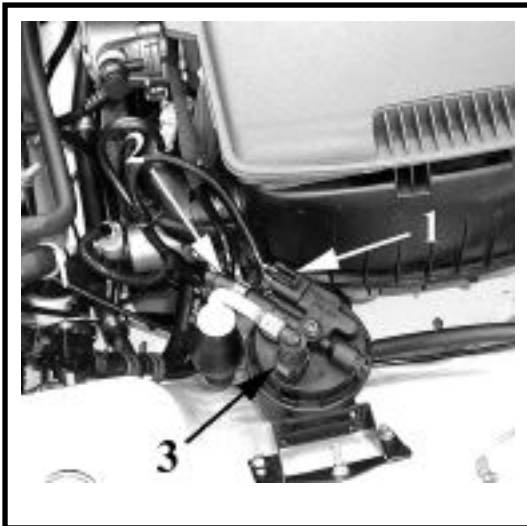
ATTENTION!

Pay attention to the diesel oil quantity and to the residual pressure of the diesel oil canalisation.

The followings are to be disconnected from the filter:

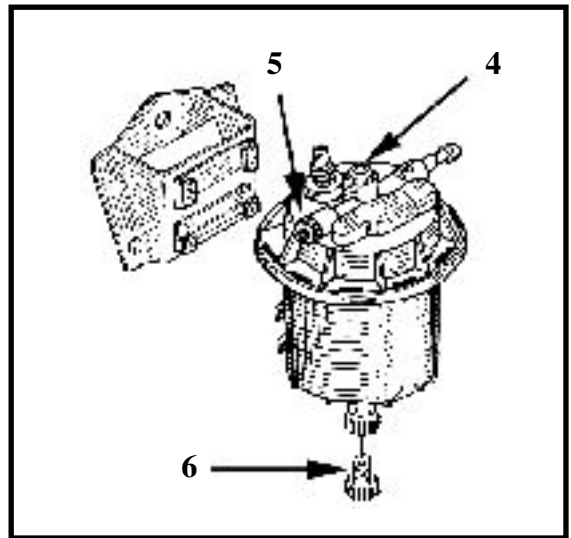
- the diesel oil heating resistance connector (1),
- the injection pump supplying pipe (2),
- the fuel supplying pipe (3),

The fuel filter is to be dismantled by unclipping it from its support.



The filter cover position is to be marked as against its body.

The screw (4) is to be unscrewed and the filtering element is to be removed.



REMOUNTING

Perform the dismantling operation in the reverse order.

The coupling positions on filter are to be compulsorily observed

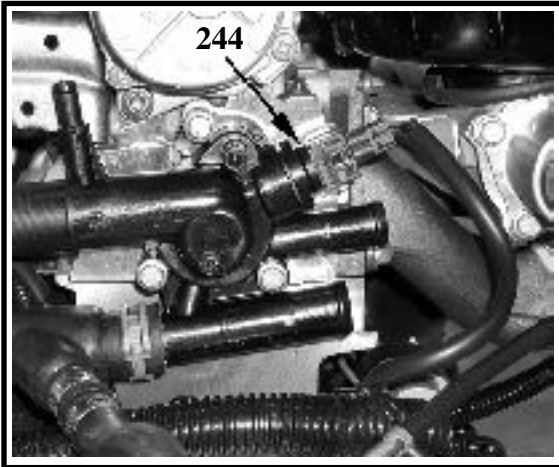
Pay attention not to obstruct or damage the fuel pipes

IMPORTANT:

The fuel circuit is to be restarted through the cap (5) by means of the restarting pump.

The water accumulated in the diesel oil filter is to be periodically purged through the purging cap (6) every **10000 km** or whenever necessary .

WATER TEMPERATURE SENSOR LOCATION



The water temperature sensor (244) is mounted in the thermostat box in the cylinder head rear part.

OPERATION

The water temperature sensor (244) informs the injection computer (UCE) about the water temperature

The injection computer controls the following according to the water temperature

- the injection system,
- the exhaust gases recycling,
- the cooling motor-fan,
- the lighting of the water temperature alarm indicator on the instrument panel.

• **ENGINE FAN STARTS WHEN THE WATER TEMPERATURE INCREASES OVER 99°C AND STOPS WHEN THE TEMPERATURE DECREASES UNDER 96°C.**

WATER TEMPERATURE INDICATOR

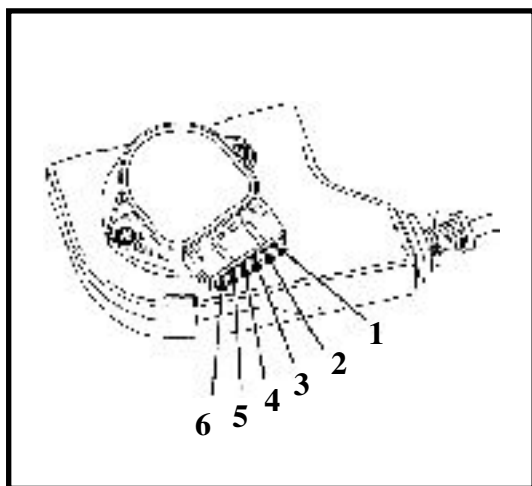
The injection computer controls the water temperature indicator.

The indicator lights when the water temperature increases over 105°C.

Acceleration potentiometer

Pins location:

1. Signal track 2
2. Signal track 1
3. 5 Volts supply track 2
4. Mass track 1
5. Mass track 2
6. 5 Volts supply track 1



Tracks resistance: $1.7 \pm 0.5 \text{ K}\Omega$.

DISMOUNTING

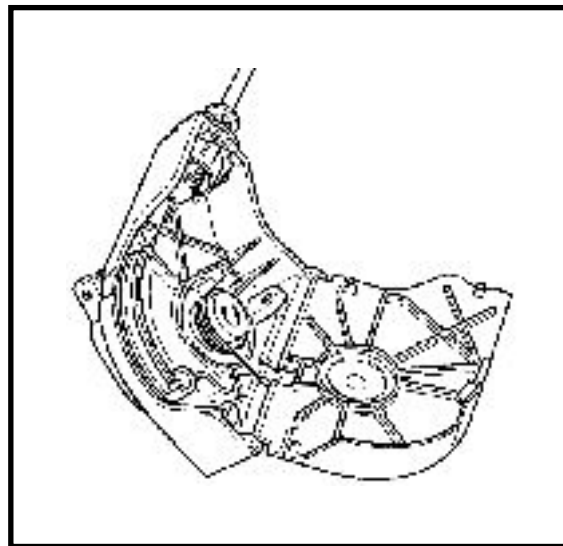
The potentiometer box is to be dismantled from the front left wing half-lining.

The acceleration cable is to be disconnected from the box. As a spare part the potentiometer is sold only assembled with its box.

REMOUNTING

Perform the dismantling operations in the reverse order.

The potentiometer operation is to be compulsorily checked by means of the tester CLIP.

**NOTICE:**

When one of the two acceleration pedal position potentiometer tracks is damaged, the normal rotation or the idle running one will modify (see Chapter 13 "Idle Running Rotation Correction").

This documentation is presenting the applicable diagnosis to the computers DCU 3R, having the diagnosis alternative VDIAG 09.

The followings are to be used in order to perform the diagnosis of this injection system:

- **Diagnosis Technical Notice;**
- **Operational Electric Diagram of the respective vehicle;**
- **Technical tester CLIP, 90-way terminal-box (ELE 1497)**

DIAGNOSIS STEPS

- In order to identify the type of the injection computer, the program number and the diagnosis alternative, the tester CLIP is to be connected to the diagnosis socket.

- The information are to be identified in the diagnosis document corresponding to the injection system

- The diagnosis documentation included working instruction are to be carefully read and observed:

- The injection computer memorised damages are to be read by means of the tester CLIP. Their causes are to be identified by means of the Chapter “Damages Interpretation” indications.

REMARK: The damages are each interpreted for a particular memorising type (present damage, memorised damage, present or memorised damage). The checking steps described for each damage treatment are not to be applied on the vehicle unless the CLIP declared damage is interpreted in the document for its memorising type. The damage memorising type is to be considered when starting the diagnosis, with contact OFF then ON. In case damage is interpreted when it is declared as being already “memorised”, the diagnosis applying conditions are mentioned in the Chapter “Recommendations”. In case of not-respected conditions, the diagnosis steps are to be performed for checking the incriminated element electric circuit, the damage not being present on the vehicle anymore. The same is to be performed in case the tester CLIP declares damage as being a “memorised”, one but the documentation only interprets it as being a “present” damage.

- The checking is to be performed accordingly (the possible wrong functions, not yet declared by the system self-diagnosis) and the associated diagnosis is to be applied following the results interpretation.

- The repairs are to be validated (the damage cause is to be eliminated).

- In case of persistent problem, the damage location range is to be checked.

INTERVENTIONS AND CHECKING NECESSARY EQUIPMENT

- Tester SAGEM CLIP;
- Multi-meter;
- 90-way terminal-box ELE 1497

DIAGNOSIS PARTICULARITIES

The Diesel injection computer LUCAS DCU 3R displays the information “Damage Type” (CO01, 1DEF) for most of the present damages. This information is systematically limited to “DAMAGE” when one of these damages is declared as being memorised, even if the breakdown is present and the necessary conditions to take it into consideration are not achieved (impossible to obtain 1.DEF or CO.0 for a memorised damage). In this case and if the diagnosis only interprets the damage as “memorised”, the confirmation condition of the breakdown real presence, mentioned in the column “Diagnosis Conditions Applying On A Memorised Damage” - “Recommendations” are to be applied.

When the breakdown is present, these recommendations applying will allow the display of the information “Breakdown Type” on the tester CLIP screen, thus applying the respective breakdown diagnosis.

DF001 present	<u>Computer</u>
--------------------------	-----------------

RECOMMENDATION	None
-----------------------	------

Replace the injection computer (UCE).
Modify the new computer configuration according to the vehicle existing options, if necessary (In order to perform this intervention read Chapter “**Help**”)

AFTER REPAIRS	A road test is to be done, followed by a tester CLIP checking.
--------------------------	--

Diagnosis - damages interpretation

DF002 present	<p><u>Water temperature sensor circuit</u> 1.DEF: Measured temperature - too low 2.DEF: Measured temperature - too high</p>
----------------------	---

RECOMMENDATION	<p>Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector. Resistance at 20°C: 2500 ±100 Ohms (300 - 450 Ohms at 80°C)</p>
-----------------------	---

1. DEF	RECOMMENDATION	None
---------------	-----------------------	------

Check the water temperature sensor connections. Repair, if necessary. Measure the water temperature sensor resistance, at its connector. Replace the sensor, in case of damage (open circuit or out of tolerance).

Check the injection computer connections. Repair, if necessary.
 Check the continuity and the isolation as compared to +12 V of the connection between:
 pin 34 injection computer → **pin 3** water temperature sensor
 Check the continuity on the electric track:
 pin 66 injection computer → **pin 2** water temperature sensor

2. DEF	RECOMMENDATION	None
---------------	-----------------------	------

Check the water temperature sensor connector. Repair, if necessary. Measure the water temperature sensor resistance, at its connector. Replace the sensor, in case of damage (open circuit or out of tolerance).

Check the connecting system at the computer level. Repair, if necessary.
 Check the isolation as compared to the mass between:
 pin 34 injection calculator → **pin 3** water temperature sensor
 Check whether the sensor circuit is short-circuited (wiring short-circuit between the computer connector **pins 34** and **66**).

AFTER REPAIRS	<p>The damages memorised by the injection computer are to be erased, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
----------------------	--

DF003 present	<u>Acceleration potentiometer circuit</u> 1.DEF: Measurement track 1 too low / track 2 2.DEF: Measurement track 2 too low / track 1 3.DEF: Measured voltage at track 2 too high 4.DEF: Measured voltage at track 2 too low 5.DEF: Measured voltage at track 1 too high 6.DEF: Measured voltage at track 1 too low 7.DEF: Value of reference voltage no.2 too low 8.DEF: Value of reference voltage no.2 too high
--------------------------	--

RECOMMENDATION	Particularities: The terminal-box ELE. 1497 is to be used for any intervention on the injection computer connector.
-----------------------	---

1.DEF / 2.DEF	RECOMMENDATION	None
----------------------	-----------------------	------

Check the acceleration potentiometer and computer connectors. Repair if necessary.

The acceleration potentiometer is to be replaced in case the damage persists after all these checking.

3. DEF	RECOMMENDATION	None
---------------	-----------------------	------

Check the acceleration potentiometer and computer connectors. Repair if necessary.
Check the injection computer connector. Repair if necessary.

Check the isolation as compared to **+12 V** of the connection between:
pin 37 injection computer → **pin 1** acceleration potentiometer
Then check this connection isolation as compared to the connection between:
pin 41 injection computer → **pin 6** acceleration potentiometer
(5 Volts potentiometer)
pin 42 injection computer → **pin 3** acceleration potentiometer
(2.5 Volts potentiometer)

The acceleration potentiometer is to be replaced in case the damage persists after all these checking.

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
--------------------------	--

Diagnosis - damages interpretation

DF003 continued	
----------------------------	--

4. DEF	RECOMMENDATION	None
---------------	-----------------------	------

Check the acceleration potentiometer connector. Repair if necessary.
Check the injection computer connector. Repair if necessary.

Check the continuity and isolation as compared to the mass of the connection between:
pin 37 injection computer → **pin 1** acceleration potentiometer
Then check this connection isolation as compared to the connection between:
pin 62 injection computer → **pin 5** acceleration potentiometer
(mass track 2 potentiometer)
pin 61 injection computer → **pin 4** acceleration potentiometer
(mass track 1 potentiometer)

The acceleration potentiometer is to be replaced in case the damage persists after all these checking.

5. DEF	RECOMMENDATION	None
---------------	-----------------------	------

Check the acceleration potentiometer connector. Repair if necessary.
Check the injection computer connector. Repair if necessary.

Check the isolation as compared to **+12 V** of the connection between:
pin 8 injection computer → **pin 2** acceleration potentiometer
Then check this connection isolation as compared to the connection between:
pin 41 injection computer → **pin 6** acceleration potentiometer
(**5 Volts** potentiometer)
Check the continuity on the electric track:
pin 61 injection computer → **pin 4** acceleration potentiometer

The acceleration potentiometer is to be replaced in case the damage persists after all these checking.

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
--------------------------	--

DF003 continued	
----------------------------	--

6. DEF	RECOMMENDATION	None
---------------	-----------------------	------

<p>Check the acceleration potentiometer connectors. Repair if necessary. Check the injection computer connector. Repair if necessary.</p>

<p>Check the continuity and the isolation as compared to the mass of the connection between:</p>
--

pin 8 injection computer → **pin 2** acceleration potentiometer

Then check this connection isolation as compared to the connection between:

pin 62 injection computer → **pin 5** acceleration potentiometer
(mass track 2 potentiometer)

pin 61 injection computer → **pin 4** acceleration potentiometer
(mass track 1 potentiometer)

<p>Check the continuity of the connection between:</p>
--

pin 41 injection computer → **pin 6** acceleration potentiometer

<p>The acceleration potentiometer is to be replaced in case the damage persists after all these checking.</p>

AFTER REPAIRS	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
--------------------------	--

Diagnosis - damages interpretation

<p>DF003 continued</p>	
<p>7. DEF / 8. DEF</p>	<p>RECOMMENDATION None</p>
<p>Check the acceleration potentiometer connectors. Repair if necessary.</p>	
<p>Disconnect the acceleration potentiometer and measure the voltage between the terminals 3 and 5 of its connector, with the contact ON.</p>	
<p>Is the measured voltage within 2.15 and 2.85 Volts?</p>	
<p>NO</p>	<p>Check the acceleration potentiometer connectors. Repair if necessary.</p> <p>In case there is a 7.DEF: Check the isolation as compared to the mass of the connection between: pin 42 injection computer → pin 3 acceleration potentiometer Then check this connection isolation as compared to the connection between: pin 62 injection computer → pin 5 acceleration potentiometer (mass track 2 potentiometer) Check again for a possible short-circuit of the potentiometer track 2 between: pin 3 potentiometer → pin 5 acceleration potentiometer</p> <p>In case there is a 8.DEF: Check the continuity and the isolation as compared to 12 V of the connection between: pin 42 injection computer → pin 3 acceleration potentiometer Then check this connection isolation as compared to the connection between: pin 41 injection computer → pin 6 acceleration potentiometer (5 Volts potentiometer) Also check the continuity of the connection between: pin 62 injection calculator → pin 5 acceleration potentiometer</p>
<p>YES</p>	<p>The acceleration potentiometer is to be replaced in case the voltage is zero between the terminals 1 and 5 of its connector (rightly checked supply). The computer is to be replaced in case of damaged isolation as compared to 12 V of the connection between: pin 37 injection computer → pin 1 acceleration potentiometer (right supply and wiring)</p>
<p>AFTER REPAIRS</p>	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>

Diagnosis - damages interpretation

DF012 present	<u>Battery voltage.</u> 1.DEF: Battery voltage too low 2.DEF: Battery voltage too high
--------------------------	--

RECOMMENDATION	Particularities: Completely check the charging circuit, by means of the tester CLIP, if necessary.
-----------------------	---

Perform the necessary interventions in order to get the right supply voltage of the computer:

- 6 Volts < operation voltage < 16.5 Volts
- Check the battery charging
- Check the circuit charging
- Check the battery terminal situation and tightening up
- Check the computer electric connection to the mass

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
--------------------------	--

Diagnosis - damages interpretation

DF014 present or memorised	Stopping electric valve circuit. DEF: Memorised damage 1.DEF: Damaged stopping electric valve 2.DEF: Stopping electric valve operational damage
---	--

RECOMMENDATION	Diagnosis applying condition for the memorised damage: The damage is declared as being present during the starting up step. Particularities: Use the terminal-box ELE.1497 for any intervention on the injection computer connector.
-----------------------	---

1. DEF	RECOMMENDATION None
---------------	----------------------------

Check the injection pump connector. Repair if necessary. Measure the stopping electric valve resistance between **pins 4** and **11** of the pump connector.
Replace the stopping electric valve in case its resistance is not **1.4 ± 0.7 ohms**.

Check the computer connector. Repair if necessary.
Check the continuity and the isolation as compared to +12 V of the connection between:
pin 30 injection computer → **pin 11** pump connector
Check whether there is supply + After Contact at **pin 4** of the pump connector

2. DEF	RECOMMENDATION None
---------------	----------------------------

Check the pump connector. Repair if necessary.

Disconnect the pump connector, put contact ON and measure the voltage at the connector **pin 11**.
* In case the voltage is not within **9 – 10 Volts**, cut the contact and check the following:
- The situation of the computer connector
- The isolation as compared to the mass of the connection between:
pin 30 injection computer → **pin 11** pump connector
* In case the voltage is within **9 – 10 Volts**, use the actuator control "ELECTRIC STOP", checking the voltage oscillation between **9 – 10 Volts** and the battery voltage during the piloting.

In case the piloting cycle is rightly performed, replace the stopping electric valve (mechanical trouble / splinter).
In case the piloting cycle is not visualized, replace the injection computer.

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
----------------------	--

<p>DF015 present or memorised</p>	<p><u>Anti-starting</u></p>
--	-----------------------------

<p>RECOMMENDATION</p>	<p><u>Diagnosis applying condition for the memorised damage:</u> The diagnosis is to be applied in case the damage is present or memorised. Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector.</p>
------------------------------	--

Check the anti-starting function.
Check / Valid the anti-starting procedure for both keys.

In case the damage persists, check the continuity and isolation of the connection between:
pin 20 injection computer → **pin A6** decoder U.C.E.

<p>AFTER REPAIRS</p>	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
-----------------------------	---

Diagnosis - damages interpretation

DF017 present or memorised	<u>Injection relay circuit</u> 1.DEF: Permanent supply (the relay does not cut the supply) 2.DEF: The relay cuts the supply too soon; therefore it does not keep the supply.
---	--

RECOMMENDATION	Particularities: Use the terminal-box ELE 1497 for any intervention on the injection computer connector.
-----------------------	--

1. DEF	RECOMMENDATION	None
---------------	-----------------------	------

Check the relay connector. Repair if necessary.
Try another relay (write down the memorised damages, replace the relay, cancel the memorised damages, cut the contact and wait for 10 seconds, read the possible memorised damages).

Check the computer connector. Repair if necessary.
Check the isolation as compared to the mass of the connection between:
pin 82 injection computer → relay connector (coil mass)
Assure the isolation as compared to + **battery** of the connection between:
pins 76 and 77 injection computer → relay connector (outlet + **12 V**)

In case the damage persists after all the above-mentioned checking, replace the computer (In order to perform this intervention see Chapter “**Help**”).

2. DEF	RECOMMENDATION	None
---------------	-----------------------	------

Check the injection relay connector. Repair if necessary.
Try another relay (write down the memorised damages, replace the relay, cancel the memorised damages, cut the contact and wait for **10 seconds**, read the possible memorised damages).

Check the computer connector. Repair if necessary.
Check the continuity of the connection between:
pin 76 and 77 injection computer → relay connector (power mass) and wiring situation
checking
Check the continuity of the connection between:
pin 82 injection computer → relay connector (coil outlet) and wiring situation checking

In case the damage persists after all the above-mentioned checking, replace the computer (In order to perform this intervention see Chapter “**Help**”).

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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DF021 present	<u>Fuel temperature captor circuit</u> 1.DEF: Measured temperature - very low 2.DEF: Measured temperature - very high
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RECOMMENDATION	Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector.
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1. DEF	RECOMMENDATION	None
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<p>Check the injection pump connector. Repair if necessary</p> <p>Measure the fuel temperature captor resistance at the pump connector, between pins 6 and 7. Replace the captor in case of damages (open circuit). Recommended value: 2716 ± 60 Ohms at 25°C.</p>
<p>Check the injection computer. Repair if necessary.</p> <p>Check the continuity and the isolation as compared to + 12 Volts of the connection between pins 36 injection computer → pin 6 pump connector</p>

2. DEF	RECOMMENDATION	None
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<p>Check the injection pump connector. Repair if necessary.</p> <p>Measure the fuel temperature captor resistance at its connector. Replace the captor in case of damages (short-circuit)</p>
<p>Check the injection computer. Repair if necessary.</p> <p>Check the isolation as compared to the mass of the connection between: pins 36 injection computer → pin 6 fuel temperature captor</p> <p>Check whether the captor circuit is short-circuited.</p>

AFTER REPAIRS	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed.</p> <p>At the end of the operation, check by means of the tester CLIP.</p>
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Diagnosis - damages interpretation

<u>DF022</u> prezent	<u>Air temperature sensor circuit</u> 1.DEF: Measured temperature - too low 2.DEF: Measured temperature - too high
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RECOMMENDATION	Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector. Resistance at 20°C: 2500±100 Ohms (1070 – 1270 Ohms at 40°C)
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1. DEF	RECOMMENDATION	None
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Check the air temperature sensor connector. Repair if necessary Measure the air temperature sensor resistance at its connector Replace the sensor in case of damages (open circuit).
Check the injection computer. Repair if necessary. Check the continuity and the isolation as compared to +12 Volts of the connection between pins 4 injection computer → pin 1 air temperature sensor Check the continuity of the connection between: pins 65 injection computer → pin 2 air temperature sensor

2. DEF	RECOMMENDATION	None
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Check the air temperature sensor connector. Repair if necessary Measure the air temperature sensor resistance at its connector Replace the sensor in case of damages (short-circuit).
Check the injection computer connector. Repair if necessary. Check the isolation as compared to the mass of the connection between: pins 4 injection computer → pin 1 air temperature sensor Check whether the sensor circuit is in short-circuiting.

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

DF023 memorised	<u>Engine rotation sensor circuit</u> DEF: Memorised damage 1.DEF: Engine acceleration - too high 2.DEF: Engine deceleration - too high 3.DEF: Impossible measurement of the rotation signal 4.DEF: No rotation signal when engine under operation 5.DEF: No rotation signal at starting
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RECOMMENDATION	Application diagnosis condition on the memorised damage: <u>The damage is declared as being present when an engine-starting test is performed supervising the damages displayed on the screen.</u> Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector
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1.DEF / 2.DEF / 3.DEF	RECOMMENDATION	Rotation sensor signal damage
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Check the rotation sensor connector. Repair if necessary.
Measure the rotation sensor resistance at its connector. Replace the sensor in case of damage (recommended value: about **650 – 700 Ohms**).

Check the rotation sensor connector. Repair if necessary
Visually check the general situation of the wiring and rotation sensor wiring circuit in order to find the possible micro-ruptures or parasites.
Check the continuity (no parasite resistances) and the isolation of the between:
pin 11 injection computer → **pin B** rotation sensor
pin 74 injection computer → **pin A** rotation sensor
Also check the continuity between these connections.

Dismount the rotation sensor and check its situation (deformations, dirt etc.)
Possibly take into consideration the situation and the conformity of the engine steering wheel (as a result of a part replacement or dismounting of vehicles with low mileage (kilometres recording).

4. DEF / 5. DEF	RECOMMENDATION	No or lost rotation sensor signal
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Check the rotation sensor connector. Repair if necessary.
Measure the rotation sensor resistance at its connector. Replace the sensor in case of damage (recommended value: about **650 – 700 Ohms**).

Check the rotation sensor connector. Repair if necessary.
Check the continuity and the isolation of the following connections between:
pin 11 injection computer → **pin B** rotation sensor
pin 74 injection computer → **pin A** rotation sensor
Also check the isolation between these connections.

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

<u>DF024</u> present	<u>Atmospheric pressure sensor circuit</u> 1.DEF: Measured pressure – too low 2.DEF: Measured pressure – too high
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RECOMMENDATION	None
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Replace the injection computer.
In case it is necessary, modify the new computer configuration as compared to the vehicle existing options (In order to perform this intervention see Chapter “**Help**”).

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

DF027 present or memorised	<u>EGR electric valve circuit</u> DEF: Memorised damage CO.0: Open circuit or short-circuit at mass (present damage) CC.1: Short-circuit at +12 Volts (memorised damage) 1.DEF: Electric valve position out of low limit (present damage) 2.DEF: Electric valve position out of high limit (present damage) 3.DEF: Electric valve positioning loop checking (memorised damage) 4.DEF: EGR calibration in close position
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RECOMMENDATION	Application diagnosis condition on the memorised damage: <u>The damage is declared as being present after giving the actuator order “EGR Electric Valve” or after the engine start-up and the checking of the situation “EGR Electric Valve” by means of the tester CLIP (engine condition: air temperature > 15°, water temperature > 15°). In case there is not damage confirmation, apply the diagnosis for DEF.</u> Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector.
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CO.0	RECOMMENDATION	None
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Check the EGR electric valve connector. Repair if necessary.
Measure EGR electric valve resistance between the connector **pins 1 and 5**.
Replace the EGR electric valve / captor assembly, in case the measured resistance is not within **8 ± 0.5 Ohms**.

Check the injection computer connector. Repair if necessary.
Check the continuity and the isolation as compared to the mass of the connection between:
pin 5 injection computer → **pin 5** EGR electric valve
Check the **+After Contact supply** at **pin 1** of the EGR electric valve

CC.1	RECOMMENDATION	None
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Check the EGR electric valve connector. Repair if necessary.
Measure EGR electric valve resistance between the connector **pins 1 and 5**.
Replace the EGR electric valve / captor assembly, in case the measured resistance is not within **8 ± 0.5 Ohms**.

Check the injection computer connector. Repair if necessary.
Check the isolation as compared to **+12 Volts** of the connection between:
pin 59 injection computer → **pin 5** EGR electric valve

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

DF027 continued	
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1. DEF	RECOMMENDATION	None
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Check the EGR electric valve connector. Repair if necessary
Check the injection computer connector. Repair if necessary

Check the continuity and the isolation of the connection between:
pin 35 injection computer → **pin 6** EGR electric valve
Check the continuity of the connection between:
pin 39 injection computer → **pin 2** EGR electric valve
pin 63 injection computer → **pin 4** EGR electric valve

In case of ‘EGR ELECTRIC VALVE CIRCUIT’ damage reparation, replace the EGR electric valve / EGR valve positioning captor assembly (In order to perform this intervention read the “Repairs Book”).

2. DEF	RECOMMENDATION	None
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Check the EGR electric valve connector. Repair if necessary
Check the injection computer connector. Repair if necessary

Check the isolation as compared to +12 Volts of the connection between:
pin 35 injection computer → **pin 6** EGR electric valve
Also check the isolation of this connection as compared to the connection between:
pin 39 injection computer → **pin 2** EGR electric valve (+5 Volts potentiometer)

In case of ‘EGR ELECTRIC VALVE CIRCUIT’ damage reparation, replace the EGR electric valve / EGR valve positioning captor assembly (In order to perform this intervention read the “Repairs Book”).

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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DF027
continued

3. DEF**RECOMMENDATION** None

Cancel the memorised damages of the computer. Start the engine and test the situation "EGR ELECTRIC VALVE CONTROL" by means of the tester CLIP. Wait for the EGR electric valve control displaying (engine condition: air temperature > 15° and water temperature > 15°).

In case of damage reappearance, dismount the electric valve. In case of impossible dismounting, extract the air filter then dismount the electric valve by pushing it from its inside. Pay attention not to damage the valve shaft and valves.

Check whether the valve is blocked.

- In case it is blocked on intermediary position:

Replace the EGR Electric Valve / EGR valve position captor.

- In case it is blocked on closed position (valves oxidized seats, electric valve):

Try the electric valve unblocking.

* In case the valve is still blocked, replace the EGR Electric Valve / EGR valve position captor.

* In case the valve unblocks, reconnect the electric valve connector and repeatedly pilot the valve by means of the actuator control "EGR ELECTRIC VALVE". Clean if necessary. Replace the EGR Electric Valve / EGR valve position captor, in case there are operation troubles.

4. DEF**RECOMMENDATION** None

Check the computer connector. Repair if necessary

Measure the resistance of the EGR valve position captor between the computer connector **pins 63** and **39** (theoretical resistance = **4 Kohms ± 40%**).

- In case the resistance is right, replace the EGR Electric Valve / EGR valve position captor (blocked valve).

- In case the resistance is wrong, directly measure the resistance of the EGR valve position captor between the **pins 2** and **4** of the EGR connector.

In case the measured value is wrong, replace the EGR Electric Valve / EGR valve position captor.

In case the measured value is right, check the wiring and its connectors.

AFTER REPAIRS

The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.

Diagnosis - damages interpretation

DF027 continued	
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DEF	RECOMMENDATION	None
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Check the EGR electric valve connector. Repair if necessary.
 Measure the resistance of the EGR valve between its connector **pins 1 and 5**.
 In case the measured value is not within **8 ± 0.5 Ohms**, replace the EGR Electric Valve / EGR valve position captor.
 Check the injection computer connector. Repair if necessary
 Check the continuity and isolation of the connection between:
 pin 59 injection computer → **pin 5** EGR electric valve
 pin 35 injection computer → **pin 6** EGR electric valve
 pin 39 injection computer → **pin 2** EGR electric valve
 pin 63 injection computer → **pin 4** EGR electric valve
 Measure the resistance of the EGR valve position captor between the computer connector pins 63 and 39 (theoretical resistance = **4 Kohms ± 40%**).

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

DF 048 present or memorised	<u>Cooling motor-fan group circuit</u> DEF: Memorised damage CO.0: Open circuit or short-circuit at mass CC.1: Short-circuit at +12 Volts
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RECOMMENDATION	Application diagnosis condition on the memorised damage: <u>The CC.1 diagnosis is to be applied in case the damage reappears as memorised after Memorised Damages Cancelling and Actuator Control “Motor-fan Group LOW SPEED”</u> Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector.
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CO. 0	RECOMMENDATION	None
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Measure the GMV relay coil resistance, placed in the engine fuse box.
Replace the relay in case the measured resistance is not equal to **65 Ohms**.

Check the GMV relay connector.
Check whether there is + **12 Volts** supply at the GMV relay **pin 1**.

Check the injection computer connector.
Check the continuity and isolation as compared to the mass of the connection between:
pin 53 injection computer → **pin 2** GMV relay

In case the damage persists after these checking's, the GMV relay is to be replaced.

CC.1	RECOMMENDATION	None
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Measure the GMV relay coil resistance.
Replace the relay in case the measured resistance is not equal to **65 Ohms**.

Check the isolation as compared to +**12 Volts** of the connection between:
pin 53 injection computer → **pin 2** GMV relay

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

<u>DF053</u> present	<u>Protection circuit</u>
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RECOMMENDATION	None
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Replace the injection computer.

If necessary, modify the new computer configuration, according to the vehicle present options (In order to perform this intervention read the Chapter “**Help**”).

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

DF054 present	<u>Pump memory circuit</u>
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RECOMMENDATION	None
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Check the pump connector. Repair if necessary.
Check the injection computer connector. Repair if necessary

Assure the continuity and isolation of the connections between:

pin 51 injection computer → **pin 8** pump connector

pin 67 injection computer → **pin 7** pump connector

In case the first checking do not allow to locate the origin of the damage “PUMP MEMORY CIRCUIT” and if the tester CLIP still declares this damage as being present, all checking are to be done again.

In case the damage persists, the pump is to be replaced.

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

DF056 present or memorised	<u>Control circuit of sparking plugs pre-heating relay</u> DEF: Memorised damage CO.0: Open circuit or short-circuit at mass CC.1: Short-circuit at +12 Volts
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RECOMMENDATION	Application diagnosis condition on the memorised damage: <u>The CC.1 diagnosis isto be applied in case the damage reappears as memorised after Memorised Damages Cancelling and Actuator Control “PRE-HEATING RELAY”</u> Particularities: <u>Use the terminal-box ELE. 1497 for any intervention on the injection computer connector</u>
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CO. 0	RECOMMENDATION	None
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Check the two connectors of the sparking plugs pre-heating relay. Repair when necessary.
Disconnect the 6-way connector pof the pre-heating relay and check its supply: - Supply presence: + After Contact between pins A1 and A2 of the 6-pins connector - Supply presence: In front of the contact at 3-way connector pin 2 (fuse 70A). Perform the necessary interventions.
Check the injection computer connector. Repair if necessary Check the continuity and isolation as compared to the mass of the connections between: pin 52 injection computer → pin B1 pre-heating relay 6-pins connector

CC. 1	RECOMMENDATION	None
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Check the isolation as compared to + 12 Volts of the connections between: pin 52 injection computer → pin B1 pre-heating relay 6-pins connector
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AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

DF058 present	<u>Captors reference voltage (+5 Volts)</u> 1.DEF: Captors reference voltage – too low 2.DEF: Captors reference voltage – too high
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RECOMMENDATION	Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector
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1.DEF	RECOMMENDATION	None
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Check the acceleration potentiometer connector. Repair if necessary.
Check again a possible short-circuit of the potentiometer track 1 between **pins 4 and 6**.

Check the EGR valve connector. Repair if necessary. Check again a possible short-circuit of the valve potentiometer track 1 between **pins 2 and 4**.

Check the injection computer connector. Repair if necessary
Check the isolation as compared to the mass of the connections between:

- pin 41** injection computer → **pin 6** acceleration potentiometer connector
- pin 39** injection computer → **pin 2** EGR valve connector

In case the first checking do not allow to locate the origin of the damage “CAPTORS REFERENCE VOLTAGE” and if damage persists, all checking are to be done again.
In case the damage still persists, the computer is to be replaced

2.DEF	RECOMMENDATION	None
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Check the EGR valve computer connector. Repair if necessary.
Check the pump connector. Repair if necessary
Check the injection computer connector. Repair if necessary

Check the isolation as compared to the mass of the connections between:

- pin 41** injection computer → **pin 6** acceleration potentiometer connector
- pin 39** injection computer → **pin 2** EGR valve connector
- pin 12** injection computer → **pin 9** pump connector
- pin 13** injection computer → **pin 13** pump connector
- pin 14** injection computer → **pin 10** pump connector
- pin 15** injection computer → **pin 12** pump connector

AFTER REPAIRS	The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.
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Diagnosis - damages interpretation

DF059 present or memorised	<p><u>Advance circuit</u> DEF: Memorised damage CO.0: Open circuit or short-circuit at mass CC.1: Short-circuit at +12 Volts 1.DEF: Cam position out of low limit 2.DEF: Cam position out of high limit 3.DEF: Wrong cam position 4.DEF: Incoherence between the measured position and the mechanical stopper</p>
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RECOMMENDATION	<p>Application diagnosis condition on the memorised damage: The DEF / 3.DEF / 4.DEF diagnosis is to be applied in case the damage reappears as present or memorised after Memorised Damages Cancelling and Road Testing. Particularities: This damage will not be taken into consideration in case the fuel circuit is re-started by means of the re-starting mechanism (near the diesel oil filter) and the contact ON. Just cancel the memorised damages. Use the terminal-box ELE. 1497 for any intervention on the injection computer connector</p>
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CO. 0	RECOMMENDATION None
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Check the pump connector. Repair if necessary.
 Measure the advance electric valve resistance between **pins 3** and **4** of the pump connector.
 Replace the advance electric valve when the resistance is not equal to **30 ± 2 Ohms**.

Check the injection computer connector. Repair if necessary.
 Check the continuity and isolation as compared to the mass of the connection between:
pin 89 injection computer → **pin 3** pump connector

Check the supply presence + **After Contact** at the pump connector **pin 4**

CC. 1	RECOMMENDATION None
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Check the pump connector. Repair if necessary.
 Measure the advance electric valve resistance between **pins 3** and **4** of the pump connector.
 Replace the advance electric valve when the resistance is not equal to **30 ± 2 Ohms**.

Check the injection computer connector. Repair if necessary.
 Check the continuity and isolation as compared to the mass of the connection between:
pin 89 injection computer → **pin 3** pump connector

AFTER REPAIRS	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
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Diagnosis - damages interpretation

DF059
continued

1.DEF

RECOMMENDATION None

Check the pump connector. Repair if necessary.
Measure the position captor resistance between **pins 13** and **12** of the pump connector.
Replace pump when the resistance is not equal to **52 ± 4 Ohms**.

Check the injection computer connector. Repair if necessary.
Check the isolation as compared to the mass of the connection between:
pin 12 injection computer → **pin 9** pump connector
Check the isolation as compared to the mass of the connection between:
pin 14 injection computer → **pin 10** pump connector

2.DEF

RECOMMENDATION None

Check the pump connector. Repair if necessary.
Measure the position captor resistance between **pins 13** and **12** of the pump connector.
Replace pump when the resistance is not equal to **52 ± 4 Ohms**.

Check the injection computer connector. Repair if necessary.
Check the isolation as compared to the mass of the connection between:
pin 13 injection computer → **pin 13** pump connector
Check the isolation as compared to the mass of the connection between:
pin 15 injection computer → **pin 12** pump connector

AFTER
REPAIRS

The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed.
At the end of the operation, check by means of the tester CLIP.

Diagnosis - damages interpretation

DF059 continued	
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DEF / 3.DEF / 4.DEF	RECOMMENDATION	None
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Check the pump connector. Repair if necessary.
 Measure the advance electric valve resistance between **pins 3** and **4** of the pump connector.
 Replace the advance electric valve when the resistance is not equal to **30 ± 2 Ohms**.

Measure the position captor resistance between the pump connector **pins 12** and **13**.
 Replace the pump when the resistance is not equal to **52 ± 4 Ohms**.
 Check the computer connector. Repair if necessary.

Measure the line resistance of the connection between:
pin 13 injection computer → **pin 13** pump connector
 Perform the necessary interventions in case the resistance is abnormally high (when the resistance > **0,2 Ohms**)
 The pump is to be replaced in case the damage persists.

AFTER REPAIRS	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
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<u>DF061</u> present or memorised	<u>Pre-heating sparking plugs</u>
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RECOMMENDATION	<p>Application diagnosis condition on the memorised damage: <u>The damage reappears as present for 30 seconds as a result of the contact putting ON before being memorised.</u></p> <p>Particularities: <u>Use the terminal-box ELE. 1497 for any intervention on the injection computer connector</u></p>
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Check the two connectors of the sparking plugs pre-heating relay. Repair if necessary
 Check the pre-heating relay supply: +**After Contact** supply presence between the 6-way connector **pins A1** and **A2** and + **In front Of The Contact** supply presence at the 3-way pins connector **pin 2** (fuse 70A). Perform the necessary interventions.

Check the injection computer connector. Repair if necessary.
 Check the continuity an isolations of the connection between:
pin 49 injection computer → **pin C1** pre-heating relay connector
 Check the continuity and isolation as compared to the mass of the pre-heating sparking plugs supplying wires.

Reconnect the computer and the pre-heating relay.
 Start the engine and keep it in idle running.
 Activate the "PRE-HEATING RELAY" actuator control following the voltage on the sparking plugs.

- When the piloting cycle is visualized, check and replace the sparking plug / plugs.
- When the piloting cycle is not visualized, replace the pre-heating relay.

AFTER REPAIRS	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
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Diagnosis - damages interpretation

DF065 present or memorised	<p>Fuel flow actuator circuit</p> <p>1.DEF: Memorised damage at flow actuator - 2.DEF: Memorised damage at flow actuator +</p> <p>1.CO.0: Open circuit or short-circuit at mass 1.CC.1: Short-circuit at + 12 Volts</p> <p>2.CO.0: Open circuit or short-circuit at mass 2.CC.1: Short-circuit at + 12 Volts</p>
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1.DEF	RECOMMENDATION	<p>Application diagnosis condition on the memorised damage: The diagnosis CC.1 is to be applied in case the damage reappears as memorised, as the result of cancelling the memorised damages and actuator control "FLOW ACTUATOR 1" or of the engine-starting step.</p> <p>Particularities: Use the terminal-box ELE. 1497 for any intervention on the injection computer connector.</p>
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1.CO.0	RECOMMENDATION	None
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Check the pump connector. Repair if necessary.
 Measure the flow electric valve resistance (-) at the pump connector level between **pins 2 and 4**.
 Replace the electric valve in case of damage (open circuit). Theoretical value: **30 ± 2 Ohms**.

Disconnect the pump connector, put the contact ON and measure the voltage at the connector **pin 2**.

* In case the measured voltage is not within **9 – 10 Volts** cut the contact and perform the following checking:

- Injection computer connector situation
- Continuity and isolation as compared to the mass of the connection between:
pin 90 injection computer → **pin 2** pump connector
- Presence of +**After Contact** supply at the pump connector **pin 4**.

* In case the measured voltage is within **9 – 10 Volts**, use the actuator "FLOW ACTUATOR 1" control, checking the change from the **9 – 10 Volts** voltage to the battery voltage during the driving.

- In case the piloting is right, replace the flow electric valve (+).
- In case the piloting is not visualised, replace the injection computer.

Make sure there is + **After Contact** supply at the pump connector **pin 4**.

1.CC.1	RECOMMENDATION	None
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Check the pump connector. Repair if necessary.
 Measure the flow electric valve resistance (-) at the pump connector level between **pins 2 and 4**.
 Replace the electric valve in case of damage (short-circuit). Theoretical value: **30 ± 2 Ohms**.

Check the injection computer connector. Repair if necessary.
 Check the isolation as compared to +**12 Volts** of the connection between:
pin 90 injection computer → **pin 2** pump connector

AFTER REPAIRS	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
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DF065 continued	
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2.DEF

RECOMMENDATION

Application diagnosis condition on the memorised damage:

The diagnosis **2.CO.0** is to be applied in case the damage reappears as memorised as the result of canceling the memorised damages and actuator control "FLOW ACTUATOR 2".

Particularities: Use the terminal-box **ELE. 1497** for any intervention on the injection computer connector.

2.CO.0

RECOMMENDATION

None

Check the pump connector. Repair if necessary.
Measure the flow electric valve resistance (+) at the pump connector level between **pins 2** and **4**.
Replace the electric valve in case of damage (open circuit). Theoretical value: **30 ± 2 Ohms**.

Disconnect the pump connector, put the contact ON and measure the voltage at the connector **pin 5**.

* In case the measured voltage is not within **9 – 10 Volts** cut the contact and perform the following checking:

- Injection computer connector situation
- Continuity and isolation as compared to the mass of the connection between:
pin 60 injection computer → **pin 5** pump connector
- Presence of **+After Contact** option at the pump connector **pin 4**.

* In case the measured voltage is within **9 – 10 Volts**, use the actuator "FLOW ACTUATOR 2" control, checking the change from the **9 – 10 Volts** voltage to the battery voltage during the driving.

- In case the piloting is right, replace the flow electric valve (+).
- In case the piloting is not visualised, replace the injection computer

Make sure there is **+ After Contact** option at the pump connector **pin 4**.

2.CC.1

RECOMMENDATION

Damage of the flow electric valve (+).

Check the pump connector. Repair if necessary.
Measure the flow electric valve resistance (+) at the pump connector level between **pins 5** and **4**.
Replace the electric valve in case of damage (short-circuit). Theoretical value: **30 ± 2 Ohms**.

Check the injection computer connector. Repair if necessary.
Check the isolation as compared to **+12 Volts** of the connection between:
pin 60 injection computer → **pin 5** pump connector

AFTER
REPAIRS

The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed.
At the end of the operation, check by means of the tester CLIP.

Diagnosis - damages interpretation

<p>DF066 present or memorised</p>	<p>Fuel flow actuator position DEF: Memorised damage <u>1.DEF: Flow rotor position captor damage</u> 2.DEF: Incoherence between rotor position and minimal stopper 3.DEF: Incoherence between rotor position and maximal stopper 4.DEF: Loss of fuel flow loop control</p>
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<p>RECOMMENDATION</p>	<p>Treatment priority in case of damagesplurality: In case the damage DF065 or DF023 are declared as being present or memorised, treat them in priority. These damages can be memorised during a vicious operation of the rotation sensor (to be confirmed during the starting step) Application diagnosis condition on the memorised damage: The damage appears as being present or memorised as a result of the followings: - Engine starting step or - Cancelling of the memorised damages and of actuators “FLOW ACTUATOR 1” and “FLOW ACTUATOR 2” controls or <u>- Running with a deceleration for longer than 4 seconds (engine braking when lifting the foot off the clutch). A too tighten distribution belt could cause the flow rotor captor blocking. The diagnosis DEF / 2.DEF / 3.DEF / 4.DEF is to be applied.</u> Particularities: Use the terminal-box ELE. 1497 for any intervention on <u>the injection computer connector.</u></p>
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<p>1.DEF</p>	<p>RECOMMENDATION</p>	<p>None</p>
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<p>Check the pump connector. Repair if necessary. Measure the resistances at the pump connector following pins: - Between pins 10 and 12 : 41.3 ± 4 Ohms - Between pins 9 and 10 : 200 ± 30 Ohms - Between pins 12 and 13 : 52 ± 4 Ohms Replace the pump in case the measured value / values is / are wrong.</p>

<p>Check the injection computer connector. Repair if necessary. Check the continuity and isolation as compared to the mass of the following connections between: pin 12 injection computer → pin 9 pump connector pin 14 injection computer → pin 10 pump connector pin 15 injection computer → pin 12 pump connector Check the isolation as compared to the mass of the connections between: pin 13 injection computer → pin 13 pump connector</p>

<p>If the first checking do not allow to locate the “FUEL FLOW CIRCUIT” damage origin and if this damage is still declared as being “present” after diagnosis by means of the tester CLIP, perform all the checking again. In case the damage persists, replace the injection computer.</p>

<p>AFTER REPAIRS</p>	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
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Diagnosis - damages interpretation

DF066 continued	
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DEF / 2.DEF / 3.DEF / 4.DEF

RECOMMENDATION None

Check the pump connector and the situation of the wiring between the pump connector and the electric valves assembly.
Selectively choose the actuators "FLOW ACTUATOR 1" and "FLOW ACTUATOR 2" controls and audio-check the valves operation (regular hammering).
Replace the damaged parts.

Disconnect the computer.
Measure the resistances between the injection computer connector following ways:

- Between **pins 14** and **15** : **41,3 ± 4 Ohms**
- Between **pins 14** and **12** : **200 ± 30 Ohms**

Are the measured resistances right?

Yes

Check the computer connector. Repair if necessary.

No

Check the pump connector, then measure the resistances between the following pins:

- Between **pins 10** and **12** : **41,3 ± 4 Ohms**
- Between **pins 10** and **9** : **200 ± 30 Ohms**

If the measured value/values is/are wrong replace the pump.
Check the computer connector. Repair if necessary.

Measure the line resistance of the following connections:

- pin 12** injection computer → **pin 9** pump connector
- pin 14** injection computer → **pin 10** pump connector
- pin 15** injection computer → **pin 12** pump connector

If the first checking do not allow to locate the "FUEL FLOW CIRCUIT" damage origin and if this damage is still declared as being "present" under the condition described in Chapter "Recommendations", perform all the checking again. In case the damage persists, replace the pump.

AFTER REPAIRS

The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed.
At the end of the operation, check by means of the tester CLIP.

Diagnosis - damages interpretation

DF0103 present or memorised	<p>Pre-heating indicator circuit injection damage: <u>DEF: Memorised damage</u> <u>CO.0: Open circuit or short-circuit at mass</u> <u>CC.1: Short-circuit at +12 Volts</u></p>
--	--

RECOMMENDATION	<p>Application diagnosis condition on the memorised damage: The diagnosis CC.1 is to be applied in case the damage reappears as memorised as the result of cancelling the memorised damages and actuator control "PRE-HEATING INDICATOR". Particularities: <u>Use the terminal-box ELE. 1497 for any intervention on the injection computer connector.</u></p>
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CO. 0	RECOMMENDATION	None
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Check the pre-heating indicator lamp situation and the presence of the option + **After Contact** at this indicator.
 Check the computer connector and the instrument panel connectors.
 Check the continuity and isolation as compared to the mass of the connection between:
pin 24 injection computer → pre-heating indicator / instrument panel injection damage.

CC. 1	RECOMMENDATION	None
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Check the continuity and isolation as compared to **+12 Volts** of the connection between:
pin 24 injection computer → pre-heating indicator / instrument panel injection damage
 Check the pre-heating indicator lamp (lamp short-circuit).

AFTER REPAIRS	<p>The damages memorised by the injection computer are to be cancelled, the contact is to be cut and a road test is to be performed. At the end of the operation, check by means of the tester CLIP.</p>
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INJECTION COMPUTER REPLACEMENT**(Or as a result of a re-programming)**

The followings are to be performed when the injection computer is to be replaced:

- The contact is to be OFF.
- Connect the tester CLIP at the diagnosis socket and at the vehicle battery.
- Replace the injection computer.
- Put the contact ON and wait for 15 seconds (necessary time of data transferring into pump memory). Not to worry if the pre-heating indicator does not light.
- Cut the contact and wait for 10 seconds (loss of communication).
- Put the contact ON, then start the tester CLIP.
- Configure the computer according to the vehicle equipment level.
- Cut the contact and wait for 10 seconds (loss of communication).
- Check whether the computer configuration is right.
- Try to start up the engine (pre-heating function activation).
- Cut the contact and wait for 10 seconds (loss of communication).
- Put the contact ON and check whether the pre-heating indicator operates.
- Start the engine and make sure there is not any damage.

INJECTION PUMP REPLACEMENT

The followings are to be performed when the injection pump is to be replaced:

- The contact is to be OFF.
- Replace the pump.
- Put the contact ON and wait for 15 seconds (necessary time of data transfer into pump memory).
- Cut the contact and wait for 10 seconds (loss of communication).
- Start the engine and make sure there is not any damage.

Diagnosis - Conformity checking

RECOMMENDATION	Not to perform this conformity checking unless a complete checking was performed by means of the tester CLIP (lack of damages).
-----------------------	---

Current number	Function	Situation/Parameter	Visualization and remarks	Diagnosis
1		ET 051: The engine does not turn at contact	Confirmed situation	Nothing to refer to
2	Battery voltage	PR 004: Computer supplying voltage	11,8 < X < 13,2 V	In case of trouble check this parameter diagnosis
3	Instrument panel indicator	ET 004: Injection damage indicator ET 008 : Superheating indicator	Unconfirmed situation. Unconfirmed situation. Lit for few seconds when putting the contact ON	Nothing to refer to
4	Damage absence	ET 044: At least one "Degraded mode" activation. ET 045 : Diminution engine performance	Unconfirmed situations	Nothing to refer to
5		ET 040: Started engine	Confirmed situation at started engine	Nothing to refer to
6	Diesel oil temperature captor Water temperature sensor Air temperature sensor	PR 001: Diesel oil temperature PR 002: Water temperature PR 003: Air temperature	- 10° < X < 140°C - 32° < X < 140°C - 32° < X < 140°C	In case of trouble check the diagnosis of these parameters

Diagnosis - Conformity checking

RECOMMENDATION	Not to perform this conformity checking unless a complete checking was performed by means of the tester CLIP (lack of damages).
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Current number	Function	Situation/Parameter	Visualization and remarks	Diagnosis
7	Clutch potentiometer	PR 008: Potentiometer voltage, track P1 PR 009: Potentiometer voltage, track P2	4 % < X < 96 % 4 % < X < 56 %	In case of trouble check the diagnosis of this parameter
8	Atmospheric pressure sensor	PR 016: atmospheric pressure	420 mbar < X < 1070 mbar	In case of trouble check the diagnosis of this parameter
9	EGR operation	ET 021: EGR electric valve control PR 024: EGR electric valve RCO	Confirmed situation according to the operation X = / = 0% when E.G.R. is active	In case of trouble check the diagnosis of this situation
10	Rotation sensor	PR 006: Engine rotation	Engine rotation (rpm) : X75 = 875 rpm	In case of trouble check the diagnosis of this parameter
11	Injection pump operation	PR 060: Rotor position measurement	250 us < X < 800 us us = SEEM units	In case of trouble check the diagnosis of this parameter
12	Motor-fan group	Control: motor-fan group	The motor-fan group running is to be heard	In case of trouble check the diagnosis of this control
13	Flow electric valves	Control: flow actuator 1 (flow -) Control: flow actuator 2 (flow +)	The actuators rhythmic movement is to be heard	In case of trouble check the diagnosis of this control

Diagnosis - Conformity checking

RECOMMENDATION	Not to perform this conformity checking unless a complete checking was performed by means of the tester CLIP (lack of damages).
-----------------------	---

Current number	Function	Situation/ Parameter	Visualization and remarks	Diagnosis
14	Advance electric valves	Control: advance actuator	The actuator rhythmic movement is to be heard	In case of trouble check the diagnosis of this control
15	Stop electric valve	Control: electric stop	The actuator rhythmic movement is to be heard	In case of trouble check the diagnosis of this control

PUMP SUPPLY
Breakdown localizing algorithm

RECOMMENDATION	Not to use this information unless a complete checking was performed by means of the tester CLIP.
-----------------------	---

TESTER – INJECTION COMPUTER IMPOSSIBLE
COMUNICATION
ALP 1

STARTING TROUBLES (engine does not start or hardly starts) ALP 2

IDLE RUNNING TROUBLES (unstable idle running) ALP 3

SUDDEN ACCELERATION OR DECELERATION (engine fragmented running) ALP 4

Breakdown localizing algorithm

ALP 1	TESTER – INJECTION COMPUTER COMMUNICATION IMPOSSIBILITY
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RECOMMENDATION	None
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Make sure the tester does not cause the damage, trying to communicate with another vehicle computer. In case the tester is right but the communication is not possible with any other vehicle computer, the diagnosis lines **K** and **L** may be perturbed by a damaged computer. Successively disconnect the other computers (UCE anti-starting) in order to locate the damaged one.
 Measure the battery voltage and perform the necessary interventions to obtain the according voltage (**7 Volts < battery U < 16 Volts**).

Check the presence and situation of the injection computer supplying safety fuse (fuse 7,5A), placed into the engine safety fuse box.
 Check the connection of the computer connector and its connector situation.
 Check whether the computer is rightly supplied.

- presence of connection at **Mass** at **Pins 78** and **79**
- supply + **After Contact** at **pin 81**

supply + **12 Volts, After the injection relay** at **pins 76** and **77**

Check whether the vehicle diagnosis socket is rightly supplied

- supply + **In front of the contact** at **pin 16**
- presence of connection at **Mass** at **Pin 5**

Check the continuity and isolation of the connecting lines between the diagnosis socket and the injection computer:

- between pin 3 injection computer connector and pin 15 diagnosis socket
- between pin 33 injection computer connector and pin 7 diagnosis socket

In case that the communication cannot be performed after all these checking, the injection calculator is to be replaced (prior this intervention performing read Chapter "**Help**").

AFTER REPAIRS	Repair the possible detected damages when re-establishing the dialogue.
----------------------	---

PUMP SUPPLY

Breakdown localizing algorithm

ALP 2
STARTING TROUBLES
(engine does not start or hardly starts)
RECOMMENDATION

Not to use this information unless a complete checking was performed by means of the tester CLIP.

In case the tester does not indicate any damage, make sure the trouble is not caused by the anti-starting system breakdown.

Check the pre-heating operation by means of the tester CLIP. Check the pre-heating sparking plugs voltage by means of the actuator "PRE-HEATING RELAY" control.

- In case any sparking plug is under supply, check the connection of the pre-heating relay 3-way connector. Also check the 70A safety fuse situation, placed in the engine fuse box.
- In case there is supply only at one sparking plugs group, check the continuity of the electric track between the sparking plugs and the pre-heating relay
- In case the sparking plugs are supplied when their connectors are disconnected, check the sparking plugs resistance (it should be within **0,6 ± 0,1 Ohms**).
- The pre-heating relay is to be replaced in case the damage persists.

Check the fuel supplying circuit (of the pump and of the injectors)in case the damage persists. If is necessary, completely check the engine (driving speed starting, pump injection blocking, injectors situation, valves laches, engine compression...)

AFTER REPAIRS

Perform a road test, then a checking by means of the tester CLIP.
Repair the possible detected damages.

Breakdown localizing algorithm

<u>ALP 3</u>	IDLE RUNNING TROUBLES
---------------------	------------------------------

RECOMMENDATION	Do not use this informations unless a complete checking was performed by means of the tester CLIP.
-----------------------	--

In case the tester clip does not indicate any damage, make sure the trouble is not caused by a mechanical trouble of the EGR valve position.	
<p>Check the fuel conformity. Check for clogging and unsealing on air intake circuit, exhaustion circuit and fuel supplying circuit. In case the trouble persists, completely check the engine (pump blocking, injectors situation, engine compression) Check the motor flywheel. Connect the tester CLIP for the flywheel checking and follow its indications.</p>	

AFTER REPAIRS	Perform a road test, then a checking by means of the tester CLIP. Repair the possible detected damages.
----------------------	--

Breakdown localizing algorithm

ALP 4**SUDDEN ACCELERATION OR DECELERATION
(engine fragmented running)****RECOMMENDATION**

Do not use this informations unless a complete checking was performed by means of the tester CLIP.

Check the fuel conformity.

Check for clogging and unsealing on air intake circuit, exhaustion circuit and fuel supplying circuit.

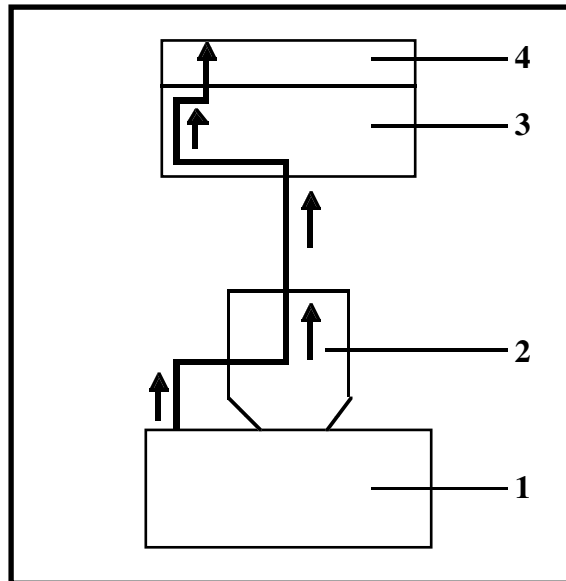
Check the absence of oil steam re-intake.

In case the trouble persists, completely check the engine (injectors, injection pump, engine flywheel).

**AFTER
REPAIRS**

Perform a road test, then a checking by means of the tester CLIP.
Repair the possible detected damages.

THE CIRCUIT DIAGRAM

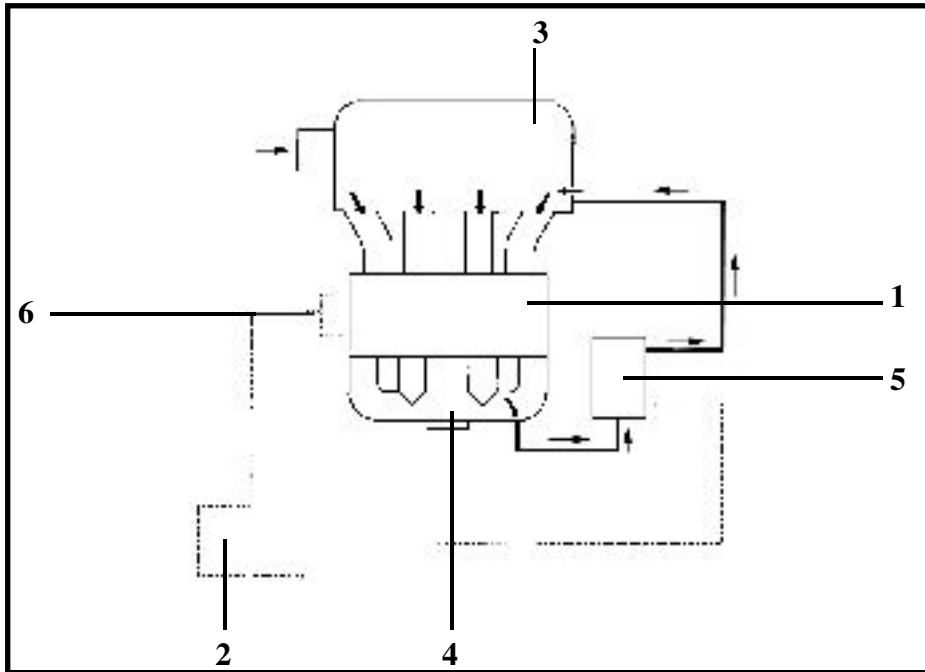


1. Engine
2. Oil setting tank.
3. Air filter box
4. Intake manifold

CHECKING

In order to ensure a good operation of the anti-pollution system, the oil vapors re-aspiration circuit must be maintained clean and in good condition.

THE CIRCUIT DIAGRAM



1. Engine
2. Injection computer
3. Intake manifold
4. Exhaust collector
5. E.G.R. valve
6. Cooling fluid temperature sensor.

E.G.R. ELECTRIC VALVE DISMOUNTING

The E.G.R. electric valve is mounted in the intake manifold.

In order to enable its replacement, it is recommended to dismount first the Air filter assembly.

Dismount :

- battery,
- EGR electric valve connector,
- air temperature sensor connector,
- connector from the diesel filter,
- connection from the vacuum pump.

Dismount the air filter assembly.

Dismount the EGR attachment screws.

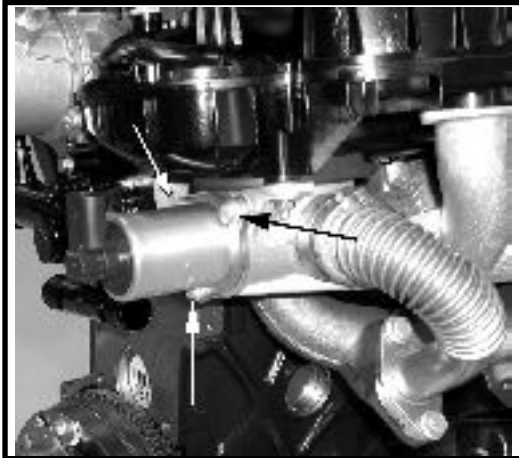
Remove the EGR electric valve.

Exhaust gases recycling (E.G.R.)

REMOUNTING

Perform the dismantling operations in the reverse order.

Tighten the electric valve attachment screws at the required moment of (0,8 daN).



THE E.G.R. PURPOSE

The exhaust gases recycling is performed for reduction of the nitrogen oxide content (NOx) from the exhaust gases.

The injection computer is authorizing the passing of the recycled gas towards the intake manifold, by means of an electric valve.

THE OPERATION PRINCIPLE

The electric valve is controlled by a R.C.O. signal issued by the injection computer. The R.C.O. signal is allowing the valve opening modification and consequently of the exhaust gas quantity diverted towards the intake manifold.

The computer is permanently performing a knowledge test of the E.G.R. electric valve flap position.

OPERATION CONDITIONS

The E.G.R. electric valve activation is governed by the following parameters:

- air temperature
- cooling fluid temperature
- acceleration pedal position
- engine RPM
- vehicle speed
- battery voltage

E.G.R is not supplied if :

- air temperature is bellow 15° C or above 60° C
- cooling fluid temperature is bellow 15° C or above 60° C.
- battery voltage is bellow 10V
- the atmospheric pressure is bellow 890 mbars

- if the RPM/ engine load parameters exceed a certain value imposed by the charts from the computer memory

If the a.m. conditions are not accomplished, the electric valve is supplied for a period of 30 s after starting.

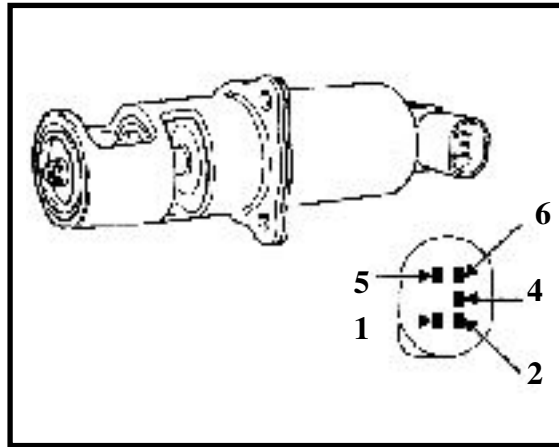
For exhaust gases recycling at idling, it is necessary that vehicle is running more than 10 Km/h.

E.G.R. electric valve is then not supplied for 30 sec. At each return to idling.

The injection computer is not controlling E.G.R in case of the damage of one of the following elements:

- cooling fluid temperature sensor
- air temperature sensor
- atmospheric pressure captor
- vehicle speed transducer
- increased flow electric valve or reduced flow electric valve
- E.G.R. electric valve

Exhaust gases recycling (E.G.R.)



- 1. Coil supply
- 2. Captor supply
- 4. Captor mass
- 5. Coil mass
- 6. Captor exit

Alternator

IDENTIFICATION

ENGINE	ALTERNATOR	INTENSITY
F8Q - 636	VALEO A 11 VI 88	75A

CHECKING

After 15 minutes of heating under a 13.5 V tension.

Engine RPM (rot/min)	Intensity (A)
1000	46
2000	68
3000	71
4000	72

OPERATION / DIAGNOSTIC

These vehicles are equipped with alternators with internal ventilation, incorporated voltage regulator, and charging indicator on the instrument panel, which must operate as follows:

- when the contact is set on, the luminous indicator is on,
- after engine starting, the indicator is off,
- if indicator goes on during engine running, then it shows a charging failure.

INCIDENTS SEEKING

The luminous indicator does not go on when setting the contact on.

In this case, check the following:

- the electric connections of the alternator and of the instrument panel indicator must be well done.
- the indicator bulb is not worn (when the circuit is mass connected, the bulb must be on).

The indicator is going on during engine running.

This shows a charging failure, which may be caused by:

- alternator drive belt broken, charging wire connected to alternator is broken.
- alternator failure (rotor, stator, diodes or brushes)
- voltage regulator failure.

Client is claiming a charging defect, but the luminous indicator is correctly operating.

If the adjusted voltage is smaller than **13.5 V**, check the alternator.

The defect may be caused by :

- worn diode,
- broken phase,
- collector wear.

VOLTAGE CHECKING

Connect a voltmeter to the battery plugs and read its value.

Start the engine and speed the engine till the voltmeter needle is set on the adjusted voltage.

This voltage must be between **13.5 V** and **14.8 V**.

Connect maximum of consumers; the voltage must still between **13.5 V** and **14.8 V**.

ATTENTION !

In case electric arch welding is performed on vehicle, obligatory disconnect the battery and the alternator .

Alternator

DIAGNOSTIC

SPECIAL TOOLS
<p>CLIP-SAGEM tester Accessories for physical measurements</p>

CHECKING OF THE CHARGING CIRCUIT

CLIP-SAGEM tester is enabling the alternator checking, by measuring the generated voltage and intensity with and without electric consumers.

NOTE :

*The ammeter pliers is of inductive type 0 ÷ 500 A.
 Its mounting does not imply the battery disconnecting, enabling so the memorized data preserving and the adapting values from the injection computer.*

Mount the ammeter directly on the alternator charging cable (permanently +), having the arrow directed towards the alternator.

The measurements are to be performed in three stages :

- measurement of the battery voltage with contact taken off, without consumers;
- measurement without consumers of the adjusted voltage and generated intensity;
- measurement, with maximum of consumers, of the adjusted voltage and generated intensity.

The values resulting further to the measurements, lead to following interpretations:

- voltage battery (without consumers) < **12.3 V** – indicating that battery is discharged.
- Without consumers :
- adjusted voltage > **14.8 V** – indicating that voltage regulator is defect;
 - adjusted voltage < **13.2** or charging current < **2 A** – indicating there is a charging failure.

With consumers:

- adjusted voltage > **14.8** – indicating that regulator is defect;
- adjusted voltage < **12.7** – indicating that alternator charging current must be checked compared with its characteristics:

INTENSITY(A)	ENGINE	F8Q
Nominal intensity :		75
Minimal intensity, which must be generated by the alternator to all consumers under operation.		55

If the measured current is too small, check the following:

- alternator wear (brushes, collectors, etc)
- battery connections
- mass stripe between the gearbox and the right longitudinal girder.
- drive belt tension.

If the measured current is correct and the adjusted voltage is too small, the cause may be:

- the vehicle has too many electric consumers;
- the battery is discharged.

Alternator

SPECIAL TOOLS

MOT 1505

Belt tension measurement device

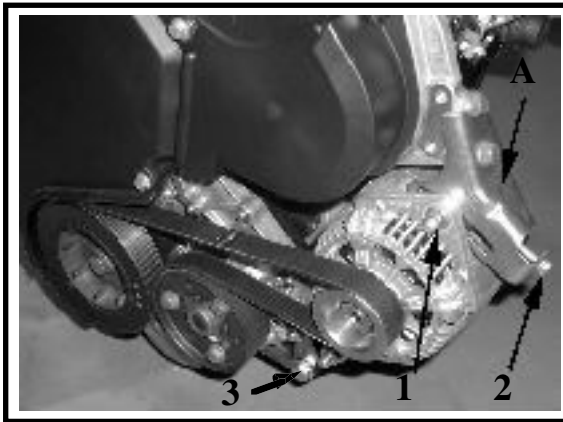
DISMOUNTING

Place the vehicle on a two columns elevator.

Disconnect the battery and the alternator electric connections.

Loosen the alternator blocking screw (1).

Unscrew the tensioning screw (2) and dismount the belt.



Dismount the support (A).

Dismount the alternator attachment screw and remove the alternator.

REMOUNTING

Perform in the reverse order the dismounting operations.

Mount the alternator belt.

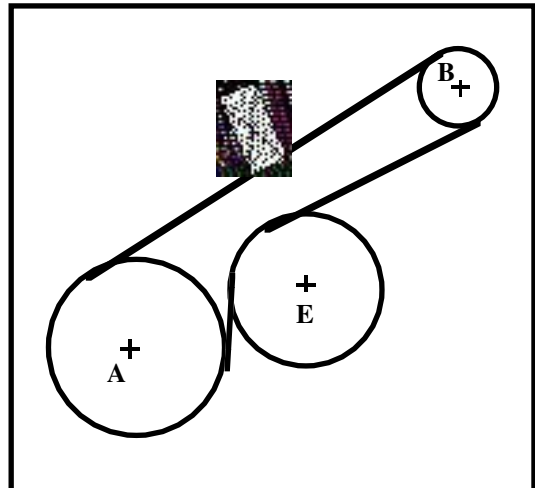
Tighten the belt by acting upon the screw (2) in order to obtain the mounting tension (142).

Block the alternator position by means of the screw (1).

Rotate the engine by three crankshaft rotations.

Place the reading head of the MOT 1505 device, with one of the two captors in front of the belt at a distance of $5 \div 10$ mm from the belt, in the position shown in drawing.

Make vibrating the belt; the measurement is validated by a device “bip”.



Tighten the belt until the stipulated value is obtained (127 ± 5 Hz).

The belt checking and tightening is to be performed with the cold engine, at the environment temperature.

Tighten the alternator attachment screws at the following moment:

- screw M 10 – 3.8 daNm,
- screw M 8 – 1.9 daNm.

Note :

Once a belt is dismantled it can not be remounted.

IDENTIFICATION

ENGINE	STARTER
F8Q - 636	mitsubishi

DIAGNOSTIC

NECESSARY SPECIAL TOOLS
CLIP-SAGEM TEHNIC tester

The starter diagnostic consists in battery voltage measurement and absorbed current intensity measurement during starting stage.

The operation abnormalities, which may be noticed, are the following:

- battery failure = large voltage drop on starter during engine starting stage,
- blocked starter = the absorbed current is very high,
- solenoid failure = the absorbed current is very low.


In order to perform the measurements, it is necessary the engine drive by means of the starter, but stopping the engine starting.

To do that, remove the injection relay placed in the fuse box from the engine compartment.

NOTE :

After performing this checking, erase by means of the SAGEM-CLIP tester, the possible failures memorized by the computer.

Starter

TIGHTENING MOMENTS (daNm)	
Starter attachment screws	4,4
Starter attachment nuts	2,7
Air filter attachment	0,8
Flange attachment screws of the exhaust gases pipe	1,9

DISMOUNTING

Place the vehicle on a two columns elevator.

Disconnect the battery.

Suspend the vehicle and dismount:

- downward pipe attachment nuts on the exhaust manifold,
- starter lower attachment clamp,
- starter attachment screw.

Lower the vehicle and dismount:

- air filter,
- inlet manifold and exhaust manifold (see chapter 12 “**Dismounting – Remounting inlet/exhaust manifold**”).

Disconnect the starter electric connections.

Dismount the attachment screws.



Remove the starter.

REMountING

Check the presence of the starter centering bushing.

Perform the dismounting operations in the reverse order.

Tighten the screws and nuts at the prescribed moment.

Characteristics

COOLING FLUID QUANTITY AND QUALITY

Engine	Quantity* (liters)	Quality
F8Q - 636	6,00	GLACEOL RX (type D) Use only cooling fluid

Mixture: concentrated anti-freeze + de-mineralisized water

Characteristics:

- Protection up to 33 ° +/-2 for temperate and cold countries (antifreeze 48 %)
- Protection up to 40 ° +/-2 for very cold countries (antifreeze 50 %)

THERMOSTAT

Engine type	Opening beginning (°C)	Opening ending (°C)	Stroke (mm)
F8Q	89	101	7,5

DRAINING

Dismount the expansion vessel cap, the engine having the environment temperature.

Open the purges and disconnect the cooling piping connection, in the lowest point (the one from the water pump entrance for engine draining and the radiator lower hose for radiator draining), in order to have the cooling fluid as complete as possible drained.

FILLING

Open the two purging screws.

Fill up the circuit by the expansion vessel hole

Tighten the purging screws in the moment when the fluid is flowing in a continuous jet.

Start the engine, maintaining it at **2500 rot/min**.

Adjust the fluid level in the expansion vessel, during about four minutes.

Close the cap of the expansion vessel.

PURGING

Let the engine run for ten minutes at **2500 rot/min**, until engine fan starting, necessary period for automatic degasification.

Check if the fluid level in the expansion vessel is nearby the mark “Max”.

NOTE :

Do not open the purging screws with engine running.

Retighten the expansion vessel cap with warm engine.

Checking

SPECIAL TOOLS

M.S. 554-01	Adapter
M.S. 554-06	Adapter
M.S. 554-07	Assembly for checking the cooling system sealing

1. CIRCUIT SEALING CHECKING

Mount the adapter **M.S 554 -01** in the expansion vessel valve place .

Connect at the adapter, the **M.S.554-07** device.

Start the engine, let it run till it is warm, then stop it.

Pump in order to create pressure in the circuit.

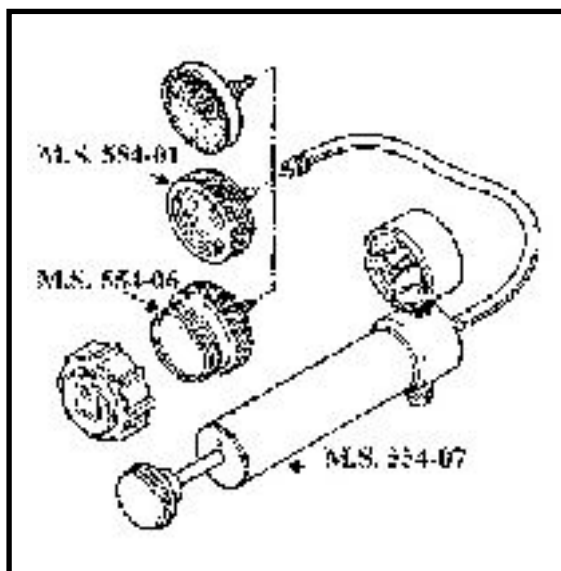
Stop pumping at a value lower with **0.1 bar** then the valve calibrating value (**1.2 bar**).

The pressure must not drop, if not, check for leak.

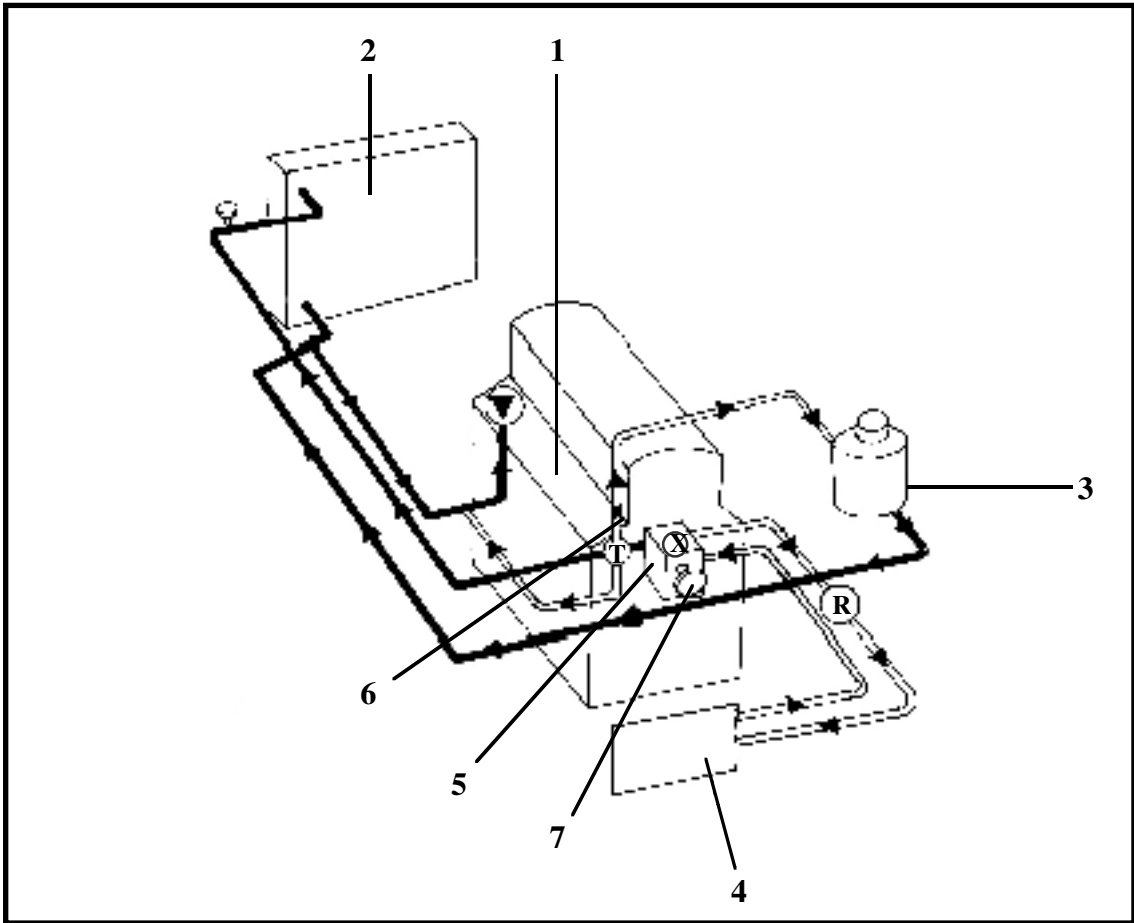
Progressively unscrew the device connection by cooling circuit decompressing, then unscrew the device, and mount back the expansion vessel valve.

2. CHECKING VALVE CALIBRATION






Mount the **M.S. 554-07** device provided with adapter **M.S. 554-06** and restore the pressure in the circuit; this must be stabilized at the valve calibration value **1.2** with a tolerance of **+/- 0.1 bar**.



Cooling system diagram




- 1. Engine
- 2. Radiator
- 3. Expansion vessel
- 4. Blower
- 5. Thermostat support
- 6. Nozzle Ø 3
- 7. Purging screw

-  - Water pump
-  - Thermostat
-  - Purge
-  - Heating valve
-  - Thermocouple

Water pump

SPECIAL TOOLS	
MOT 1202 - 01	Pliers for elastic clips
MOT 1505	Device for belts tension measurement

TIGHTENING MOMENTS (daNm) 	
Water pump screws	1,6
Water pump pulley screws	2
Crankshaft pulley screw	2+115°±15°

DISMOUNTING

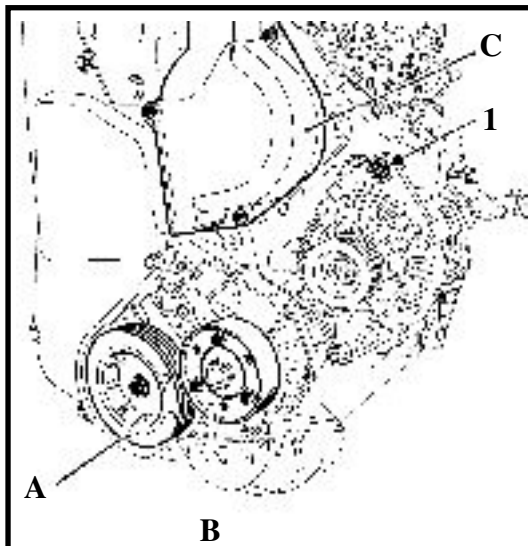
Place the vehicle on a two columns elevator.

Disconnect the battery.

Drain the cooling circuit using the lower hose from the water pump.

Dismount the radiator from the vehicle:

- accessories belt;
- crankshaft pulley (A);
- water pump pulley (B);
- injection pump casing (C);
- screw (1) and tilt over the alternator.



Dismount the water pump attachment screws and remove the pump.



CLEANING

It is very important not to scratch the surfaces for gaskets of the aluminum parts.

In order to dissolve the gasket particles stacked, product “DECAPJOINT” is to be used.

Apply the product on the surfaces to be cleaned, leave it for about 10 minutes, then clean using a wood palette knife.

During performing this operation, use protection gloves.

REMountING

Mount the water pump equipped with a new gasket.

Perform the dismounting operations in the reverse order.

Mount and tighten the accessories belt by means of the MOT 1505 device (see the method described in chapter 16 “Alternator”).

Fill up and purge the cooling circuit with cooling fluid type D “ GLACEOL RX “ (see chapter 19 “ Filling – draining”).

Radiator

SPECIAL TOOLS

MOT 453

Hoses clamp

MOT 1202 - 01

Pliers for elastic clips

DISMOUNTING

Disconnect the battery.

Clamp the hoses from radiator by means of **MOT 453** device.

Dismount the hoses from radiator by means of the pliers for elastic clips **MOT 1202-01** and recover the cooling fluid.

Disconnect the blower connector.

Dismount the side supports from the radiator upper cross bar and remove the radiator assembled with the cooling fan.

Dismount the fan lower attachment on the radiator, from the two screws.

Dismount the two fan attachment screws on the radiator at the upper part and release the radiator.

Drain the radiator and recover the cooling fluid.

REMOUNTING

Perform in the reverse order the dismounting operations.

Perform the cooling circuit filling and purging.

NOTE : When mounting, line up the marking from the hose and related parts.

Exhaust assembly

The exhaust assembly is ensuring the evacuation of the burnt gas produced during engine running and the reduction of the noise level and of the dangerous emissions.

The exhaust assembly is composed of :

- downward pipe (1);
- expansion chamber (5);
- noise silencer (8).

DISMOUNTING

In order to dismount the noise absorber assembly, perform the following operations:

Loosen the clamp (6) between the expansion chamber (5) and the noise silencer (8).

Dismount the attachment elastic rings (7) of the noise silencer.

Dismount the noise silencer by rotating it and pulling it backwards.

In order to dismount the expansion chamber, perform the following operations:

Dismount the attachment nuts (3) of the «Matex» coupling between the expansion chamber (5) and the primary downward pipe (1).

Loosen the clamp (6) between the expansion chamber (5) and the noise silencer (8).

Dismount the expansion chamber.

In order to dismount the downward pipe, perform the following operations:

Dismount the engine shield.

Dismount the coupling bar.

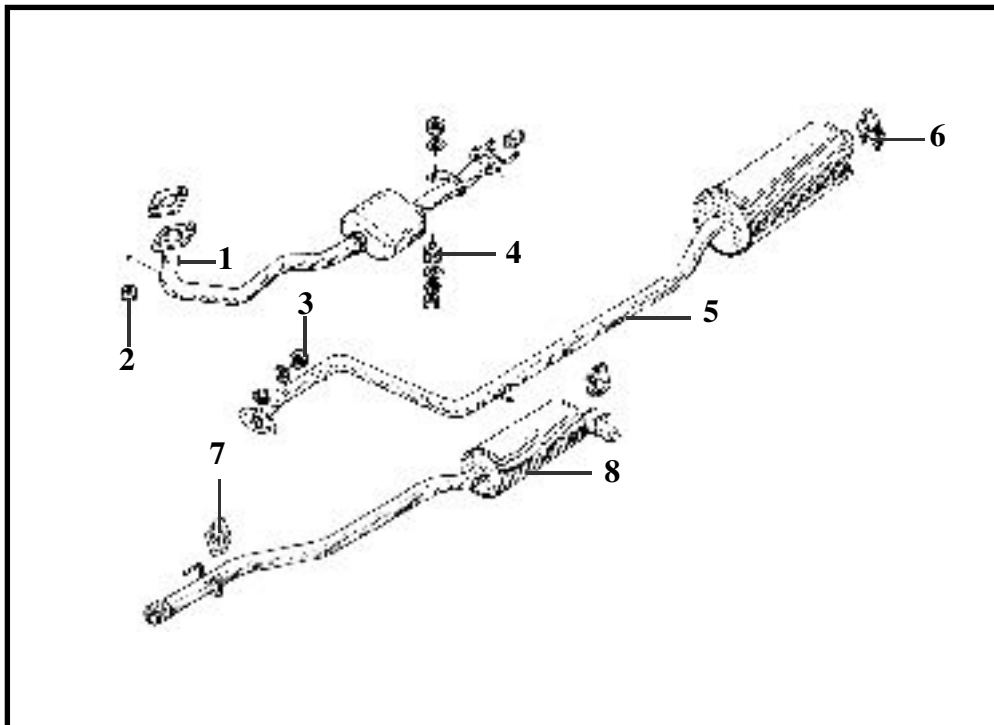
Dismount the two screw-nuts (2) of downward pipe attachment on the exhaust gallery flange.

Unscrew the attachmentnuts (3) of the «Matex» coupling between the expansion chamber (5) and the primary downward pipe (1).

Dismount the elastic buffer RON (4).

Extract the downward pipe.

Exhaust assembly

**REMOUNTING**

Perform the remounting starting from the downward pipe on the exhaust collector and finishing with the noise silencer.

ATTENTION !

During operation, the catalyst reaches high temperatures, therefore it is necessary not to stand in areas where combustible materials may come in contact with this one, with danger of fire.

Tank draining

Necessary special tools

Pneumatic pump for fuel tank draining
Pliers for “clic” clips

TANK DRAINING

The lack of the fuel electric pump in DIESEL version is imposing the use of a pneumatic pump for fuel tank draining.

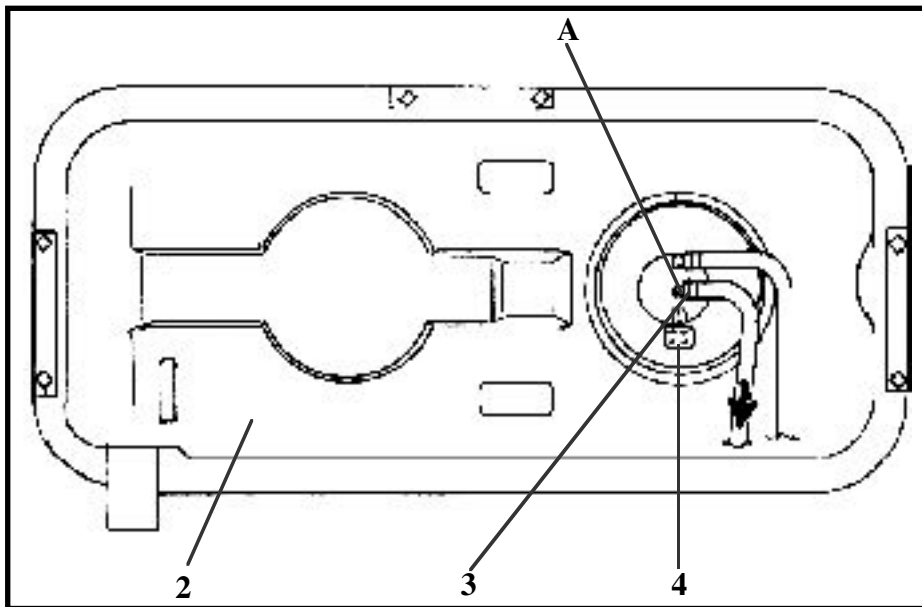
In order to drain the fuel tank, proceed as follows:

Disconnect the battery.

Dismount the tank visiting cover.

Disconnect the supply contact (4) for fuel level transmitter.

Disconnect the connection (3) and connect the hose of the pneumatic pump on the exit connection (A).



Drain the fuel tank (2).

Dismounting – Remounting tank

DISMOUNTING

In order to dismount the tank, perform the following operations:

Disconnect the battery.

Dismount the attachment screws of the visiting cover.

Disconnect the rear wiring from the tank cover.

Dismount the hose attachment clip (3) on the air exhaust (4) connection for Dacia 1304 Pick-Up, consequently the sealing gasket (6) for DACIA 1304 Drop-Side.

Dismount the attachment clips of the supply-return hoses.

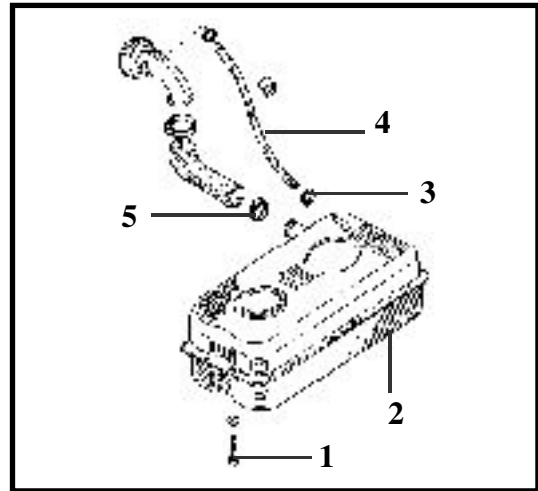
Dismount the attachment clip (5) of the petrol connection on the lower filling cap.

Lift the vehicle on a two columns elevator.
Dismount the fuel tank (2) attachment screws (1) on the carriage body.

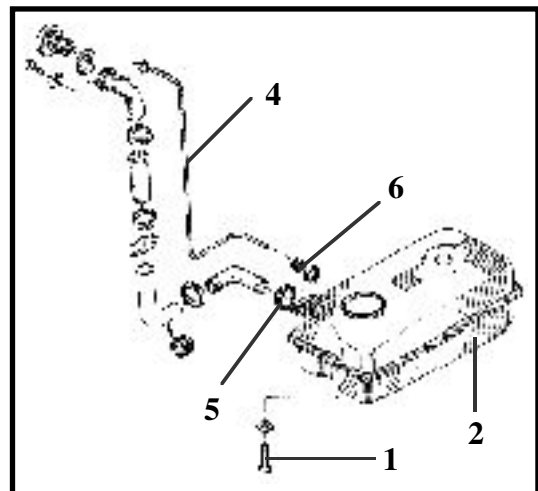
Release the tank.

REMOUNTING

Perform in the reverse order the dismounting operations.



Dacia 1304 Pick Up



Dacia 1304 Drop Side, Dacia Double Cab

Fuel level transmitter

DISMOUNTING

Disconnect the battery.

Dismount the tank visiting cover.

Disconnect the connection connector with the rear wiring.

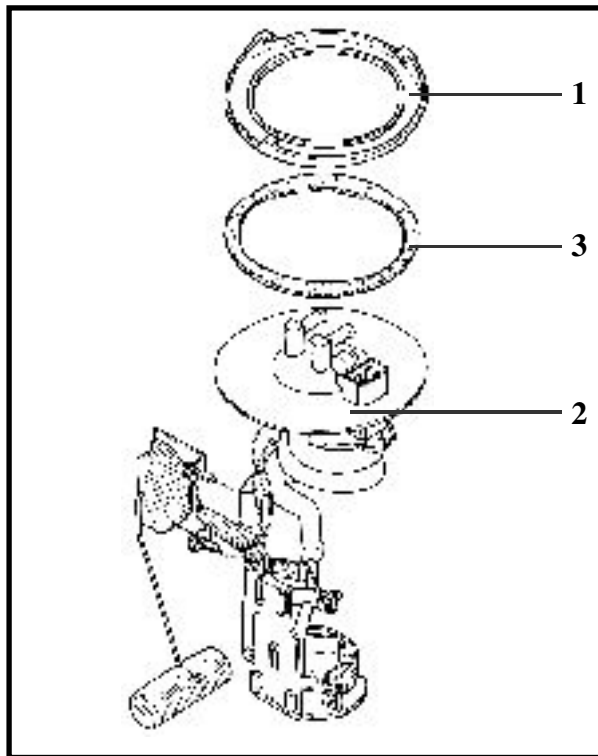
Detach the hose clips connected to the tank cover.

Turn anti-clockwise the blocking ring (1) of the tank cover, with about **1/3 rotation**, until it is released from its attachment shoulders.

Remove the immersed assembly (2) from the tank, carefully lifting it.

Disconnect the two transmitter wires.

Dismount the two transmitter attachment screws from this assembly.



REMountING

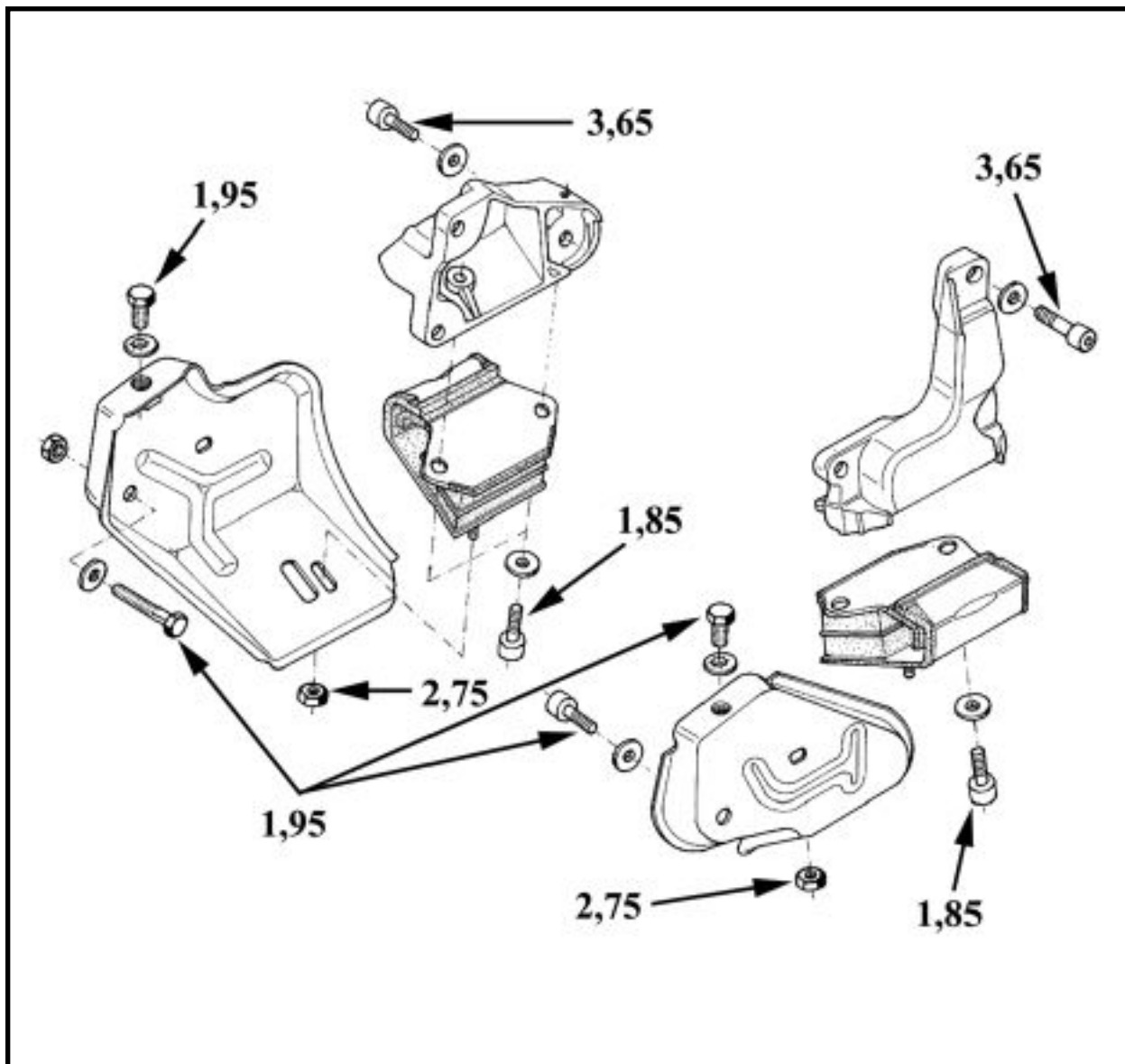
Perform in the reverse order the dismounting operations.

NOTE :

When remounting, take care that sealing gasket (3) of the tank cover is in good condition, the flange is tight fixing it on the tank and the hoses connected to the tank are well attached by means of clips.


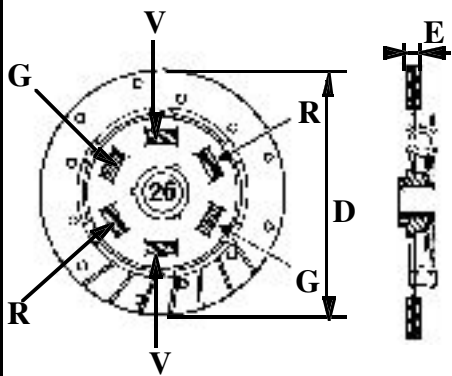
Tightening moments (daNm)

TIGHTENING MOMENTS (daNm)



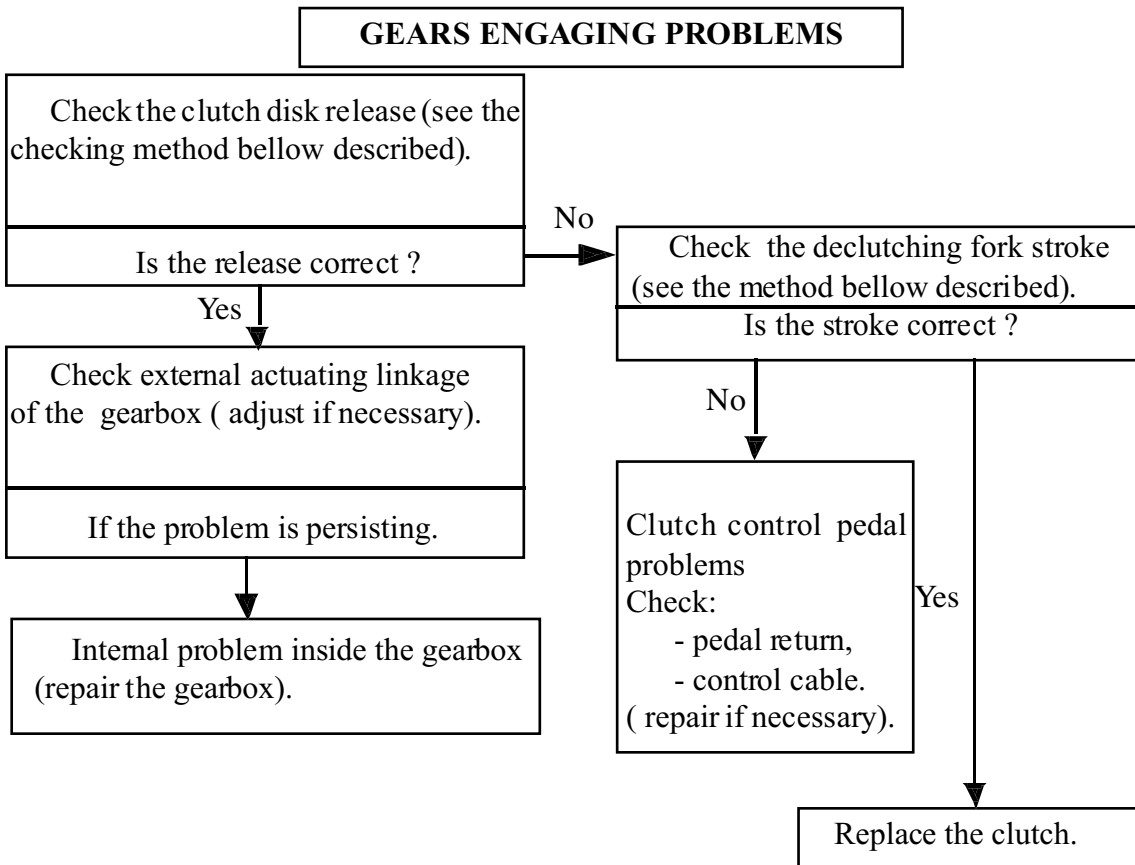
CLUTCH Identification

20

VEHICLE TYPE	ENGINE TYPE	MECHANISM	DISK
Pick Up Drop Side Double Cab	F 8 Q	 200 CPOV 3700	<p> 26 grooves D = 200 mm E = 6.8 mm </p> <p style="text-align: right;"> V: Green R: Red G: Grey </p> <div style="text-align: center;">  </div>

CHARACTERISTICS

- Single disk dry clutch cable controlled.
- Clutch mechanism with diaphragm spring.
- Clutch disk with elastic hub.
- Pressure bearing with balls permanently in contact with the diaphragm (constant pressing force of **5 daNm**).



CHECKING METHOD

“ DISK RELEASE “

The checking is to be performed at idling, warm engine.

- declutch,
- wait for three seconds,
- engage the reverse driving (engagement must be performed without noise).

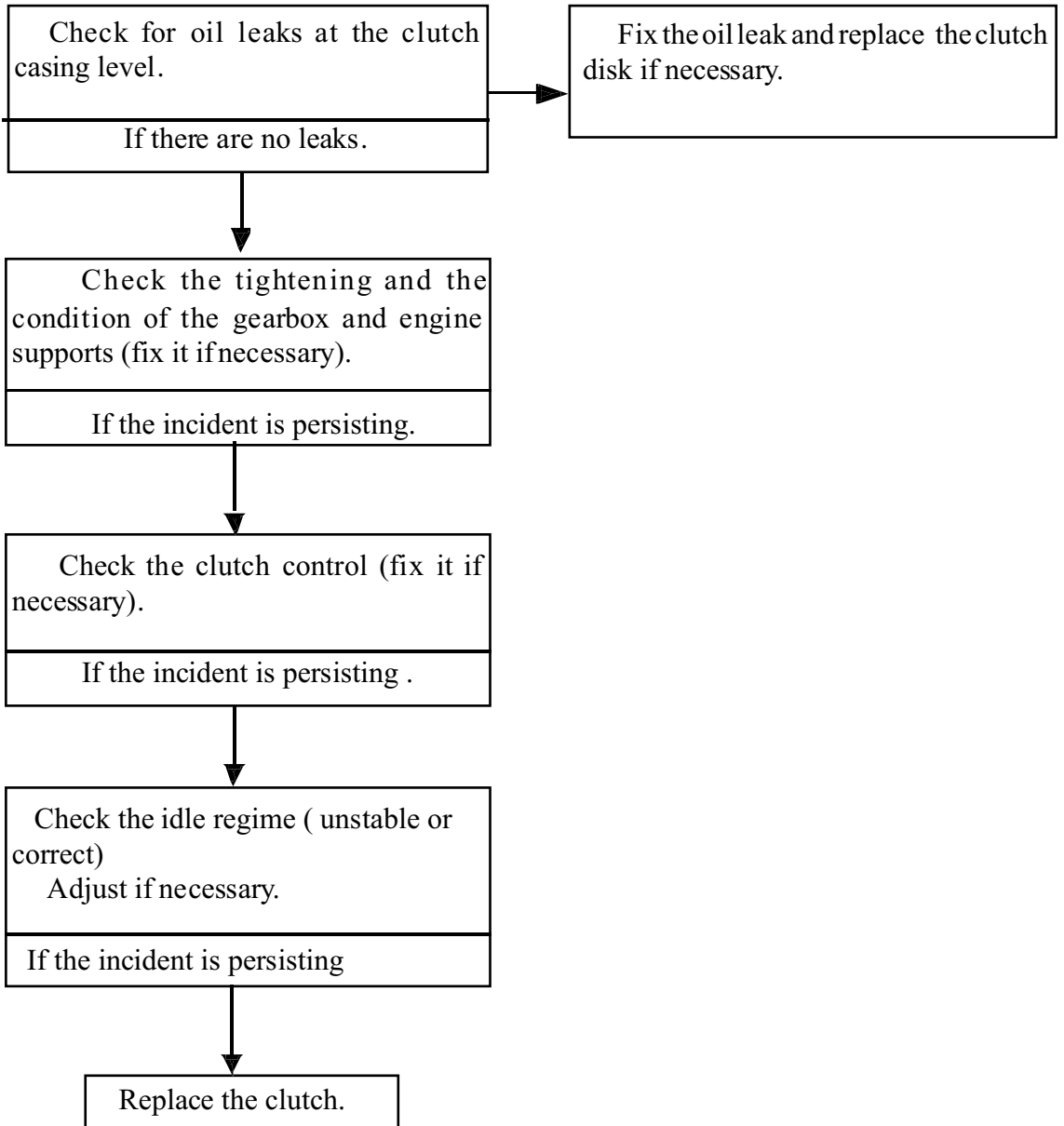
CHECKING METHOD

“ DECLUTCHING FORK STROKE “

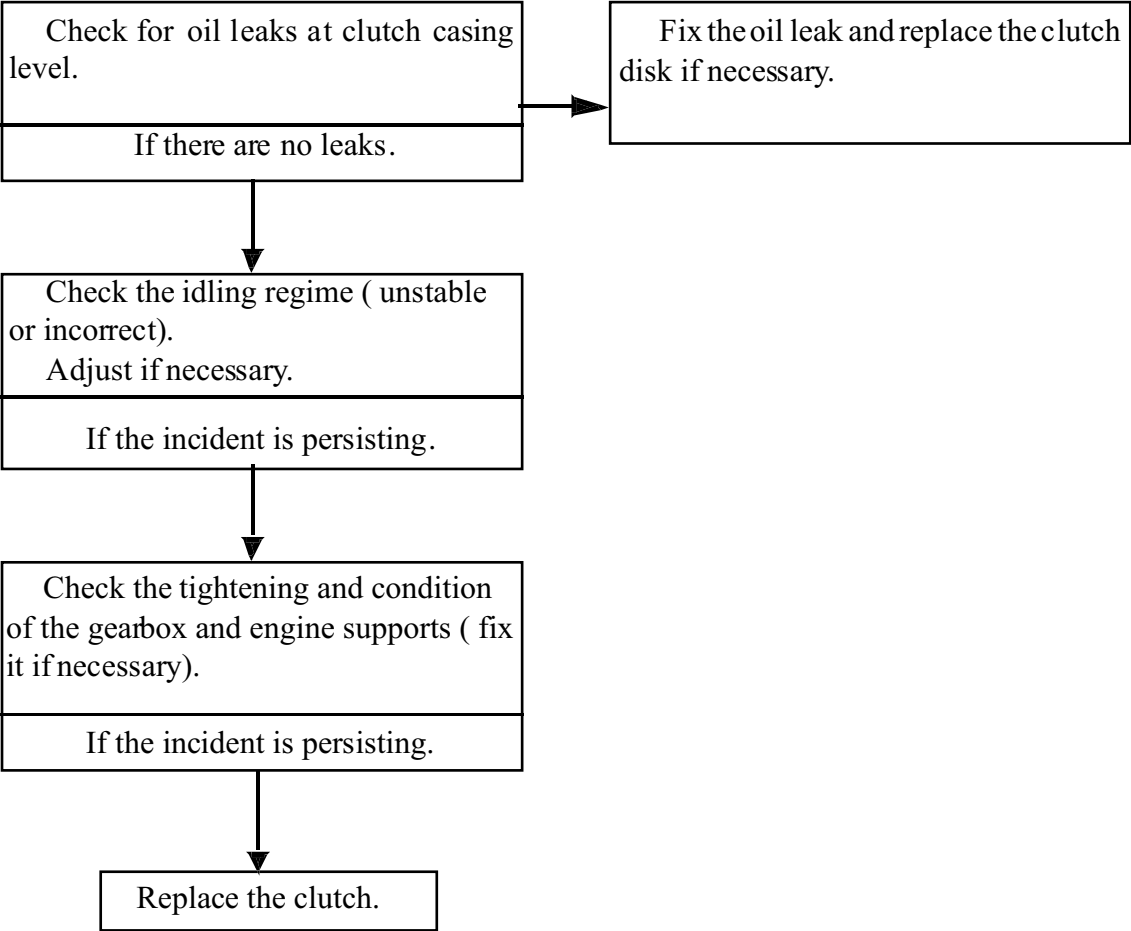
By means of a lineal perform the following operations:

- measure the distance between the fork upper part and the clutch cable support, in the clutched position,
- measure the distance between the fork upper part and clutch cable support, in the declutched position,
- calculate the difference between the two values (the fork stroke) and compare it with the reference value (**maximum 40 mm**).

EFFECT OF TREPIDATION



NOISE AT FREE CLUTCH
(low and regular noise subject to engine regime)



Mechanism - Disk

REPLACEMENT

This operation is to be performed after dismantling the gearbox off the vehicle.

SPECIAL TOOLS

MOT 582 Flywheel immobilizing sector

TIGHTENING MOMENTS (daNm)



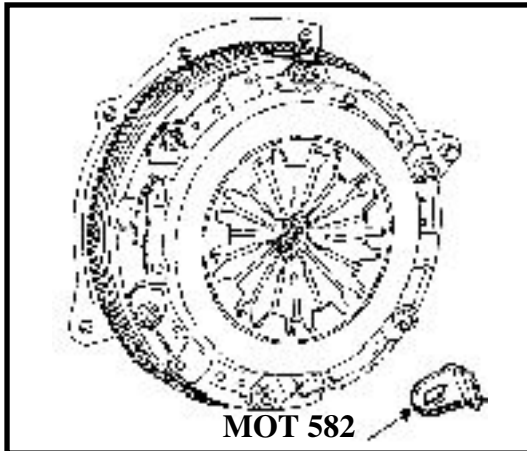
Clutch mechanism attachment screws 2

DISMOUNTING

Mount the immobilizing sector **MOT 582**.

Dismount the clutch mechanism attachment screws.

Dismount the mechanism and the clutch disk.



Perform a visual checking of :

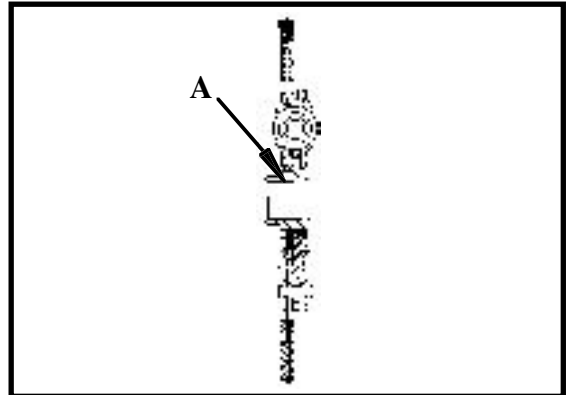
- the wear of the engine flywheel and of the mechanism plate,
- the condition of the starter crown,
- the sealing at crankshaft sealing gasket level,
- the condition of the bearing from the crankshaft extremity,
- the wear of the pressure bearing guide and of the control fork,
- the conditions of the clutch shaft grooves.

Replace the damaged parts and clean the clutch shaft grooves.

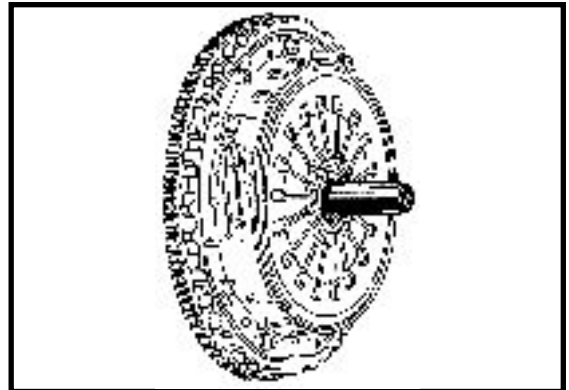
REMOUNTING

Degrease the friction surface of the engine flywheel.

Check the disk sliding on the clutch shaft. Mount the clutch disk (with hub protuberance (A) towards the engine flywheel).



Center the clutch disk by means of the centering device delivered in the clutch kit.



Mount the clutch mechanism.

Progressively screw “radial way”, the mechanism attachment screws, then tighten them at the required moment.

Dismount the immobilizing sector **MOT 582**.

Lubricate with grease **UM 170 LiCaPb2M**:

- the bearing guiding tube,
- the declutching fork sliders.

CLUTCH

Engine flywheel

REPLACEMENT

This operation is to be performed after dismantling the clutch and gearbox off the vehicle.

SPECIAL TOOLS

MOT 582 Flywheel immobilizing sector

TIGHTENING MOMENTS (daNm)



Flywheel screws

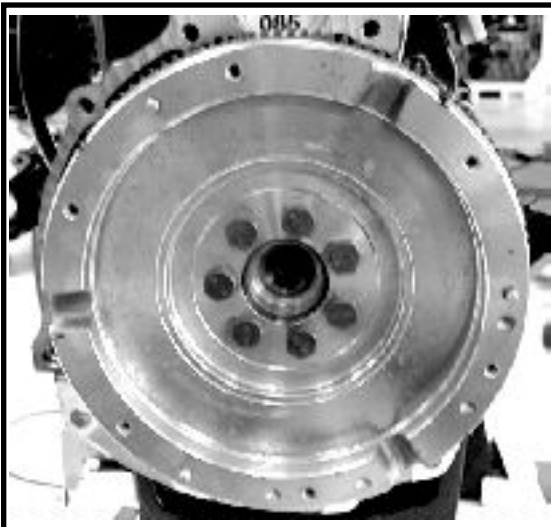
5 ÷ 5.5

DISMOUNTING

Mount the immobilizing sector **MOT 582**

Dismount the flywheel attachment screws

The screws are not to be reused.
Dismount the engine flywheel.



REMOUNTING

Clean the holes thread from the crankshaft by means of a dry gauze.

Degrease the flywheel seating surfaces on the crankshaft.

Mount the flywheel with new screws (the screws thread shall be lubricated with **LOCTITE FRENETANCH**)

Tighten the screws at the required moment.

Dismount the immobilizing sector **MOT 582**.

REPLACEMENT

This operation is to be performed after dismantling the clutch and gearbox.

SPECIAL TOOLS

Bearing extractor

DISMOUNTING

Extract the bearing by means of a bearing extractor.

REMOUNTING

Lubricate the external diameter of the new bearing with **LOCTITE 648**

Mount the bearing by slightly tapping upon the bearing external ring by means of an adequate tube.

Characteristics

The gearbox NG 1, Ng 7 are monobloc type, mechanical in steps (five steps for forward driving and one step for reverse driving).

The speed steps for forward driving are provided with Borg-Warner synchronizers.

The reverse driving step is not synchronized.

GEARBOX		CONIC GEARING	MILEAGE GEARING	NO OF TEETH	RATIO	ENGINE	CLUTCH
TYPE	VARIANT						
365 (NG1)	18 (104)	8x33	6x13	i) 42 x 11 ii) 38 x 17 iii) 34 x 23 iv) 29 x 28 v) 29 x 38 MÎ 40 x 13	3,818	F8Q 636	200 CPOV 3700
50C (NG1)	31 (103)	-	6x14		2,235		
51C (NG7)	02 (101)	9x41	6x14		1,478 1,030 0,760 3,070		

Gearbox capacity (in liters) : CV 365 2.3

CV 50C 2.2

CV 51C 2.3

Oil used: **DACIA OIL SUPERGEAR 80W 90 API GL5.**

VALORI DE REGLARE

Conic distance : **59 mm.**

Pre-tightening of the differential bearings: - reused bearings : free, no clearance,
- new bearings : **1-3 daNm.**

Teeth clearance : **0.12 – 0.25 mm.**

Clearance in the differential gearing : **maximum 0.1 mm.**

TIGHTENING MOMENTS (daNm)



- **Half-crankcases assembling screws:**
 - **M 7** 1,9 - 2,4
 - **M 8** 2,8 - 3,3
- **Rear cover attachment screws** 1 - 1,4
- **Clutch crankcase attachment screws:**
 - **M 8** 2 - 2,8
 - **M 10** 3,2 - 4
- **Reverse driving selector axle nut** 2 - 2,5
- **Crown attachment screws** 9 - 11
- **Speedometer endless screw** 10 - 12
- **Primary shaft nut** 6
- **Differential nut lock screw** 2,4
- **Draining or filling plug** 2 - 2,8
- **Counter nut of the speedometer guide attachment screws** 0,1 - 0,3
- **Reverse driving contact** 2 - 3
- **Cross piece attachment screws:**
 - **M 6** 1 - 1,4
 - **M 7** 1 - 1,4
- **Aerating valve** 1 - 1,9
- **Return shaft nut** 4 - 4,5
- **Plug M 16** 1 - 1,5
- **Secondary shaft flange nut** 10 - 12
- **M 8 attachment screws of the differential flange 4 x 4** 2 - 2,8
- **M 7 attachment screws of the differential cover 4 x 4** 1 - 1,4

Ingredients

MATERIALS

The following parts are to be obligatory replaced, if they were dismantled: papergaskets, oil seal rings, crown attachment screws, speedometer endless screw, elastic pins, primary shaft nut, secondary shaft nut, reverse driving selector axle nut, return axle nut.

MATERIAL	USE
Oil DACIA OIL SUPERGEAR 80W 90 API GL5	Parts lubrication upon mounting.
LOCTITE 518	Sealing : half crankcases; clutch crankcase; flange on the differential hub (4x4).
RHODORSEAL 5661	Transmission pins sealing.
LOCTITE 577	Reverse driving contact ; plug M 16
Grease UM 170 Li Ca Pb 2M	Joint and contact parts greasing

MAINTENANCE

The maintenance of the gearboxes consists in repeatedly performing certain inspections, according to the performed mileage as mentioned bellow :

- gearbox oil replacement : is to be performed at the **1 000 km** inspection and than periodically, every **20 000 km**;
- checking of gearbox oil level – periodically, every **10 000 km**.

The oil in the gearbox is replaced through the emptying (**B**) and filling (**A**) plugs.

The oil in the gearbox should reach the level of the orifice uncovered by the filling plug (**A**).

If the level is lower than that, add oil until it starts flowing through the orifice.

The plugs are tightened at the required moment of **2.4 daNm**.



Manual gearbox : Dismounting – Remounting

SPECIAL TOOLS

CV 31 B	- Mandrels kit for elastic pins
PF 509	- Maintaining cross pieces
PF 476	- Ball joints extractor

TIGHTENING MOMENTS (daNm)



Upper attachment nuts and screws of the gearbox on the engine	4,4
Lower attachment screws of the gearbox on the engine	2,1
Cardan transmission attachment screws on the gearbox flange	4,1
RPM sensor attachment screws	0,8
Steering auxiliary connecting rods nuts	4
Piulițe rotile superioare	5
Upper ball joint nuts	9
Speeds control rod nuts	1,5

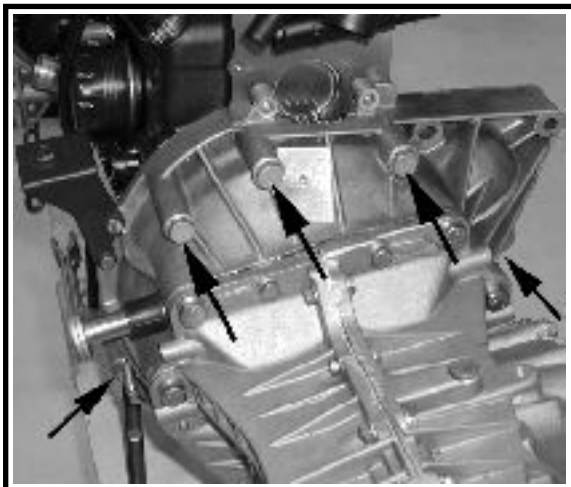
DISMOUNTING

Place the vehicle on a two columns elevator.

Dismount the battery.

Drain the oil from the gearbox if this one is going to be disassembled.

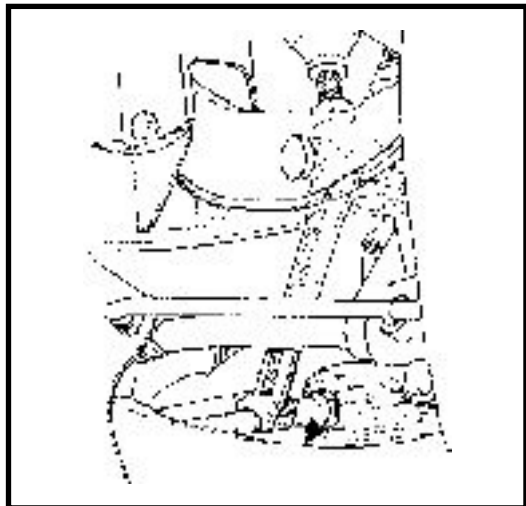
Dismount the starter (see chapter 16 “Starter Dismounting-Remounting”)



Dismount the clutch cable from the gearbox

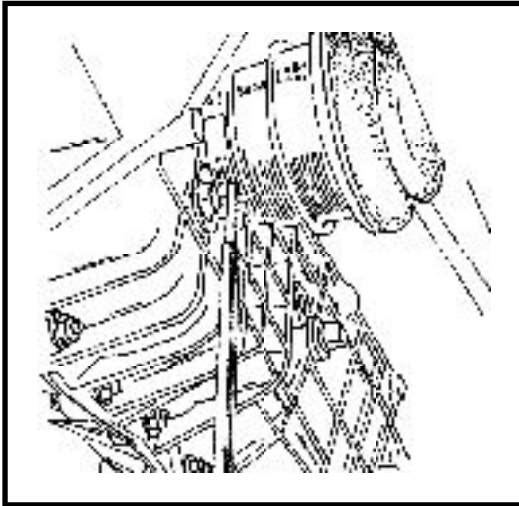
For the gearbox types 365 and 51C:

- mount the crosspieces PF 509, for front half axles maintaining, between the shock absorber attachment axle and the suspension lower arm axle.



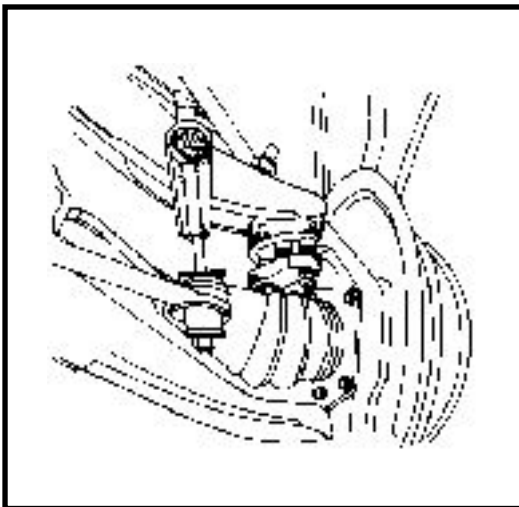
- Dismount the front wheels.
- Remove the transmission pins by means of the mandrel C.V. 31B.

Manual gearbox : Dismounting – Remounting



Dismount by means of the PF 476 extractor :

- the steering connecting rods ball joints,
- the suspension upper ball joints.



Swing over the steering knuckle and remove the transmission from the transmission gear.

Disconnect the vacuum hoses and the electric connection of the vacuumcapsule (4x4).

Dismount the attachment screws of the cardan transmission on the gearbox flange.

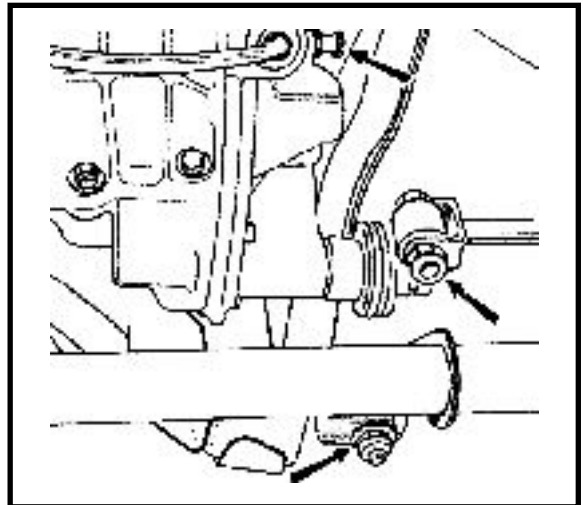


Swing over the cardan transmission.

Disconnect the gears control from the gearbox.

Dismount the nut of the exhaust attachment elastic buffer.

Detach the flexible shaft.



Disconnect the reverse driving contact connector

Sustain the rear part of the gearbox by means of a jack.

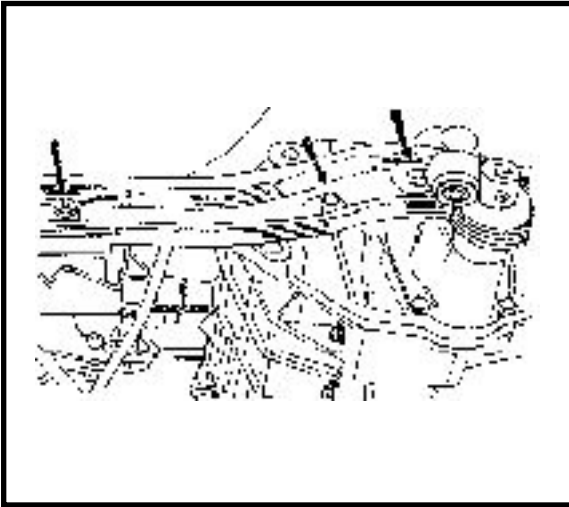
Manual gearbox : Dismounting – Remounting

Dismount:

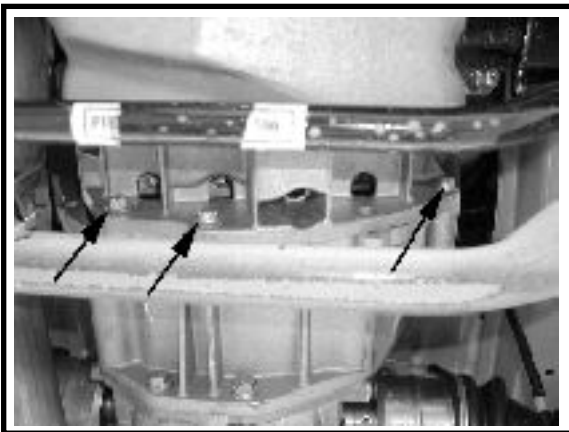
- the attachment screws of the rear cross member on the gearbox and recover the stiffening cross pieces.

- The attachment nuts of the cross member on the longitudinal girders.

Dismount the cross member.



Dismount the lower attachment screws of the gearbox on the engine.

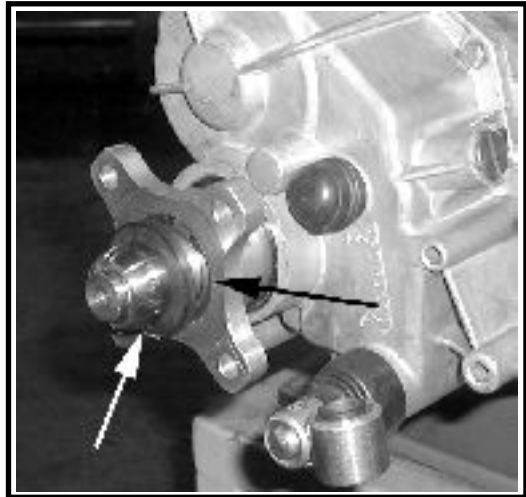


Detach the gearbox off the engine, by backward drawing.

When dismantling the gearbox, take care not to catch the clutch mechanism.

Dismount the centering kit lock of the longitudinal transmission by means of a safety pliers.

Remove the centering kit.



REMOUNTING (PARTICULARITIES)

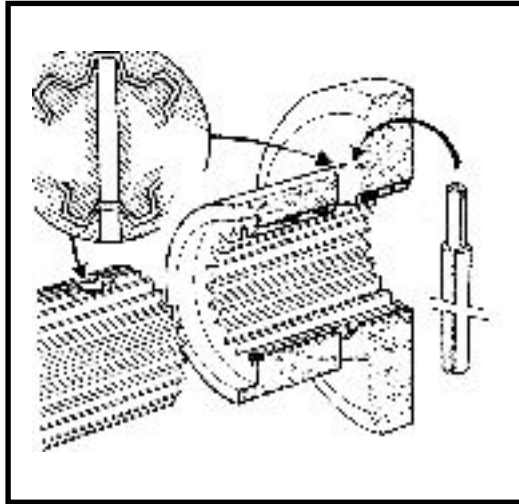
Check the presence of the centering bushings on the clutch crankcase.

Grease the pressure bearing guiding tube and the transmission gears grooves with **UM LiCaPb 2M grease**.

Position and engage the transmission with the transmission gears, using the mandrel **CV 31B** for centering.

Insert the new elastic pins with the notches oriented towards the wheel and seal the ends using **RHODORSEAL5661**.

Manual gearbox : Dismounting – Remounting



Fill the centering cam place from cardan transmission flange with **UM 185 Li 2** grease.
Perform the dismounting operations in the reverse order
Tighten at the required moment the screws and nuts.
Fill up with oil the gearbox.
Check the speeds engagement.

Dismount the gearbox off the vehicle
 Dismount the reverse driving lamp contact.
 Dismount the clutch casing.



DISMOUNTING OF THE COUPLING MECHANISM 4X4 (G.B. 51 C)

Dismount the attachment pin of the connection bolt (1) between the vacuum capsule shaft and the control lever and take out the bolt.

Dismount the vacuum capsule support from the gearbox casing.

Take out the safety washer (2) of the control lever fixing.

Dismount the control lever (3) of the front transmission.

Dismount the threaded plug (4) for stroke limiting.

Unscrew the attachment screws (5) of the deflector and flange on the differential hub.

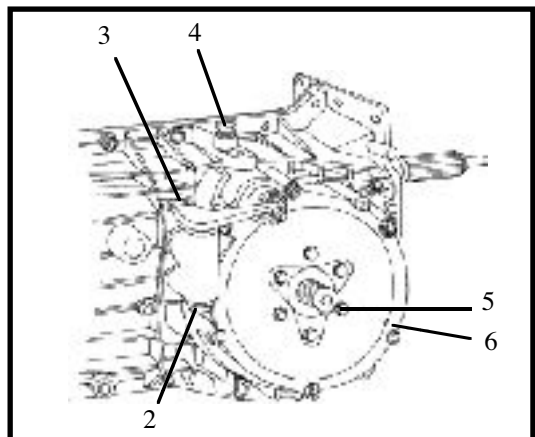
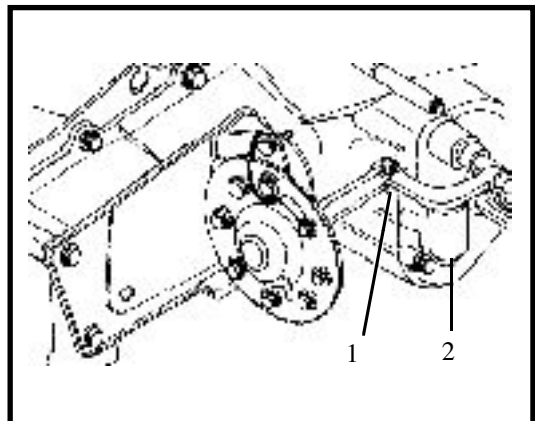
Take out the deflector and flange.

Unscrew the attachment differential cover screws (6) on half crankcase.

Take out the differential cover assembly and its paper gasket.

Dismount the bearing from the differential hub by means of an extractor (only if this is used and must be replaced).

Take out the annular oil ring from the differential cover by means of a screwdriver.



Repair

Clean the annular oil seal place from the differential cover.

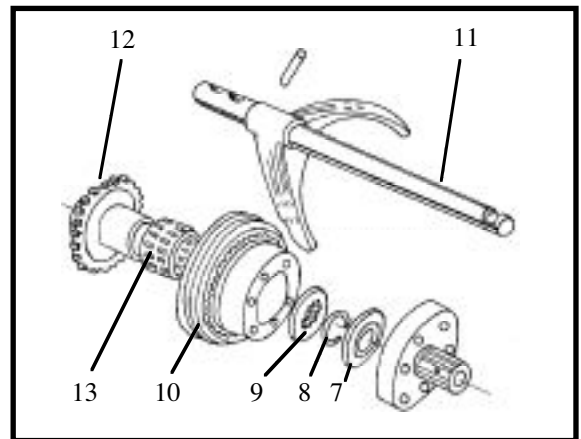
Take out the cover (7) from the hub differential.

Dismount the safety ring (8) from the propeller shaft gear.

Take out slotted shim (9).

Extract the hub-gear assembly (10) together with fork and shaft (11).

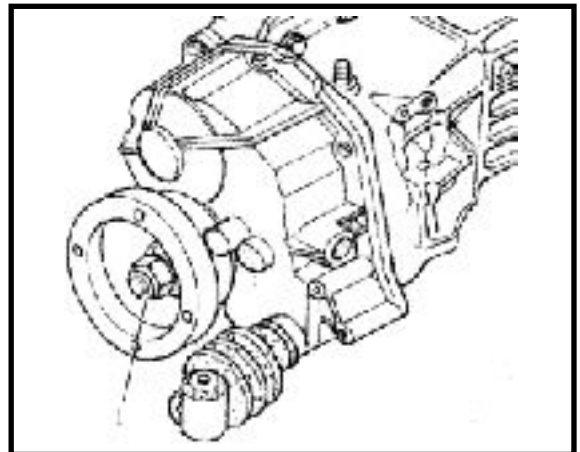
Take out the claw (12) and the pins housing (13).



DISMOUNT THE VELOCITY STEP V

Dismount the flange attachment nut flange on secondary shaft and take out the flange (G.B. 50C , 51 C).

Bring the gearbox to the dead point and dismount the back cap.

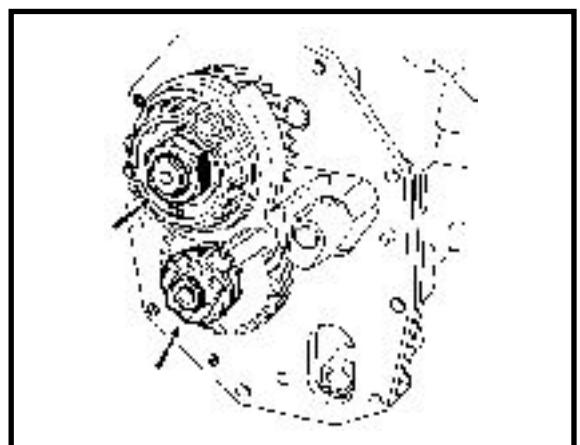


Engage the velocity step V and the reverse one.

Unscrew the primary shaft nut.

Bring the gearbox to the dead point, then engage velocity step IV.

Take out the speedometer spring by means of CV 204 wrench at GB 365.



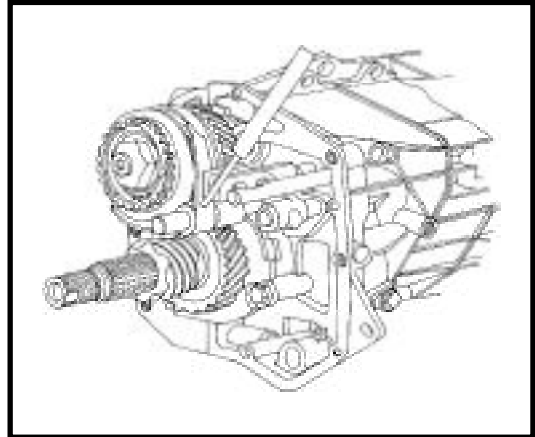
Dismount the velocity step V fork pin by means of 31 B mandrel.

Observe the hub and the tooth gear sliding mechanism of velocity step V.

Dismount:

- the synchronizing mechanism and the fork of velocity step V;
- the velocity step V pinions.

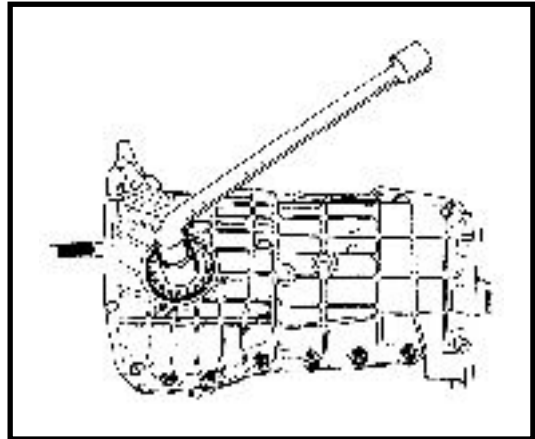
Dismount the distance plate.



For G.B. 365 and 51 C

Dismount the nuts lock washers for the differential gear adjustment.

Dismount the adjustment nuts of the differential gear by means of the CV 377 wrench.



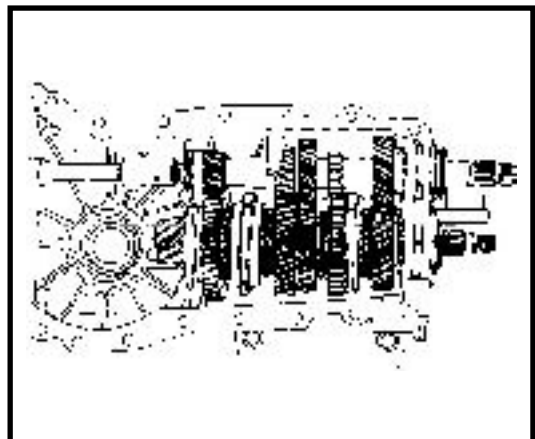
Rotate the gearbox with the left side upwards.

Unscrew the attachment screws of the crankcases.

Remove the left half crankcase.

Dismount :

- the differential gear(G.B.365, and 51 C);
- the secondary shaft and the lockerpin of the biconical bearing;
- the primary shaft.



FORKS AND SHAFTS DISMOUNTING

Bring the fork **III - IV** to the dead point.

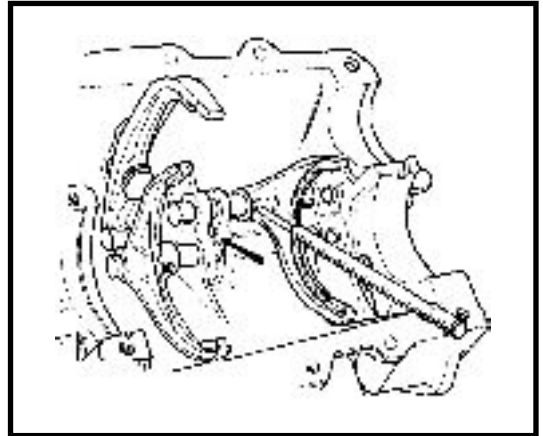
Dismount the speed **V** fork shaft and recover :

- the interlocking ball between forks shafts **III-IV** and **V**.

- the ball and the attachment spring of the speed **V** fork shaft;

Dismount the elastic pin of fork **III - IV** by means of the **CV 31 B** mandrel.

Take out the interlocking disk of the forks shafts.

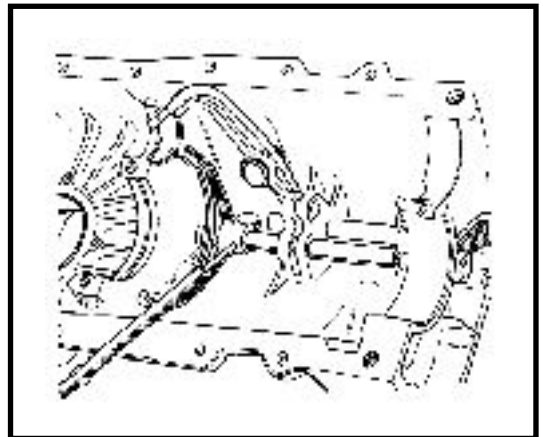


Engage speed **I**.

Move toward back the reverse driving shaft.

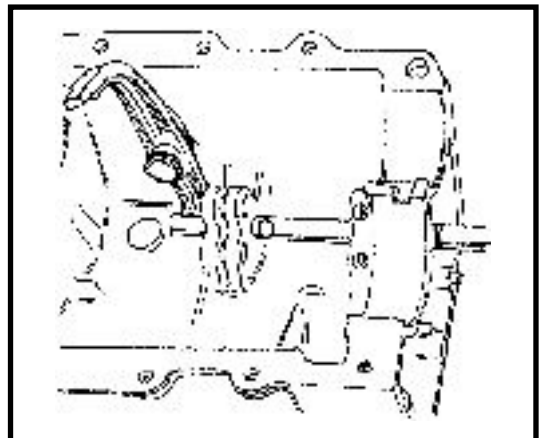
Dismount the elastic pin of fork **I - II** by means of the **CV 31 B** mandrel.

Dismount the shaft and the fork, recover the attachment spring and ball.



Dismount :

- the reverse selector;
- the reverse driving shaft.

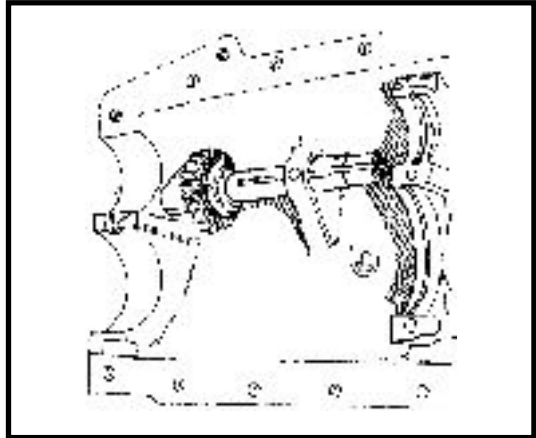


REVERSE DRIVING PINION DISMOUNTING

Dismount:

- the lock ring;
- the shaft;
- the pinion;
- the friction ring;
- the guiding wedge.

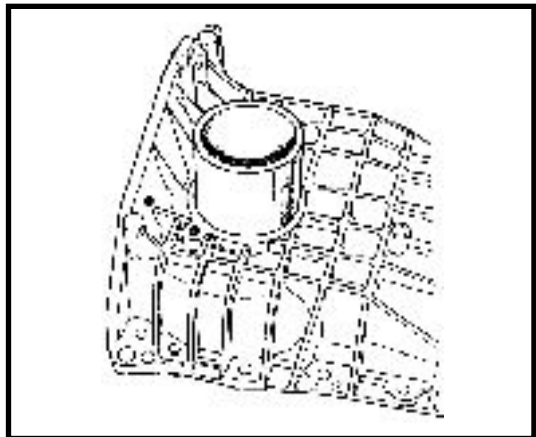
Recover the spring and the attachment ball.

**HALF CRANKCASES DISASSEMBLING**

Dismount the outer ring of the bearing by means of a trod.

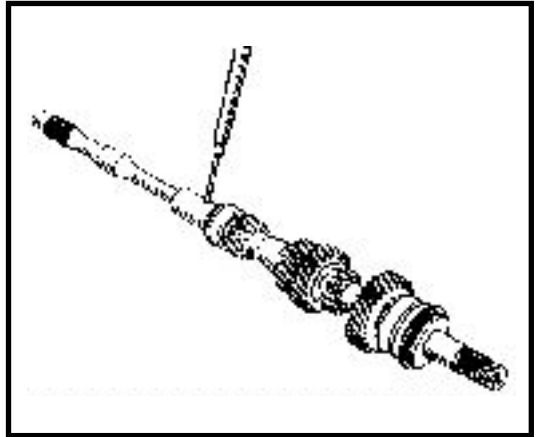
Dismount the annular oil seals from the differential gear adjustment nuts.

(G.V. 365 i 51C).



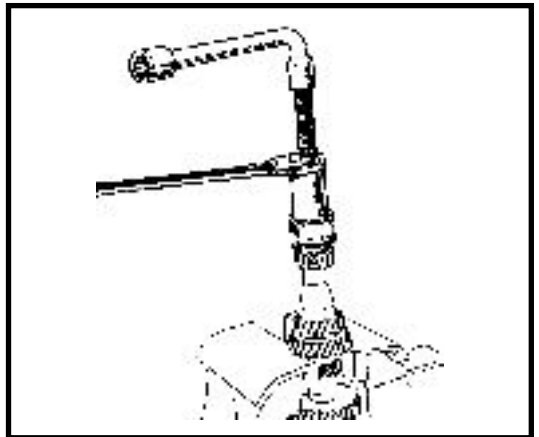
PRIMARY SHAFT DISASSEMBLING

Dismount the elastic pin by means of the **CV 39** mandrel and separate the clutch shaft from the primary shaft.

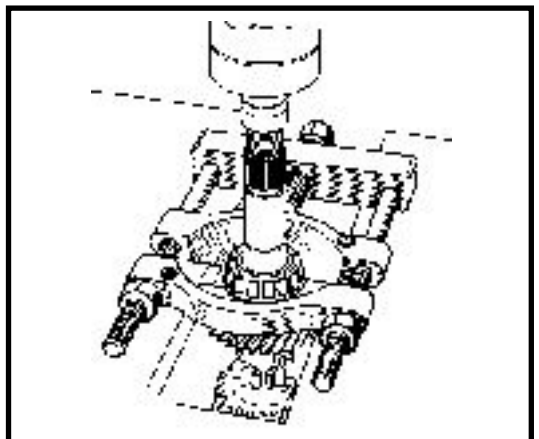


Take out the outer rings of the bearings and the rollers cage.

Dismount the bearing inner ring by means of the **CV 22** extractor.



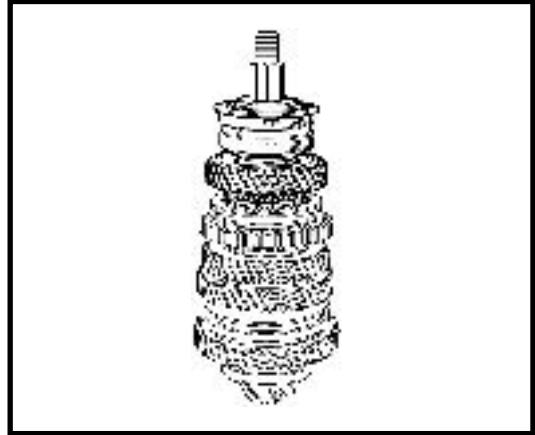
Dismount the biconical bearing on a press by means of the **TS 65** extractor.



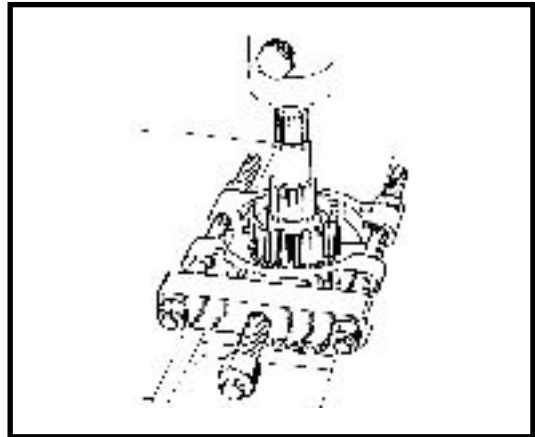
SECONDARY SHAFT DISASSEMBLING

Dismount :

- the biconical bearing;
- the ring for the adjustment of the distance between the cones gear;
- the velocity step **IV** pinion and its synchronizing ring;
- the synchronizer tooth gear sliding mechanism **III - IV**.

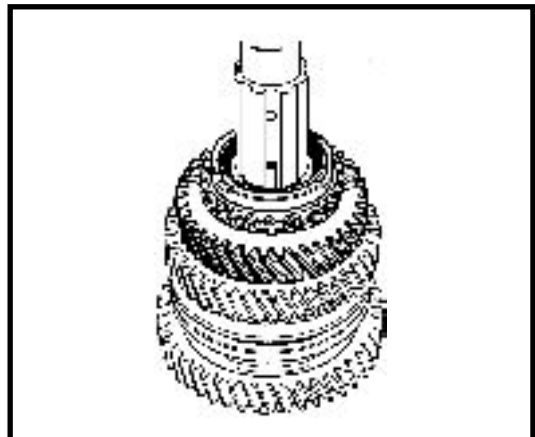


Dismount the speeds **III-IV** synchronizer hub on a press, by means of the **TS 65** extractor.



Dismount:

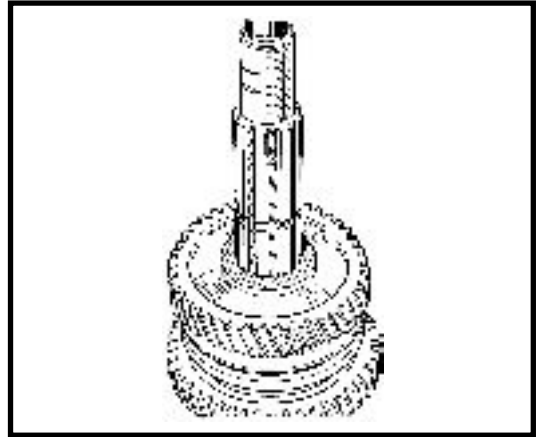
- the wedge of the lock ring of the speed **III** pinion;
- the lock ring of speed **III** pinion;
- the speed **III** free pinion and its synchronizer ring.



Dismount:

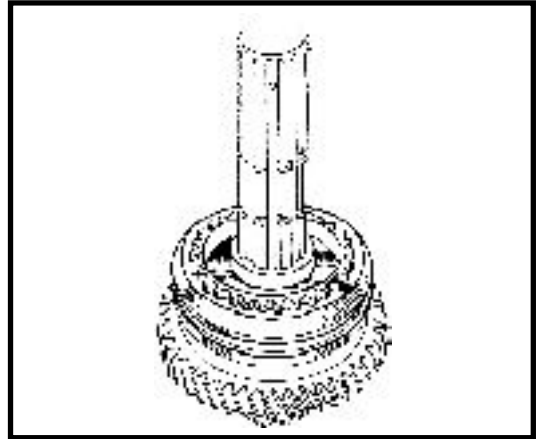
- the lock ring of the speed **II** pinion;
- the speed **II** free pinion and its synchronizer ring;
- the lock ring of the synchronizer hub speeds **I -II**;
- the synchronizer tooth gear sliding mechanism of speeds **I – II** (observe the position of the gear sliding corresponding to that of the synchronizer hub).

Dismount on a press, the hub of the velocity steps **I-II** synchronizer, by means of the **TS 65** extractor.



Dismount:

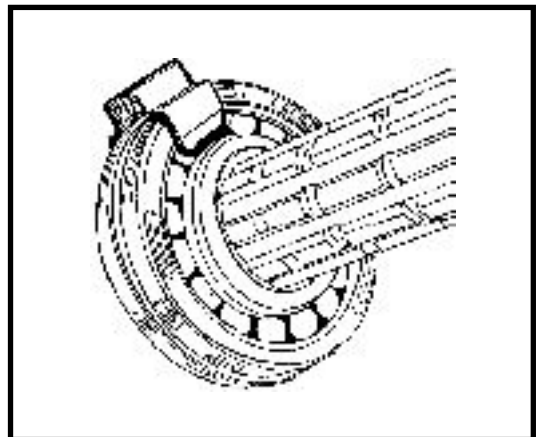
- the lock ring of the speed **I** pinion;
- the synchronizer ring of speed **I** pinion;
- the speed **I** free pinion.



IMPORTANT!

Place the maintaining device of the bearing outer ring.

The bearing inner ring is stuck to secondary shaft, so that the bearing cannot be replaced.

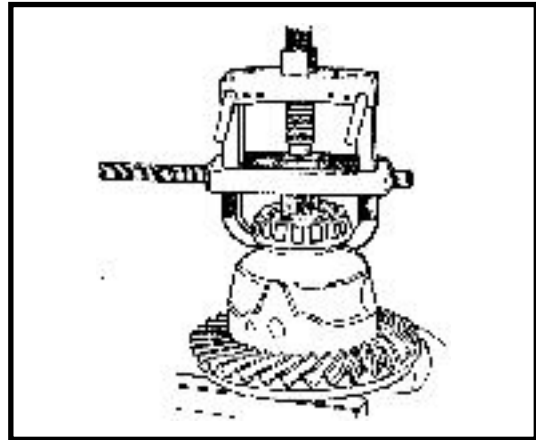
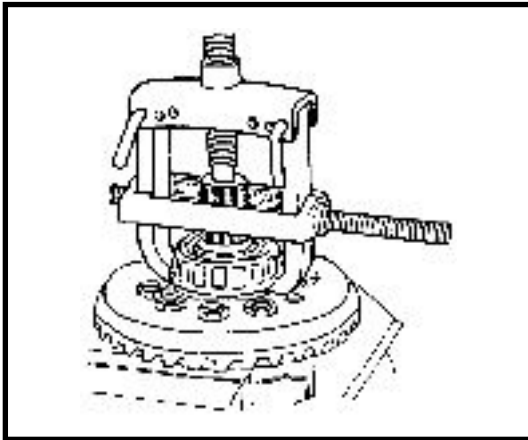


**DIFFERENTIAL GEAR DISASSEMBLING
(G.B. 365 'i 51C)**

Unscrew two opposite attachment screws of toothed crown.

Dismount the bearings by means of the **CV 28 A** extractor, provided with the **CV 48** grippers.

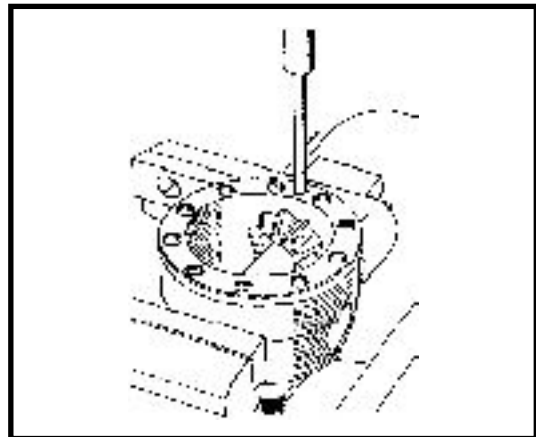
Dismount the toothed crown; **the screws may not be re-used.**



Dismount the elastic attachment pin of the pinions shaft, by means of the **CV 31 B** mandrel.

Dismount :

- the differential pinions shaft;
- the different pinions;
- the friction washers;
- the propeller shaft pinion.



BACK CAP DISASSEMBLING

Dismount :

- the speedometer pinion guide and its sealing gasket;
- the speedometer pinion.

Dismount the nut at the end of the rocking lever; take out the shaft.

Dismount the plug of the **V** velocity step pusher, recover the spring, the pusher and the gasket.

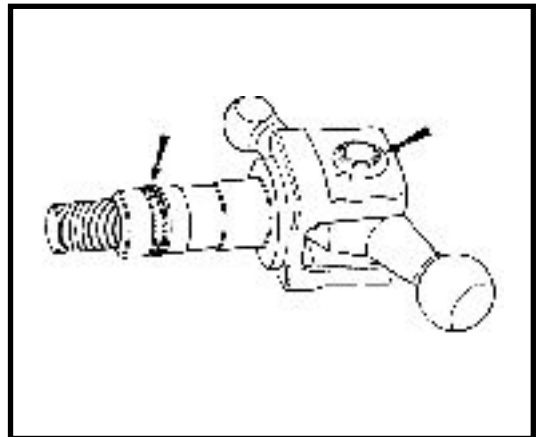
Dismount the elastic pin from the end of the control shaft, by means of the **CV 344** mandrel.



Dismount the lock ring of the rocking lever shaft; dismount the shaft and the rocking lever.

Dismount :

- the sealing gasket;
- the control shaft bushing (if it is worn).



SECONDARY SHAFT ASSEMBLING

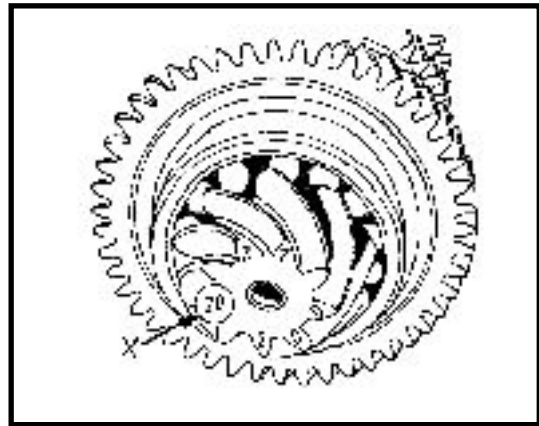
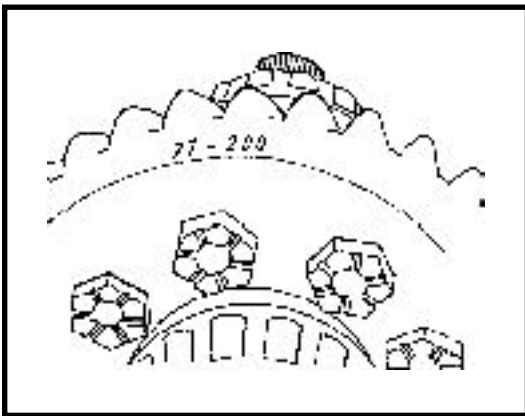
For **G.B. 365** и **51C**.

The differential drive pinion and the toothed crown are lapped together.

Replacing of one part obligatory requires replacing the pair part.

A pairing number is marked both on the pinion end and on the toothed crown.

No other markings shall be taken into consideration besides the pairing number.

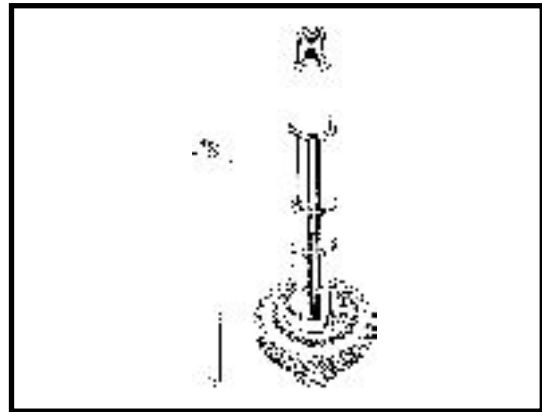


NOTE: All spare parts will be lubricated with 80W 90 oil before being mounted.

Mount on the secondary shaft:

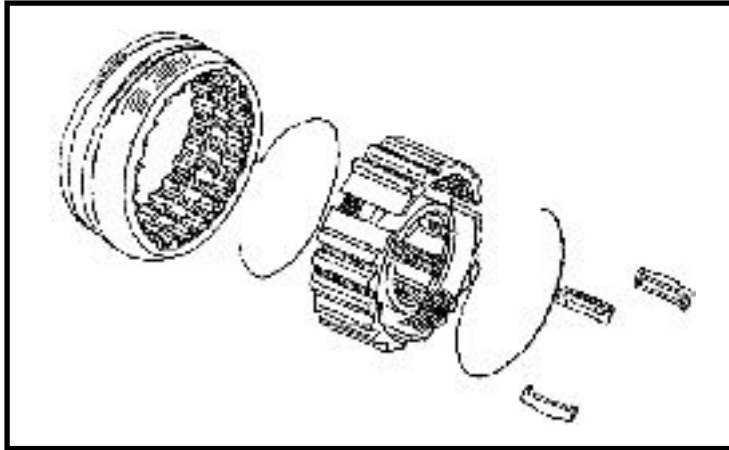
- the velocity step I pinion together with its synchroniser ring ;
- the lock washer of the velocity step I pinion ;
- a false wedge, made from a normal wedge, with a curved end ; the false wedge is introduced in a channel which has a lubricating hole.

Remove the maintaining device of the bearing outer ring.



Mount the velocity steps **I – II** synchroniser hub:

- the three wedges ;
- the two springs ;
- the toothgear sliding mechanism (for the re-used parts, observe the markings made upon dismantling).

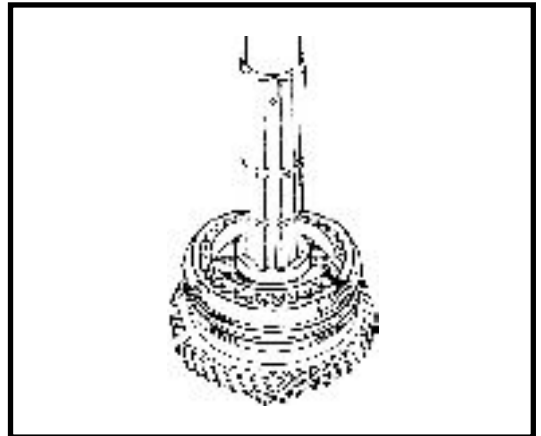


The mounting of the hub I – II can be performed in two variants :

1. By difference of temperature (for gearbox made until **26.04.1999**, series **172321**). Place the velocity steps I – II synchroniser hub on electrical stove, at a 120°C , dgr temperature, and keep it there for about 15 minutes, to heat it.

2. Without difference of temperature (for gearbox made after **26.04.1999**, series **172321**).

The pressing force for the hubs I – II and III – IV will be max. 2000 daN.



Press the assembled hub until it comes into contact with the velocity step I pinion lock.

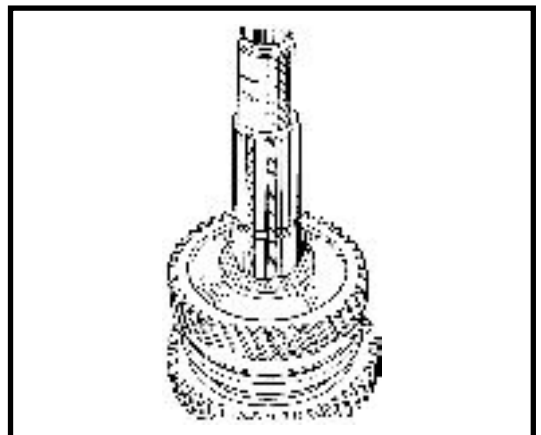
Center the three wedges in the synchronising ring grooves.

Remove the false wedge.

Mount the hub I – II washer.

Mount the velocity step II pinion together with its synchroniser ring.

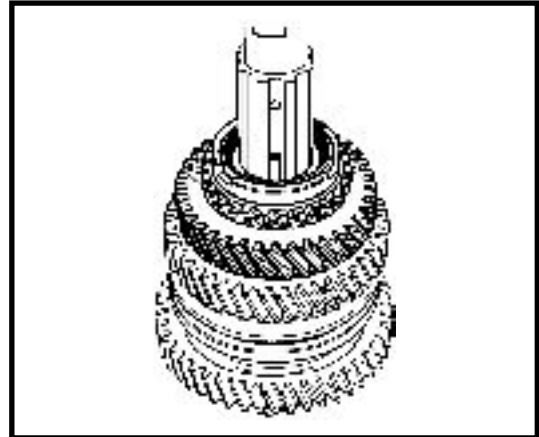
Mount the velocity step II pinion washer.



Mount the velocity step **III** pinion and its synchronising ring.

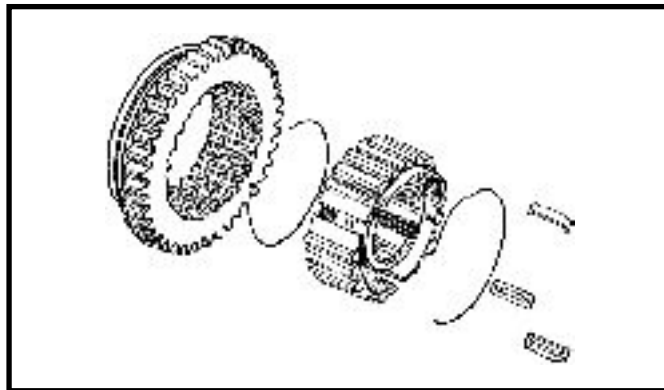
Mount :

- the velocity step **III** pinion lock washer;
- the lock wedge of the washers; the wedge is mounted in a channel which has a lubricating hole.



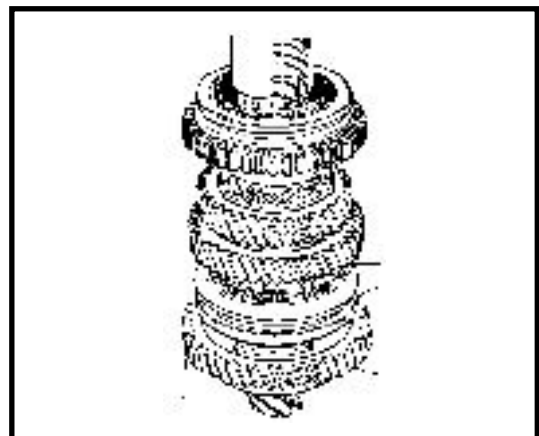
Mount on the velocity steps **III – IV** synchroniser hub :

- the three wedges ;
- the two springs ;
- the tooth gear sliding mechanism , with its groove opposite to the groove hub.



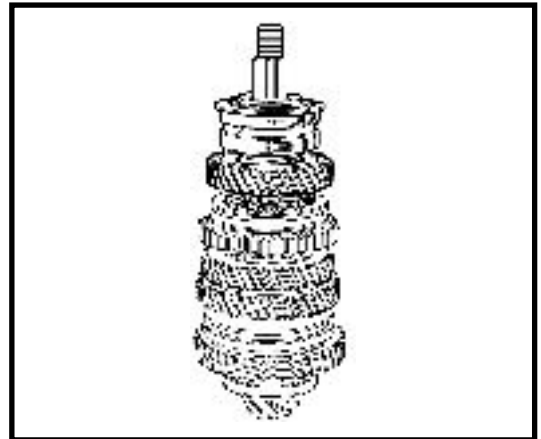
Press the assembled hub until it comes into contact with the lock washer of the velocity step **III** pinion ; the groove in the hub shall be oriented towards the velocity step **III** pinion.

Centre the three wedges in the synchroniser ring grooves.



Mount :

- the velocity step **IV** pinion and its synchroniser ring;
- the adjustment washer for the conical mechanism distance, recovered upon dismantling;
- the biconical bearing;
- the spacer;
- the velocity step **V** pinion;
- the elastic washer.



Mount the speedometer endless screw (**G.B. 365**).

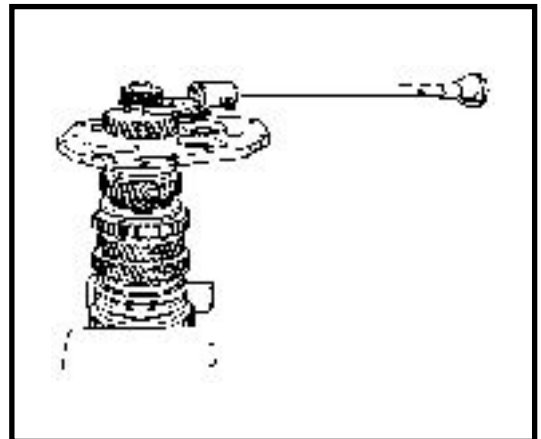
Mount the speedometer endless and flange of the secondary shaft (**G.B. 51 C**).

Tighten the velocity step **I**, in a soft dies vice.

Engage gearbox in speed **I**.

Tighten at the required moment (**10-12 daN**) the secondary shaft flange nut or speedometer endless screw by means of the **CV 204** wrench.

The speedometer endless screw shall not be locked by straining in order to enable adjustment of the conical distance.

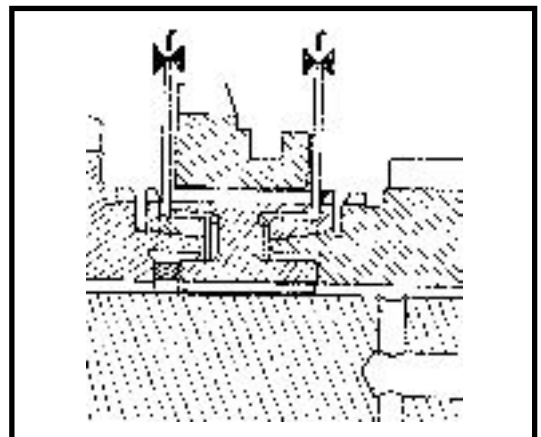


Check the clearance (**J**) between the synchronising rings of the velocity steps **I** and **II** and the sides of the hub : **J = min.0,2 mm**.

The check shall be performed as follows:

- the pinion in contact with the hub;
- the synchronising ring in contact with the pinion con.

Check in the sameway also the clearance of the synchroniser rings of the velocity step **III** and **IV**.



PRIMARY SHAFT ASSEMBLING

Mount the biconical bearing.

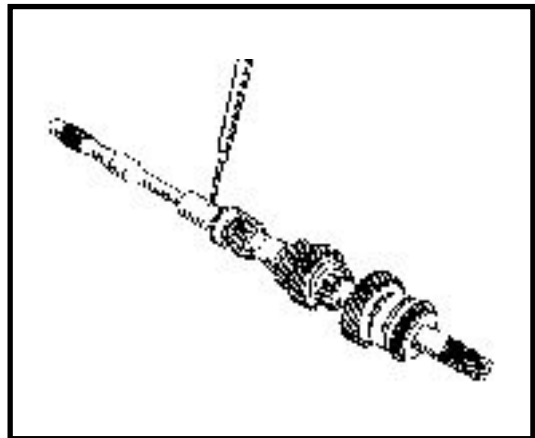
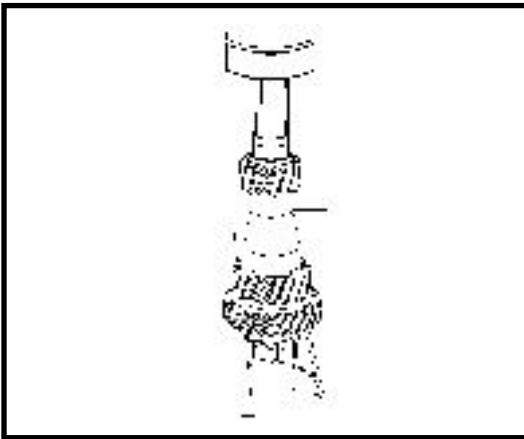
Press the needle-roller bearing inner ring.

Mount the outside bearing ring together with its rollers casing.

Mount the lock washer.

Mount the clutch shaft ; place a new compensation washer between the end of the shaft, in order to prevent the noise.

Mount the elastic pin by means of the **C.V. 31B** mandrel.



DIFFERENTIAL GEAR ASSEMBLING (G.B. 365 and 51C)



Place the following parts in the casing:

- the textolite washer ,with the lubricating grooves directed towards the propeller shaft pinion ; use **1.96 - 2 mm** thick washers. The **2.03 - 2.07 mm** thick washers shall be used only if the clearance between the propeller shaft pinion and the differential pinion is very big.
- the propeller shaft pinion, lubricated with oil;
- the friction washers of the differential pinions;
- the differential pinions.

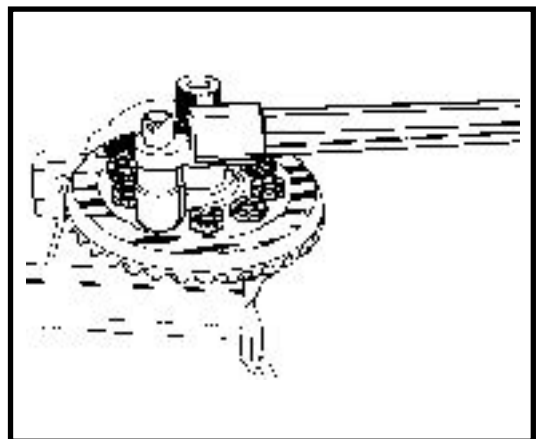
Mount the differential pinions shaft and center the pin shaft with the one in the casing.

Mount the elastic pin by means of the **G.B. 31 B** mandrel; the pin shall be introduced about **5 mm** in the differential gear casing.

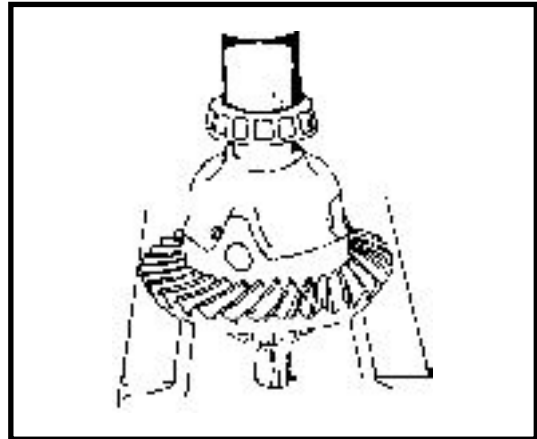
Lubricate the second propeller shaft pinion with oil and place it in the casing.

Mount the toothed crown on the differential gear casing with new screws.

Tighten the screws at the requiredoment (**9 -11 daNm**).



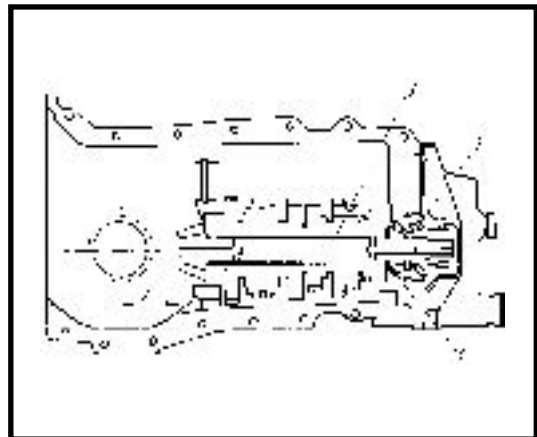
Mount the differential bearings on a press.



ADJUSTMENT OF THE CONICAL DISTANCE (G.B.365 AND 51 C)

The differential drive pinion is in the correct position, when its front is at distance **A=59 mm** from the toothed crown axis.

This position is obtained by mounting a washer (1) of the adequate thickness between the biconical bearing (2) and the differential drive pinion shoulder(3).



CAS EXCEPTIONNEL

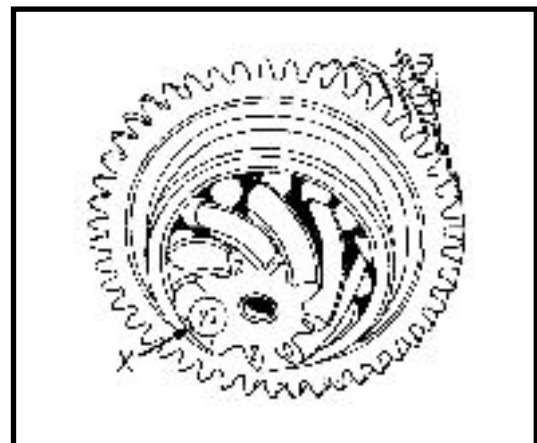
There may be situations when the value **A=59 mm** is not correct value for the pinion positioning.

The difference (**X**) between the actual value and the value **A=59 mm** is marked on the front side of the pinion near the number marked for pairing with the toothed crown.

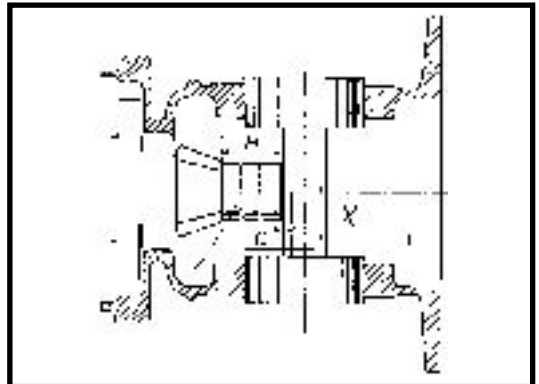
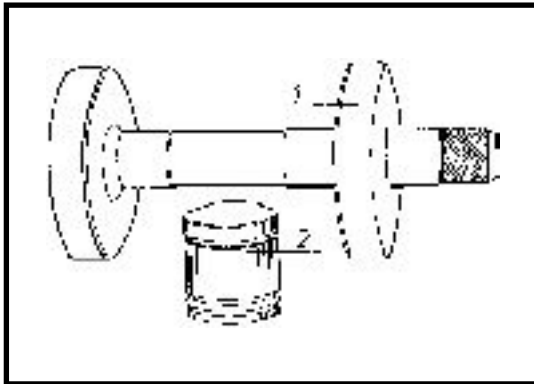
The value is given in hundredths of mm.

EXAMPLE : X = 20 (0,2 mm)

In this situation ,the distance between the conical mechanisms shall be **A + X**. In a.m. case: **A + X = 59 + 0,2 = 59,2 mm**



The checking of the conical distance is performed by means of the **CV239 - 01** control device, which materializes the toothed crown axis and by means of a spacer **CV 239 - 02**, with the height **H = 48,5 mm**. The height (H) of the **48,5 mm** spacer plus radius (C) of the device axis of **10 mm** represents: **48,5 mm + 10 mm = 58,5 mm**.



The distance value (X) measured between the spacer and the pinion face shall be:
 $X = 59 \text{ mm} - 58,5 \text{ mm} = 0,5 \text{ mm}$ (when the actual value is $A = 59 \text{ mm}$).

Attach the right half crankcase on the support, with the separating plane upwards.

Place the secondary shaft.

Place the left (1) half crankcase and tighten it by means of several screws.

Tighten the attachment spacer screws on the half crankcase at the required couple.

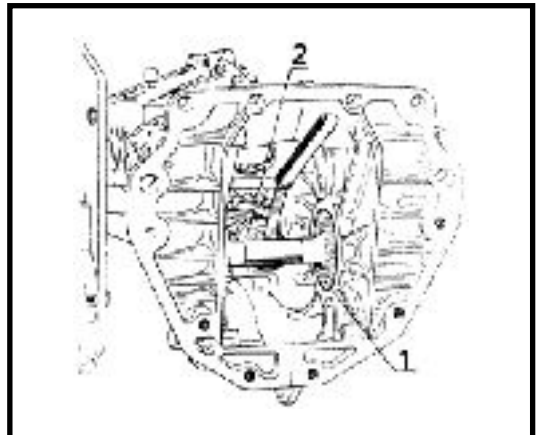
Introduce the **CV 239 -01** control device.

Place the **CV 239 - 02** spacer at the end of the differential drive pinion

Measure by means of a thickness gauge the distance (X) between the spacer and the device shaft :

1. The distance value measured is smaller than the normal one (**0,5 mm**). In this case, replace adjustment washer for the distance between the conical mechanisms with a thinner one.

2. The distance value measured is bigger than the normal one (**0,5mm**). In this case, replace the adjustment washer for the conical distance with a thicker one.



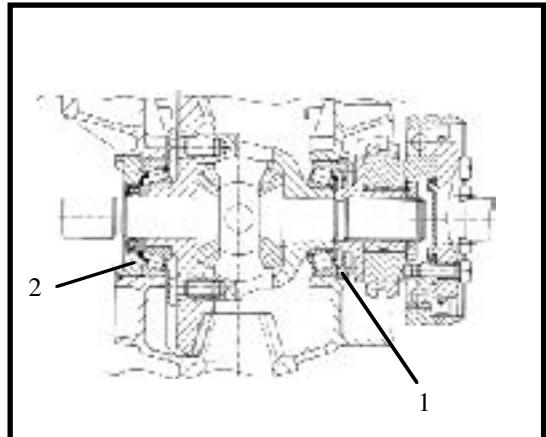
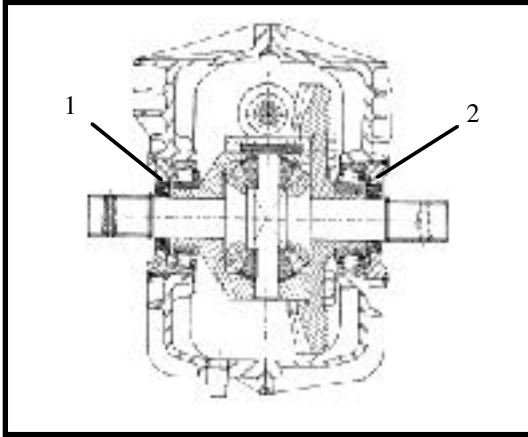
The thickness of the adjustment washers is **1,8 - 3,8mm**, every 10 hundredths of millimeter.

The measurement of the value (X) is performed by means of the speedometer endless screw (**G.B. 365**) or the flange nut (**G.B. 51 C**) tightened at the required moment (**10 -12 daNm**).

Take out the checking device.

Dismount : the spacer, the left half crankcase; secondary shaft.

DIFFERENTIAL GEAR BEARINGS ADJUSTMENT (G.B. 365 and 51 C)

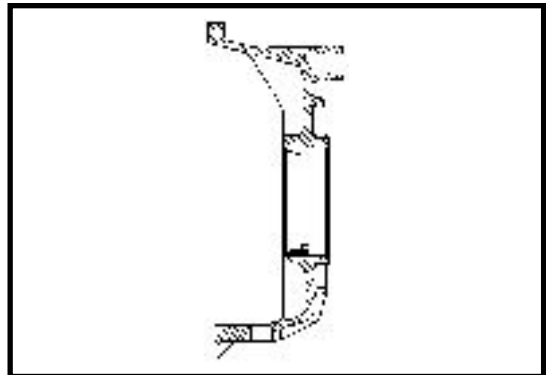


The differential gear bearings adjustment is performed by means of the nuts (1) and (2).
Mount the annular oil seal rings on the adjustment nuts.
Grease the adjustment nuts threads with sealing paste **LOCTITE 518**

NOTE:

Before mounting, the annular oil rings will be immersed in oil 80W/90.

Mount the outer rings of the differential gear bearing in the half crankcases so that they are protruding as compared to the inner side of the half crankcase.



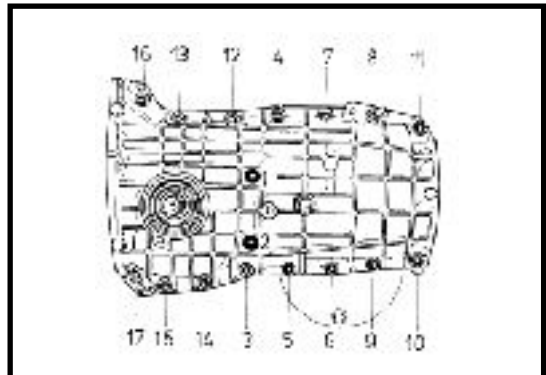
Place the differential gear in the right side half crankcase.

Place the left side half crankcase and assemble it by means of screws.

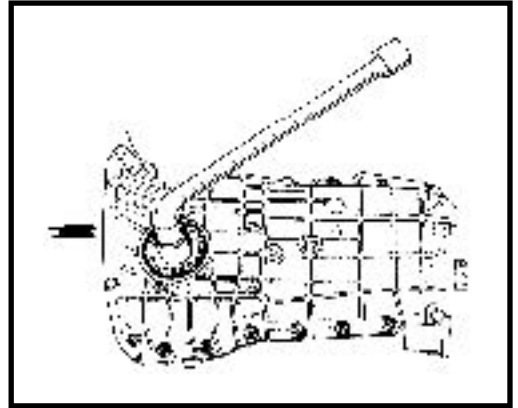
Tighten the screw to the required moment, observing the tightening order specified in the drawing.

M 7 : 1,9 - 2,4 daNm

M 8 : 2,8 - 3,3 daNm



Tighten thetheadjustment nuts by means of the CV 377 wrench, until they come into contact,with the outer rings of the bearings.



1. REUSED BEARINGS

The reused bearings shall be mounted freely, without clearance.

Tighten the adjustment nuts until the bearings rotate freely, without any clearance.

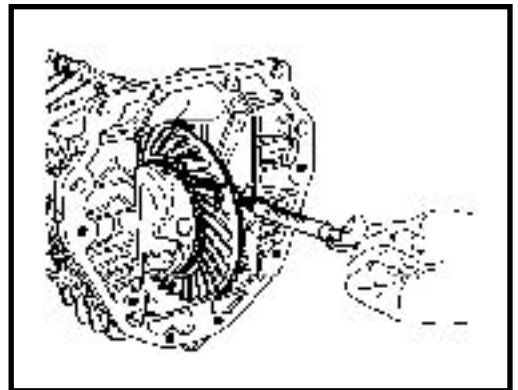
2. NEW BEARINGS

The new bearings shall be mounted by pretightening.

Tighten the adjustment nuts until the bearings show a certain resistance to rotating.

Check the pre-tightening of the bearings as follows:

- rotate the differential gear several times, in order to set the bearings;
- place a thread around the differential gear casing and draw the thread by means of a dynamometer; the differential gear should rotate at a **1 - 3 daN** force.

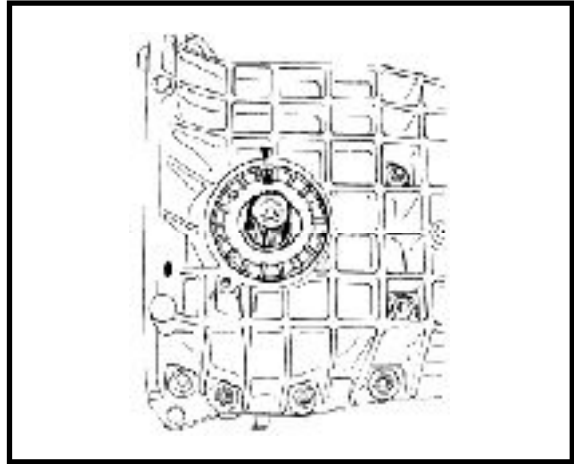


NOTE:

For both types of bearings , the nut (1) in the right side half crankcase shall be tighten more, in order to obtain a bigger clearance of the tooting.

Notice the nuts position corresponding to the half crankcases.

Dismount the left side half crankcase and the differential gear.



REMOUNTING OF FORKS AND SHAFTS

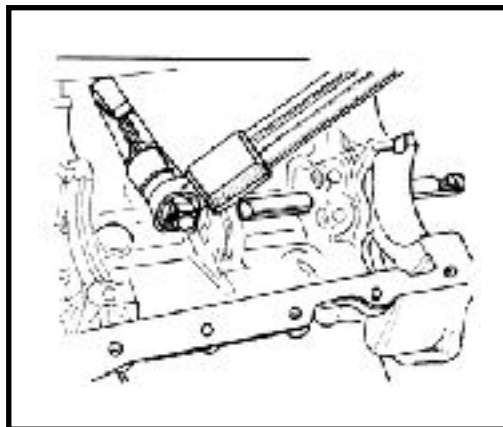
NOTE:

Upon remounting, the elastic pins shall be positioned with the slot towards the back side of the gearbox.

Mount the reverse driving shaft in the right side half crankcase.

Position the reverse drive selector in the notch of the reverse driving shaft.

Tighten at the required couple (**2,3 daNm**) the reverse driving selector shaft.



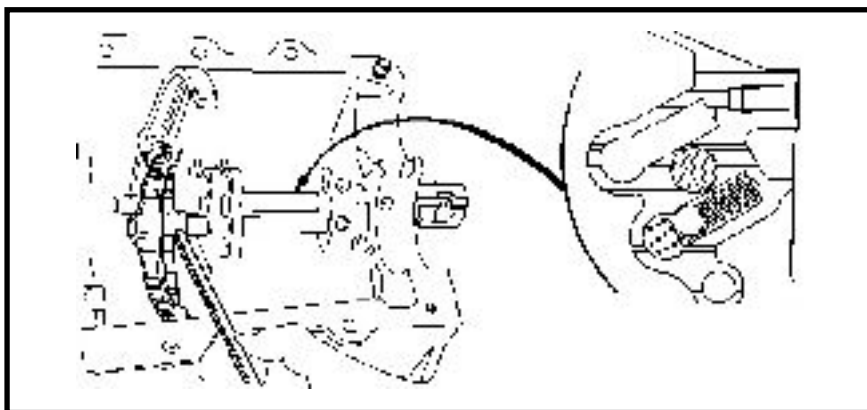
Place the attachment spring and ball of the velocity steps **I -II** fork shaft.

Introduce the shaft.

Assemble the velocity steps **I -II** fork with the hub, towards the back side of the gearbox.

Introduce the elastic pin.

Repair



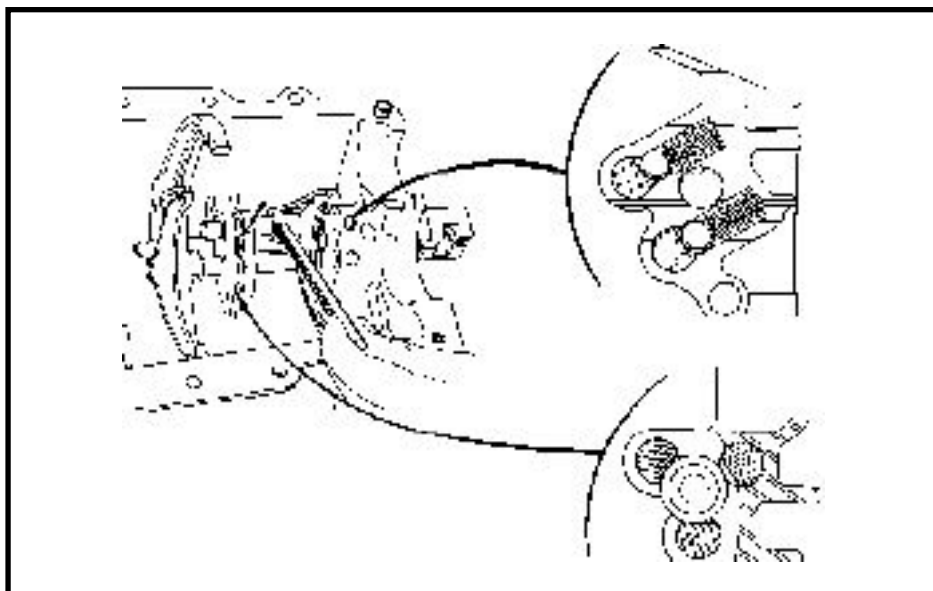
Place the interlocking disk of the forks shafts.

Place the attachment spring and ball of the velocity steps **III IV** fork shaft.

Introduce the shaft.

Mount the velocity steps **III - IV** fork with the hub towards front side of the box.

Introduce the elastic pin.

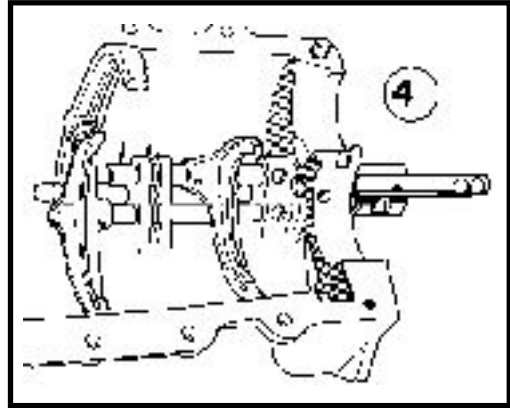
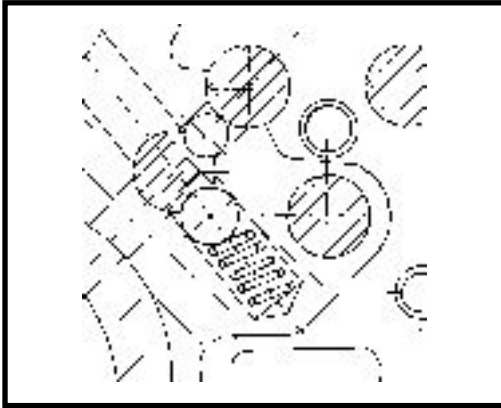


Place the attachment ball and spring of the fork shaft velocity step **V**.

Place the blocking ball of forks shafts, velocity steps **V** and **III - IV**.

Introduce velocity step **V** fork shaft.

Engage the velocity steps **III - IV** fork in the position required for the coupling of velocity step IV and keep it in this position until complete mounting of the gearbox.



REMOUNTING OF THE REVERSE DRIVING PINION

Place the attachment spring and ball of the shaft in the left side half crankcase.

NOTE:

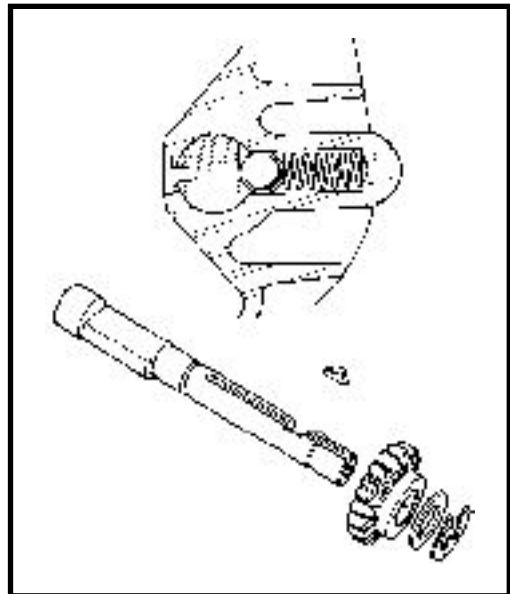
The spring is black painted to be different from locking spring of forks shafts.

Introduce the reverse driving pinion shaft
Mount :

- the reverse driving pinion, with the hub directed towards the front of the gearbox;
- the friction washer, with the bronze side towards the pinion.

Introduce the guiding wedge in its seat and completely introduce the shaft.

Mount the safety ring.



HALF CRANKCASE ASSEMBLING

Place in the right side half crankcase

- primary shaft;
- secondary shaft together with the lock pin of the biconical bearing taking care that the assembled forks to be positioned in their seats;
- the differential gear (**G.B. 365** and **G.B. 51C**).

Grease the assembling areas of the crankcases with sealing paste **LOCTITE 518**.

Place the left side half crankcase over the right side half crankcase; position correctly the reverse selector.

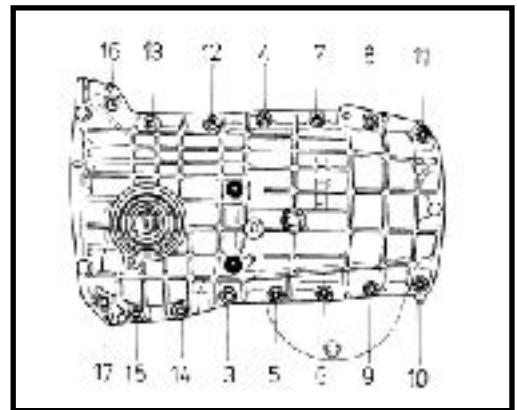
Place the assembling screws of the half crankcase and slightly tighten them.

Mount the spacer and tighten its attachment screws at the required moment (**1 - 1,4 daNm**).

Tighten the assembling screws of the half crankcases at the required moment, observing the tightening order specified in the drawing.

M 7 : 1,9-2,4 daNm

M 8 : 2,8-3,3 daNm

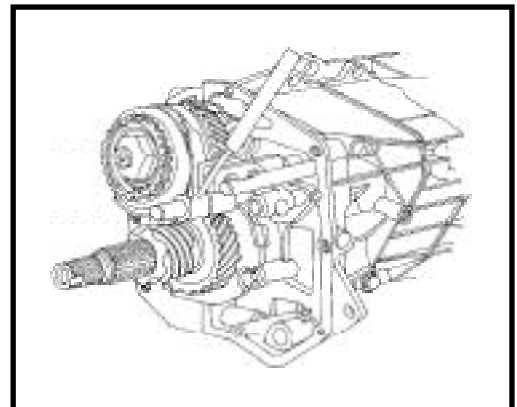


VELOCITY STEP V PINION REMOUNTING

Place the following parts on the primary shaft:

- the spacer;
- the inner bushing and needle casings;
- the free pinion of velocity step **V**;
- the synchronizer assembly together with the fork and shaft for velocity step **V**;
- the elastic washer;
- the locking nut.

Mount the elastic pin of fork for. velocity step **V**, by means **CV 31 B** mandrel.



NOTE:

*The synchronizer for velocity step **V** shall be assembled in the same way as the one for velocity steps **I - II**; mount additionally the retentive segment.*

Place the following parts on the secondary shaft:

- the velocity step V pinion;
- the elastic washer;
- the speedometer endless.

Check the clearance “J” between the synchronizing ring and the surface of the hub : **J = min 0,2 mm**

The checking shall be performed as follows:

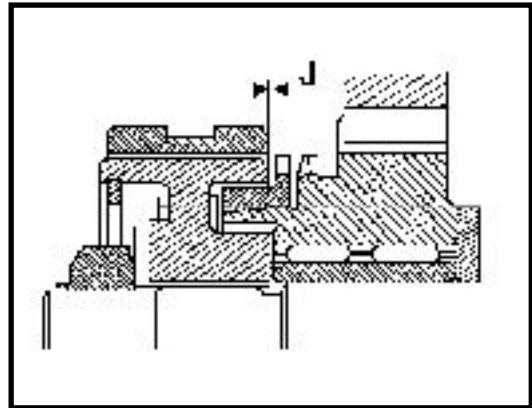
- the pinion in contact with the hub;
- the synchronizing ring in contact with the pinion con.

Couple the reverse driving and the velocity step V.

Tighten at the required couple:

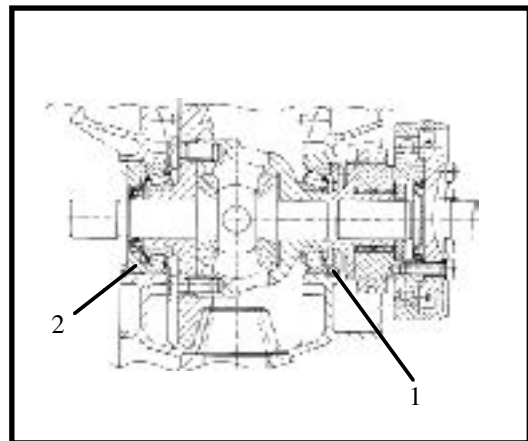
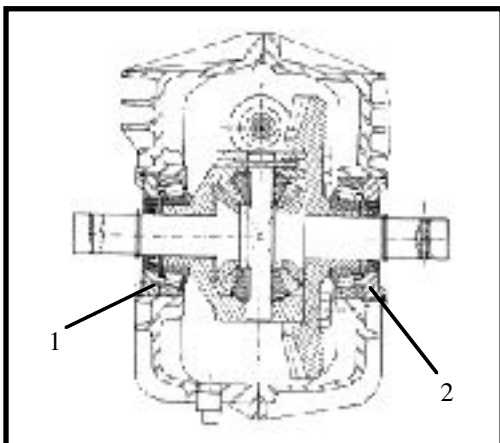
- the nut of the primary shaft: **6 daNm**
- the speedometer endless screw: **10 - 12 daNm (G.B. 365).**

Secure the locking nut and the speedometer endless screw.



GEAR CLEARANCE ADJUSTMENT (G.B. 365,51C)

In order to adjust the clearance of the gear, loosen the nut (1) from the right side half crankcase and tighten the nut (2) from the left side half crankcase by the same value.

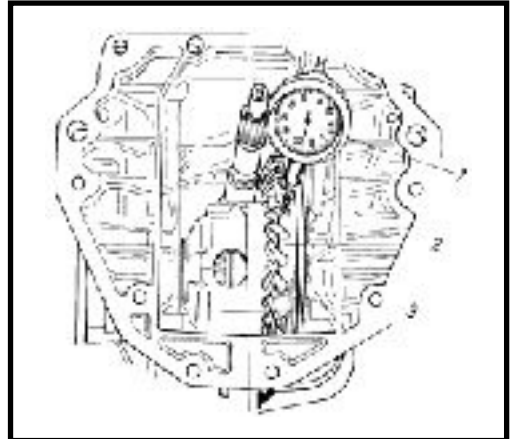


Repair

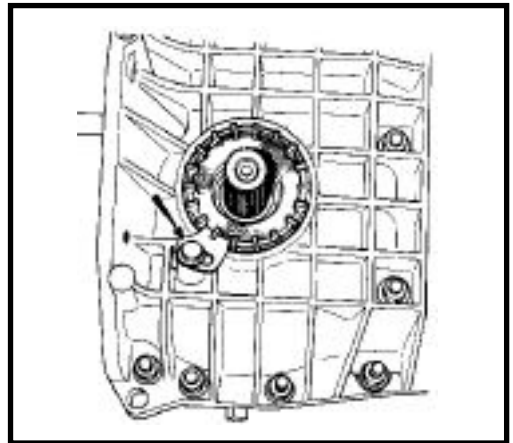
Mount a comparing device on the crankcase and place the feeler perpendicularly on the crown tooth flank, as much to the edge of the rim as possible.

Check the clearance of the gear which should be: **0,12-0,25 mm.**

Adjust the nuts until correct clearance is obtained.



Mount the nuts locks.



BACK CAP ASSEMBLING

Mount the control shaft annular oil seal.
Assemble the rocking lever with its shaft.
Mount together:

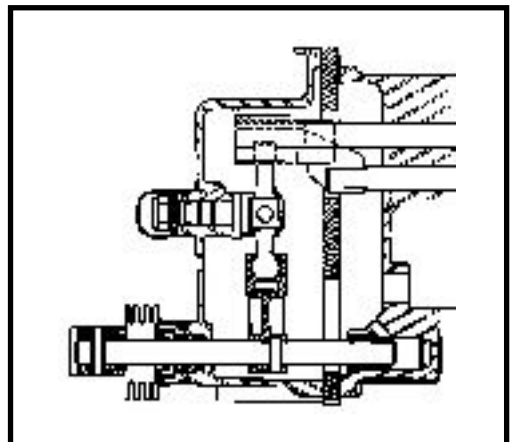
- the assembled rocking lever shaft;
- the control shaft.

Tighten the attachment nut of the return rocking lever (**4-4,5 daNm**).

Mount the rubber protection.

Mount on the control shaft:

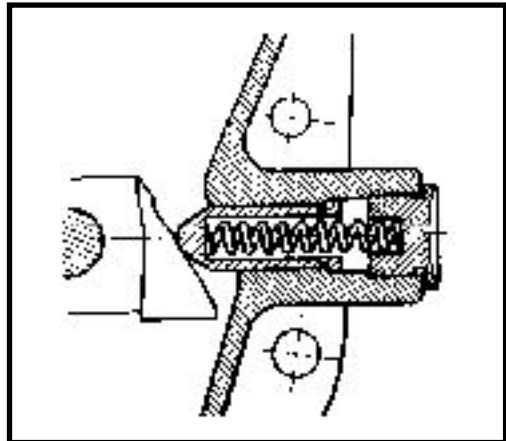
- the protection bellows;
- the control shaft end;
- the elastic pin.



Mount the speedometer pinion and its guide provided with a sealing gasket.

Mount :

- the velocity step V pusher;
- the spring;
- the gasket;
- the plug greased with **LOCTITE 577** and tighten at the required couple (**1,1-1,5daNm**)



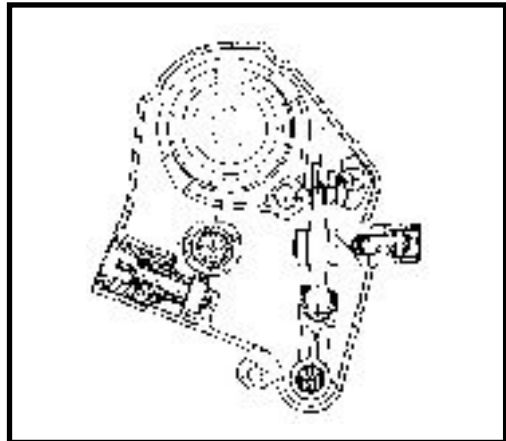
BACK CAP RE MOUNTING

Bring the forks to the dead point.

Place the back cap gasket lubricate with oil.

Place the back cap; position the velocity steps selector in the forks shafts notches.

Tighten at the required moment (**1- 1,4daNm**) the back cap attachment screws.

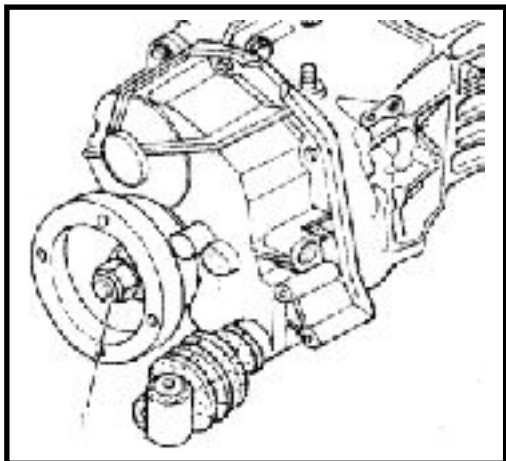


For **G.B. 50C** and **51C**:

Fill the contact surface between the annular seal and the flange with grease **UM 170 Li Ca Pb 2M**.

Mount the flange of propeller shaft transmission.

Place the washer and tighten at required moment (**10 - 12daNm**) the flange attachment nut (**1**).



CLUTCH CASING RE MOUNTING

Press in the clutch casing the guiding bushing of the pressure bearing (only if it has previously been dismantled).

Mount the annular oil seal of the clutch shaft by means of the device **CV 488**.

NOTE: Before mounting, the annular oil seal shall be immersed in 80W/90.

Apply a layer of sealing paste **LOCTITE 518** on the assembling area of the clutch casing with mechanisms crankcase.

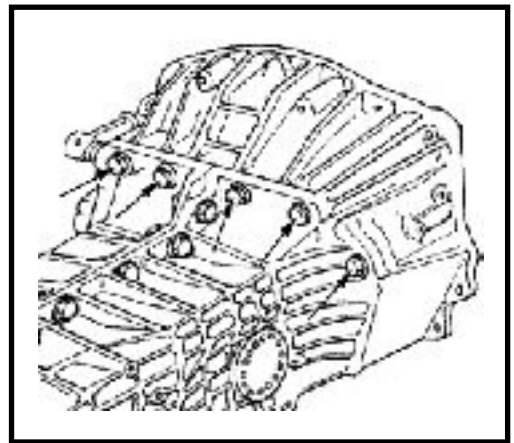
Mount the clutch casing by means the device **CV 488** for oil seal ring protection.

Tighten the attachment screws of the clutch casing at the required moment.

M8 : 2 - 2,8 daNm

M10 : 3,2 - 4 daNm

Mount the reverse lamp contact, after its thread has been greased with **LOCTITE 577** and tighten it at required moment (**2,5 daNm**).



RE MOUNTING THE COUPLING MECHANISM 4X4 (G.B. 51 C)

Check by visual inspection the state of the mechanism elements and replace damaged parts with new ones.

Mount the pins housing (**13**) and the claw (**12**).

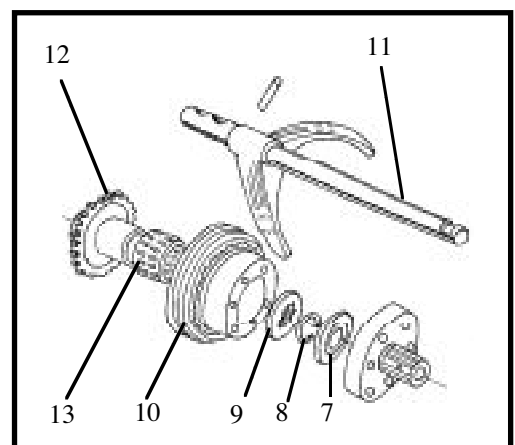
Mount using a press, by means of a metallic strap, the bearing on the differential hub (if this was previously dismantled).

Mount the assembly hub - the tooth gear sliding mechanism (**10**), together with coupling shaft and fork (**11**).

Place the washer rut (**9**).

Mount the safety ring (**8**) on the propeller shaft pinion.

Mount the cover (**7**).



Replace the annular oil seal from the differential cap, as follows:

- grease the new annular oil seal with gear oil **80W90**;

- mount the new annular oil seal by slightly tapping by means of the plastic hammer until it came into contact with the support shoulder from the differential cap resulting in this case the dimension of **6 + 0,5 mm**.

Mount the differential cap assembly with a new lubricated gasket.

Grease de contactsurface between the flange and differential hub with sealing paste **LOCTITE 518**.

Necessary quantity: **2 ml**.

Mount the flange and deflector.

Tighten the screws at the required moment:

- differential cap - **1,2 daNm**;

- differential flange - **2,4 daNm**.

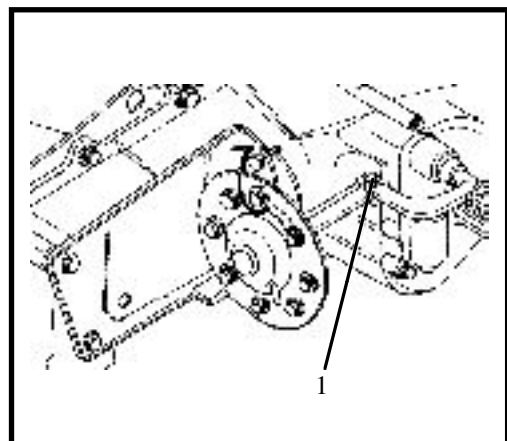
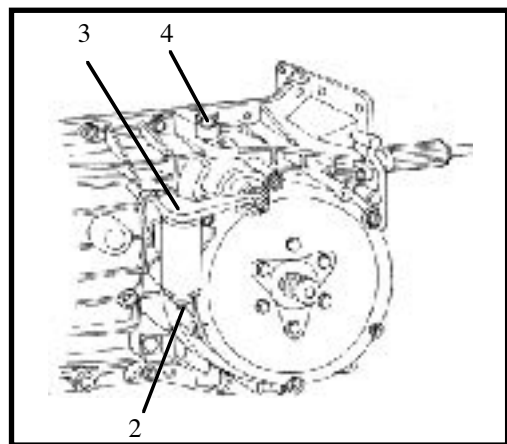
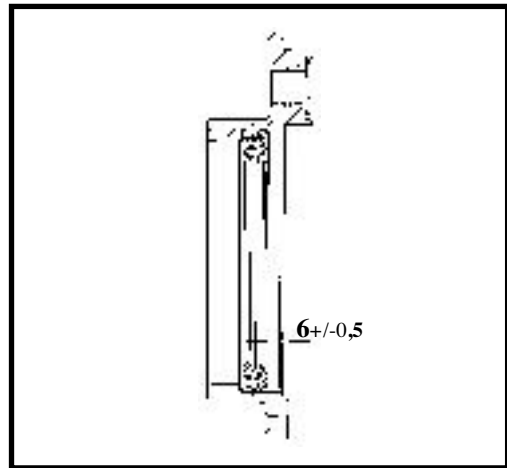
Mount the threaded plug (**4**) for limiting the stroke.

Mount the control lever (**3**) and secure with safety ring (**2**) (position the end of lever in the notch of the control shaft).

Check the front transmission engagement and disengagement.

Mount the vacuum capsule bracket on the gearbox casing.

Mount the connecting bolt (**1**) between the vacuum capsule shaft and the control lever and secure with the attachment pin.



Backcap

(on vehicle)

DISMOUNTING

Lift the car on the elevator.
 Drain the oil from the gearbox.

Disconnect:

- the speedometer cable;
- the velocity steps control.

Support the back part of the gearbox.

Unscrew the attachment nut of the exhaust pipe from back cap cross bar gearbox.

Dismount the back crossbar of gearbox.

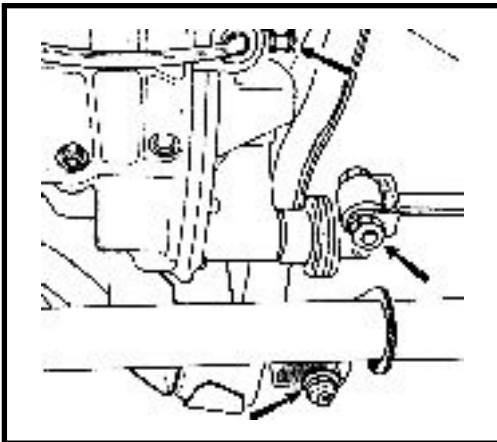
For G.B. 50C and 51C:

- dismount the cardan transmission from the secondary shaft flange and tilt it over.
- dismount the secondary shaft flange.

Engage the gear velocity step **IV**

Unscrew the back cap attachment screws.

Dismount the back cap



NOTE:

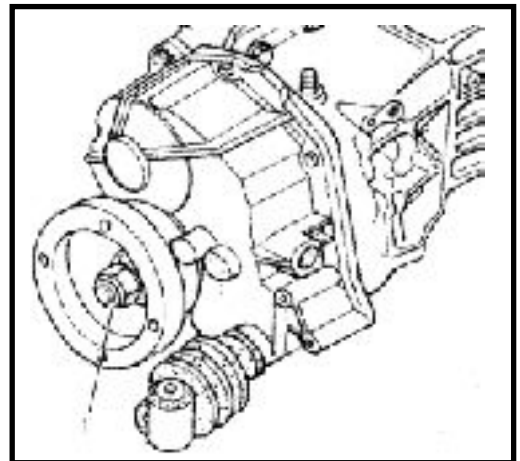
The velocity step V fork shaft shall not be dismantled because the interlocking ball may fall; their mounting implies dismantling the whole gearbox.

REMOUNTING

Clean the contact surface of the gasket.
 Place a new paper gasket after it was lubricated with oil.

Place the backcap; position the velocity steps selector in the forks shafts grooves.

Place the cap attachment screws and tighten them at the required moment of **1,2daNm**.



For G.B. 50C and 51C:

- mount the driving flange of cardan transmission and tighten the attachment nut at the required couple (**10 -12 daNm**);
- engage the cardan transmission.

Mount the back support of the gearbox.

Connect :

- the speedometer cable;
- the velocity steps control.

Fill up the gearbox with oil **80W/90**.

(on vehicle)

DISMOUNTING

Lift the car on the elevator.

Drain the oil from the gearbox.

Dismount the back crossbar of the gearbox.

For G.B. 50C and G.B.51 C:

- disengage the cardan transmission;
- dismount the flange of secondary shaft.

Dismount the back cap.

Unscrew the nut from the end of the rocking lever shaft.

Dismount the elastic pin from the control shaft end.

Dismount together :

- the control shaft;
- the rocking lever and shaft.

Dismount the worm annular oil seal.

**REMOUNTING**

Mount the new annular oil seal, after it was immersed in **80W90** oil.

Mount together :

- the rocking lever shaft;
- the control shaft.

Tighten the attachment nut of the rocking lever shaft, at the required couple (**4 - 4,5 daNm**).

Mount the rubber protection.

Mount on the control shaft :

- the protection bellow;
- the control shaft end;
- the elastic pin.

Mount the back cap with a new lubricated gasket.

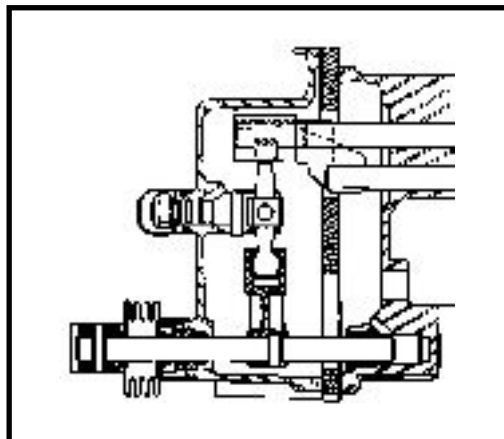
Mount the back crossbar of the gearbox.

Mount the flange of secondary shaft and connect the cardan transmission (G.B.50C, G.B. 51C)

Check the velocity steps control mechanism.

Fill up the gearbox with **80W90** oil.

Lower the vehicle from the elevator.



Speedometer endless screwpinion replacement

(on vehicle)

DISMOUNTING

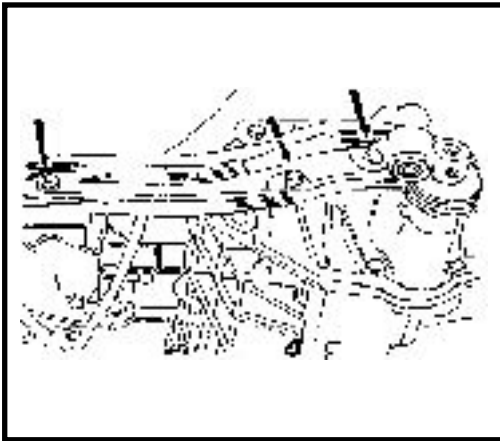
Lift the car on the elevator
 Drain the oil from the gearbox.
 Disconnect:
 - the speedometer cable;
 - the velocity steps control.

Disconnect the cardan transmission and dismount the secondary shaft flange (G.B.50C;51).

Dismount the back crossbar.

Dismount the back cap.

Dismount the speedometer endless pinion from the back cap.



Replace the speedometer endless (G.B.50C,51C).

Engage velocity step I and draw the hand brake.

Dismount the speedometer endless screw by means of the **CV 204** wrench.

REMOUNTING

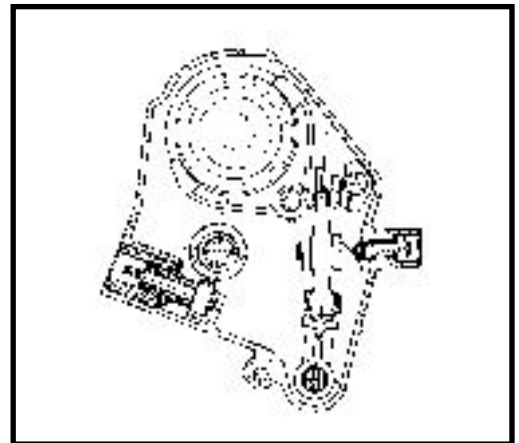
Mount the speedometer new endless screw by means of the wrench **CV 204** and tighten at the required moment (**10-12 daNm**) and secure it by straining. (G.B. 365).

Mount the new speedometer pinion in the back cap.

NOTE:

Before mounting, the speedometer pinion shall be immersed in 80W/90.

Mount the back cap with a new gasket.



Mount the back crossbar.

Connect:

- the speedometer cable;
- the velocity steps control.

Mount the flange, tighten its nut at the required moment (**10 - 12 daNm**) and connect cardan transmission (G.B.50C,51C).

Check the velocity steps control.

Fill up the gearbox with **80W90** oil.

Velocity step synchronizer replacement

(on vehicle)

DISMOUNTING

Lift the car on the elevator
 Drain the oil from the gearbox.

Disconnect :

- the speedometer cable;
- the velocity steps control.

Disconnect the cardan transmission and dismantle the flange (G.B. 50C,G.B.51C).

Dismount the back crossbar of the gearbox.

Dismount the back cap.

Engage the velocity step **V** and the reverse driving.

Dismount the primary shaft nut.

Dismount the elastic pin of the velocity step **V** fork by means of the **CV 31 B** mandrel.

Dismount the velocity step **V** fork together with the tooth sliding mechanism and velocity step **V** hub.

NOTE:

The velocity step V shaft shall not be dismantled because the interlocking ball and the attachment ball may fall; their mounting implies complete dismantling of the gearbox.

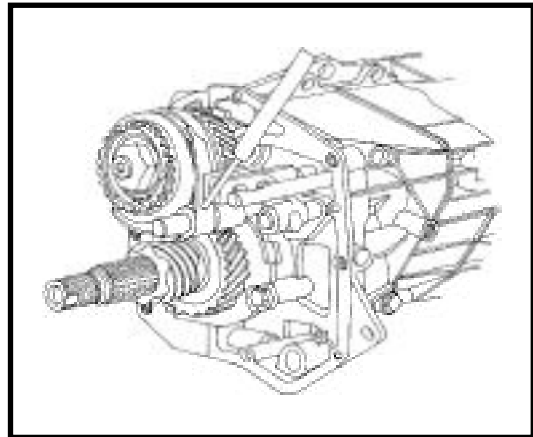
REMOUNTING

Place the fork on the gear tooth gear sliding mechanism;

Mount the velocity step **V** synchronizer assembly together with the fork, on the primary shaft.

Mount the fork elastic pin by means of the **31 B** mandrel.

Mount the primary shaft nut and tighten at the required moment (**6 daNm**).



Connect :

- the speedometer cable;
- the velocity step control.

Mount the flange, tighten at the required moment (**10 - 12 daNm**) its nut, and connect the cardan transmission (G.B.50C,G.B.51C).

Check the velocity steps control mechanism.

Fill up the gearbox with **80W/90** oil.

(on vehicle)

DISMOUNTING

Clutch annular oil seal replacement requires gearbox dismounting from the vehicle.

Dismount the gearbox from the vehicle.

Dismount the pressure bearing.

Dismount the clutch casing.

Dismount the annular oil seal clutch shaft.

REMOUNTING

NOTE: Before mounting ,the annular oil seal shall be immersed in 80W/90 oil.

Mount the new annular oil seal by means of the **CV 488** device, composed of:

- a pipe **(1)** for mounting the annular seal oil.

- a pipe **(2)** for protection of the annular seal oil.

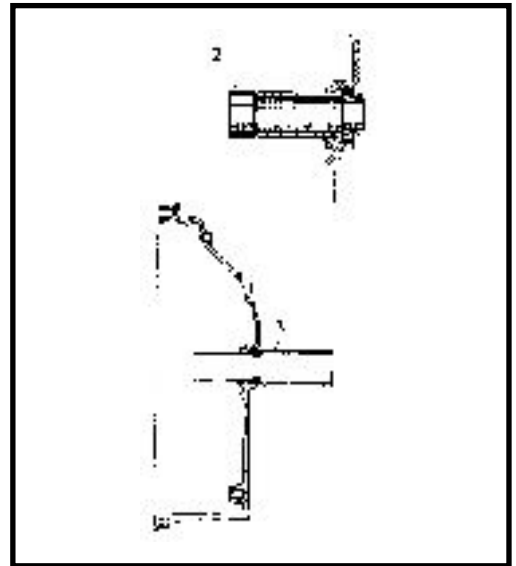
Clean the assembling surface clutch casing with the half crankcases and apply a layer of sealing paste **LOCTITE 518**.

Mount the clutch casing ,using the protector **(2)** for protection of the annular seal oil.

Tighten the screws at the required moment:

M8 : 2-2,8 daNm;

M10 : 3,2-4 daNm.



Mount the pressure bearing.

Mount the gearbox on the vehicle.

Adjust the clutch stroke (**2,5 - 3,5 mm** at the declutching lever end).

(on vehicle)

DISMOUNTING

Mount the **TF 509** support crossbars between the attachment shaft of the shock absorber and the lower suspension arm shaft.

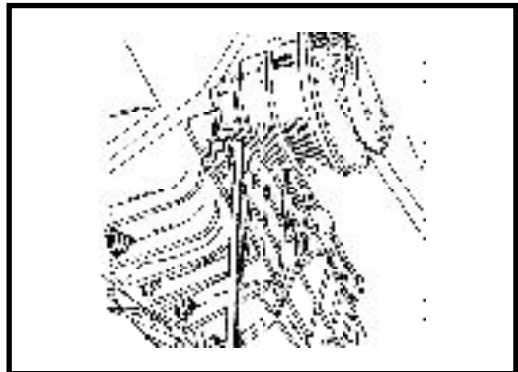
Lift the car on the elevator.

Dismount the front wheels.

Drain the oil from the gearbox.

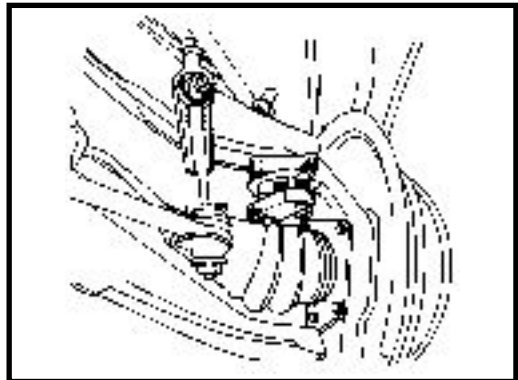


Take out the attachment pins of the transmission by means of the CV 31 mandrel.



Disconnect:

- the steering joint;
- the upper suspension joint, by means of the **TF 476** extractor.



Rock the steering knuckle support and remove the transmission from the propeller shaft pinion.

Observe the position of the nut corresponding to the crankcase.



(on vehicle)

Dismount the lock washer.

Dismount the adjustment nut by means of the **CV 377** wrench; mark the number of rotations of the nut to enable the mounting in the same position, avoiding this way the further adjustment of the differential gear bearings.

Dismount the annular oil seal and the tightening ring.

Clean the nut.

REMOUNTING

NOTE: Before mounting, the annular oil seals shall be immersed in **80W/90**.

Mount the new annular oil seal and tightening ring.

Mount the nut, observing the number of rotations and the dismounting marking.

Grease the propeller shaft pinion grooves with grease **UM 170 Li Ca Pb 2 M**.

Position the transmission gear in correspondence with the pinion; center the transmission by means of the **CV 31 B** mandrel.

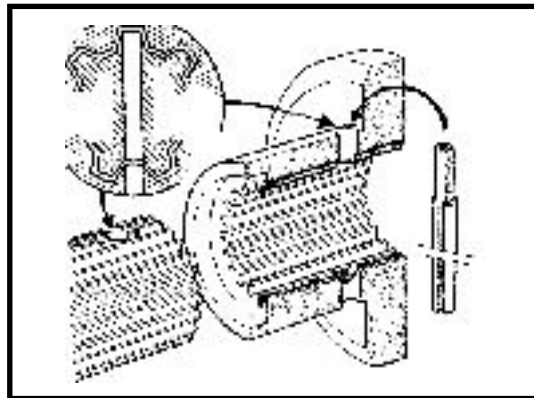
Introduce the new elastic pins.

The pins notches shall be oriented towards the wheel.

The pins ends shall be sealed with **RHODORSEAL 5661**

Mount:

- the upper suspension joint;
- the steering joint.



Mount the front wheels.

Lower the vehicle from the elevator and tighten the wheels nuts to required moment (**9 daNm**).

Mount the **TF 509** support cross bars.

Fill up the gearbox with **80W/90** oil.

I. FRONT CROSS TRANSMISSION

CHARACTERISTICS

Transmission of the motion from the gearbox to the front two driving wheels is performed by means of two assembled homo-kinetics transmissions provided at their ends with two joints of the following type:

- **GE 86** - towards the wheel;
- **GI 69** - towards the gearbox.

Both couplings are tripod type, the one from the gearbox, consisting in a tulip and GB tripod assembly and the one from the wheel, consisting in a steering knuckle casing with a tripod assembly, which is to be assembled with the propeller shaft tulip, the connection being ensured by the retention star.

These couplings allow: the transmission of the rotation motion, an axial sliding movement and accomplishment of the imposed turning angles.

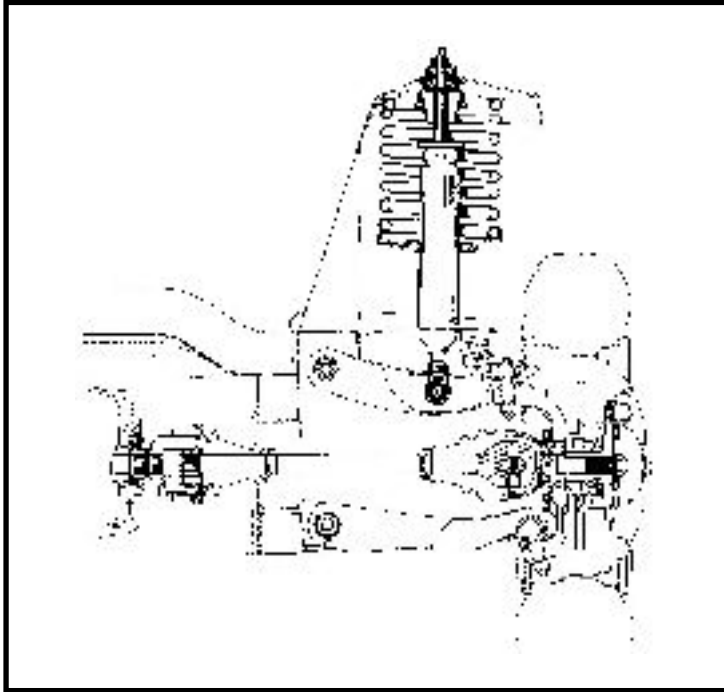
The both couplings are working in special grease **UM 185 Li 2** or **ELF CARDREXA RNT2**, being sealed towards exterior by means of a protection bellow.

INGREDIENTS

GREASE	QUANTITY	COUPLING
ELF CARDREXA RNT 2 UM 185 LI 2 M	14,0 cl. 14,0 cl.	JOINT GI
ELF CARDREXA RNT 2 UM 185 LI 2 M	26,0 cl. 26,0 cl.	JOINT GE


DRIVE SHAFTS

FRONT CROSS TRANSMISSION



SPECIAL TOOLS

Pivot pins extractor	PF 476
Mandrel	C.V. 31 B
Hub immobiliser	PF 235 A
Device for mounting transmission in the hub	PF 236

TIGHTENING MOMENTS (daNm)		
Suspension upper joint nut	5	
Steering joint nut	4	
Transmission nut	23	
Wheels nut	9	

DISMOUNTING

Mount the **TF 509** support cross bar between the shock absorber attachment shaft and the suspension lower arm shaft.

Lift the vehicle on the elevator.

Dismount the wheel.

Loosen:

- the attachment nut of the suspension upper ball joint;
- the steering joint fixing nut.

Depress by means of the **PF 476** extractor:

- the upper suspension ball joint;
- the steering ball joint.

Remove the attachment elastic pin by means of the **CV 31 B** mandrel.

Stuck the hub by means of the **PF 235 A** device and dismount:

- the transmission nut;
- the washer.

Dismount the brake caliper.

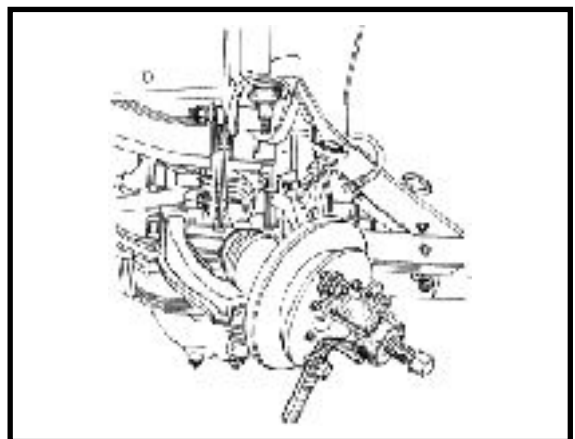
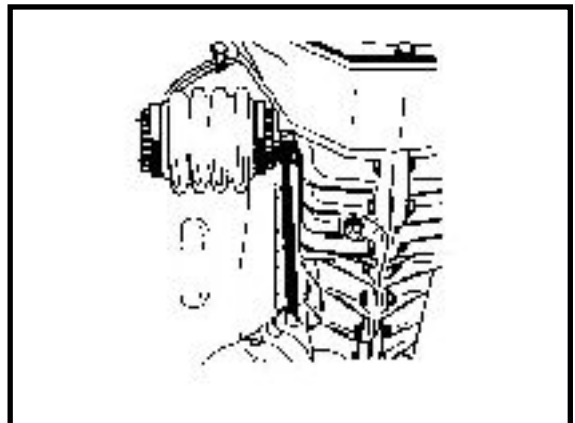
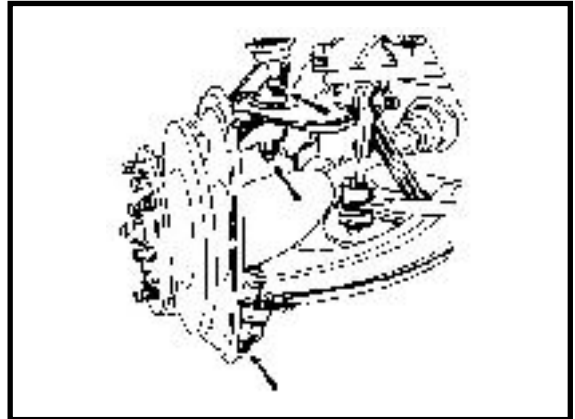
Dismount the suspension upper joint nut and the steering joint nut.

Take the suspension off the propeller shaft pinion.

Temporarily mount the steering ball joint.

Remove the transmission from the hub by means of the **PF 235 A** extractor.

Dismount the steering ball joint and remove the transmission.



REMOUNTING

Grease the propeller shaft pinion grooves with **Li Ca Pb type II**.

Couple the transmission with the propeller shaft pinion.

Introduce the new elastic pins.

*The pins notches shall be oriented towards the wheel. The pins ends shall be sealed with **RODORSIL**.*

Introduce the transmission in the hub.

Mount the transmission in the hub by means of the **PF 236** device.

Mount:

- the suspension upper ball joint;
- the steering ball joint.

Tightening the nuts at the required couple.

Fix the hub by means of the **PF 235 A** device.

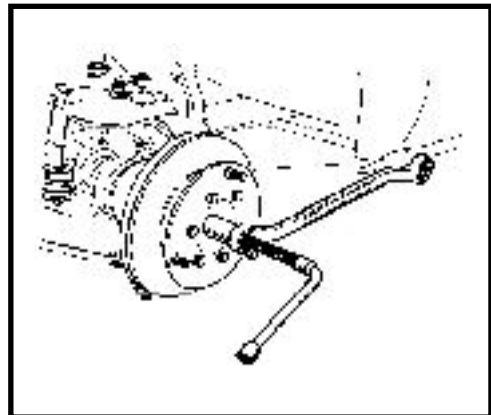
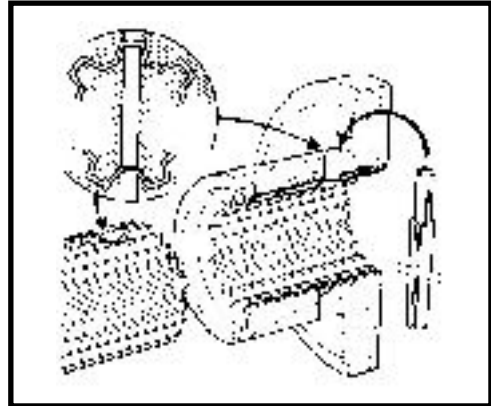
Mount:

- the washer ;
- the transmission nut.

Tighten the transmission nut at the required moment.

Remount:

- the brake caliper;
- the wheel.



Take the vehicle down from the elevator and tighten the wheel nuts at the required moment.

Dismount the **PF 509** support cross bar.

Press the brake pedal several times in order to bring the brake piston in contact with the friction linings.

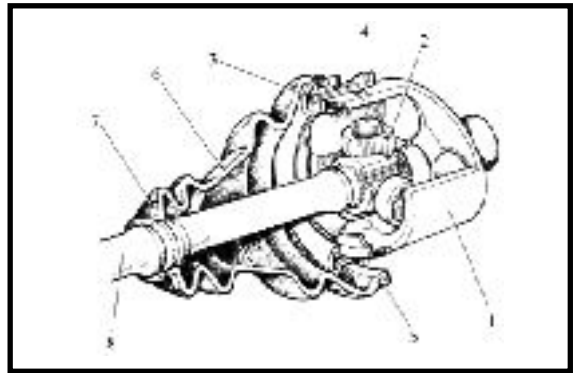
NOTE:

If after front brake beginning the brake damage warning light remains on perform the dismounting of the ICP from the brake pump; push three-five times the brake pedal then remount the ICP and the brake damage warning light will not be on again.

GI 69 JOINT BELLOWS REPLACEMENT

Joint bellows replacement - the part towards the gearbox – is to be performed with dismantled transmission.

1. Tulip
2. Assembled tripod
3. Assembled type
4. Casing
5. Collar
6. Bellows
7. Ruber ring
8. Transmission shaft



DISMOUNTING

Dismount the transmission off the vehicle.

Dismount the collar (5) maintaining the bellows (6) on the tulip.

Dismount the rubber ring (7).

Cut the bellows on the entire length.

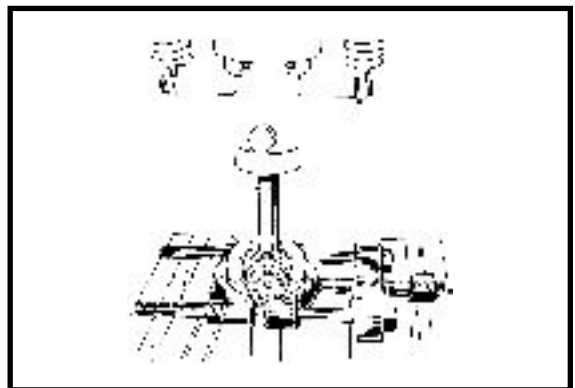
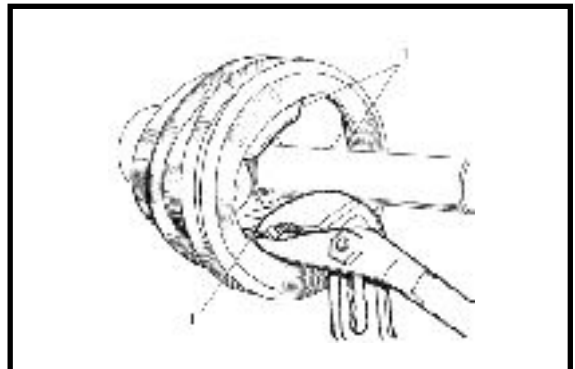
Remove maximum possible of the grease.

By means of a pair tongues, strain the tulip tilt towards the outside in the three zones of the tulip ramps.

Dismount the tulip.

Dismount the tulip safety ring.

Depress the tripod off the shaft.



NOTE:

The sliding blocks and the needles are in pairs. Do not dismount the sliding off the tulip. Do not ever use solvent for parts washing.

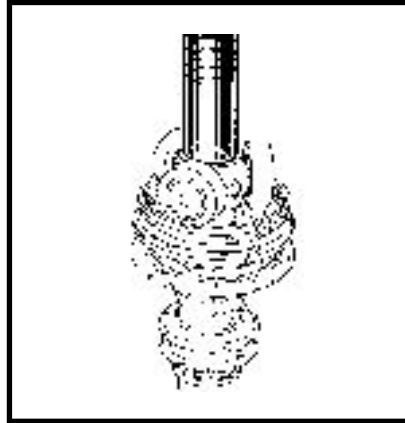
REMOUNTING

Grease, the transmission shaft, the bellows and the rubber ring with MoS 2 grease.

Place on the shaft, the rubber ring and the new bellows.

Mount the tulip on the shaft.

Mount the safety ring.



Mount the tulip on the shaft.

Introduce approximate 14,0 cl special grease **ELF CARDEXA** or **UM 185 Li 2 M** in the bellows and the tulip.

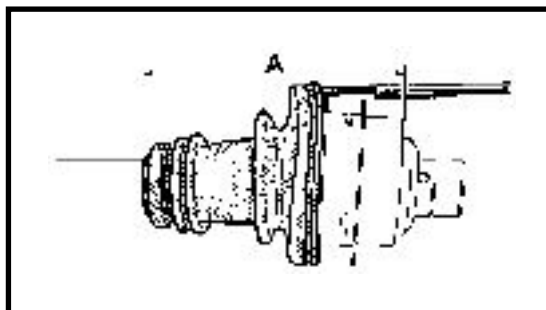
Introduce a bar between the bellows and the transmission shaft in order to dose the quantity of air inside the bellows.

Move the tulip until the value **A=162 mm** is obtained (the value comprised between the bellows edge and the tulip extremity).

In this position take out the bar.

Mount the clip.

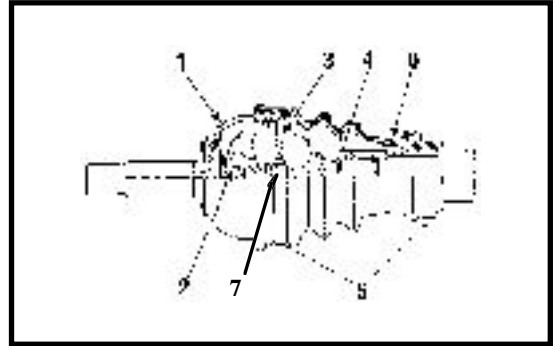
Mount the transmission on the vehicle.



GE 86 JOINT BELLOWS REPLACEMENT

Bellows replacement – the wheel side- is to be performed having the transmission dismantled.

1. Steering knuckle casing
2. Retention star
3. Tripod assembly
4. Tulip shaft
5. Collars
6. Bellows
7. Spring



DISMOUNTING

Remove the two collars (5) taking care not to damage the channels made on the steering knuckle surface.

Cut and remove the damaged bellows.

Take out maximum of grease.

For **GE** joint bellows replacement it will be necessary to dismantle the joint parts towards the gearbox (joint **JI 69**) (see previously described method).

REMOUNTING

NOTE:

It is absolutely necessary to observe the prescribed grease quantity (26,0 cl).

Position: the bellows reinforcements in the steering knuckle casing channels and in the shaft rod channel.

Mount the **GE** joint collars.

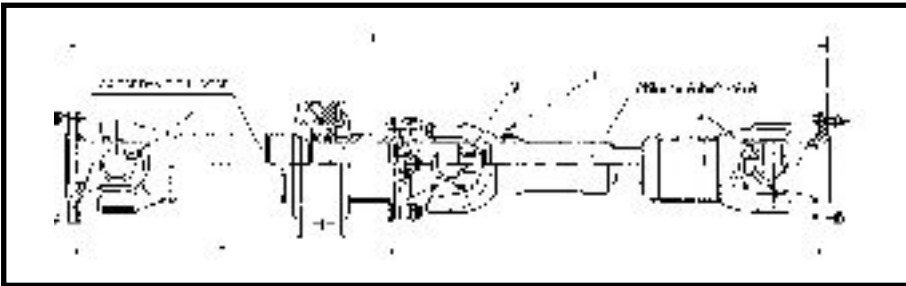
Remount **GI** joint parts.

II. LONGITUDINAL TRANSMISSION (CARDANIC)

CHARACTERISTICS

Longitudinal transmission is specific and is equipping the D1304, D 1307 vehicles (rear wheel drive or f.w.d. 4 W D) and has the purpose to transmit the motion from GB to rear axle (drive axle). It is composed of three asynchronous cardanic joints open type and two longitudinal cardanic shafts, the first one assembled to the gearbox, sustained on a support with intermediary bearing, the second one assembled with the first and with the main transmission, owing an axial compensating coupling (slotted joint).

In the cardanic joints areas there are mounted the lubricators G which have the purpose to distribute the grease through the channels made for the access to the four bearings.



DISMOUNTING

Dismount:

- the four bolts **M10 x 1,25 - 35** assembling the cardanic flanges to the side towards the drive axle;
- the four bolts **M10 x 1,25 - 35** assembling the cardanic flanges to the side towards the drive gearbox;
- the two bolts **M 8 x 1,00 - 25** positioning the transmission relay on the cross bar.

Dismount the cardanic transmission off the vehicle.

REMountING

For remounting, perform in reverse order the dismounting operations.

Additionally, observe the following conditions:

- before assembly the shaft flanges must not show shocks marks, marks, paint marks, oxides, etc.
- when assembling the intermediary support on the cross bar, the screws will be oriented from top to bottom.

IMPORTANT !

The cardanic joints forks which are mounted at the both ends of the longitudinal transmission are to be placed in the same plane.

SIZE CHARACTERISTICS [mm]

- Lt - total length of the cardanic transmission
- L - length of the cardanic shaft with bearing
- Lz - length of the assembled cardanic shaft

VEHICLE RANGE	NUMBER OF GEARS GB	Lt	L	Lz
DACIA 1304	4 TR	1970	870	1100
DACIA 1304	5TR	1950	850	1100
DACIA 1307	4 TR	2080	980	1100
DACIA 1307	5 TR	2060	960	1100

TIGHTENING MOMENTS [daNm]

- cardanic flanges tightening screws (extremities) - **M 10 x 1,5**.....**4 - 6**
- cardanic intermediary flanges tightening screws - **M 8 x 1,25**.....**1,5 - 2,5**

CARDANIC TRANSMISSION MAINTENANCE

In order to avoid arising of some problems in exploitation such as : noise, joint clearance, nooses gutter wear, it is necessary to perform the greasing of the cardanic transmission every 5000 km.

The operation is performed within adjust in within the periodical technical revisions by means of the Tecalemit (grease gun).

This to be applied on the lubricators from the joints areas (cross-head) and the corresponding lubricator to the gutters. Needle roller bearings and the gutter connection is to be lubricates under pressure using **UM 185 Li 2** type grease or its equivalent.

Greasing is considered adequate when by the sealing elements (gaskets) the old grease is eliminated and the new one is coming out.

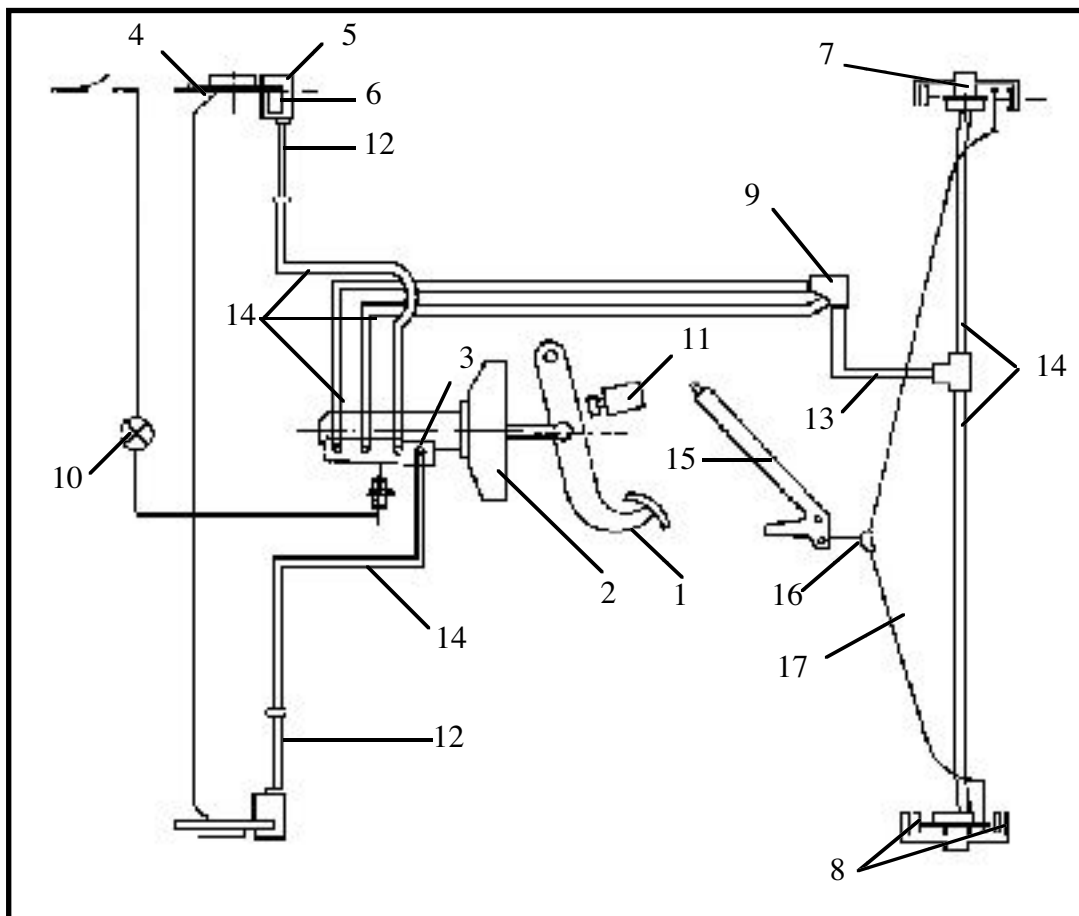
The intermediary support does not require maintenance.

GENERAL
GENERAL PRINCIPLE SCHEDULE OF A BRAKE CIRCUIT
IN PARALLEL WITH BY-PASS CIRCUIT

The DACIA commercial vehicles, are equipped with hydraulic braking system, double circuit by-pass brake pump , brake amplifier, pressure limiter in order to avoid the rear wheels blocking.

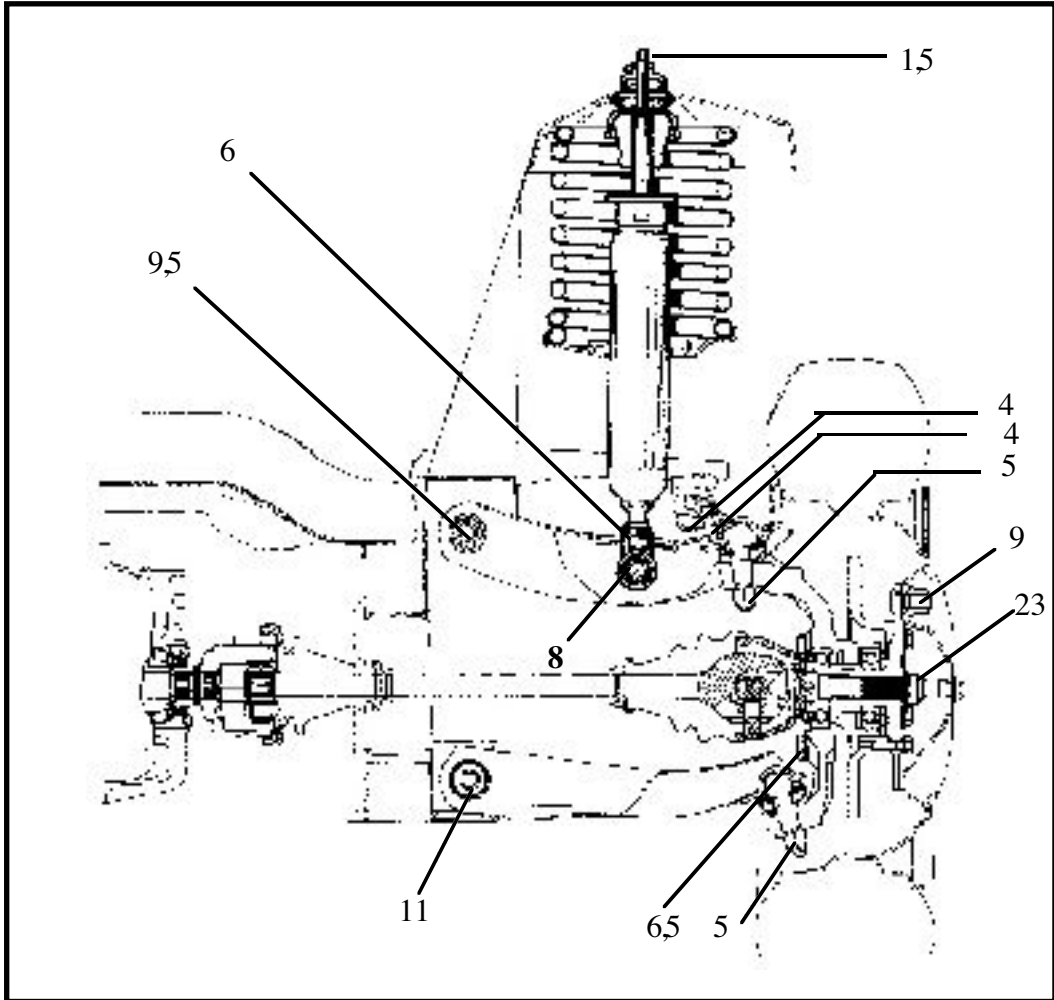
The front brakes are disk type and the rear brakes are drums type.

The brake disks are aerated, for the wheels with 5 attachment screws and non aerated for wheels with 3 attachment screws.

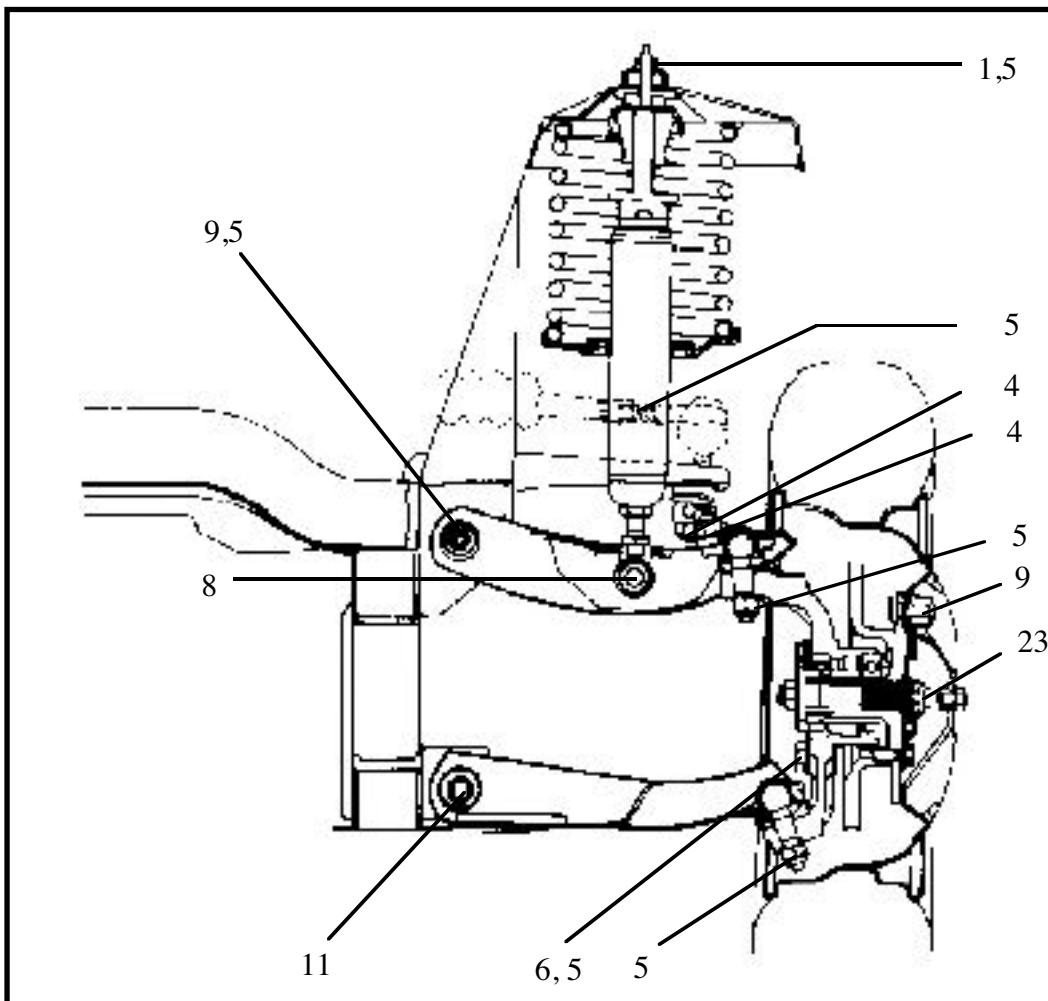


- | | |
|---|--|
| <ul style="list-style-type: none"> 1. Brake pedal 2. Master - Vac amplifier. 3. Master cylinder 4. Front brake disk 5. Front brake caliper 6. Brake pads 7. Brake drum 8. Brake shoes | <ul style="list-style-type: none"> 9. Pressure limiter 10. Warning light 11. STOP contact 12. Front brake hose 13. Rear brake hose 14. Rigid piping 15. Parking brake control lever 16. Parking brake primary cable 17. Parking brake secondary cable |
|---|--|

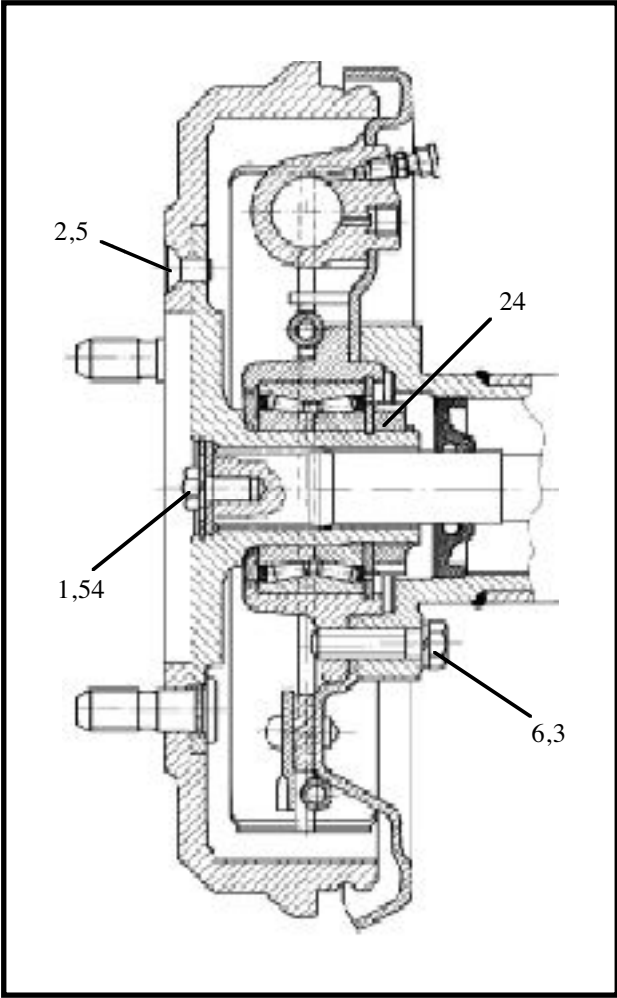
FRONT DRIVING AXLE



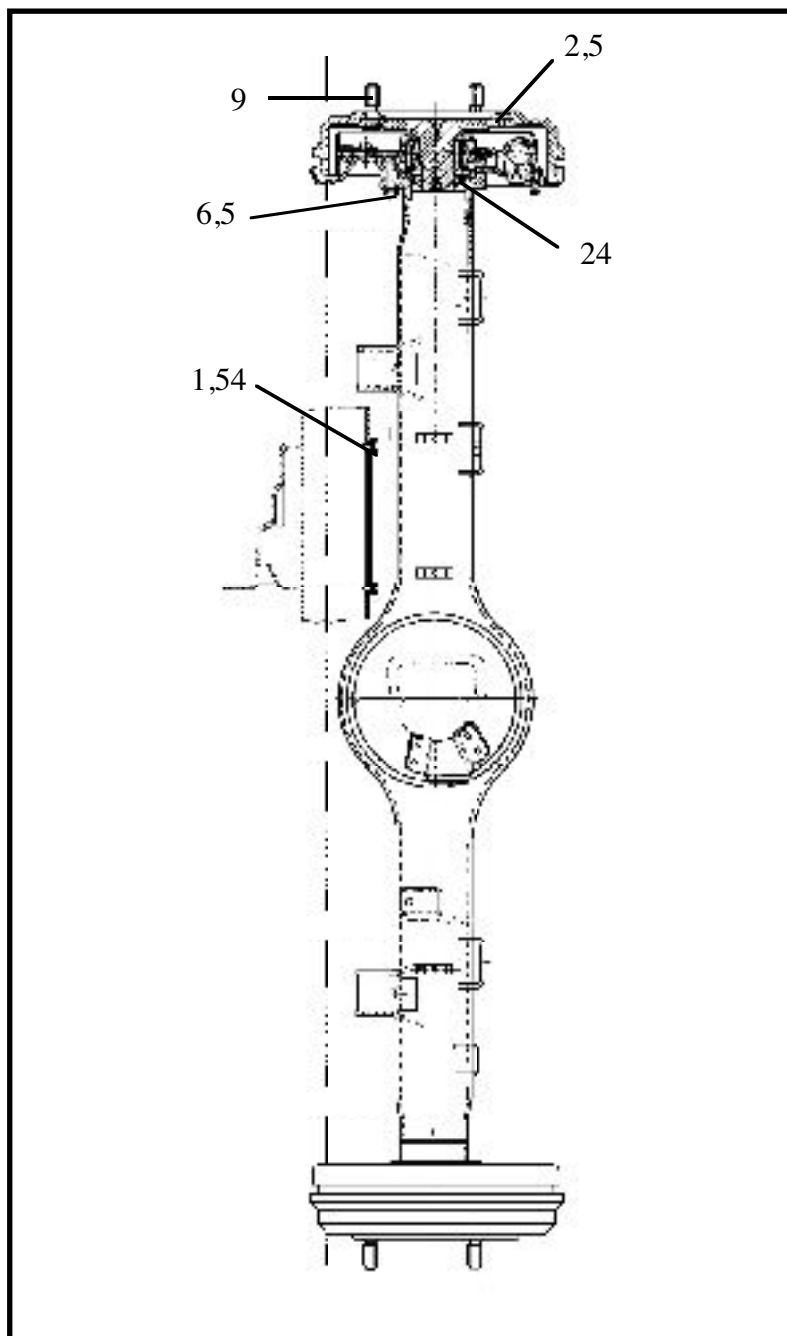
FRONT NON DRIVING AXLE



REAR DRIVING AXLE



REAR UNDRIVING AXLE





ELEMENT	TIGHTENING MOMENT
Caliper purging screw	1 - 1,2
Flexible hoses in calipers	2
Rigid tubing linkage in wheel cylinder	1,5
Pad holder attachment screw	6,5
Attachment screw disk to the hub	2
Front wheel steering knuckle nut	23
Wheel attachment screw	9
Wheel fixing nuts	9
Main brake cylinder fixing nut with servobrake	1,3
I.C.P. transducer	2
Servobrake on bridge floor	2
The screw-connection of the rigid linkage on: main brake cylinder, pressure limiter, rear wheel cylinder, flexible hose.	1,5

GENERAL
THE DIMENSIONS OF MAIN BRAKING ELEMENTS

30

(in mm)
FRONT BRAKE

Brake caliper bore diameter (for 3 screws wheel)	ϕ 48
Brake caliper bore diameter (for 5 screws wheel)	ϕ 54
Brake disk diameter	228
Disk thickness non aerated	10
Disk thickness aerated	20
Minimal disk thickness non aerate	9
Minimal disk thickness aerated	19
Braking pad thickness (the support included)	14
Minimal brake pad thickness (the support included)	7
Disk axial run out measured at Φ 215	0,1

REAR BRAKE

Wheel braking cylinder diameter	25,4
New drum inner diameter	254
Maximum drum diameter after grinding	255
Braking lining width	50
Braking lining thickness	5
Minimal accepted braking lining height above rivets	0,5

TANDEM MASTER CYLINDER with I.C.P. BY PASS INCLUDED Inner diameter Max.pump stroke BRAKE FLUID TANK PRESSURE LIMITER	20,6 32 Double, with alarm sensor For parallel circuit
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The sewerage connection between the brake pump, brake calipers, pressure limiter is performed by means of the sleeves threaded with METRIC PITCH

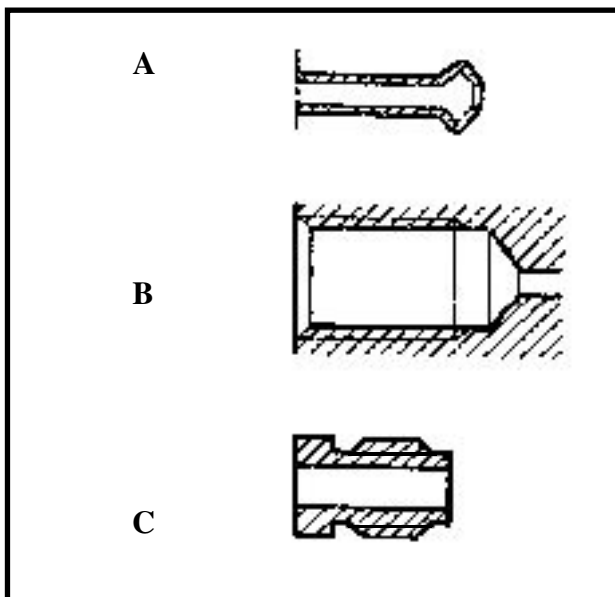
Therefore it is important to use only original spare parts, recommended in the spare parts catalogue specific for this type of vehicle.

Spare parts identification

The cupping shape of the copper or steel ducts (A).

The shape of the threaded lengths on parts (B).

Connections of ducts (C).



PERIODIC CHANGE OF THE BREAK FLUID

The manufacturing conception of the brakes equipping the Dacia vehicles especially the disk brake type (inner empty pistons, low quantity of fluid with cylinder, sliding calipers avoiding existence of a fluid reserve in the less cooled area of the wheel) enable the maximum rejection of fluid vaporization even in case of intensive using of brakes (mountain area).

The current brake fluids suffer in all cases a slight degradations during the first months of use by a slight humidity absorption series (see the Vehicle Warranty and Maintenance Booklet, for brake fluid change)

COMPLETION OF THE BRAKE FLUID LEVEL

The wear of brakes pads and shoes leads to a gradually diminution of brake fluid level in the brake fluid tank.

It is not necessary to compensate this diminution, because the level will be restored when changing the brake pads and shoes.

Obviously, in the meantime, the level of brake fluid in tank must not go down below the minimal mark.

HOMOLOGATED BRAKE FLUIDS

The mixture in the braking circuit of two non compatible brake fluids may leads to important risks mainly due to gasket damage. In order to avoid such risks, it is important to use brake fluids checked and homologated by our laboratories and which are conformed with Norm **SAEJ 1703, DOT 4**.

AIR ELIMINATION FROM THE HYDRAULIC CIRCUIT (PURGING)

The air existence in the hydraulic circuit may be noticed by an elastic displacement of the brake pedal, sometimes even, close to the floor. This fact is more evident with the engine stopped.

GENERAL RECOMMENDATIONS

Always use for completion or total changing the brake fluid Norm **SAE J 1703, DOT 4**

In case of changing the brake fluid it is necessary to wash the system with one liter of industrial alcohol.

During the purging, the brake fluid from the tank must not go down bellow the minimal level marked on the tank.

To perform the purging, one person will stay on the driver place, to push the brake pedal and the other one will perform the purging (bleeding) at the wheel using a 500 ml vessel, a transparent plastic tube and brake fluid for completion.

PROCEDURE

Place on the bleeding (purging) screw, a transparent tube with its end in a vessel with brake fluid and proceed as follows: press the brake pedal slowly, dismount the bleeding screw, maintaining the full stroke of the pedal, then tighten the bleeding screw and slowly release the brake pedal.

Repeat the same procedure until complete cease of bubbles. Proceed in the same way also for the other purging places. (Take into consideration the existence all the time of the brake fluid in the tank).

ATTENTION : Before beginning the purging procedure dismount the I.C.P. from the brake pump. It shall be remounted at the end of the operation.

PROCEDURE IN PARALLEL SYSTEM

It is important to observe the following sequence of the purging points:

- 1,6. Main cylinder with I.C.P. incorporated;
2. Left rear wheel brake cylinder;
3. Right rear wheel brake cylinder;
4. Caliper of front right wheel;
5. Caliper of front left wheel.

OPERATING CONDITIONS

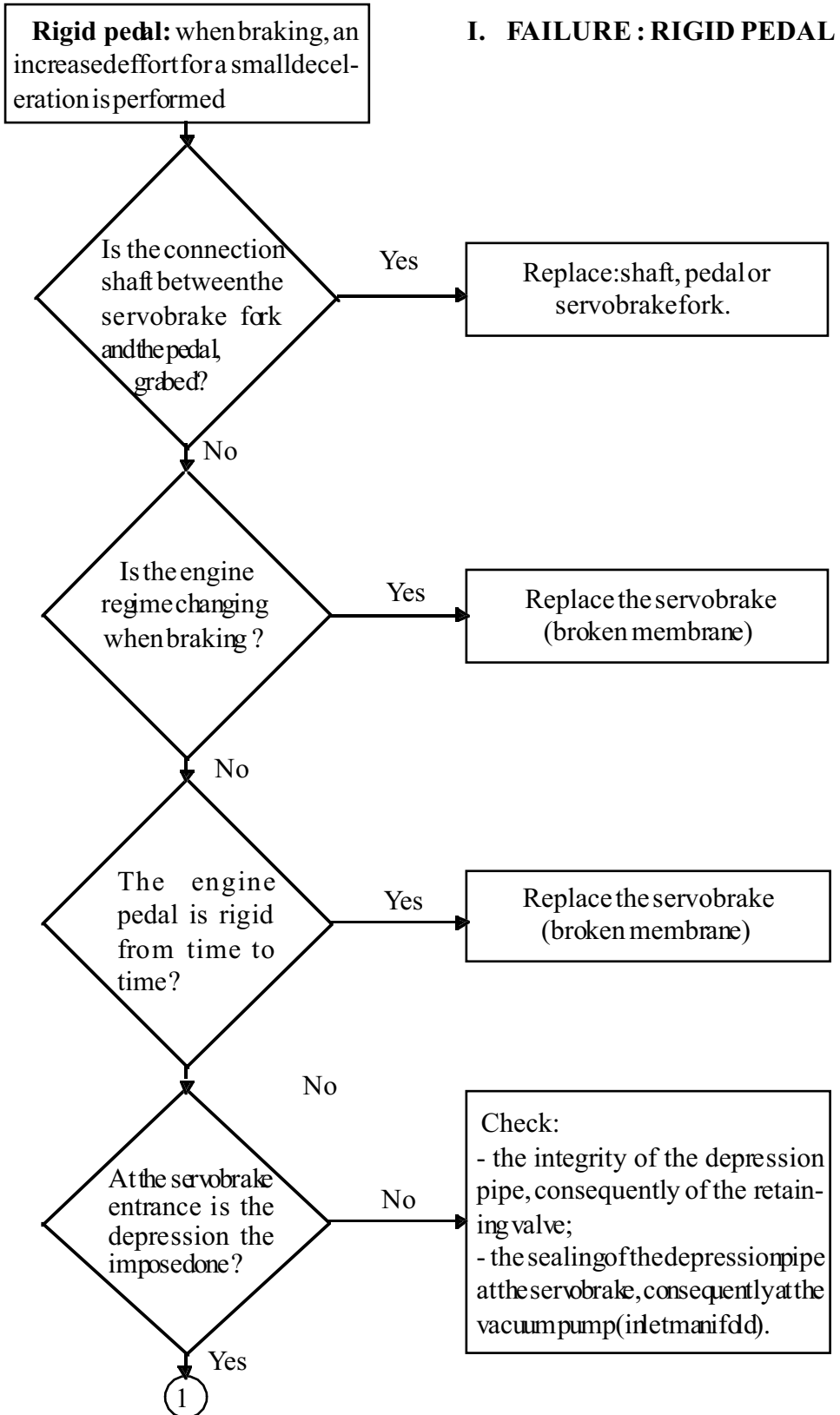
The vehicle is on wheels.

If the fuel tank is empty, place on the rear bench of the vehicle one or two persons to enable the possibility of the circuit opening (the passing of a larger fluid flow through the brake limiter).

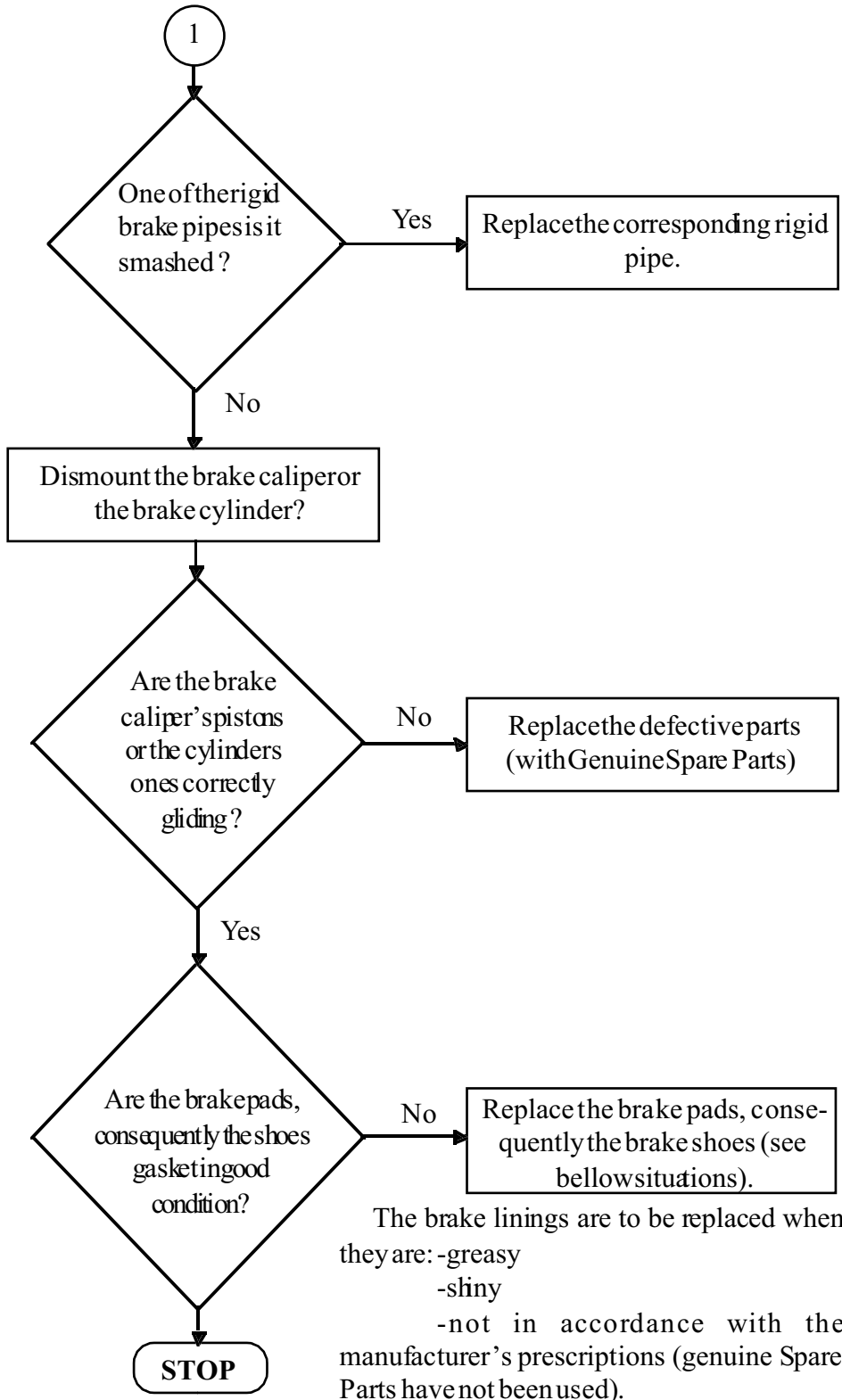
CHECKING THE BRAKE SYSTEM SEALING

After purging the front and rear circuits, check if the level of brake fluid in tank is within the prescribed limits, than press the brake pedal for 30 s ,during this time the pedal shall not change its place.

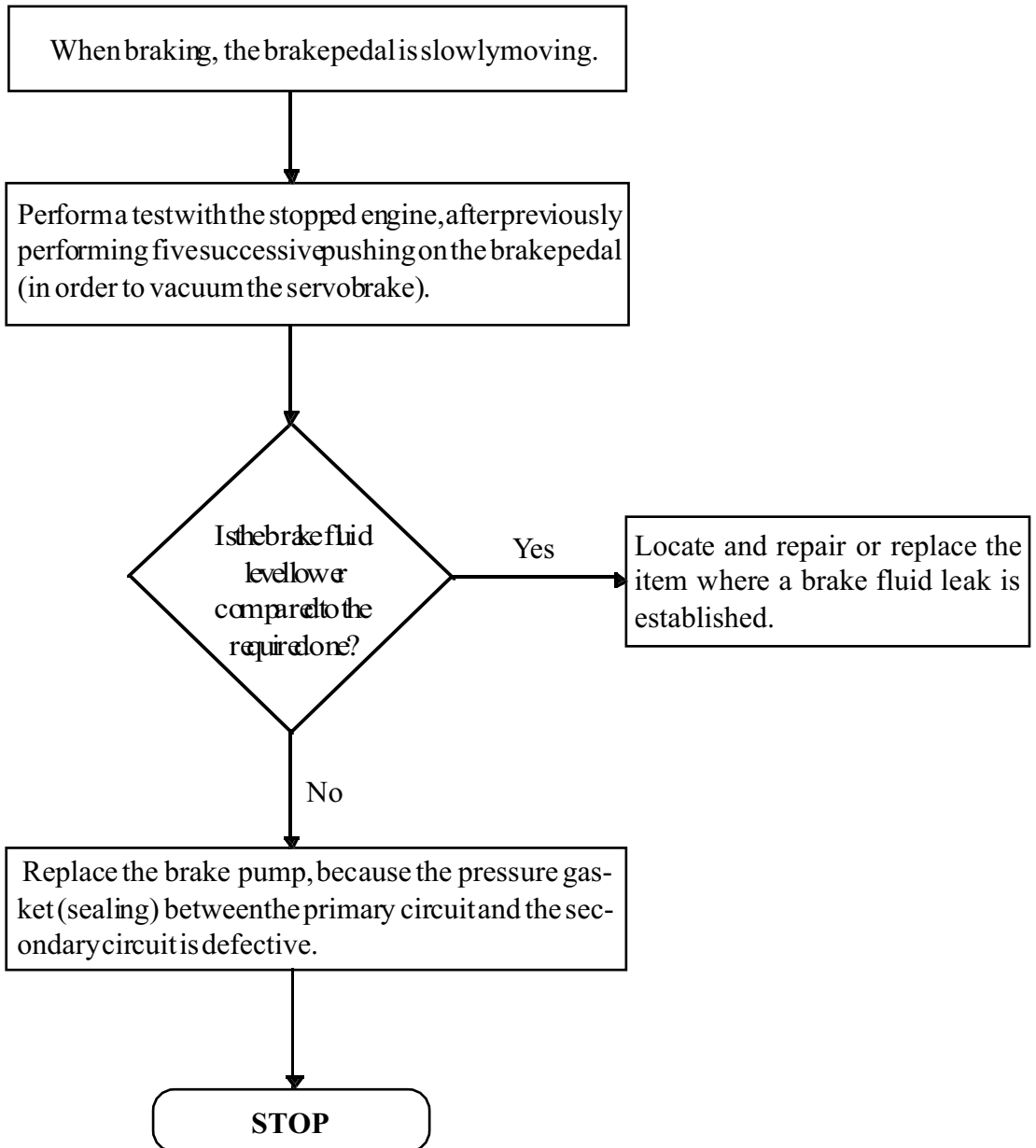
Leaking in the brake system is not acceptable.



I. FAILURE : RIGID PEDAL (ctd)



II. FAILURE : LONG PEDAL



I. CONSTANT EFFECT TO THE PEDAL

EFFECTS	POSSIBLE CAUSES
<p>Tough pedal: <u>High effort for small deceleration</u></p>	<ul style="list-style-type: none"> - Assistance defect - Brake linings: <ul style="list-style-type: none"> - greasy - stacking to the disk (non-conform) - heating, prolonged braking with constant pedal press - Stuck piston - Rigid duct narrowed (flattening)
<p>Elastic pedal In order to diagnose, an incident where the use was normal is to be analyzed and two tests are to be performed:</p> <p>1. While driving the vehicle : Interpretation test: pedal stroke/ deceleration rate.</p> <p>2. While vehicle is stopped, engine cut. Additional test of brake pedal press: Perform five consecutive pressings on the brake pedal in order to vacuum the servobrake, before taking into consideration the test result.</p>	<ul style="list-style-type: none"> - Air presence in the circuit defective purging - Internal leak in the braking circuit. - Leak of fluid from reservoir (external fluid leak from braking circuit) <p>Automatic adjustment : hand brake cable too tighten.</p>
<p>Long pedal The test is to be performed with stopped vehicle and cut engine.</p> <p>REMARK: It is necessary to perform five consecutive pressings on the brake pedal, in order to vacuum the servobrake before taking into consideration the test result.</p>	<ul style="list-style-type: none"> - Important and asymmetric wear of the brake linings - Stroke too ample between the servobrake pushing rod and the brake pump - Brake fluid having high temperature. - Hydraulic leak (check the sealing of the braking system components)
<p>Floor pedal The test is to be performed with stopped vehicle and cut engine.</p> <p>REMARK : Perform five consecutive pressings on the brake pedal, in order to vacuum the servobrake before taking into consideration the test result.</p>	<ul style="list-style-type: none"> - Sealing gaskets defects of the two brake pump circuits. - Brake fluid having high temperature

II. CONSTANT EFFECT AT BEHAVIOUR

EFFECTS	POSSIBLE CAUSES
Brakes not accomplishing the required braking distance	<ul style="list-style-type: none"> - Non-uniform worn brake linings (backing off); - Brake linings slightly greased; - Springs with modified characteristics.
Vibrating brakes	<ul style="list-style-type: none"> - Brake disks with high wobbling; - Inconstancy brake disks width; - Particles abnormal deposit on brake disks (oxidation between linings and disk).
When braking, the vehicle (front part) is left/right deviating	<ul style="list-style-type: none"> - Front axle suspension, steering (to be checked); - Stuck piston; - Tires – wear, inflation pressure; - Rigid duct narrowed (flattening).
Braking	<ul style="list-style-type: none"> - Stuck piston; <p>Automatic adjustment : hand brake cable very tighten</p> <p style="text-align: center;">REMARK :</p> <p style="text-align: center;"><i>Automatic recovering is performed by means of the brake pedal, if there is no abnormal tension in the hand brake cable when released (hand brake released).</i></p> <ul style="list-style-type: none"> - Return spring.
Heating brakes	<ul style="list-style-type: none"> - Insufficient hydraulic stroke of the brake pump, not allowing the return at rest of the brake pump pistons (brake pump remaining under pressure); - Stuck pistons or hardly returning; - Rigid duct narrowed (flattening); - Defective adjustment of the hand brake control.

THE SEQUENCE OF THE OPERATIONS

Due to the geometric conception of the front axle, modification of one side angle (castor angle, camber angle, ball joints) has no major impact on the value of other side angles (the parallelism being directly influenced).

The modification of these angles does not happen during vehicle exploitation, but only as a consequence of a vehicle accident.

It is important to observe the following sequence:

- placing the vehicle on rotating plates;
- braked vehicle;
- check suspension for placing the vehicle at its free height;
- establishing of the steering central point and steering box lock;
- fixing of the optical devices on the vehicle, as per manufacturer instructions.

ESTABLISHING OF THE STEERING CENTRAL POINT

In order to establish the steering box central point, bring gear rod in the position where $C = 65 \text{ mm}$.

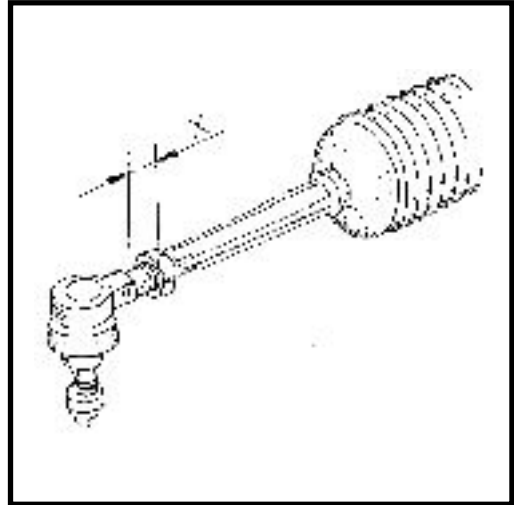
This value is obtained when a rivet of the elastic coupling is upward orientated.

The performing of one checking or adjusting front axle operation implies location of the steering box point in order to avoid errors when measuring.

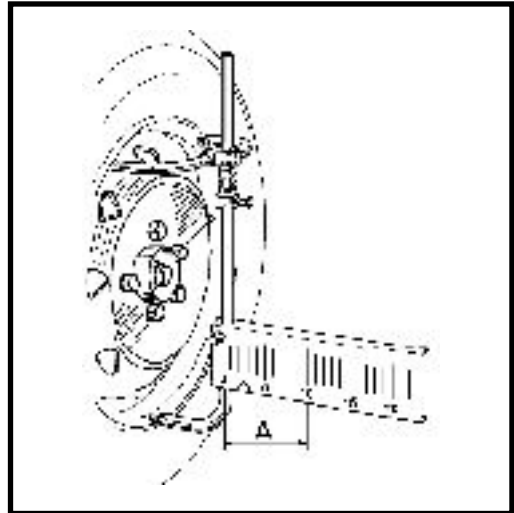


REPARTITION CHECKING AND ADJUSTMENT

Check the connecting rods symmetry "X".



Read the value "A" on the scale.



Case1. The symmetry dimension “X” is correct:

- the value “A” is equal distributed.

Case2. The symmetry dimension “X” is incorrect:

- read the value “A” on each side, mark it, calculate an average value, establishing the value for each side.

EXAMPLE

Right side value: **A = 16**;

Left side value: **A = 10**;

16 + 10 = 26; 26 : 2 = 13.

Operating the steering rods tie bar, restore the same value for both side **A = 13**.

In this position, lock the rotating plate to zero point.

Check in order: camber angle, caster angle, parallelism, ball joint angle.

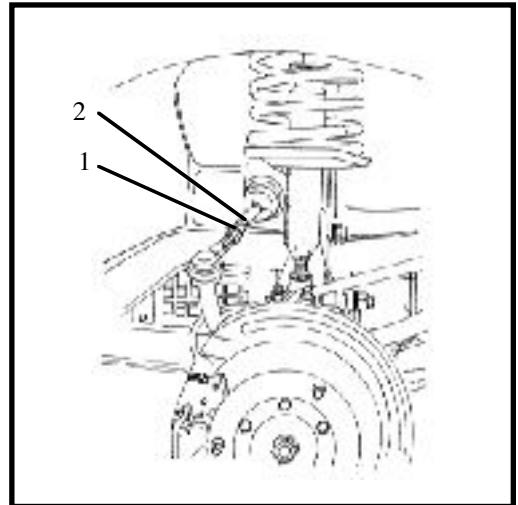


PARALLELISM ADJUSTMENT

Loosen the locknut (1) maintaining the tierod of steering connecting rod (2) in a fixed position

Act upon the rod of steering connecting rod taking into account the rotation sense of latter in order to obtain the convergence or divergence and also the fact that one of its complete rotation leads to an axial displacement of **1,5 mm**.

After obtaining the correct parallelism, tighten the lock nut at a moment of **5 daNm**.



OBSERVATION: Three situations may appear:

PARALLELISM	REPARTITION	CORRECTION WHICH MUST PERFORMED
1. CORRECT	INCORRECT	It is performed the same number of connecting rod rotation on left side and right side until obtain the same value “A”.
2. INCORRECT	CORRECT	Adjust the parallelism at the same value for left and right side ensuring in the same time, the same value “A” on both sides.
3. INCORRECT	INCORRECT	First operate on repartition in order to balance the value “A” on each side, than adjust the parallelism (see Case 2).

THE AXIAL DEVIATION OF THE WHEELS TO THE LEFT OR RIGHT AT STABLE SPEED

Preliminary checking:

WHEELS (front,rear): - pressure;

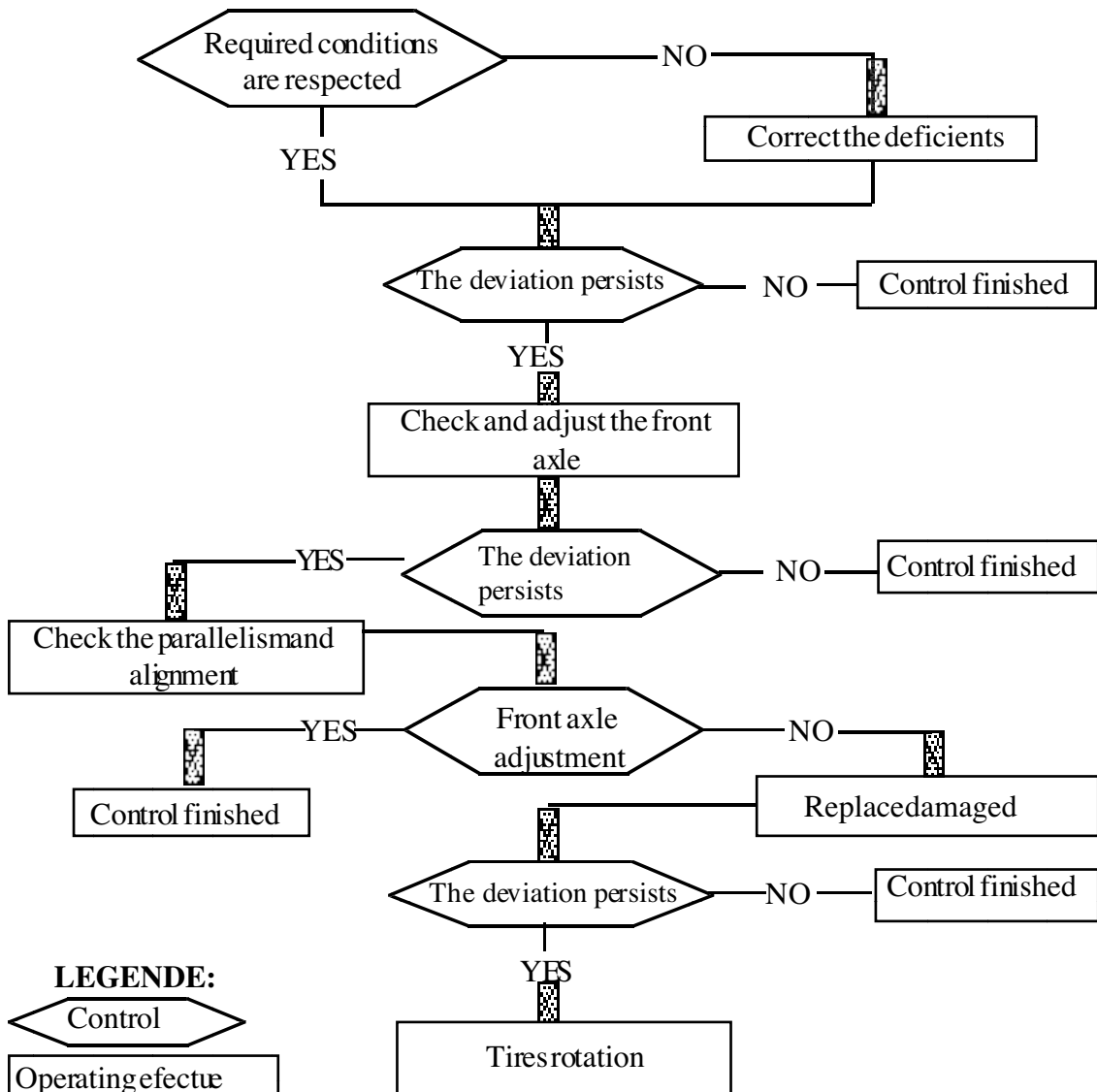
- dimensions;

- types;

- adjusting wheels.

HINGES: - bush.

CONTROL POINTS HEIGHT: - symmetry



SUSPENSION UPPER ARM

SPECIAL TOOLS

DENOMINATION	CODE
Front axle support cross bars	PF 509
Ball joints extractor	PF 476
Dynamometric wrench	MOT 50

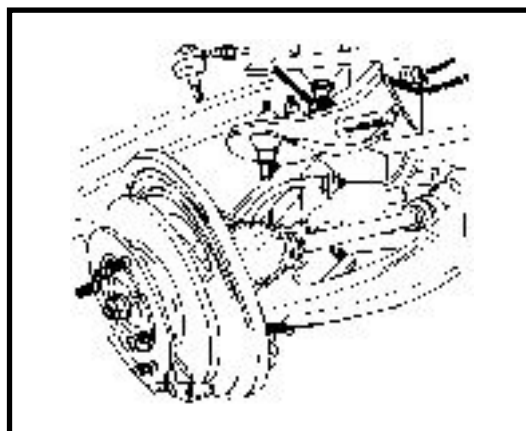
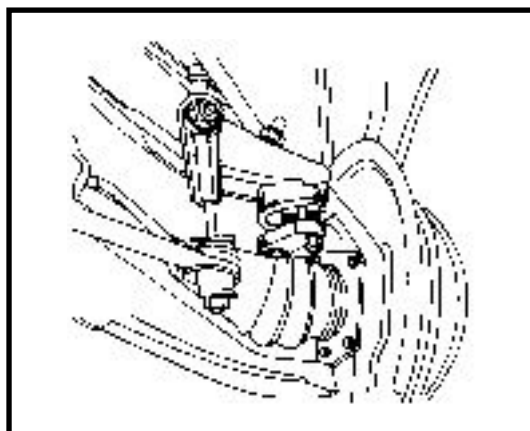
DISMOUNTING

The operation that were performed on a half axle are identical to those performed on the other one.

Suspend the vehicle on the elevator.

On the part where the upper arm is dismantled , the following operations are performed:

- dismantle the wheel;
- loosen the lower lock nut of the shock absorber;
- detach the caster angle rod off the upper part of the arm;
- dismantle the suspension upper ball joint and the steering ball joint by means of the **PF 476** extractor;
- dismantle the lower joint shaft of the shock absorber;
- dismantle the upper arm of the shaft;
- lift the arm and dismantle the lower joint of the shock absorber;
- remove the arm.



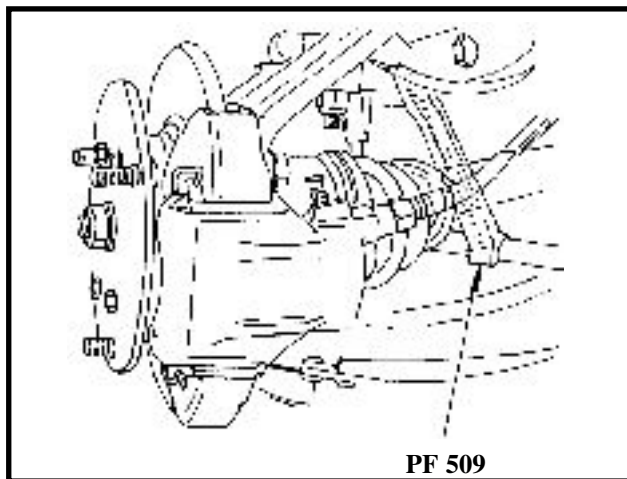
REMOUNTING

Position the arm and clamp the lower joint of the shock absorber.

Couple the upper suspension ball joint with the steering knuckle and slightly tighten the nut.

Mount , without tightening ;

- the upper arm shaft;
- the lower joint shaft of the shock absorber;
- the steering ball joint;
- the caster rod.



Mount the crossbar **PF 509** or compress the front axle in position **H1 – H2 = 80 mm**.

In this position of elastic bushings locking , tighten to the required moment:

- the upper arm shaft nut;
- the lower joint shaft of the shock absorber;
- the caster rod nut;
- the upper suspension ball joint nut;
- the steering ball joint nut.

Mount the wheel and get the vehicle down from the elevator.

TIGHTENING MOMENTS

- Upper arm shaft nut..... **9,5 daNm**
- Shock absorber lower shaft nut..... **6 daNm**
- Caster rod nut..... **4 daNm**
- Upper ball joint nut..... **5 daNm**
- Wheels nut..... **9 daNm**

CHECKING

SPECIAL TOOLS

DENOMINATION	CODE
Front axle support cross bars	PF 509
Ball joints extractor	PF 476
Upper arm checking device	PF 502
Dynamometric wrench	MOT 50

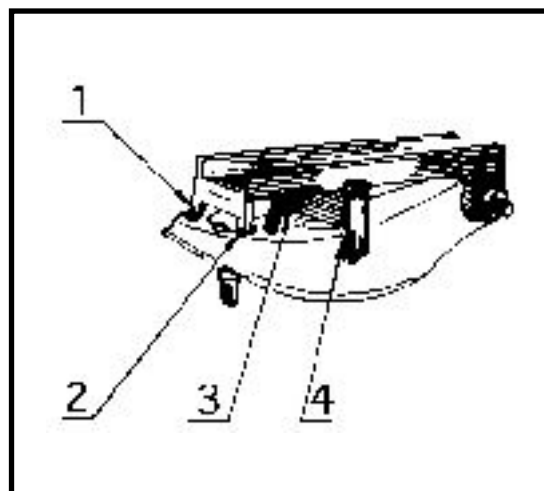
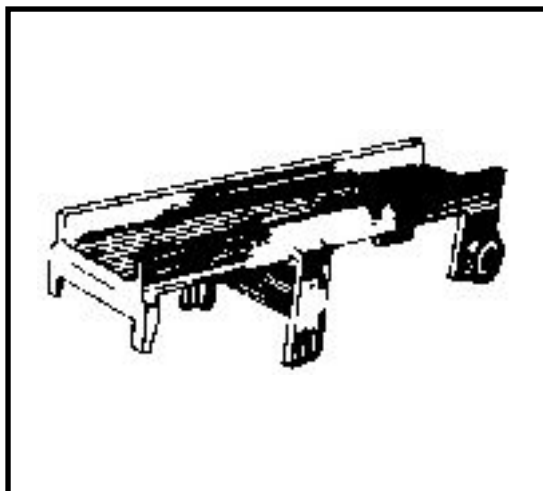
Dismount the upper arm of the suspension.

Place the device on the arm and mount the shaft.

The arm should easily enter in the device central guiding and should be placed on one of the support pins (1,2,3,4).

Measure the distance between the support pins and arm, which should be between **0** and **1 mm**.

Re mount the suspension upper arm on the vehicle.



ELASTIC BUSHING REPLACEMENT

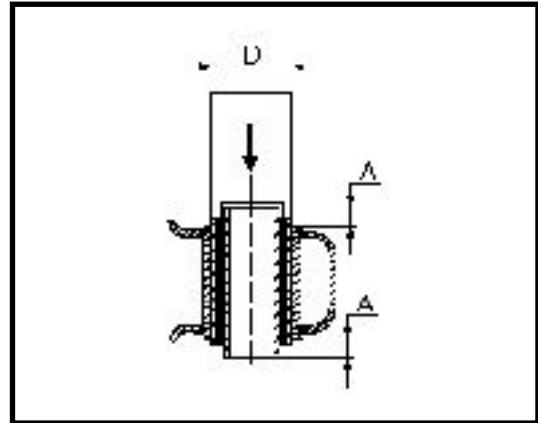
SPECIAL TOOLS:

DENOMINATION	CODE
Front axle support cross bar	PF 509
Ball joint extractor	PF 476
Dynamometric wrench	MOT 50

Dismount the upper arm of the suspension.
 Dismount on a press the worn bushing, using a rod with the outer diameter of **D = 26mm**.

Press the new bushing. On pressing, observe the value **A = 6mm**.

Mount the upper arm on the vehicle.



BALL JOINT REPLACEMENT

SPECIAL TOOLS:

DENOMINATION	CODE
Front axle support cross bar	PF 509
Ball joint extractor	PF 476
Dynamometric wrench	MOT 50

Lift the vehicle using a two columns elevator.

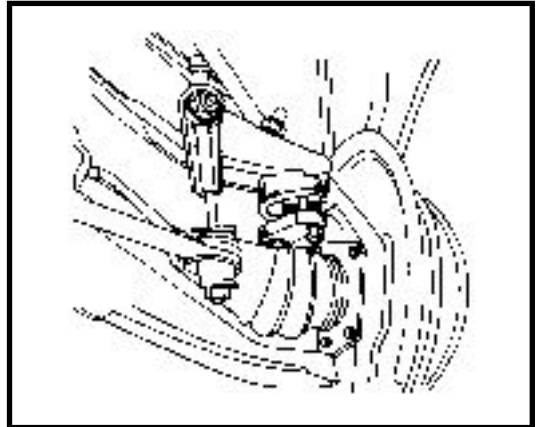
Dismount the wheel, mounting the **PF 509** crossbar, between the lower arm shaft and the shock absorber joint shaft.

Release the ball joint from the steering knuckle by means of the **PF476** extractor.

Dismount the attachment screw of the upper ball joint.

Dismount the ball joint.

Assemble the attachment screw of the rod with the ball joint and place it on the arm.



In case protection below is damaged, replace it with a new one.

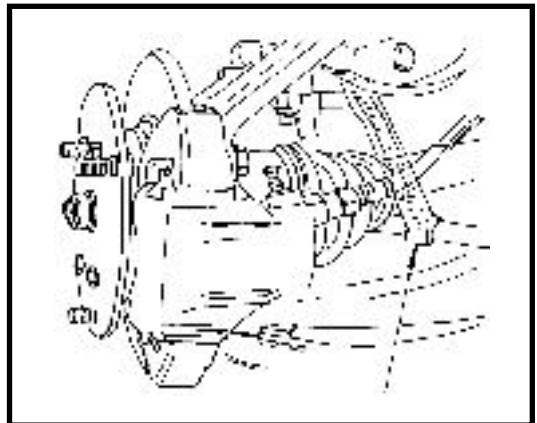
Attach the ball joint to the arm by replacing the rivets with screws, the latter being mounted with the ends towards the bellow.

Mount the caster rod.

Couple the ball joint and tighten it to the required moment.

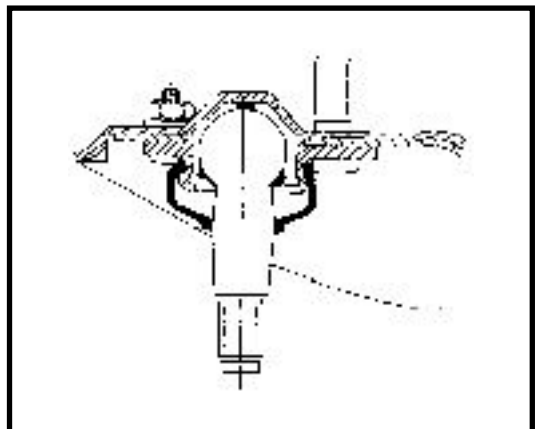
Dismount the cross bar **PF 509**.

Mount the wheel and take down the vehicle from the elevator.



Check and adjust, if necessary :

- the caster angle;
- the camber angle;
- the steering box position;
- the parallelism and the wheels alignment.

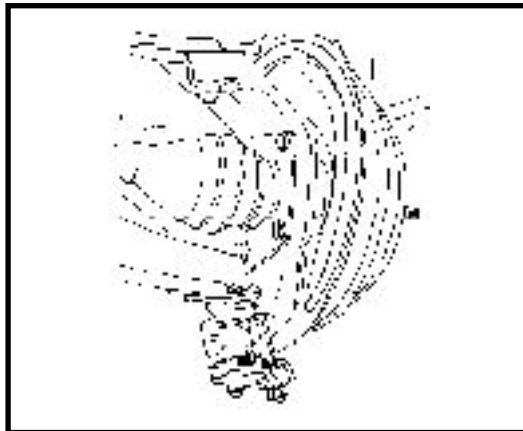


SUSPENSION LOWER ARM**SPECIAL TOOLS:**

DENOMINATION	CODE
Front axle support cross bar	PF 509
Ball joint extractor	PF 476
Dynamometric wrench	MOT 50

DISMOUNTING

Lift the vehicle on the elevator and dismount the wheel.
Release the lower suspension ball joint by means the **PF 476** extractor
Dismount the elastic bushings of the rod stabilizer.
Slowly lower the stabilizer rod to enable the taking out of the shaft.
Unscrew the nut and take out the shaft.
Release the lower ball joint and dismount the arm.



REMOUNTING

Mount the lower ball joint in the steering knuckle and slightly tighten the nut.

Lift the half-front axle by means of a jack.

Position the arm, grease it with special **MoS2** grease and mount it.

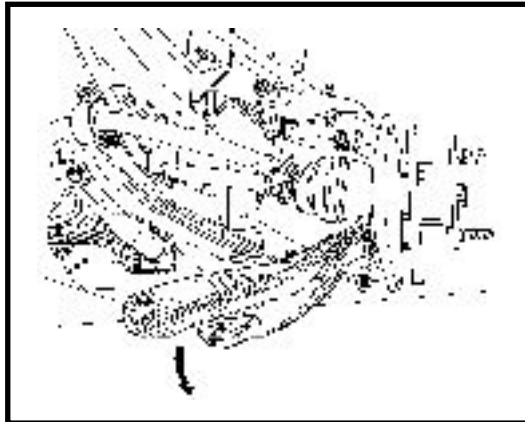
Mount the elastic bushings of the stabilizer rod.

Compress the front axle in the lock position of the elastic bushings, introducing the **PF 509** support cross bar between lower arm shaft and shock absorber shaft.

Tighten the following to the required moment :

- the lower ball joint nut;
- the lower arm shaft nut;
- the stabilizer rod elastic bushing nut.

Mount the wheel, take down the vehicle from the elevator and remove the **PF509** support cross bar.



CHECKING**SPECIAL TOOLS:**

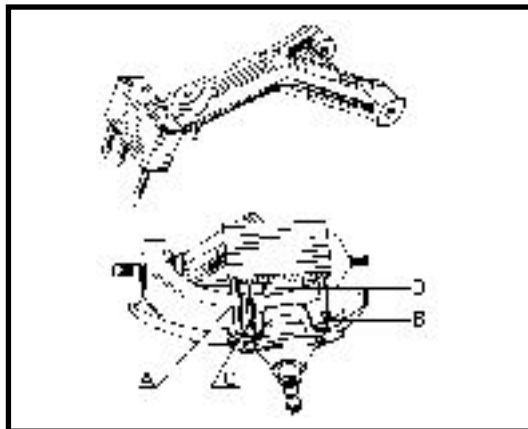
DENOMINATION	CODE
Front axle support cross bar	PF 509
Ball joint extractor	PF 476
Lower arm checking device	PF 502
Dynamometric wrench	MOT 50

Dismount the suspension lower arm.

Mount the lower arm checking device **PF502** on the lower arm and introduce the shaft.

By means of the pin (**D**) placed on the arm, measure the distance between the pins (**A,B,C**) and arm, which should be between **0** and **1 mm** .

Mount the suspension lower arm on the vehicle.



ELASTIC BUSHING REPLACEMENT

SPECIAL TOOLS:

DENOMINATION	CODE
Front axle support cross bar	PF 509
Ball joint extractor	PF 476
Dynamometric wrench	MOT 50

This operation implies bushings replacement one by one ,in order to maintain their position as to the arm shaft.

Dismount the suspension lower arm.

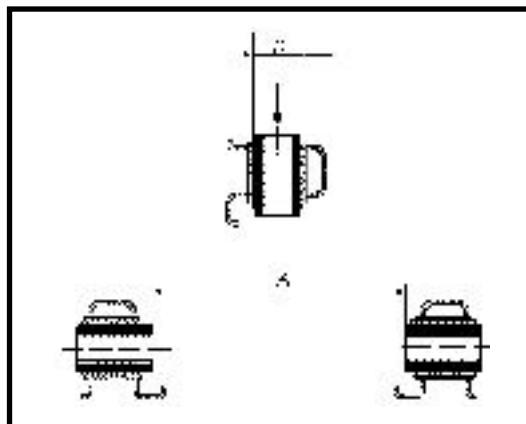
Depress one elastic bushing, using a **31 mm** outside diameter (**D**) rod.

Mount the new bushing on a press ,observing the value **A = 151 mm**.

Dismount on a press the other elastic bushings.

Press the new bushing ,observing the value **A = 151mm**.

Mount the suspension lower arm on the vehicle.



BALL JOINT REPLACEMENT

SPECIAL TOOLS:

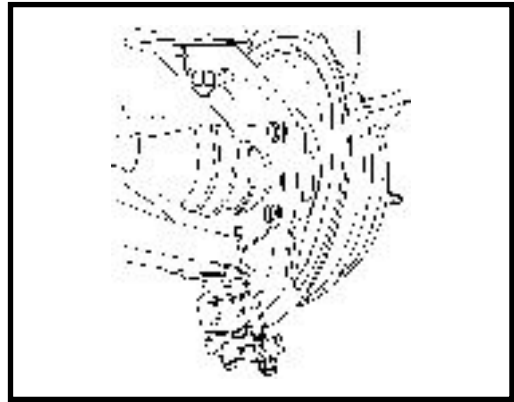
DENOMINATION	CODE
Front axle support cross bar	PF 509
Ball joint extractor	PF 476
Dynamometric wrench	MOT 50

Release the ball joint by means of the **PF 476** extractor.

Dismount the suspension lower arm.

Bore and remove the ball joint attachment rivets.

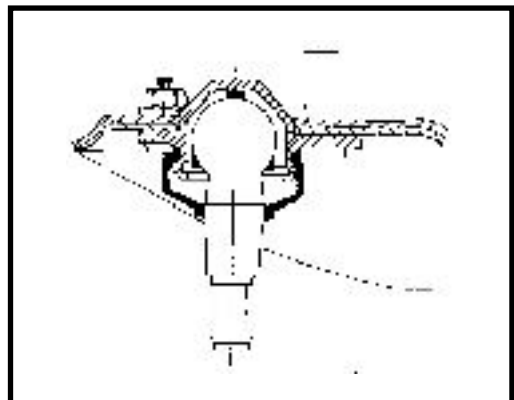
Mount the new ball joint and attach it with screws, which shall have the head oriented towards the bellows.



Mount the lower arm on the vehicle.

Check and adjust:

- the caster angle;
- the camber angle;
- the steering box position;
- the parallelism and repartition.



SPECIAL TOOLS: *Pushing piston device FR 500*

FRONT BRAKE PADS REPLACEMENT

NOTE:

In order to maintain the brake efficiency, the replacement of the brake pads shall be made only in complete kit; never fit brake pads of different makes and different qualities. The replacement is made when the pad thickness is less than 7 mm (support included).

DISMOUNTING

Lift the vehicle by means of a two columns elevator.

Dismount the wheels.

Dismount the calipers without detaching the flexible hoses.

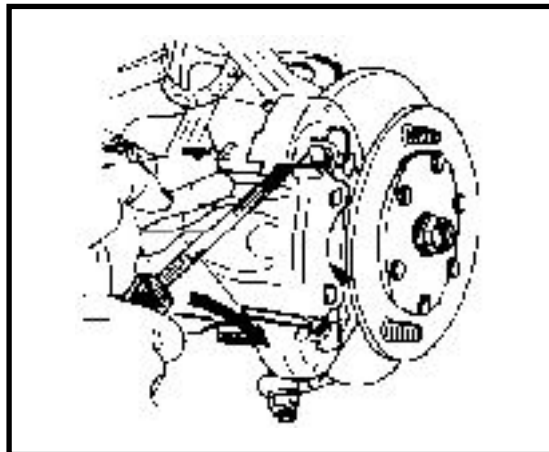
NOTE: *Do not press the brake pedal*

Dismount :

- the brake pads;
- elastic blades.

Dismount the protection bellows.

Clean with alcohol the housing of bellow and the piston end; blow with compressed air.



REMOUNTING

Mount the protection bellow.

Check :

- the wear of brake disk;
- the wear of flexible hoses.

Push the piston by means of the **FR 500** device.

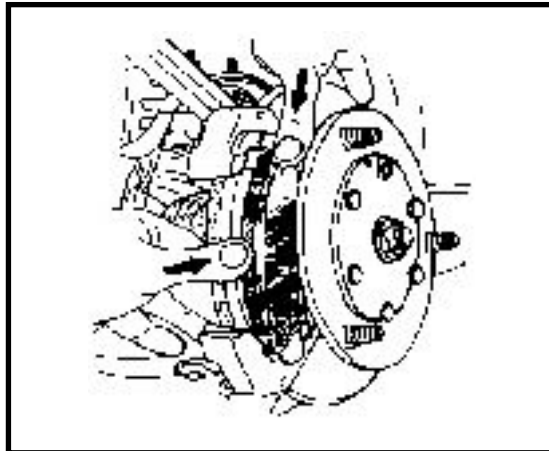
Mount:


- the protection bellows;
- the elastic blades;
- the new brake pads; pads must easily slide in the caliper fork.

Mount the calipers.

Mount the wheels and get down the vehicle on the ground.

Press the brake pedal for several times in order to bring the pistons in contact with the brake pads.



TIGHTENING MOMENTS (daNm)		
Wheel nuts	9	
Rigid sewerage-connection screws	1,5	

DISMOUNTING

Drain the brake fluid tank.

Lift the vehicle by means of a two columns elevator

Dismount the wheel.

Dismount:

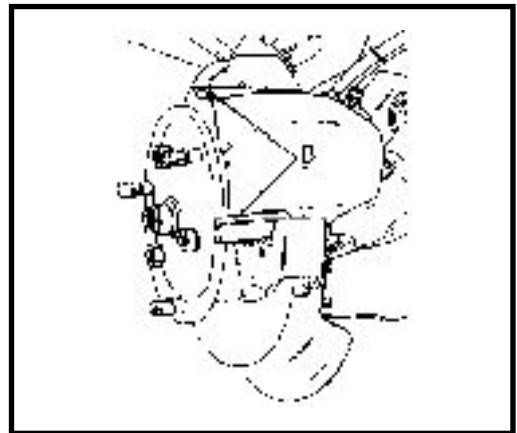
- safety wedges;
- the wedges (**B**) by lateral sliding.

Disconnect the brake wear sensor.

Unscrew the rigid sewerage-connection from the brake flexible hose.

Remove the safety washer of the flexible connection from the stopper and dismount the caliper.

Unscrew the flexible connection from caliper and the purging screw.

**REMOUNTING**

Check:

- the state of flexible connection;
- the state of brake disk;
- the state of brake pads;
- the state of protection bellow.

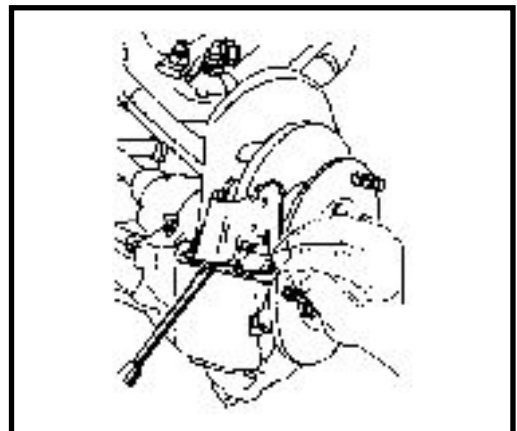
Replace the damaged or worn parts.

Fill the caliper with brake fluid.

Mount on the caliper:

- aerating screw;
- the flexible connection with a new copper gasket.

Push the piston by means of the **FR 500** device.



Clean and grease the sliding surfaces of the caliper, wedges and pads holder.

Mount the caliper on the pad holder.

Mount the lower wedge, which must smoothly slide.

Introduce a screwdriver between upper caliper part and pad holder and press the screwdriver.

Mount the upper wedge.

Mount the wedges safety washers.

Place the flexible connection on its stopper.

Connect the rigid connection with the flexible connection.

Mount the safety maintenance washer.

Fill the tank with brake fluid.

Purge the brake circuit.

FRONT BRAKE CALIPER REPAIRING

Dismount the caliper off the vehicle

Dismount:

- the flexible connection;
- the purging screw;
- the protection bellow.

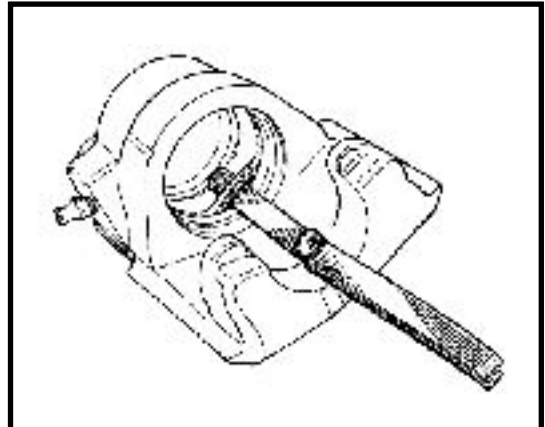
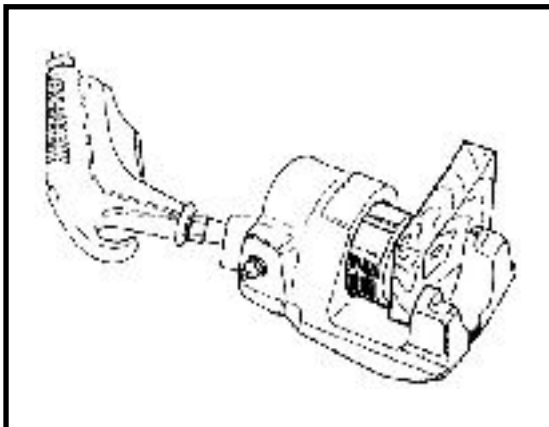
Place a wooden wedge between the piston and the caliper.

Take out the piston by means of compressed air.

Dismount the sealing gasket from the caliper groove by means of a steel blade with round ends.

Wash with alcohol the parts and blow them with compressed air; clean attentively the sealing gasket housing.

Check the wear of parts; replace the parts showing wear, scratches or ripple-marks, with new, original ones and reassemble for sealing test.



TEMPORARY REMOUNTING FOR TESTING

Lubricate the caliper groove and the sealing gasket with brake fluid.

Mount the sealing gasket in its seat.

Lubricate the piston with brake fluid and introduce it in the brake caliper. The piston should be displaced easily by hand; in any case, it shall be not forced or tapped by a hammer.

Mount the purging screw.



BRAKE CALIPER SEALING CHECKING

Connect to the brake caliper, a pressure gauge attached to a compressed air source.

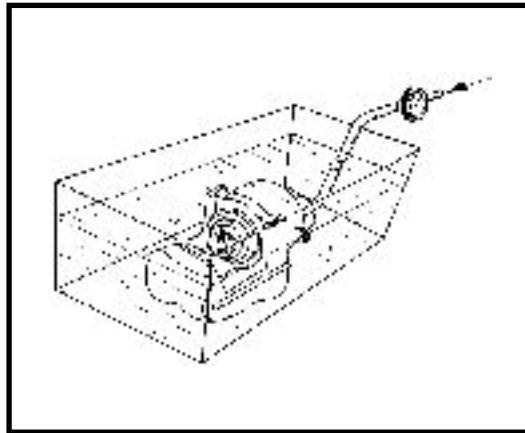
Create a **0,3 bars** pressure in the brake caliper.

Dip the caliper into a vessel with alcohol.

Move the piston several times to remove the air from the sealing gasket seat.

Place a wooden wedge between the piston and the brake caliper.

Check the sealing of the brake caliper at various pressures , without going over **2 bars**.



If the brake caliper lets the air flow by the piston, dismount the caliper brake once more.

If the piston has been reused, it shall be replaced, and if it has been replaced, it shall be recovered and the brake caliper shall be replaced with a new assembly.

Perform again the sealing test.

After having performed the sealing test, dismount the brake caliper and blow it with compressed air.

If the brake caliper is in a good state, it shall be mounted.

Grease the pinion and the inside of the caliper brake grease.

Mount:

- the sealing gasket;
- the piston;
- the protection bellow;
- the purging screw;
- the flexible connection, with a new copper gasket.

Fill up the caliper with brake fluid.

Mount the caliper brake on the vehicle.

Purge the braking circuit.

FRONT BRAKE DISK

SPECIAL TOOLS:

DENOMINATION	CODE
Caliper piston pusher	FR 500
Dynamometric wrench	MOT 30



TIGHTENING MOMENTS

- Brake caliper fork attachment screw on steering knuckle..... **6,5 daNm**
- Disk attachment screw on the hub..... **2 daNm**
- Steering knuckle front wheel nut..... **23 daNm**
- Wheel nut..... **9 daNm**

The brake disk shall be not rectified.

A bigger wear or important marks on the brake disk impose obligatory replacement of the brake disk.

The minimal accepted thickness of not aerate disk**9 mm**

The minimal accepted thickness of aerate disk..**19 mm**

The maximum accepted axial deviation **0,2 mm** on diameter ϕ 215

NOTE:

The maximum axial deviation is 0,2 mm. If the thickness of the disk is smaller than 9 mm or if the wear is not uniform, the disk shall be replaced.

DISMOUNTING

Lift the vehicle on the elevator

Dismantle:

- the wheel;
- the front wheel steering knuckle nut;
- the caliper without disconnecting the flexible connection;
- the brake pads;
- the caliper support.

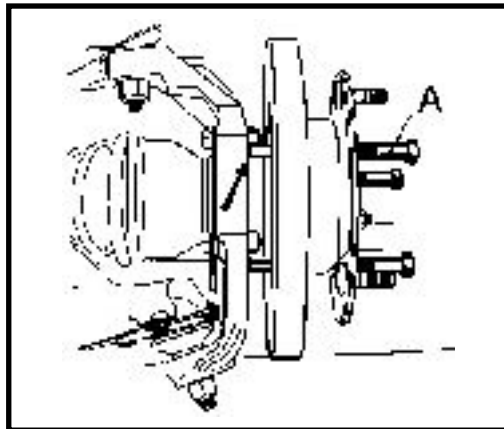
Lock the hub by means of the **PF 235 A** device and unscrew the steering knuckle nut.

Unscrew the three attachment screws of the hub disk, located at 120° one of another; mount in their place the **RO 482 – 01** extractor.

Place a screw near the attachment nut of the bearing closing plate and bring the three screws in contact with the steering knuckle.

Alternatively tighten the three screws until dismantling the “hub – disk” assembly

Dismount the disk off the hub.



REMountING

Check the state of the flexible hose and of the brake pads; replace them if necessary.

Attach the disk to the hub.

Grease the bearing with **LiCaPb type II grease**.

Mount the cross bar on the hub and place the “hub – disk” assembly on the steering knuckle.

Mount the “hub – disk” assembly on the steering knuckle by means of the **PF 236** device.

Mount the steering knuckle nut and tighten at **23 daNm** moment by means of the

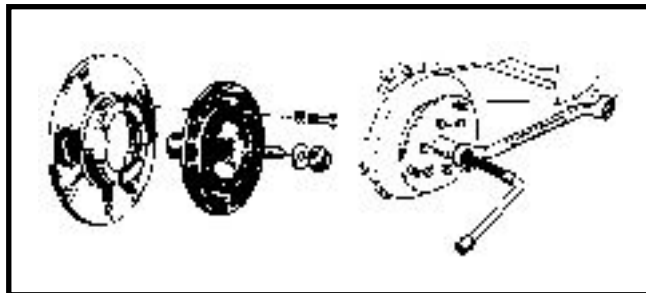
MOT 50 wrench.


Mount:

- the caliper support with the screws greased with **FIXAMED R 58** and new Grower washer;
- the brake pads;
- the brake caliper;
- the wheel.

Get the vehicle down from the elevator.

Press the brake pedal several times, in order to bring the piston in contact with the brake pads.



TIGHTENING MOMENTS (in daNm)	
The attachment caliper support screw on steering knuckle	6,5
The attachment protector screw on the caliper support.....	1,3
The attachment protector screw on the steering knuckle.....	2

DISMOUNTING

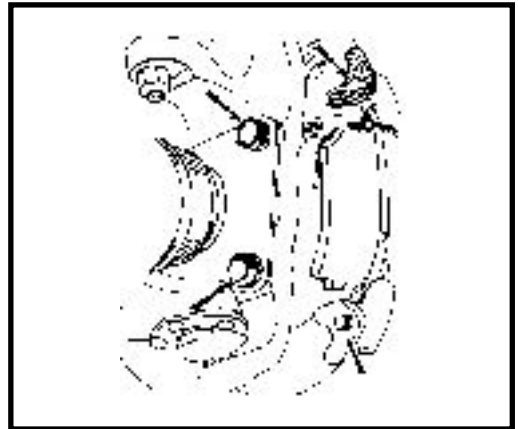
Lift the vehicle on a two columns elevator;

Dismant:

- the wheel;
- the caliper without disconnecting the flexible connection;
- the brake pads.

Dismant:

- the two screws **M 6 x 1** that attach the protector on the brake caliper support;
- the two screws **M 8 x 1,25** that attach the brake caliper support on the steering knuckle;
- the two screws **M 12 x 1,25** that attach the brake caliper support on the steering knuckle the brake caliper support.

**REMOUNTING****NOTE:**

Upon remounting, grease the screws with FIXAMED R 58 and replace the Grower washers.

Place the brake caliper support in the right position.

Tighten the screws **M 12 x 1,25** at the required moment of **6,5 daNm**.

Tighten the screws **M 6 x 1** that attach the protector at the required moment of **1,3 daNm**.

Mount:

- the brake pads;
- the brake caliper support;
- the wheel.

Take down the vehicle from the elevator.

DISMOUNTING

SPECIAL TOOLS:

DENOMINATION	CODE
Transmission gear and hub extractor	PF 235 A
Transmission gear mounting device	PF 236
Ball joint extractor	PF 476
Front axle support cross bar	PF 509
Dynamometric wrench	MOT 50



TIGHTENING MOMENTS

- Upper ball joint nut.....**5 daN.m**
- Lower ball joint nut.....**5 daN.m**
- Steering ball joint nut.....**4 daN.m**
- Transmission nut.....**23 daN.m**
- Wheels nut.....**9 daN.m**
- Caliper support attachment screws.....**6,5 daN.m**

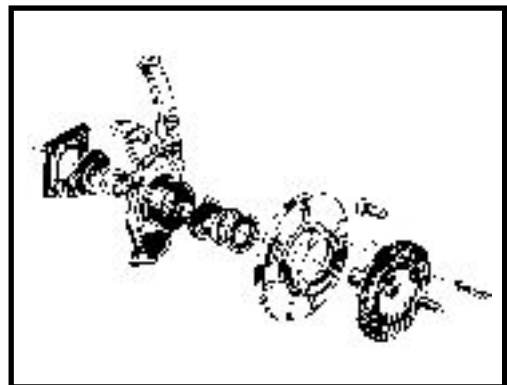
DISMOUNTING

Lift the vehicle by means of an elevator.

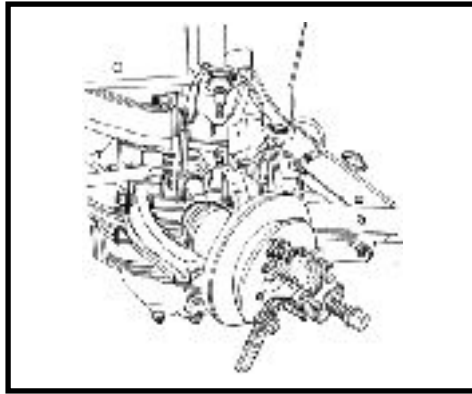
Mount the **PF509** support cross bar.

Dismant:

- the wheel;
- the brake caliper together with flexible connection;
- the brake caliper support and the mud flap
- the transmission gear nut.



Mount the **PF 235 A** extractor on the hub;
 Depress the “hub – disc” assembly;
 Dismount the three ball joints by means **PF 476** and take out the steering knuckle.



REMOUNTING

Position and press the steering knuckle on the “hub – disk” assembly, after previously having introduced a grease supply.

Mount the “hub – disk - steering knuckle” assembly, by coupling the ball joints and tighten their nuts to the required moment.

Mount the transmission gear by means of the **PF 236** device.

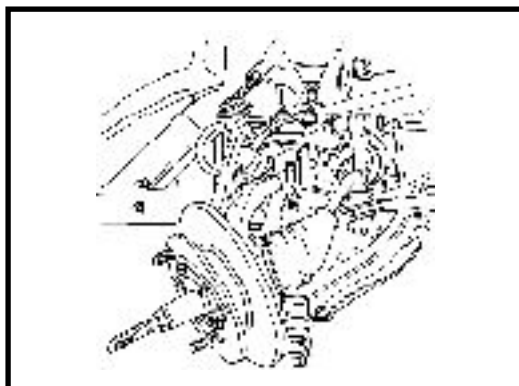
Mount and tighten:

- the transmission nut;
- the brake caliper support and the mud flap;
- the brake caliper.

Mount the wheel, get the vehicle down from the elevator, recover the **PF 509** crossbar.

Press the brake pedal several times in order to bring the brake caliper piston in contact with the brake pads

When replacing the steering knuckle, check and adjust the steering box position, the parallelism, distribution.



STEERING KNUKLE - CHECKING

SPECIAL TOOLS:

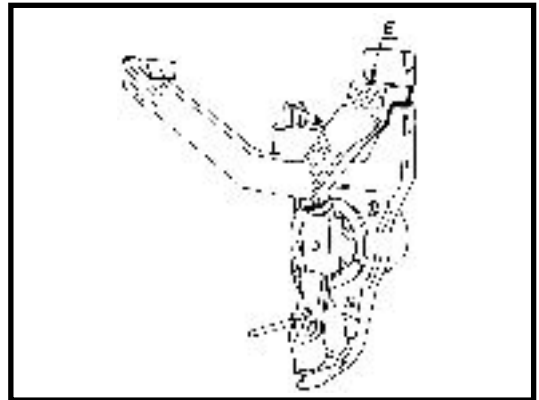
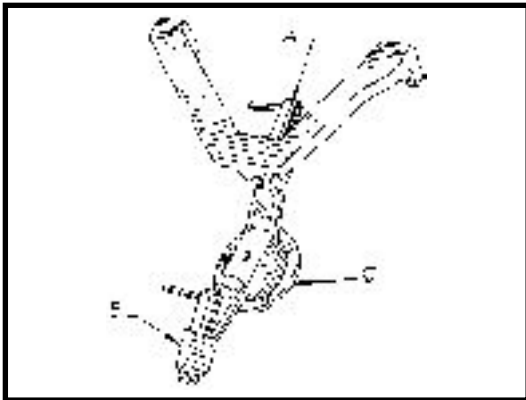
DENOMINATION	CODE
Steering knuckle checking device	PF 496

The steering knuckle is dismounted off the motor car.

Dismount the inner bearing of the steering knuckle.

In its seat, place the pin (C) of the PF 496 checking device, and place mandrels (A) and (B) in the suspension ball joint seats.

In this situation, the side (E) of the steering knuckle should be parallel to the checking device front side, and the seat of the steering ball joint should get into the device bore.



STEERING KNUCKLE - BEARINGS REPLACEMENT

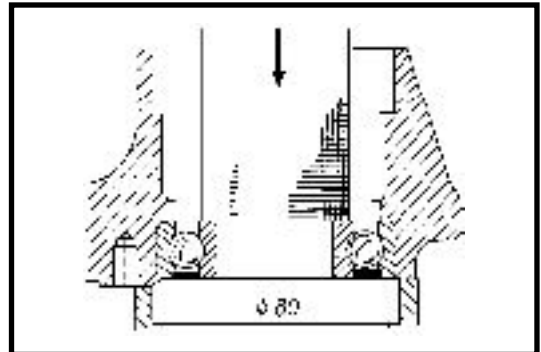
SPECIAL TOOLS:

DENOMINATION	CODE
Front axle support crossbar	PF509
Transmission gear and hub extractor	PF 235 A
Transmission gear mounting device	PF 236
Ball joint extractor	PF 476
Shaft protection bushing	RO 15 - 01
Bearings extractor	CV 28 A
Dynamometric wrench	MOT 50

Dismount the steering knuckle off the vehicle and dismount the sealing plate.

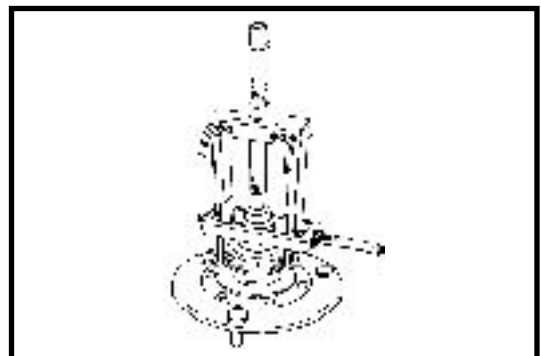
INNER BEARING DISMOUNTING

Place the steering knuckle on a **80 mm** → inner diameter tube and depress the inner bearing, using a **45 mm** → outer diameter rod.



OUTER BEARING DISMOUNTING

Once the “hub – disk” assembly being dismantled, mount the **RO 15 – 01** protection sleeve and dismount the bearing by means of the **CV 28 A** extractor.



INNER BEARING REMOUNTING

Mount the new bearing by means of a press, using a bushing having the outer diameter of **71 mm** and the inner diameter of **66 mm**.

The bushing shall be supported and shall be pressed on the bearing outer ring.

NOTE: Do not deteriorate the bearing sealing gasket !

OUTER BEARING REMOUNTING

Mount bearing by pressing it on the hub, using a **36 mm** inside diameter rod. This shall be supported and shall press the inner ring of the bearing.

Put grease **LiCaPb** type **UM 180 Li 2** in the steering knuckle.

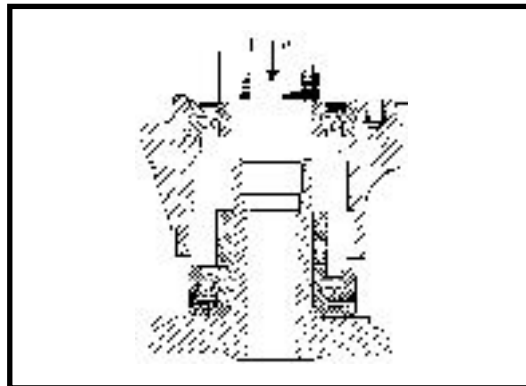
Introduce the bearing spacer.

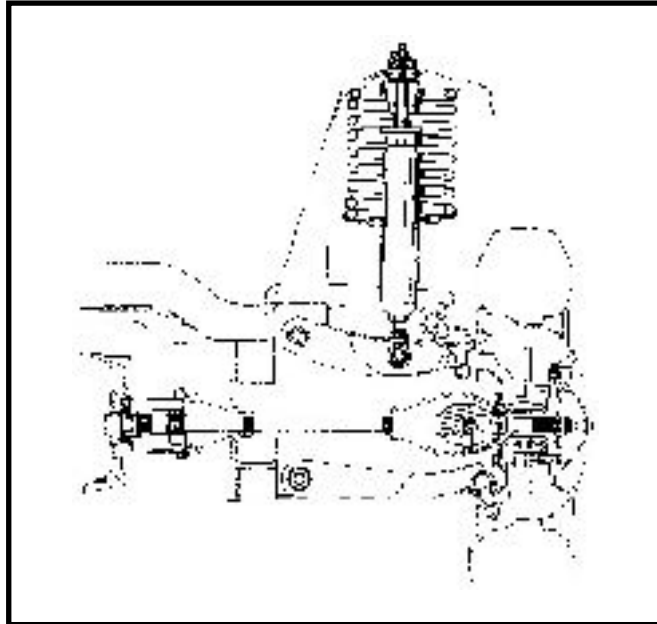
Position the bearing together with the steering knuckle on the “hub– disk” assembly

This is pressed on the hub using a rod that shall rest on the inner ring, and that shall have the following dimensions: outer diameter: **43 mm** and inner diameter **36 mm**.

Grease the inner bearing sealing gasket edge with grease **LiCaPb** type **UM 180 Li 2**.

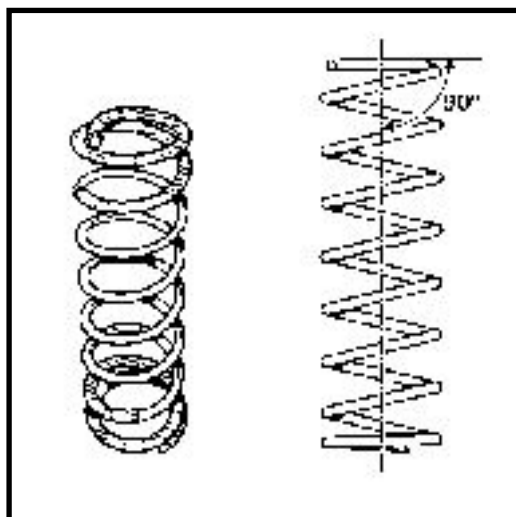
Mounting the sealing plate.



FRONT SUSPENSION (section)**FRONT SUSPENSION**

With helical springs, hydraulic shock absorber with double effect, with incorporated lock buffers and stabilizer rod.

The helical springs have a flat support area at the upper part, and a flat support area at the lower part.



NOTE: Make sure the suspension springs of each axle have the same characteristics.

TYPE OF MOTOR CARE	COIL DIAMETER (mm)	FREE LENGTH / UNDER LOAD daN/mm
FRONT SPRINGS		
Pick - up 1304, 1305, 1307	14,5	410 / 250

STABILIZER ROD

VEHICLE TYPE	DIAMETER (mm)
Pick - up 1304, 1305, 1307	19

FRONT SUSPENSION TIGHTENING MOMENTS

- Upper arm shaft nut.....**9,5 daN.m**
- Lower arm shaft nut.....**11 daN.m**
- Upper ball joint nut.....**5 daN.m**
- Lower ball joint nut.....**5 daN.m**
- Steering ball joint nut.....**4 daN.m**
- Stabilizer rod shaft nut.....**8 daN.m**
- Steering connecting rod lower nut.....**1,5 daN.m**
- Shock absorber lock nut.....**1,5 daN.m**
- Front shock absorber lock nut.....**6 daN.m**
- Stabilizer rod shaft attachment nut.....**1,5 daN.m**

IMPORTANT!

Since the shock absorbers are stored in the spare parts warehouses in horizontal position, it is possible, that they get depressed.

That is why, before mounting on the motor car, the shock absorbers shall be pressed by shifting the rod upwards and downwards (the shock absorber in vertical position).

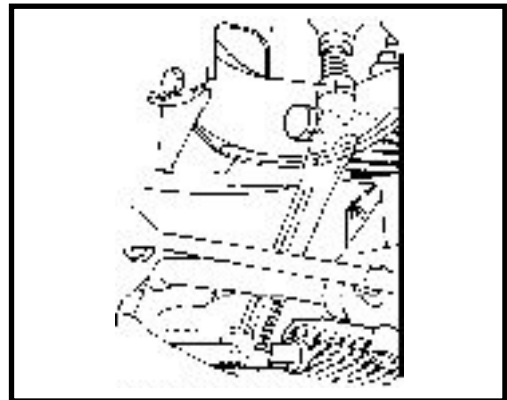
FRONT SHOCK ABSORBER REPLACEMENT BY MEANS OF THE SUS 478 - 01 DEVICE

The front shock absorber may be dismantled as follows:

- single, using the **SUS 478 – 01** device;
- together with the spring, using the **SUS 478** device.

DISMOUNTING

Mount the **PF 509** support crossbar between the shock absorber lower attachment shaft and the suspension lower arm shaft.



Lift the engine by means of a 2 columns elevator.

Remove the plastic shutter mounted on the shock absorber column.

Dismount the wheel.

Mount the **SUS 478 – 01** device on the wing double lining reinforcement.

Place the threaded rod and compress the spring.

Loosen the stabilizer rod shaft nut.

Unscrew:

- the shock absorber upper lock nut and nut;
- the shock absorber lower lock nut.

Rotate the shock absorber and remove it from the lower joint.

Push the rod, tilt the shock absorber and take it out.



REMOUNTING

Grease the threaded parts of the shock absorber with special **MoS2** grease.

Press the rod, tilt and place the shock absorber.

Fully screw the shock absorber into the lower joint.

Pull the shock absorber rod by means of the **SUS513** device.

Position the rubber buffers and the crossbar.

Tighten the upper nut at the required moment.

Tighten the lock nut.

Tighten at the required couple:

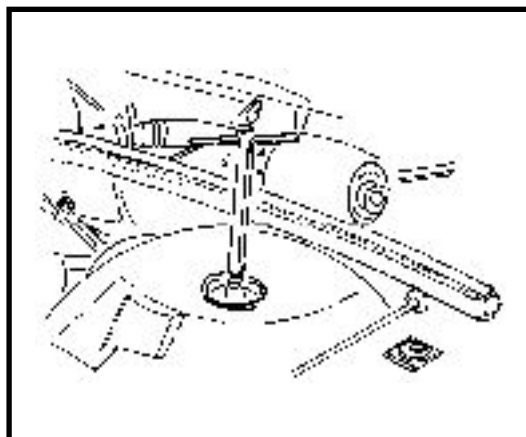
- the lower lock nut;
- the stabilizer rod shaft nut.

Dismount the **SUS478 – 01** device.

Mount the wheel.

Lower the vehicle from the elevator.

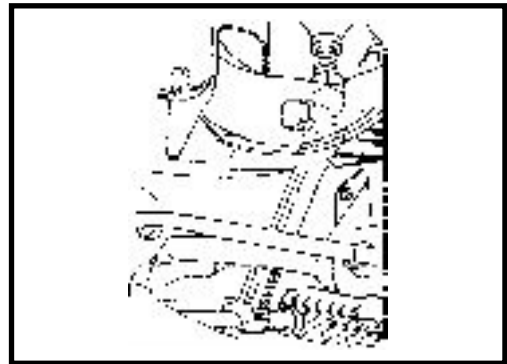
Remove the **PF509** support crossbar.



FRONT SHOCK ABSORBER REPLACEMENT BY MEANS OF THE SUS 478 DEVICE

DISMOUNTING

Mount the **PF 509** support crossbar.



Lift the vehicle by means of a 2 columns elevator.

Dismount the wheel.

Take the **SUS 478** device and perform the following operations:

- grease the thread of the grippers;
- hook the grippers to the last but one upper coil of the shock absorber spring;
- place the lower plate of the device;
- slightly tighten the nuts;
- mount the lock collar at the middle of the springs;
- compress the spring by alternately tightening the nuts, until the spring raises from the shock absorber flange.

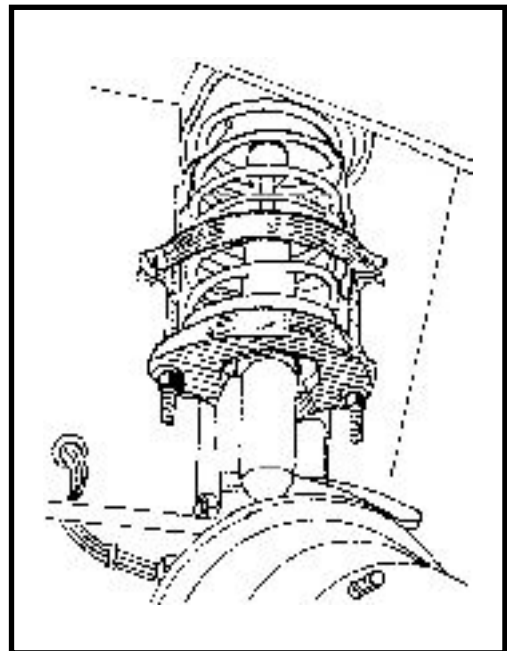
Dismount:

- the shock absorber upper nut and lock nut;
- the shock absorber lower lock nut.

Rotate the shock absorber and remove it from the lower joint.

Push the shock absorber rod.

Dismount the “device – spring – shock absorber” assembly.



REMountING

Grease the threaded parts of the shock absorber with special **MoS2** grease.

Place the “ device– spring – shock absorber “ assembly.

Fully screw the shock absorber into the lower joint.

Pull the shock absorber rod by means of the **SUS 513** device.

Position the rubber buffers and the crossbar.

Tighten the upper nut at the required moment.

Tighten the lock nut.

Tighten at the required couple:

- the lower lock nut;

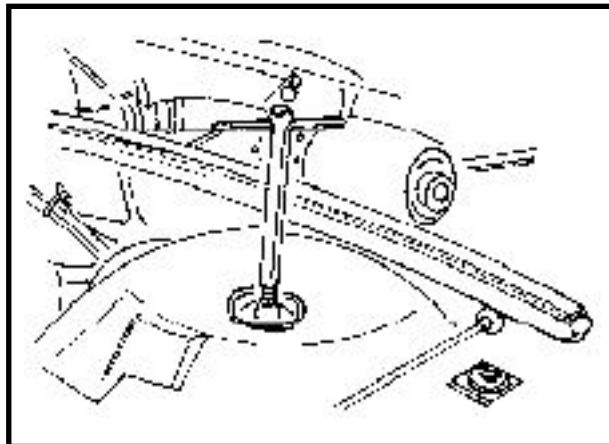
- the stabilizer rod shaft nut.

Depress the spring and dismount the **SUS 478** device.

Mount the wheel.

Lower the vehicle from the elevator.

Remove the **PF 509** support crossbar.



DISMOUNTING

Dismount the shock absorber and the spring by means of the **SUS478** device.

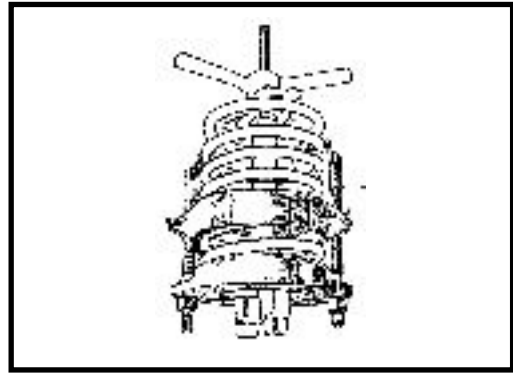
Clamp the **SUS480** device into the vice.

Place the “**SUS478** device – spring” assembly on the **SUS480** device.

Place the upper plate and press the spring until the **SUS478** device is released.

Dismount the **SUS478** device.

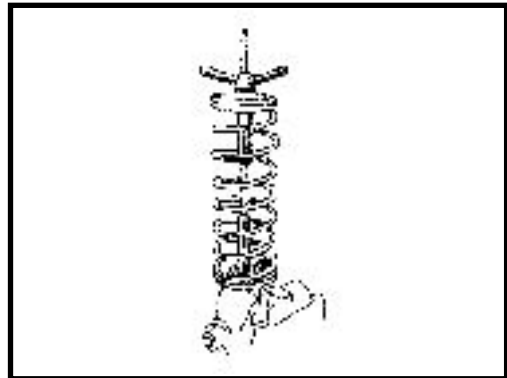
Depress the spring and remove it.

**REMOUNTING**

Place the new spring on the **SUS480** device.

Press the spring, observing its mounting position.

Mount the **SUS478** device (the grippers shall be hooked on the last but one upper coil).

**NOTE:**

*The lower end of the spring must be in contact with the plate and aligned with the **SUS478** device support slot.*

Dismount the **SUS480** device.

Mount the “device – spring – shock absorber” assembly.

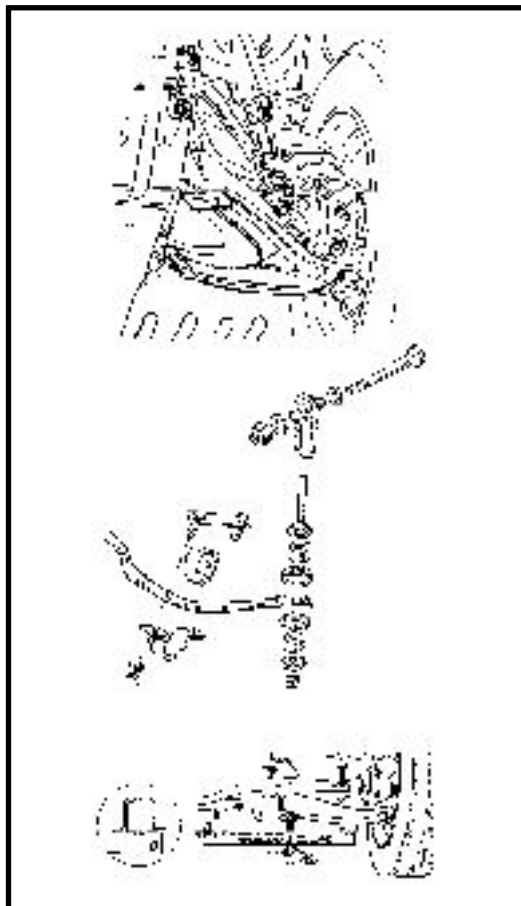
DISMOUNTING

Unscrew:

- the attachment nuts (1) and (2) of the casing on the longitudinal girder;
- the nuts (3) of the stabilizer rod auxiliary connecting rod.

Dismount the stabilizer rod together with the auxiliary connecting rod.

Check the state of the elastic bushings; if it shows marks of wear, replace the auxiliary connecting rod.



REMOUNTING

Mount the auxiliary connecting rods on the stabilizer rod.

Grease the auxiliary connecting rod shaft with special MoS₂ grease.

Mount the assembled stabilizer rod.

Press the front axle at a distance $D = 45$ mm by means of the TAV 238-02 device.

Tighten at the required moment:

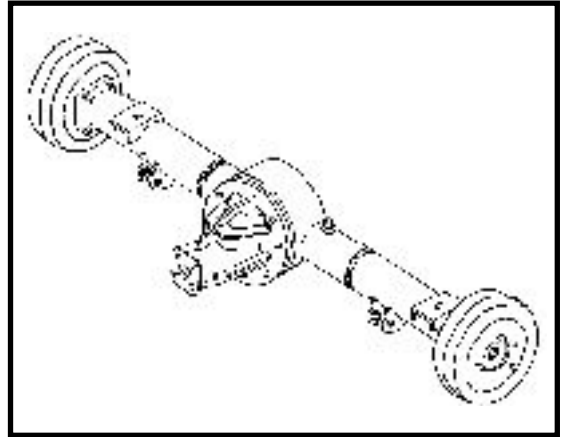
- casing attachment nut;
- auxiliary connecting rods shaft nuts;
- the nuts that attach the auxiliary connecting rod to the stabilizer rod.

PLATE DRIVE REAR AXLE**DACIA 1304,1307****CHARACTERISTICS**

It is a rigid type axle made of plate, with differential gear and propeller shafts.

It is attached to the chassis by means of semi elliptic springs and hydraulic shock absorbers.

The main transmission is simple type, with hypoid gear between the pinion and the rim. The differential is symmetrical, simple, with four conical differential pinions.

***ATTENTION!***

After fixing ,the tighten nut of the cardanic flange shall be lock by straining.

IDENTIFICATION

On the rear part of the axle casing it is marked by stamping :

- mark or symbol of the manufacturer;
- manufacture series;
- week /year(month / year).

The characters height is at least **5 mm**.

The minimal deep is **0,15 mm**

CONSUMPTION PRODUCTS

Transmission gear oil **80 W/90** or **T90 EP 2 (2,0 l)**

Fixamed R 58.

Loctite 518.

REAR BEARING ELEMENTS

PLATE DRIVE REAR AXLE

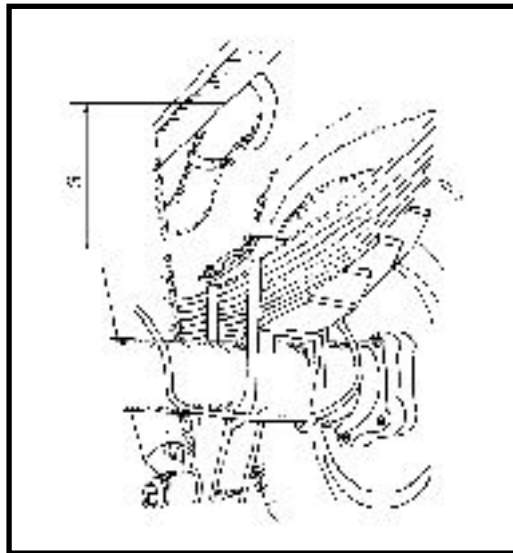
ANGLES

	VALUE	ADJUSTMENT
Parallelism	0°	Not adjustable
Camber angle	0°	Not adjustable
Pressing position of the leave spring	G = 162 mm	



TIGHTENING MOMENTS

- Shock absorber lower nut.....**3 daN.m**
- Axle attachment nut.....**11 daN.m**
- Wheel nut.....**9 daN.m**



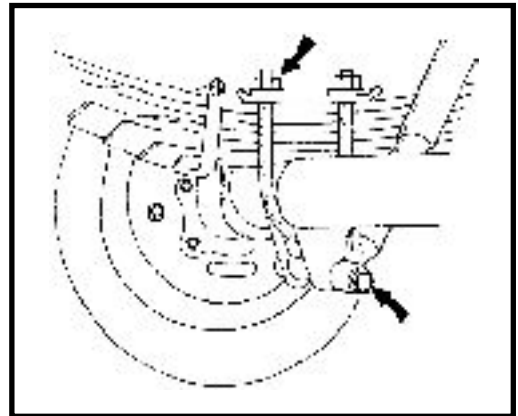
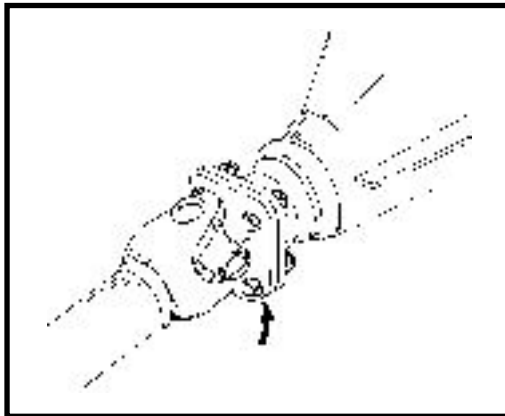
DRIVE REAR AXLE

DISMOUNTING

- Lift the rear axle by means of a two columns elevator.
- Dismount the wheels.
- Disconnect the brake limiter control.

Dismount :

- the four screws of the cardanic flange at the side towards the differential gear;
- the shaft nut that attaches the shock absorber;
- the clamping clips of the half-elliptic spring.



Detach the brake cable from the hand brake levers.

Disconnect the flexible connecting hose of the braking hydraulic circuit from the three ways connection.

Remove the rear axle, place it on a support and drain the oil, by dismantling both the empty plug and the level one, to speed draining.

REMOUNTING

Perform the same operation in reverse order; attention should be paid to the fact that the axle may overturn when lifting it to mount the clips.

NOTE:

The steps performed when dismantling , remounting the rear axle (as assembly) are similar for all types of pick-ups.

REAR BEARING ELEMENTS BRAKE DRUM

The two rear brake drums must have the same diameter, the rectifying of one drum implying the same operation for the other one.

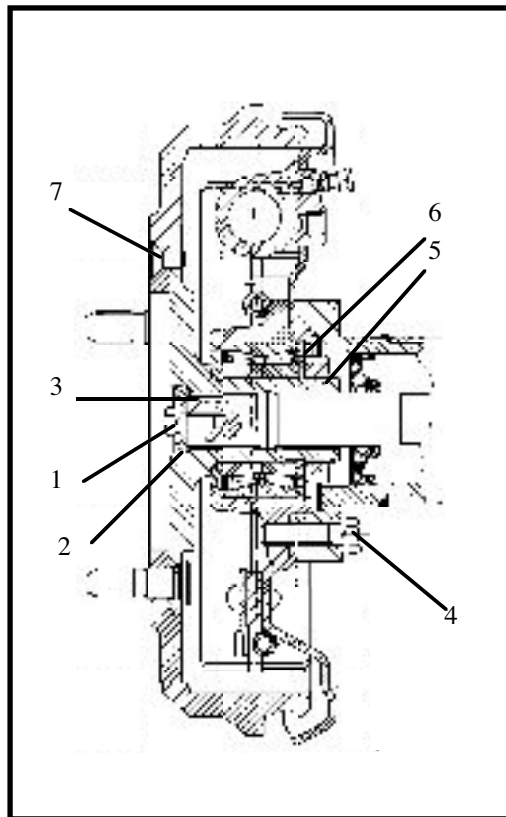
SPECIAL TOOLS

Depress bearing closing assemble device PS 65.



TIGHTENING MOMENTS

- Wheels nuts**9 daN.m**
- Slotted nut**24 daN.m**
- The attachment screws of the assembly “ drum – axle brakeplate “**6,3 daN.m**
- The connecting screw propeller shaft – drum hub assembly**1,54 daN.m**



DISMOUNTING

Dismount the **M 8 x 1,25 - (1)** screw.

Dismount the elastic ring **32** and washer **8,1 x 12,7 - (3)**.

Dismount the four 4 screws **M 10 x 1,5 - (4)**.

Dismount the “ hub drum – brake plate “ assembly and place it on a bench.

Straighten the shoulder of the slotted nut **(5)**.

Unscrew the slotted nut and take out the bearing washer **(6)**.

Separate the brake plate from the drum-hub assembly.

Dismount :

- the sunk screw **(7)** and separating the drum from the hub assembly;
- the safety ring **AI 68**;
- depress the bearing casing assembly from the hub by means of the **PS 65** device.

REMOUNTING

Clean of dust the drum and brake shoes by means of a cleaner (vacuum cleaner) for brake.

For remounting, perform the mounting operations in reverse order, respecting the required tightening moments;

The clearance adjustment shall be perform as follows :

- by means of a wrench, rotate the eccentric downwards until the drum locks, than rotate it upwards with 1/12 rotations **(30°)**;
- after performing the adjustment, the drum must easily hand rotate. Begin with the compression brake shoe;
- the brake shoes by pressing several times the brake pedal;
- the hand brake (see chapter 37 “Controls”).



TIGHTENING MOMENTS

- Wheels nuts	9 daN.m
- Slotted nut	24 daN.m
- Attachment screws of the assembly “ drum – axle brake plate “	6,3 daN.m
- Connecting screw propeller shaft – drum hub assembly	1,54 daN.m
- Connection screw of the rigid duct.....	1,5 daN.m
- Cylinder attachment screws on the brake plate	0,53...0,99 daN.m

DISMOUNTING

Dismount :

- the rigid duct connection from brake cylinder by means of a wrench;
- the connection of secondary cable with the hand brake lever;
- the brake drum (see corresponding chapter);

The brake plate being placed on bench, dismount:

- the upper return spring (see the corresponding paragraph);
- the assembly rod assembled with the hand brake lever;

Distance the shoes in the cylinder area.

Unscrew the two cylinder attachment screws on the plate by dismounting it.

Check the state of the shoes linings and if oil trace are present, replace the brake shoes.

REMOUNTING

Clean of dust the drums and the brake shoes by means of a cleaner(vacuum cleaner) for brake.

Perform in reverse order the dismounting operations.

Adjust the drum clearance.

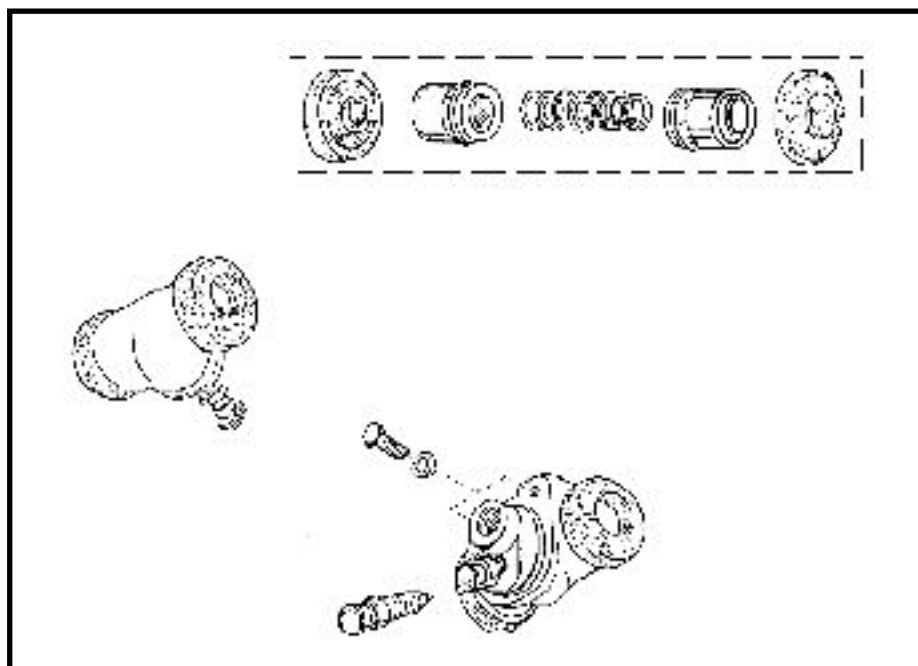
Aerate the brake system.

Check the pressure in braking system.

REPAIRING

Dismount the cylinder off the vehicle.

Dismount: the protection bellows assembled with pistons, the pressure gaskets, and the purging screw.



Check the state of cylinder boring, pressure gaskets of the bellows and of the pistons. Any trace of wear, oxidation or scratches implies the replacement of brake cylinder assembly.

If the cylinder components are in a good state, lubricate the parts with brake fluid and mount them in the reverse order of dismounting.

Check the easy moving of the pistons in the cylinder.

Mount the brake cylinder on the vehicle.

Check the adjustment of the hand brake.

Perform the purging of the brake system.



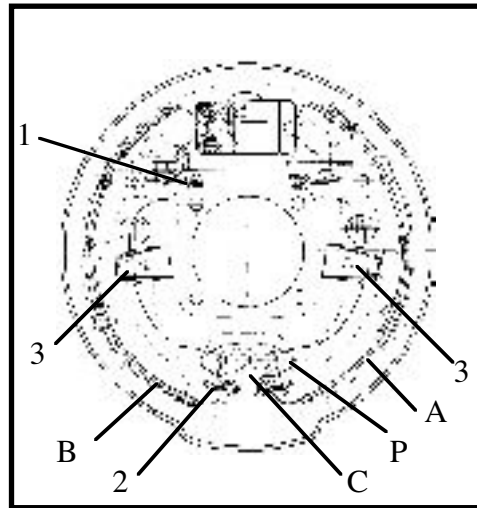
TIGHTENING MOMENTS

- Wheels nuts9 daN.m
- Attachment screws of the assembly “ drum – axle brake plate “6,3 daN.m
- Slotted nut24 daN.m
- Connecting screw propeller shaft – hub drum1,54 daN.m

The brake components with adjustment by eccentrics:

- A - tightening shoe
- B - compression shoe
- C - supporting plate (fixe point)
- P - shoe’s foot

1. Upper return spring
2. Lower return spring
3. Clip for maintaining shoes



DISMOUNTING

The replacement of brake shoes must be performed in complete set, never mount the brake shoes equipped with linings of different brands and qualities.

Dismount :

- the connection of the brake secondary cable with the hand brake lever;
- the brake drum (see the corresponding paragraph) separating it from the brake plate;

The brake plate being placed on a bench, dismount ;

- the shoes maintaining clips on the brake plate;
- the upper return spring by means of a nipper for brake shoes;
- the assembled connecting rod with the hand brake lever;
- the assembled shoes with the lower return spring;
- the lower return spring.

REMOUNTING

The shoes assembled with the lower return spring is attached on the plate (the shoes **P** foos in contact with supporting plate **C**).

Remount the auxiliary connecting rod assembled with the hand brake lever.

By means of a brake shoes nipper, set the upper connection of shoes by means of the upper return spring.

Mount the brake shoes maintaining clips.

Apply a sealant layer (**ROMTIX 1502**) in the areas of the maintain clips with the brake plate.

Assembly the brake plate with the drum – hub assembly.

Tighten at therequired moment the attachment screw of the assembly “drum - rear axle brake plate”.

Drum clearance adjustment:

- rotate downward the eccentric until the dum is locked than rotate it upward with 1/12 rotations (aprox. 30’).
- after performing drum adjustment, it must be easy rotating by hand.
- begin with the compression shoe.

SPECIAL TOOLS*Depressing device for bearing casing assembly PS 702***TIGHTENING MOMENTS**

- Wheels nuts**9 daN.m**
- Slotted nut**24 daN.m**
- Attachment screws of the assembly “drum axle brake plate”**6,3 daN.m**
- Connecting screw propeller shaft – hub drum**1,54 daN.m**

CHECKING

Check by means of a comparator device attached on the drum, the axial clearance:
0 - 0,15 mm max.

DISMOUNTING

Dismount :

- the connection of the secondary cable with the hand brake lever;
- the assembly hub drum-brake plate.

Take out from the assembled bearing casing :

- the safety ring by means of adequate nippers;
- the bearing by means of a tube.

REMOUNTING

Clean the inside of the bearing casing.

Mount the bearing by means of a tube and a press;

Set in its place:

- the safety ring for boring by means of special nippers.

Press the bearing casing on the hub – drum assembly, tighten at the required moment the slotted nut.

Set the assembly hub drum –rear brake and mount it on the axle.

Fix the secondary hand brake cable.

Adjust:

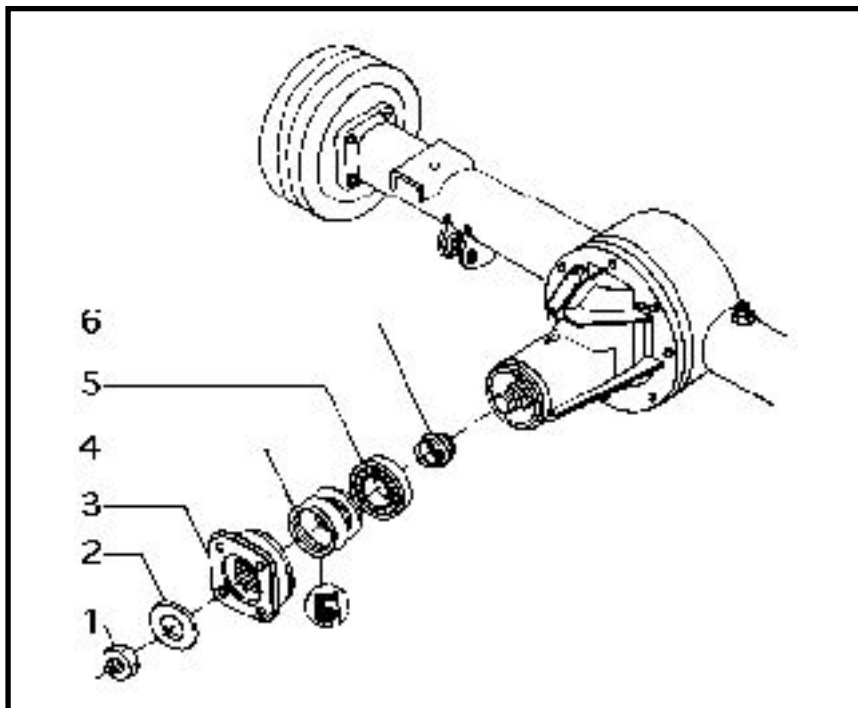
- the drum clearance (see the corresponding chapter);
- the hand brake.

The rear axle assembly is dismantled from the vehicle, placed on an universal support, having its propeller shaft removed.

DISMOUNTING

Dismount:

- the flange nut (1);
- the washer (2);
- the cardanic flange (3);
- the sealing ring (4) (annular oil ring) 42 x 72 x 12;
- the deflector (5);
- the bearing (6) (the inner ring with balls) 30 x 72 x 28,75;
- the adjustment bushing set (7).



REAR BEARING ELEMENTS

PLATE DRIVE REAR AXLE DIFFERENTIAL

Remove the differential assembly by unscrew the eight screws of the casing.

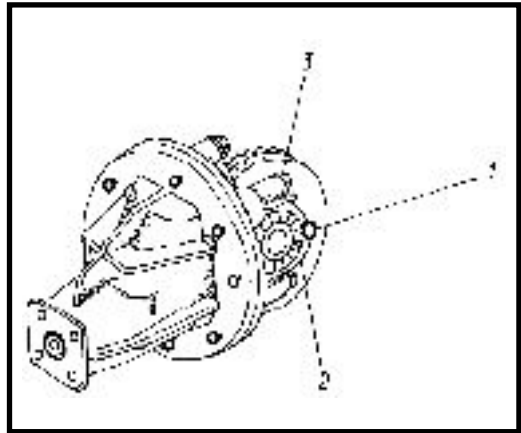
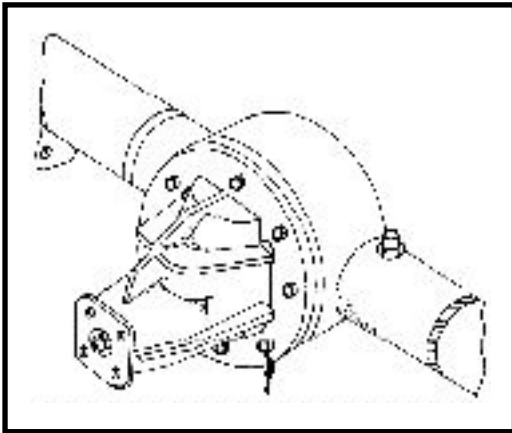
Dismount :

- the screws that attach the differential nuts lock washers (1);
- the differential adjustment nuts (2);
- the stub bolts nuts that attach the bearings half casings (3);

Remove the centering bushing and unscrew the stub bolts.

Together with the conical balls bearings, remove the differential assembly, detaching it from the front part of the drive pinion.

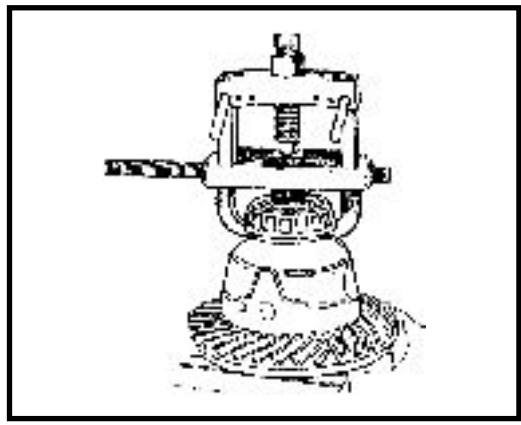
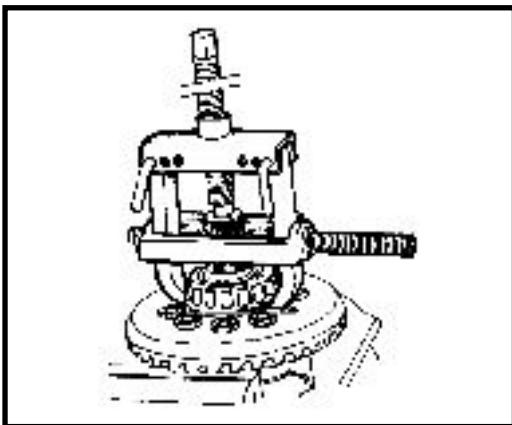
Remove the differential drive pinion together with the conical balls bearing from the differential casing.



Dismount two rim attachment screws, on opposite sides.

Depress the bearings by means of the CV 28A extractor, provided with CV 48 claws.

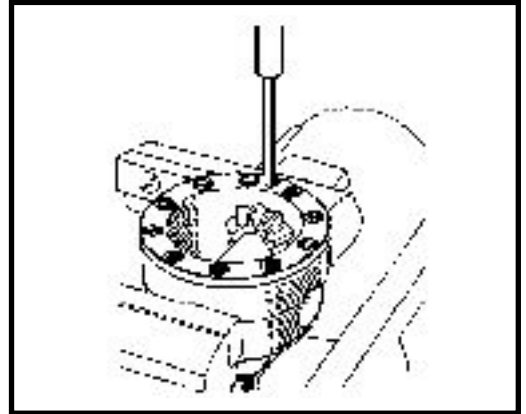
Dismount the rim ; do not reuse the screws.



Dismount the elastic pin that attaches the differential pinions shaft by means of the mandrel **CV 31 B**.

Dismount:

- the differential pinions lock washer;
- the differential pinions shaft, the ball joint;
- the differential pinions;
- the friction washers (elastic bushings);
- the propeller shaft pinions.



RE MOUNTING

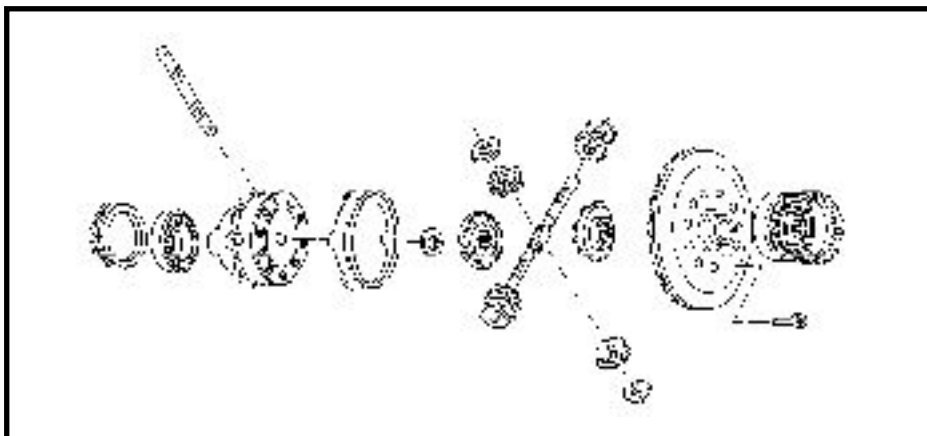
The differential gear shall be re mounted by performing the dismounting operations in the reverse order.

Before mounting, the component elements from the differential casing, shall be lubricated with **T 90** or **T80** oil.

Mount the following items in the casing:

- the propeller shaft pinion opposite to the rim , after attaching the support washer on the former;
- put in, the four differential pinions and their respective bushings, oriented with the lock notch in the casing seat;
- put in the ball joint the differential pinions shaft and half shafts, so that the pin hole corresponds to the hole in the casing;
- attach and push the pins by means of the **CV 31 B** broach;
- after attaching the differential pinion shaft lock washer, mount the rim on the casing by means of the ten self lock screws (use new screws).

Tighten at the required moment of **9 11 daNm**



The two conical ball bearing shall be mounted by pressing in the differential casing. Press the two outer rings of the differential drive pinion bearing in the differential casing.

Put the differential drive pinion in the casing; the former has the adjustment washer mounted on it and the **30 x 80 x 32,75** conical balls bearing pressed on.

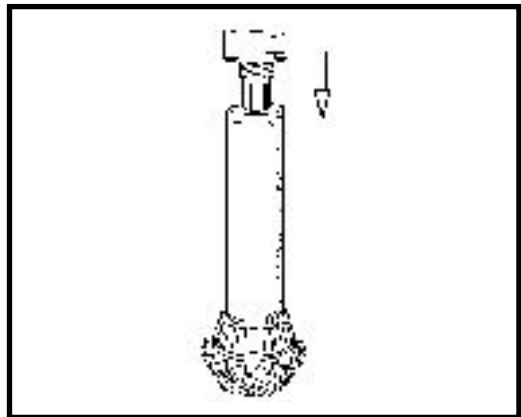
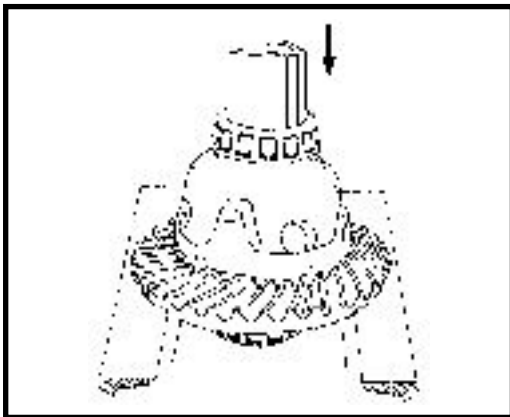
The differential assembly shall be fixed and mounted in the casing, with the bearings cushioned on half casings.

Tighten the differential bearing caps on the differential casing at a moment of **3,5-5 daNm**.

Tighten the bearing adjustment nuts.

NOTE: *Mark the adjustment nuts in correspondence with the casing.*

Check the mark on the bearings in correspondence with the casing.



To remount the main transmission, observe the following:

1. The pairing of the conical gear.

The pinion and the rim are lapped together.

They are inseparable.

Replacing one of the parts implies obligatory replacing of the other one.

There is a common, corresponding mark both on the rim and on the pinion.

2. The use of a continuous sealing material layer of **LOCTITE 518** on the contact surface of the differential casing and the axle casing (aprox. 5 gr). Operation procedure is as follows:

- dismount the differential assembly from the rear axle;
- clean the old sealing material (by scraping);
- clean with solvent the contact surface of the differential casing and of the axle casing.

- place continuous sealant material layer on the whole contact surface of the rear axle taking care not to close the attachment wholes of differential casing;
- mount the differential assembly and tighten the screws at the required couple of **2 - 2,5 daNm**.

NOTE: The interchangeable of the gasket with the layer is not affected.

DIFFERENTIAL REMOUNTING – ADJUSTMENT

Continue the attachment and mounting of the following items :

- the new adjustment bushing of the bearing;
- the **30 x 72 x 28,75** conical balls bearing;
- the deflector ;
- the **42 x 72 x 12** annular oil seal.

Attach and tighten:

- the washer;
- the flange nut.

NOTE: When assembling the cardanic flange, check the wear degree of the surface in contact with the annular oil seal.

After remounting , the rear axle must be sealed.

The sealing test is performed by blowing air at a **0,15 – 0,20** bars pressure through the aeration valve seat.

No air leaking is accepted.



TIGHTENING MOMENTS

- The screws for the attachment of gear rim to the differential box**9- 11 daN.m**
- The two screws of the differential bearings adjustment nuts lock washer**2 daN.m**
- The four nuts of the attachment stud bolts of the bearing cups.....**3,5 - 5 daN.m**
- The differential drive pinion nut tightening moment**9 - 11 daN.m**

ATTENTION: After tightening ,the nut shall be locked by straining.

MOUNTING CONDITIONS

1. Adjustment of the conical distance 54^0 mm between the rim axis and the front surface of the pinion head. -0,1

2. The propeller shafts and the differential pinions shall be selected so that a maximum **0,1 mm** clearance is obtained in the whole differential assembly, one propeller shaft being locked, the moment required for the rotation of the propeller shaft should be maximum **1 daN.m**.

3. The geared rim shall be adjusted so that the clearance between the pinion and the rim measured on the outer diameter of the rim is between **0,12 – 0,25 mm**, measured in three points, placed at **120°**.

4. The resistant moment due to the initial tightening of the differential bearings, without differential drive pinion, shall be between **0,12 – 0,15 daNm**, measured within the range of the gear clearance.

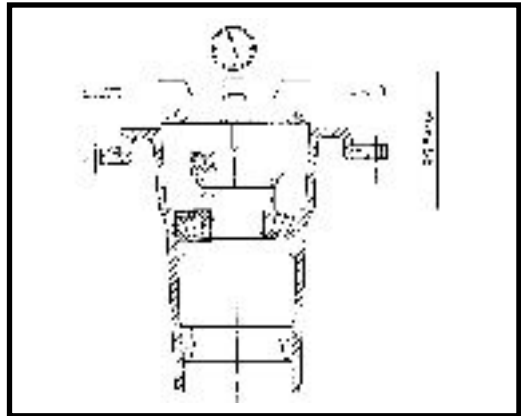
5. The rotation moment of the differential drive pinion, without the mounted rim, is **0,15 - 0,20 daN.m**.

DIFFERENTIAL ADJUSTMENT

To be performed before and upon remounting

This implies three operations :

1. Adjustment of the conical distance
2. Adjustment of the gearing clearance
3. Adjustment of the differential bearings



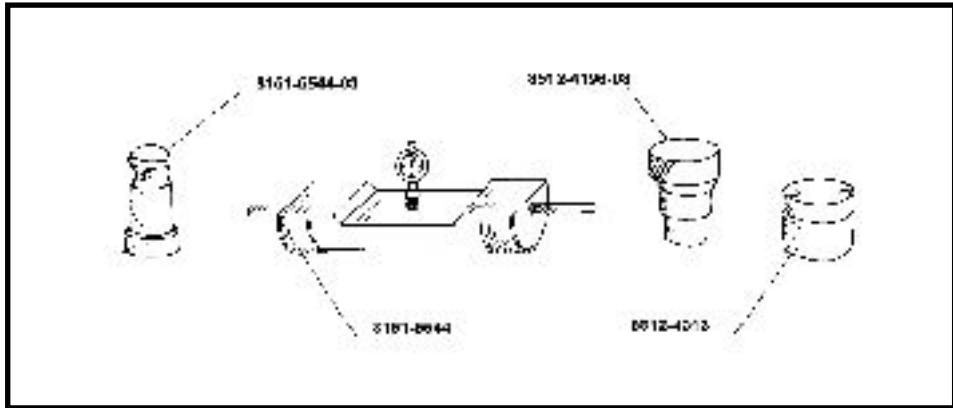
1. ADJUSTMENT OF THE CONICAL DISTANCE

It supposes to measure and correct the distance between the front face of the differential drive pinion and symmetry axis of the rim.

The following operations shall be performed:

- place the outer housing of the bearing in the differential casing;
- place the conical balls bearing;
- place the **8512 41196 – 08** standard gauge and then place the **8151 – 5544** gauge checking device.

Check the distance **90 +/- 0,015 mm** by reading the value shown by the device.



OBSERVATION: Regarding the mounting conditions:
- in case there are accidental deviations from the absolute value 54, on the front side of differential drive pinion it will be marked the effective deviation in hundredth;
- the conical distance of 54⁰ mm shall be algebraic corrected with a.m. value.
 - 0,1

The adjustment of the value shall be done as follows:

- for the 0 value read on the device, choose a washer of A value (value A is the one written on the differential pinion; for example: **185 means A = 1,85 mm**);

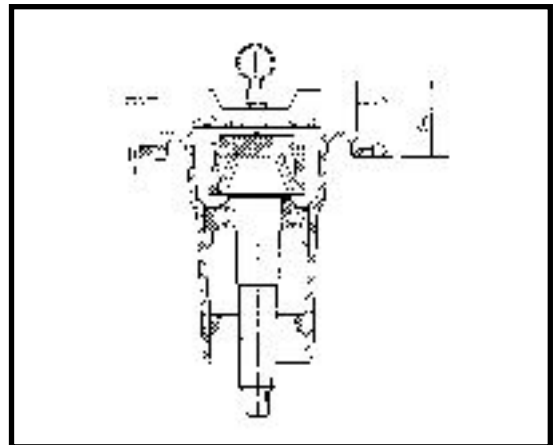
- for negative values (example : - **0,05**) choose a washer of A value = + **0,05** mm;

- for positive values (example: + **0,05**) choose a washer of A value = - **0,05** mm.

Remove the bearing.

Place the adjustment washer on the differential drive pinion and press the bearing.

The differential drive pinion and the pressed bearing shall be placed in the differential casing.



Place the **8512 4313** standard gauge on the front side of the differential drive pinion, then place the gauge checking device and measure the **54⁰ mm** distance value.
 - 0,1

According to the value shown on the gauge, the washer shall be replaced or not.

2. ADJUSTMENT OF THE PINION – RIM GEARING CLEARANCE

Checking of the clearance of the conical assembly gear is performed initially by estimation, by hand.

If the clearance felt is too big, act upon the nut on the side of the casing; by unscrewing it a number of rotations, until a smaller clearance in the conical assembly gear is obtained, or, perform the opposite operation clearance is too small.

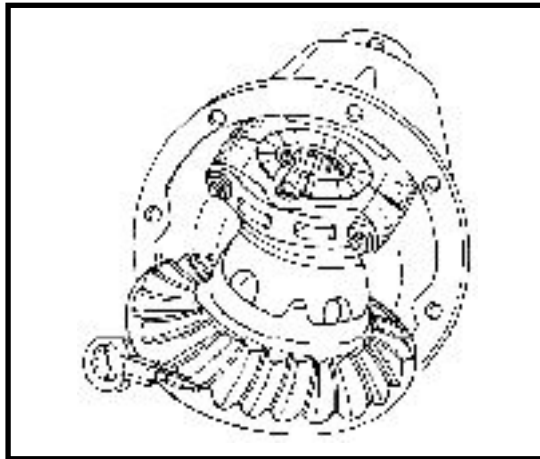
The following operations shall be performed:

Place in the differential drive pinion casing, the casing – rim assembly, mount the bearing casings, the adjustment nuts, observing the marking made upon dismounting.

Tighten the bearings casings nuts at a moment of a **4 – 5 daNm**.

Screw the adjustment nuts until the clearance value of the gear may be estimated by hand.

Mount a dial comparator with the tester perpendicular on the rim tooth flank and check the gearing clearance : it must be between **0,12 – 0,25 daNm**.



The measurement shall be made in three equidistant points.

The bearings tightening correction is performed by means of the adjustment nuts.

Mark the position of the nuts in correspondence with the casing.

3. DIFFERENTIAL GEAR BEARINGS ADJUSTMENT

It is performed by means of the adjustment nuts until the bearing opposes a certain resistance.

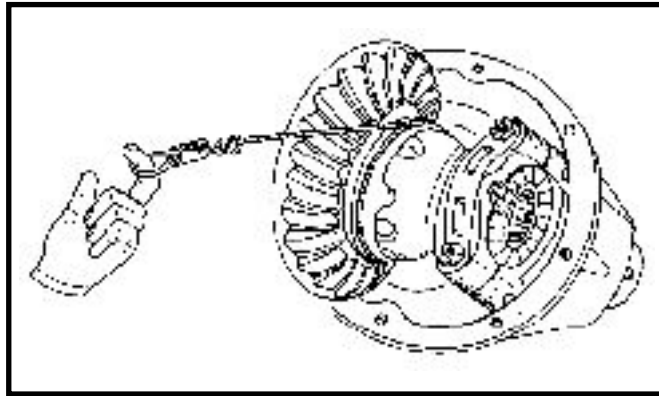
The bearing clearance is correct if upon rotation of the differential, without differential drive pinion, the resistant moment shall have values between **0,10 – 0,15 daNm**.

The adjustment shall be performed as follows.

Rotate the differential rim several times so that the bearings get in their seats.

Wind a string around the differential gear casing and pull the end of the string by means of a dynamometer.

The force that allows the rotation of the differential is between **2 – 3 daNm**.



If the force measured is not within the specified range, tighten or loosen the nuts.

Mark the nuts in correspondence with the marks on the casing.

The rotate tightening couple of one propeller shaft shall be maximum **1 daNm** when the other is blocked.

**NONDRIVE PLATE REAR AXLE
DACIA 1305, 1307 F**

CHARACTERISTICS

It is rigid, drawn type.

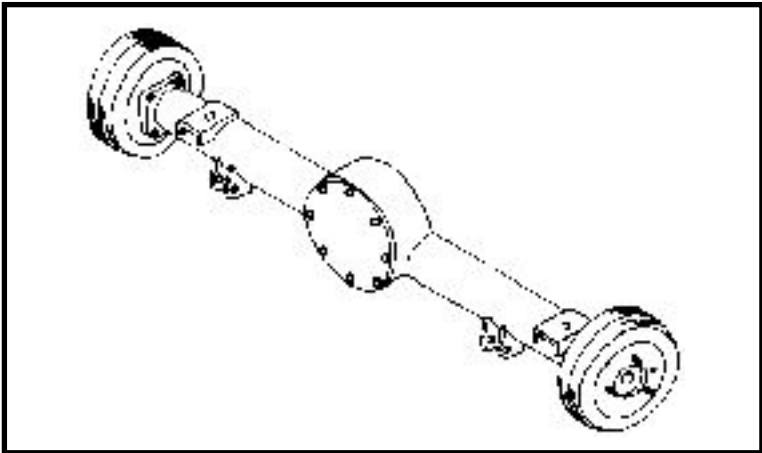
From the manufacturing point of view, it looks like the platedrive axle.

The central and annular part is sealed by means of a cap.

Provided for : **DACIA 1305, 1307 F.**

Values of the steering angles:

- parallelism **0°**
- pivot cross indicator angle **0°**
- tightening position of the leaf springs **G = 162 mm**



WHEEL HUB

DISMOUNTING

NOTE: It is assumed that the axle is dismantled and fixed on the support.

Dismount the wheel.

Unscrew the **M8** sunk screw.

Unscrew the four **M10** screws attaching the bi-conical bearing casing to the axle end.

Remove the hub – bearing casing assembly

Dismant:

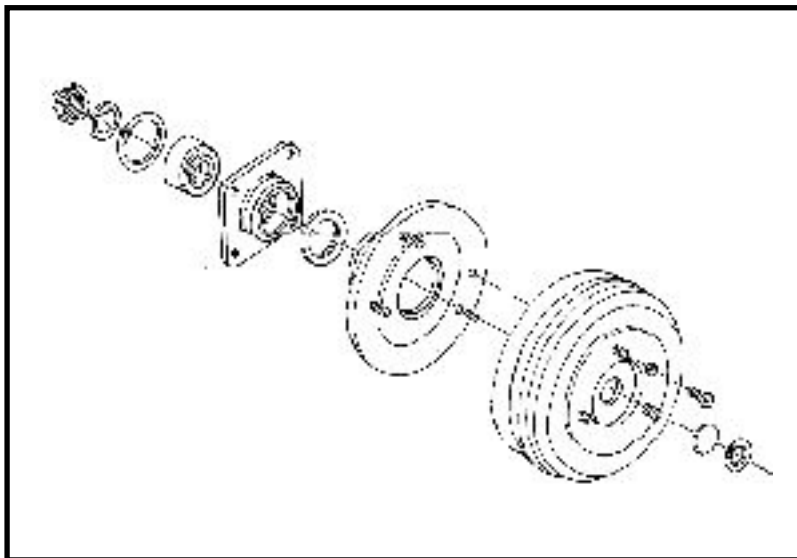
- the slotted nut and the spacer which attach the bearing casing on the inner part;
- the inside safety ring

Depress the hub from the bearing casing by means of the **PS 65** device.

REMOUNTING

Perform the dismantling operations in the reverse order.

The tightening moments have the same values as those for the hub of the drive plate axle.



NONDRIVE PIPE REAR AXLE

DACIA 1305, 1307 F

CHARACTERISTICS

It is a drawn, rigid type axle.

Attachment to the chassis is performed by means of the half axial blades springs and of the hydraulic shock absorbers.

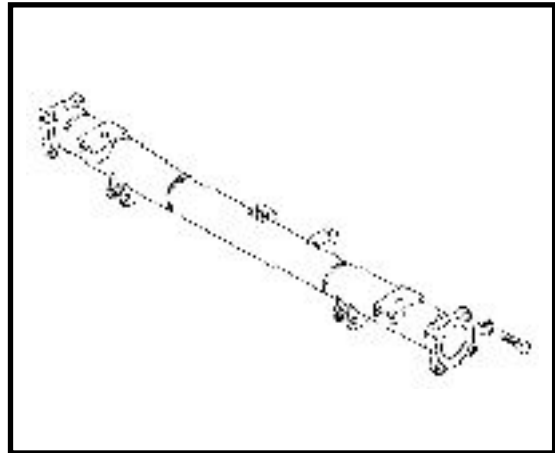
Provided for Dacia 1305, 1307 F.

Values of steering angles:

- parallelism.....**0°**
- pivot cross angle.....**0°**
- tightening position of the leafsprings

.....**G = 162 mm**

The parallelism and the pivot cross inclination angle are not adjustable.



WHEEL HUB

DISMOUNTING

NOTE: It is assumed that the axle is dismantled and fixed on the support.

Dismount the wheel.

Detach the drum from the wheel hub by unscrewing the three **M 8** sunk screws.

Dismount the drum cap by means of the **RO 441** tongues.

Straighten the nut retainer and unscrew the steering knuckle nut.

Take out:

- the retainer;
- the support washer.

Extract the hub by means of the **PF 235 A** extractor.

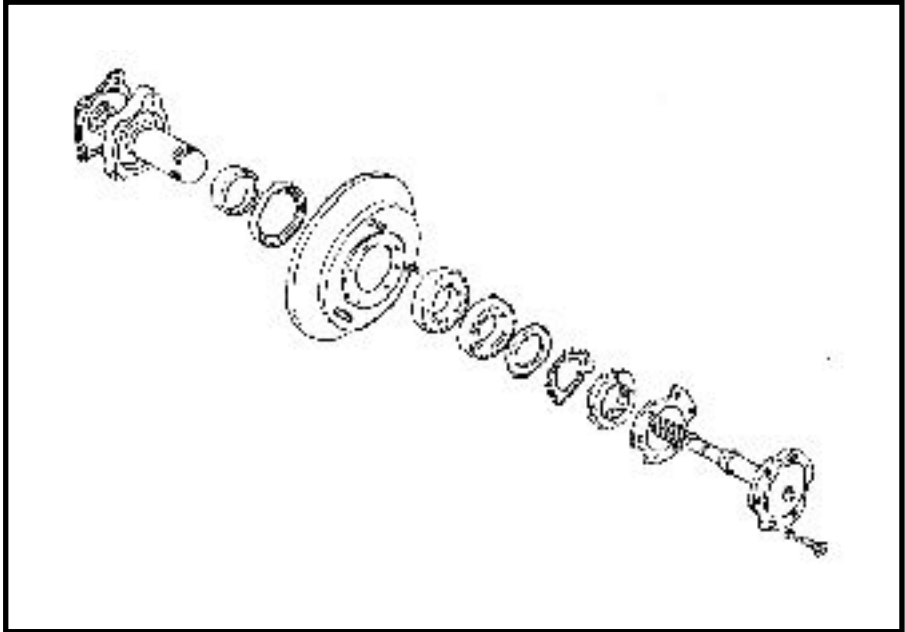
Depress and recover the two conical balls bearings.

NOTE:

If the sealing ring (annular oil seal) has marks of wear on the sealing surface, it shall be replaced.

REMOUNTING

Perform the dismounting operations in the reverse order.

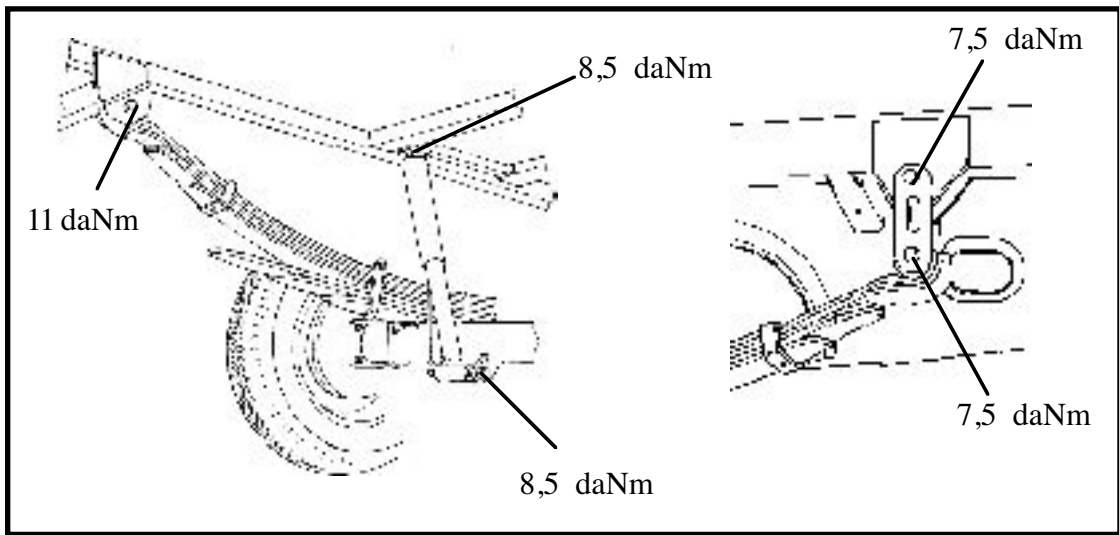


REAR SUSPENSION WITH LEAF SPRINGS AND HYDRAULIC SHOCK ABSORBERS



TIGHTENING MOMENTS

- Shock absorber upper attachment nut **8,5 daNm**
- Shock absorber lower attachment nut **8,5 daNm**
- Leaf spring front attachment nut **11 daNm**
- Leaf spring rear attachment nut **7,5 daNm**
- The nut that attach the clip of the leaf spring on the rear axle **8,5 daNm**



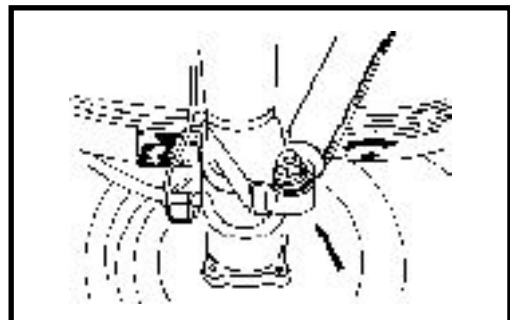
REAR SHOCK ABSORBER (for DACIA 1305 , 1304 , 1307 vehicles)

DISMOUNTING

Lift the pick up on a two column selevator.
Dismount the rear wheels.

Unscrew the nuts that attach the shock absorber at the lower and upper parts.

Remove the shock absorber.



REMOUNTING

Performed in the reverse order the shock absorber dismounting operations, taking into account the shafts greasing and tightening at required moments, as follows:

- upper attachment nut8,5 daNm
- lower attachment nut8,5 daNm

REAR SPRING

Dacia 1304, 1305, 1307, light trucks are provided with leaf springs.

The leaf springs suspension has the advantage that it undertakes in the same time with the vertical forces, the longitudinal and the cross ones; these are the forces that occur upon contact between tire and road, without requiring additional guiding elements.

DISMOUNTING

Unscrew the nuts of rear wheels.

Lift the pick up on a two column elevator.

Dismount the rear wheels.

Dismount the nuts (1) of the rods that attach the leaf springs (2) to the front part.

Lift the back axle by means of a jack in order to facilitate the dismounting of the (3) nuts fixing the leaf spring to the clip (4) that attaches the spring to the axle in the rear part.

Unscrew the nuts (5) that attach the leaf spring on the rear axle.

Remove the leaf spring



REMOUNTING

Perform the operations required for dismounting in the reverse order, observing the following:

- when placing the spring on the axle, a good centering of the central screw should be done, in order to avoid internal tension;
- the nuts are locked at the established moments, for the spring shafts and for the flange;
- check the rear axle parallelism with the front axle.



TIGHTENING MOMENTS

- Anti roll rod shaft attachment screw..... **1,5 daN.m**
- Antiroll rod-auxiliary connectingrod connectionaxlesnut **8 daN.m**

DISMOUNTING

Loose the rear wheels nuts.

Lift the vehicle on a two columns elevator.

Dismount the rear wheels nuts.

Dismount the rear wheels.

Unscrew the connections of the rear anti roll rod (1) with connecting rods (2).

Dismount the connections (3) of the rear anti roll rod with the rear axle.

Dismount the anti roll rod.

REMONTING

Grease the attachment screws of the anti roll rod with special grease **MoS2**.

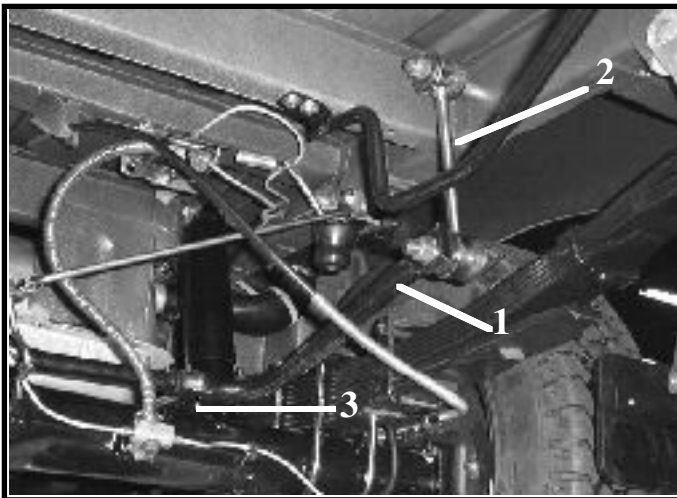
Mount the anti roll rod on the rear axle.

Attach the anti roll rod to the connecting rods.

Tighten at the required moments: the anti roll rod- auxiliary connecting rod connection axles nuts and screws, anti roll rod attachment screws on the rear axle.

Mount the rear wheels

Lower the vehicle from the elevator.



The rear anti roll rod diameter is: $\phi 24$ mm.

Characteristics

RIMS

The wheels identification marking is represented in two ways:

- engraved marking for steel rims
- cast marking for aluminum rims

The marking is enabling the acknowledgment of the main wheels dimensions criteria.

This marking may be:

- complete

Example : 5 J 14 5 H 2 48, or

- simplified:

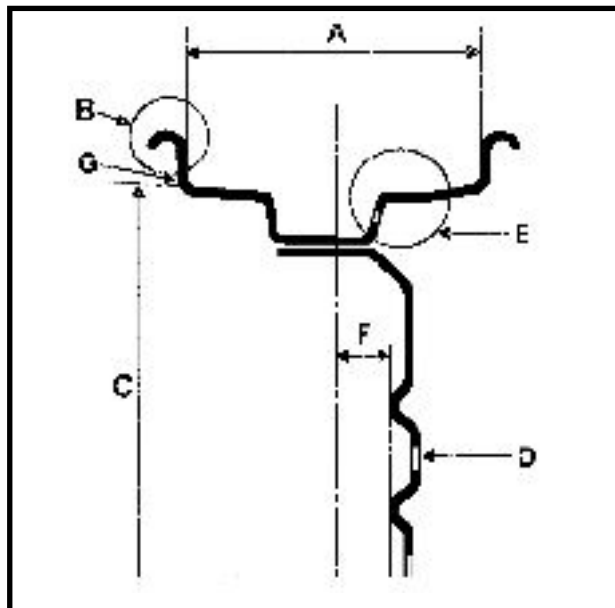
Example: 5 J 14

	A	B	C	D	E	F
Wheels type	Width (in inches)	The rim edge profile	→ Nominal (in inches) Under tire bead	Number of fixing points	Tire staffing profile	Offset (in mm)
5 J 14 5 H2 48	5	J	14	5	H2	48

The rims attachment holes are situated on a diameter of 100 mm.

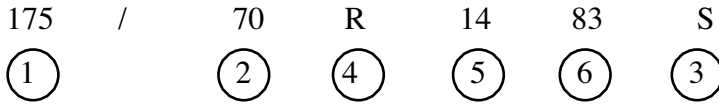
Maximum axial runout : 1.2 mm measured on the rim edge (in G).

Maximum radial runout : 1.2 mm measured on the bedding side of the tires beads.

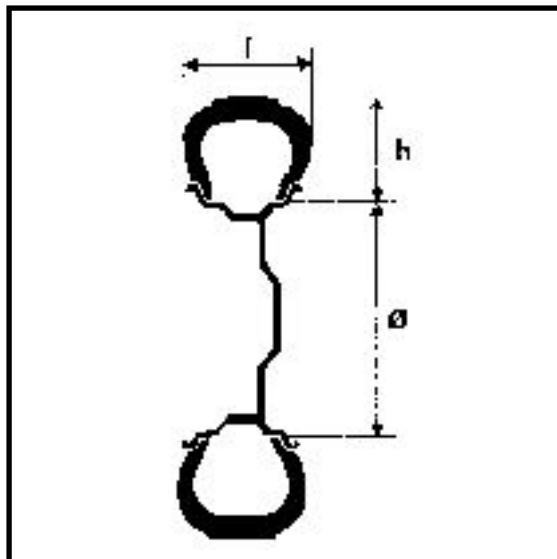


TIRES

Identification marking examples : 175/70 R 14 83 S



- ① - 175 - Tire width in mm (1)
- ② - 70 - Ratio height/width
- ④ - R - Radial structure
- ⑤ - 14 - Inner diameter in inches (ϕ): This is corresponding with the rim diameter
- ⑥ - 83 - Charging index
- ③ - S - Speed index max. km/h



Characteristics

Some speed markings : Max. speed		Km/h
	R	170
	S	180
	T	190
	U	200
	H	210
	V	240
	ZR bigger than	240

Structure types

Diagonal	No marking
Radial	R
Diagonally belted	B

RIMS – TIRES

Vehicle	Rim	Tires	Outer diameter (mm)	Air filling pressure (bars) (1)	
				Front	Rear
DACIA PickUp 7, X sau T DACIA Drop Side 7, X sau T DACIA Double Cab 7, X sau T	5 J 14	175 R 14 PR 8	1920 ± 25	2.0	4.5

(1) Using the maximum loading, wheels on ground

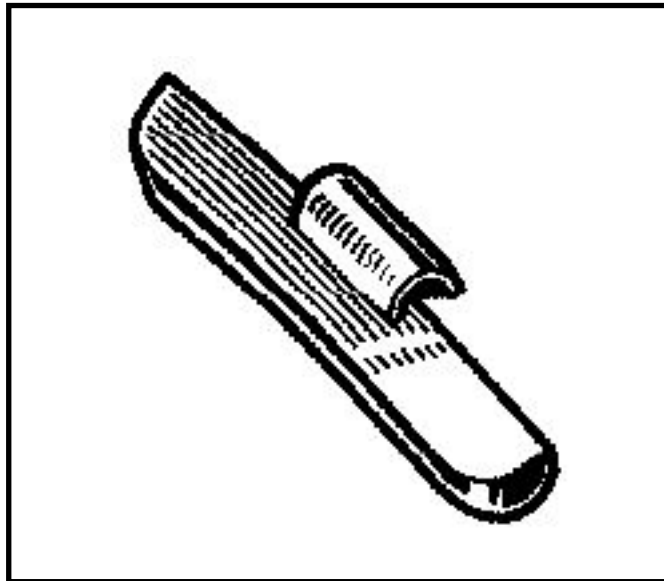
The tightening moment of the wheels screws : 9 daNm

The temperature raising during driving, leads to a pressure increase from 0.2 - 0.3 bars compared to the prescribed values

In case temperature checking is done immediately after driving, take into account this pressure increase.

Use exclusively the weights delivered as spare parts :

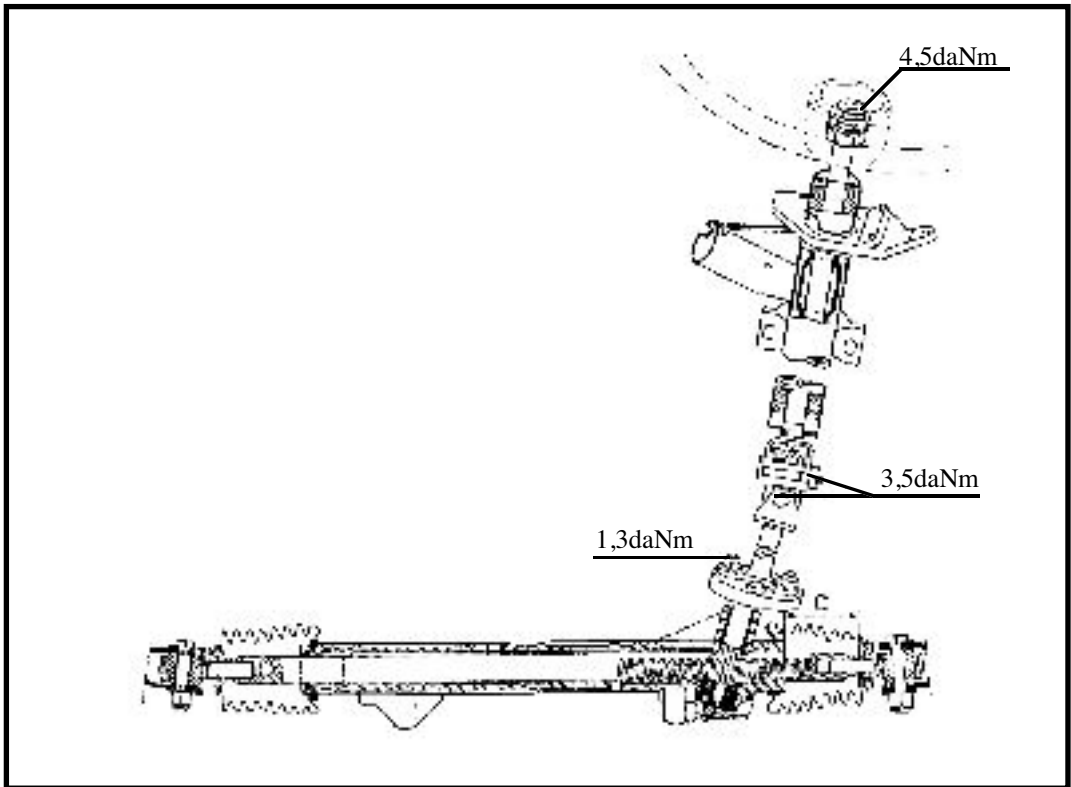
- fixed by means of clamps on steel rims (clamps included in weights).



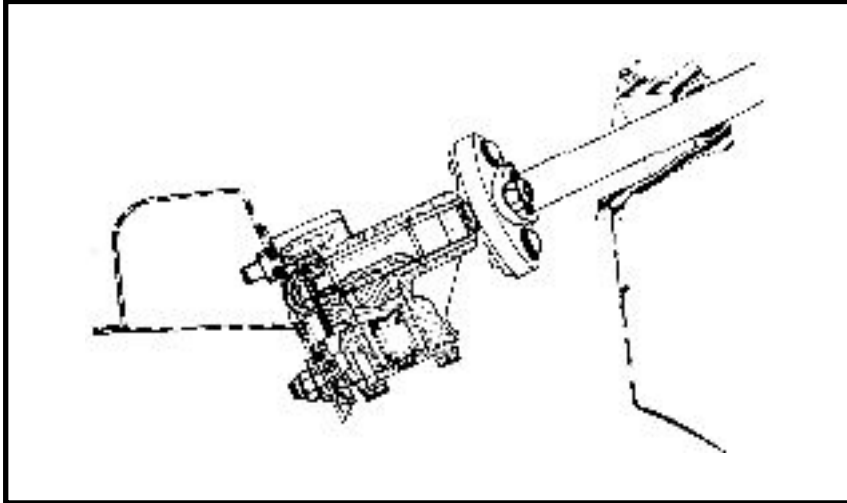
CHARACTERISTICS

- The steering mechanism is rack-and-gear drive.
- The multiplication ratio in the steering box is: **20:1**.
- The steering wheel number of rotations, corresponding to passing from one end to the other of the rack: **3,5**.
- The central point of the steering gear is: **c = 65 mm**
- The diameter of the turning circle between:
 - pavement.....**11,2 m**
 - walls....**11,6 m**

LONGITUDINAL SECTION



CROSS SECTION



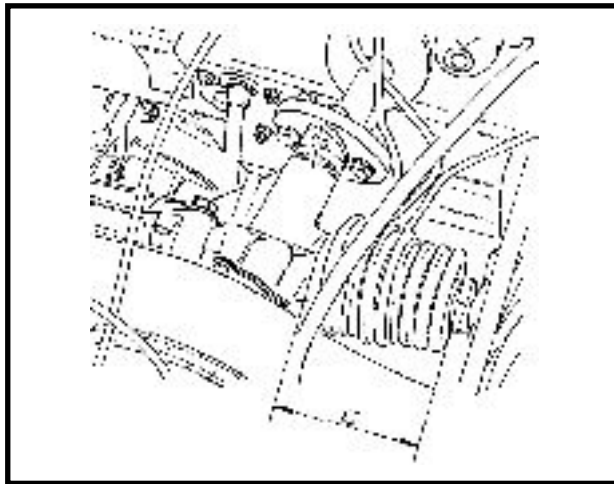
TIGHTENING MOMENTS

- Screws for the attachment of the box on the cross rod.....**2,5 daNm**
- Steering ball joint nut.....**4 daNm**
- Elastic coupling nut..... **1 ,3 daNm**
- Steering auxiliary connecting rod shaft nut..... **3,5 daNm**
- Steering wheel shaft nut..... **4,5 daNm**
- Steering cardan nut **3,5 daNm**
- Corp articulație pe cremalieră**5 daNm**

In order to set the steering gear central point, bring the rack in the position in which the value **C = 65mm**.

This position is obtained when a rivet of the elastic coupling is oriented upwards.

Performing of a checking and adjustment operation of the front axle, impose the identification of the steering gear central point in order to avoid measurement errors occurrence.



STEERING GEAR BOX

The replacement of the steering gear box implies the adjustment of the steering gear height and the parallelism adjustment

DISMOUNTING

Disconnect the battery.

Dismount: the battery and the battery support.

Dismount the steering gear auxiliary connecting rods shaft nuts.

Remove the ball joints of the auxiliary connecting rods using the **PF476** extractor.

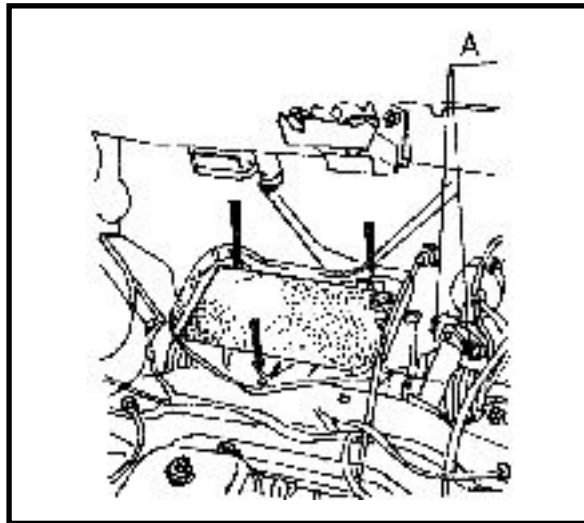
Disconnect the steering auxiliary connecting rod connections with the steering box.

Dismount:

- the attachment screws of the elastic coupling;
- the steering box attachment screws on the cross rod.

NOTE:

If the steering gear box is not replaced, do not dismount the eccentric safety rings, so that, after remounting, it will not be necessary to adjust the height of the steering gear box.



REMOUNTING

Perform the dismounting operations in the reverse order:

Grease the ball joints with **Li Ca Pb Hp2** grease.

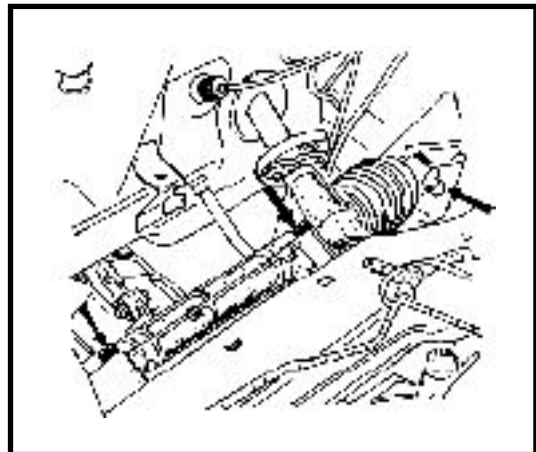
Check the state and the attachment of the protection bellows of the steering box.

Tighten the steering gear auxiliary connecting rods shafts nuts to the required moment.

Tighten the elastic coupling nuts to the required moment.

Check and adjust:

- the steering gear box height, after which, the screws by means of which the box is attached to the cross rod are tightened at the required moment;
- the parallelism.



REPLACEMENT OF THE NOISE ABSORBER BEARING

DISMOUNTING

1. Noise absorber bearing
2. Elastic bushings
3. Inside support washer
4. Outside support washer
5. Safety ring



Place the car on the elevator.

Dismount the wheel on the noise absorber bearing side (right side).

Dismount:

- the steering auxiliary connecting rod;
- the protection bellows.

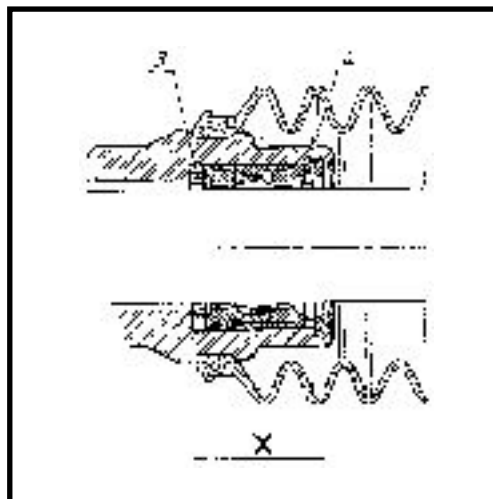
Rotate the steering wheel until the rack is withdrawn.

Dismount:

- the safety ring;
- the outer washer.

Remove, by means of a screw driver:

- the elastic rings;
- the worn noise absorber bearing.



REMountING

Carefully clean the rack and the noise absorber bearing seat and grease with a special grease containing **MoS2**.

Mount the elastic rings on the noise absorber bearing.

Rotate the steering wheel towards the left until the rack is on the extreme right position.

Mount the following parts on the rack:

- the new noise absorber bearing;
- the support washer;
- the old noise absorber support.

Temporarily tighten the joint body of the steering auxiliary connecting rod.

Rotate the steering wheel until the rack is completely withdrawn; in this way, the new noise absorber bearing gets into its seat.

Dismount:

- the articulation body ;
- the worn noise absorber bearing.

Check if the noise absorber bearing got into its seat and if the outer washer does not cover the safety ring.

Dismount:

- the safety ring;
- the steering auxiliary connecting rod;
- the protection bellows.

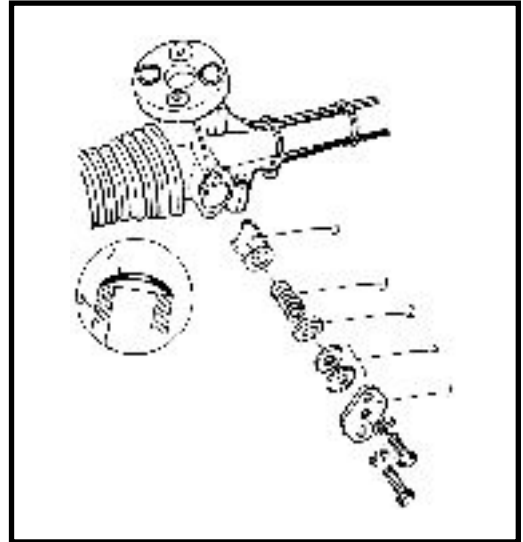
Check and adjust the parallelism.

The pusher clearance adjustment shall be performed taking into account the wear degree of the following parts: rack, pusher, casing.

The adjustment method shall be observed every time it is necessary to alter the spacers clearance, in order to maintain a normal operation of the steering gear box.

1. Cap
2. Elastic washer
3. Sprig
4. Adjustment washer
5. Pusher

The operation shall be performed after removing the steering gear box off the vehicle.



ADJUSTMENT METHOD

Clamp the steering gear box in the vice.

Dismount:

- the pusher cap (1);
- the adjustment washers (4);
- the elastic washer (2);
- the spring (3);
- the pusher (5).

Carefully clean the pusher seat and the parts that have been dismantled.

Grease the parts with special grease containing **MoS₂**.

Mount the parts in the pusher seat, except for the elastic washer.

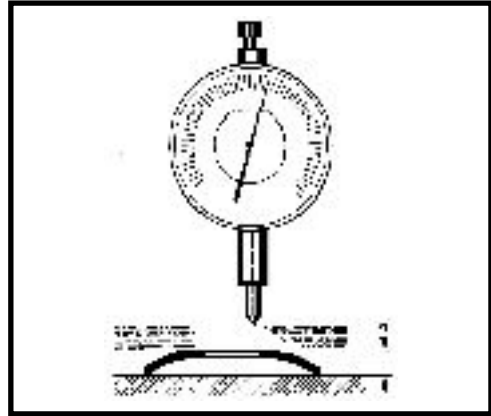
Make a comparator support out of an old cap.

NOTE: Do not rotate the drive pinion while the cap is dismantled.

MEASUREMENT OF THE FREE HEIGHT “ H “ OF THE ELASTIC WASHER

Place the washer on a straight plate and measure its height by means of a comparator, using a set of spacers with a known thickness.

Note the average value.

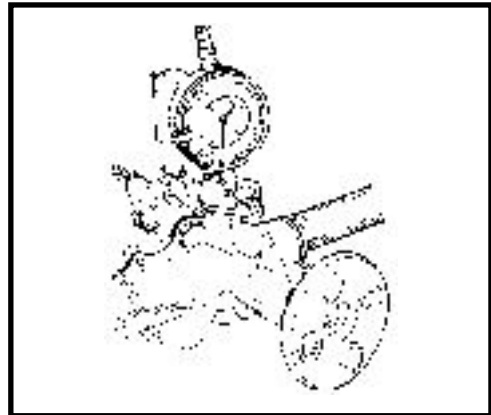


RACK WEAR CHECKING

The rack wear degree is established by measuring the difference between the maximum and minimum values on the rack, in the central area.

Attach the comparator support instead of the cap.

Bring the feeler in contact with the pusher.



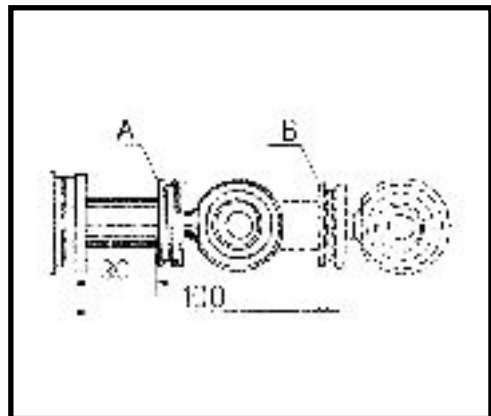
Mark points **A** and **B** in the central area of the rack, corresponding to the box extremity.

The measurements are always performed from point **(A)** towards point **(B)**.

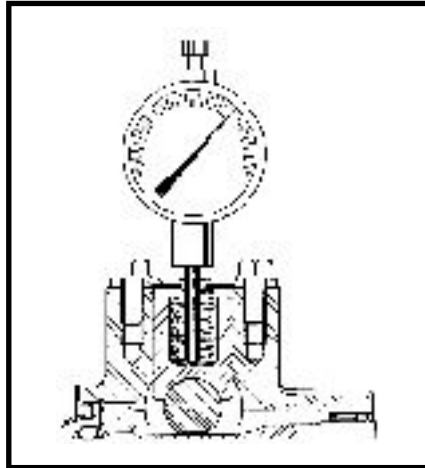
Bring the rack to point **(A)** and set the comparator to zero.

Slowly move the rack until it reaches point **(B)**.

Bring the rack back to point **(A)**.



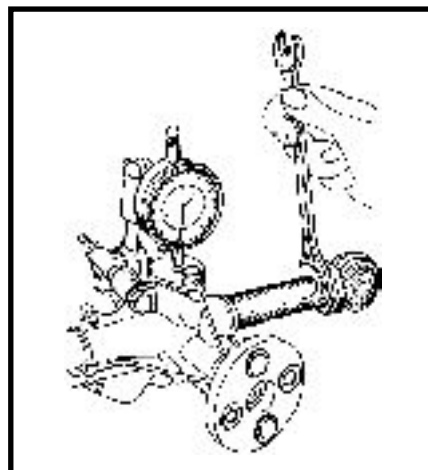
Move the rack up to the point where the value is the highest.
In this point, reset the comparator to zero.



MEASUREMENT OF DISTANCE (D) ABOVE THE PUSHER

In the position previously set, rotate the rack by means of a fixed wrench, without forcing, until the pusher comes into contact with the adjustment washers; the rotation must be done in both directions.

Read the displacement value on the comparator and note the highest value.



SETTING OF THE ADJUSTMENT WASHERS THICKNESS

The thickness of the adjustment washers shall be measured for the lowest point of the rack, so that a pre compression of the washer is obtained:

$$E = (D + 0,06 \text{ mm}) - H$$

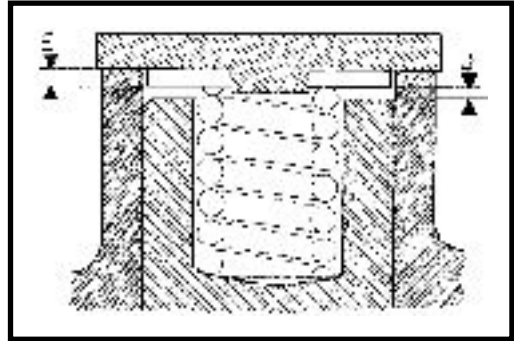
E - washers thickness;

D - the distance above the pusher;

H - the free height of the elastic washer;

0,06 - pre compression of the washer.

In order to obtain an adequate thickness which may be obtained from the existing washers, diminish the calculated value by **0,04 mm**.



On remounting, place the elastic washer (2) in contact with the pusher (5) and the adjustment washers (4), in contact with the cap (1).

Observe the mounting sense of the elastic washer.

Place the set of washers, established by measurement above the pusher.

CHECKING

Place the set of the washers, established by measurement, above the pusher.

Measure the distance between the pusher and the adjustment washers; this distance should be equal to the free height of the elastic washer, minus **0.02-0.06mm**.

If this value is not obtained, measure again.

Dismount the comparator support.

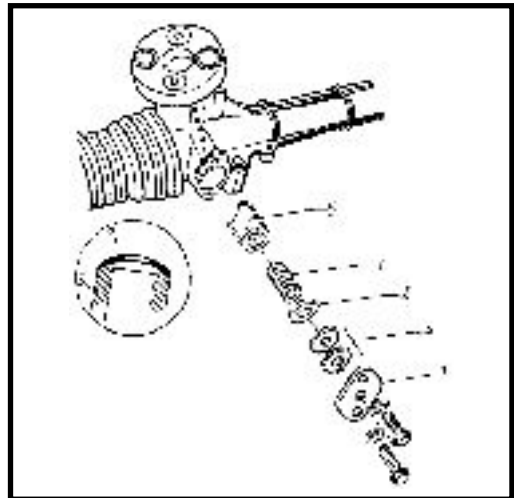
Remove the adjustment washers.

Put specialgrease, containing **MoS2**, in the seat.

Remount:

- the elastic washer;
- the adjustment washers;
- the cap.

Tighten the cap attachment screws at the required moment.



ADJUSTMENT EXAMPLE

The distance between the pusher and the adjustment washers: **D = 1,48 mm**

Free height of the elastic washer: **H = 1,32 mm**

Thickness of the adjustment spacer: **E = (D + 0,06) - H = (1,48 + 0,06) - 1,32**

$$\mathbf{E = 0,22 \text{ mm}}$$

PARTICULAR CASE

It may happen that value found for the adjustment washers thickness is negative.

EXAMPLE

The distance between the pusher and the adjustment washers: **D = 1,17 mm**

Free height of the elastic washer: **H = 1,35 mm**

Thickness of the adjustment spacer: **E = (D + 0,06) - H = (1,17 + 0,06) - 1,35**

$$\mathbf{E = - 0,12 \text{ mm}}$$

In this case, take out a **0,15mm** thick washer from the washers set, after which perform measurement again to establish the thickness of the adjustment washers.

DISMOUNTING

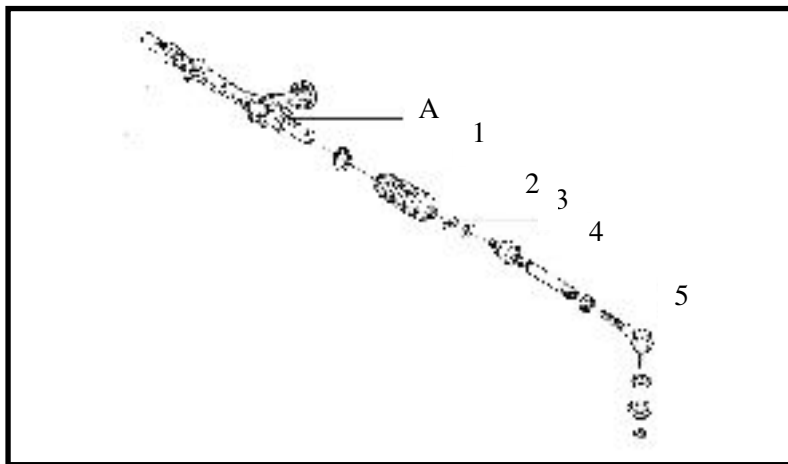
Unscrew The attachment nut of the funnel to the steering knuckle support and depress the auxiliary connecting rod ball joint.

Take out the attachment collar of the bellows on the casing box.

Detach bellows (2) from the steering box.

Straighten the edges of the safety washer (4).

Unscrew the steering connecting rod from the rack, using the special wrench and take it out together with the safety washer (4) and the locking washer (3).



REMountING

Fold the bellows (2) towards the connecting rod funnel.

Apply a layer of **FIXAMED R 58** on the threaded part of the joint ball.

Put the safety washer (4) and the locker washer (3) (in this order) on the threaded shaft of the steering auxiliary connecting rod, passing the curved pin of the safety washer through the slot of the locking washer.

Screw the steering auxiliary connecting rod by placing the safety washer pin on the flat area (A) at the end of the rack.

Tighten the ball joint ball body with the rack at a moment of **5 daNm**.

Bend the safety washer in the opposite part to the pin in at least one of the cuts made on the ball joint body.

Mount the bellows in its channel from the steering casing.

Mount the bellows collar.

Mount the auxiliary connecting rod funnel in the steering knuckle support.

Check the tightening of the nut (5) at a moment of **4daNm**, on the vehicle.

The tightening at the moment of **5 daNm** shall be performed with the **6902-4105** special wrench.

AUXILIARY CONNECTING ROD FUNNEL

In case only the auxiliary connecting rod funnel is worn, this may be replaced.

DISMOUNTING

Dismount the attachment nut of the auxiliary connecting rod funnel ball joint on the steering knuckle support.

Depress the funnel ball joint from the steering knuckle support

Loosen the nut (5).

Unscrew the auxiliary connecting rod funnel from the assembled auxiliary connecting rod end.

REMOUNTING

Remount the new funnel performing the dismounting operations in the reverse order. See that the nut (5) is tightened to the moment of **4daNm**.

STEERING WHELL SHAFT BUSHINGS REPLACEMENT**DISMOUNTING**

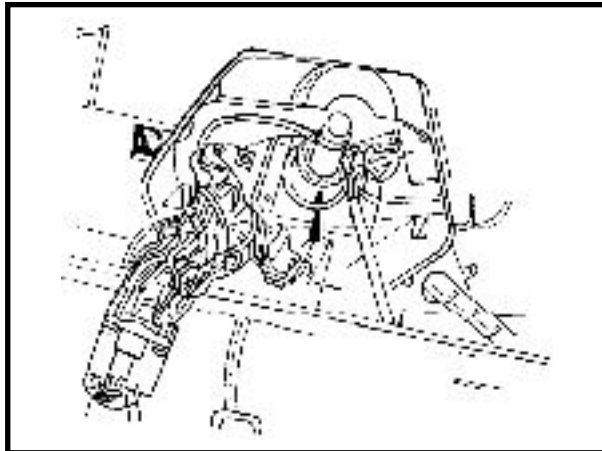
Disconnect the battery.

Dismount:

- the lower half case;
- the steering wheel;
- lights control switch;
- windscreen washer control switch;
- the steering cardan;
- upper bushing safety ring;
- the ignition/starting contact.

Push the steering wheel shaft by means of a bronze mandrel and a plastic hammer until the lower bushing gets out of the steering gear support.

Take out the upper bushing.



RE MOUNTING

Place an old lower bushing, with the diameter diminished by 2mm, under the new lower bushing(1).

Push the steering wheel shaft (3) upwards until the lower bushing gets in its seat.

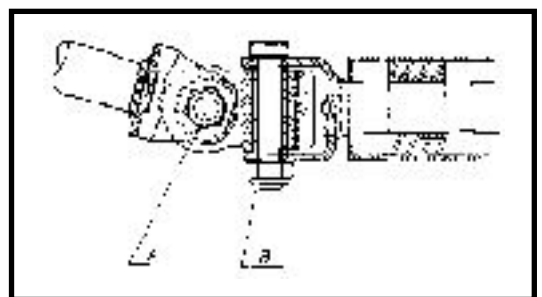
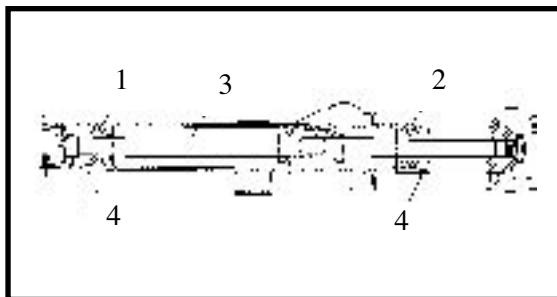
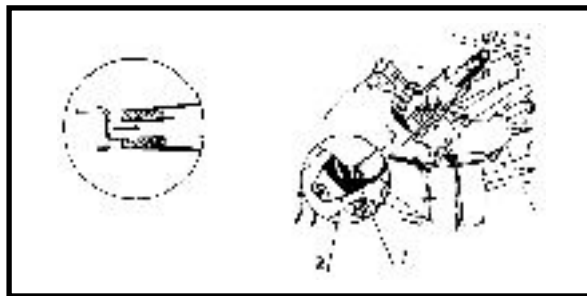
Push downwards the steering wheel shaft and recover the old bushing.

Mount the new upper bushing (2) by means of a pipe.

Check the correct positioning of the bushings in their respective seats.

Mount the safety ring (4) of the upper bushing.

Bring the steering gear to its central point.



Tighten the lower nut (A) of the cardan.

Rotate the steering wheel to the left or to the right and tighten the lower nut (B) of the cardan.

When the steering gear is in the central point (the wheels in straight line), one of the ends of the cardan screws should be oriented upwards.

Mount:

- the lights control switch;
- the steering wheel;
- the lower half casing;
- the ignition/starting contact.

DISMOUNTING

Disconnect the battery.

Dismount:

- the lower half casing;
- the steering wheel;
- the lights control switch;
- the tum lights relay.

Disconnect the stop lamp switch and the ignition/starting contact.

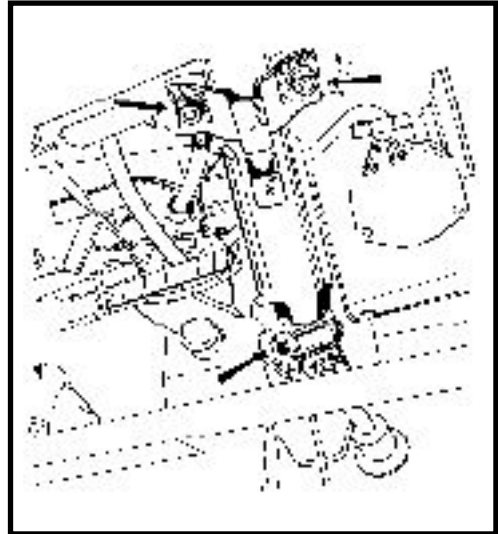
Dismount:

- the steering cardan;
- the servo brake attachment nuts;
- the servo brake.

Disconnect:

- the brake pedal pushing rod and the clutch cable.

Unscrew the two attachment nuts of the steering column and dismount the column.

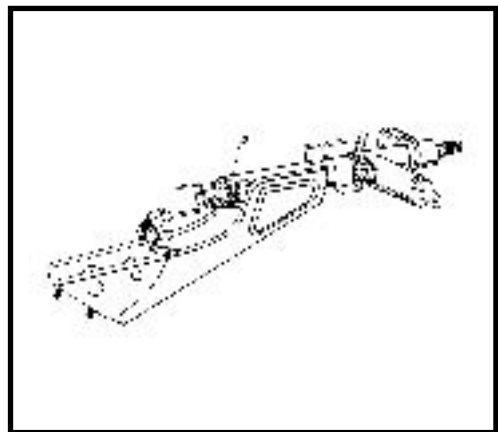
**REPAIR**

Check the parts; steering wheel shaft, steering wheel shaft bushing, steering column. Replace the defective or worn parts.

REMOUNTING


It shall be performed in the reverse order as to the dismounting.

Tighten at the moment the steering cardan nuts.



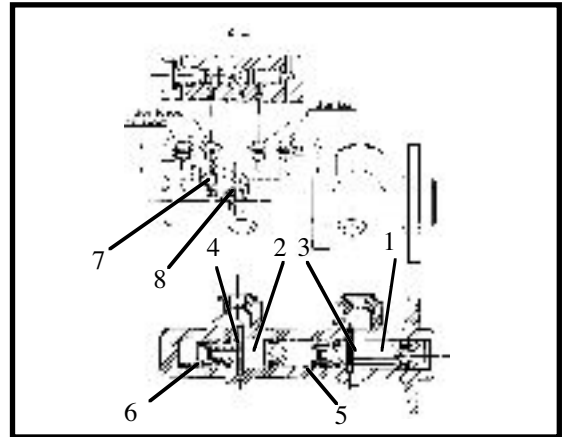
BRAKE PUMP

DOUBLE BRAKE PUMP WITH PRESSURE DROP INDICATOR (ICP) INCLUDED

TIGHTENING MOMENTS (daNm)	
The hydraulic ducts guides	1,4
The attachment nuts brake pump with servobrake	1,3

COMPONENTS

1. Assembled primary piston with gaskets
 2. Assembled secondary piston with gaskets
 3. Primary piston pin.
 4. Secondary piston pin.
 5. Primary piston return spring
 6. Secondary piston return spring.
 7. Purging screw
 8. ICP transducer
- A – A ICP assembly section



OPERATION

a) BRAKING

THE FRONT BRAKE CIRCUIT

The primary piston is controlled by the pushing rod. A part of the brake fluid under pressure will operate together with the spring on the secondary piston, and the other part of the brake fluid shall penetrate through the ducts to the upper floor towards both exits leading to the front brake calipers.

THE FRONT BRAKE CIRCUIT

The secondary piston is continuing its movement, conducting the brake fluid under pressure, through the ducts, to the upper floor, towards the exit to the pressure reducing valve.

b) DE BRAKING

After effort ending, the two pistons resume their initial position under the effect of the retainer springs, while the fluid is coming back and the pressure is decreasing in both circuits.

PRIMARY CIRCUIT – PRESSURE LOSING

Lack of pressure in the primary circuit leads to the following situation:

The primary piston advances up to the pin, so it controls mechanically the secondary piston.. The secondary piston reaches a fluid pressure that shall operate on the piston – linings assembly moving it to the right, opening also the second exit of the rear circuit (the by-pass circuit) increasing the pressure in this circuit.

In this moment, by means of the transducer, the warning light on the instrument panel is on.

SECONDARY CIRCUIT – PRESSURE LOSING

Both cylinder pistons go on. The caliper cylinders of the front brake shall normally operate.

The secondary piston reaches its respective pin, but the pressure will decrease (due to the failure).

BRAKE PUMP DISMOUNTING

Drain the brake fluid reservoir.

Disconnect the pump from the ICP transducer.

Dismount the four pipes from central pump.

Unscrew the attachment nuts of the pump on the servobrake.

Dismount the pump.

**BRAKE PUMP REMONUTING**

Before remounting, check the stroke of the servobrake push rod to be min. 30 mm.

Mount the brake pump on the servobrake, performing the dismounting operations in reverse order.

After assembling with the brake fluid reservoir and fluid filling, no leakage must occur in the surface of separation between the two elements.

VERYIMPORTANT: The I.C.P. transducer is mounted after the braking system purging. The tightening moment = 2daNm. ICP sub-assembly is not reparable (ICP – pressure decreasing indicator)

**BRAKE PUMP REPAIRING**

The operation is performed after dismantling the central pump off the vehicle.

DISMOUNTING

Dismount the brake fluid reservoir, recovering the two gaskets.

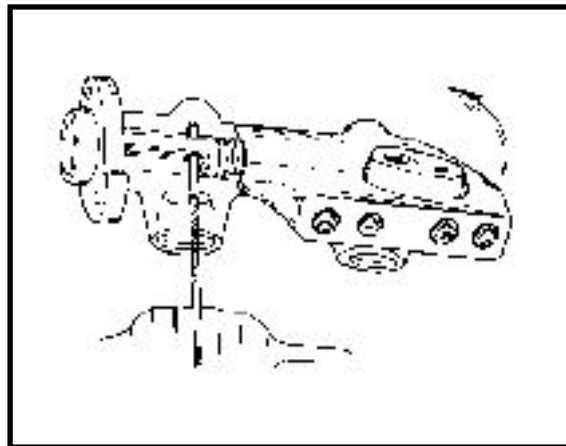
Dismount the transducer and the purging screw.

Clamp a **3,5 mm** drill in the vice.

Introduce the drill in the elastic pin of the primary piston.

Rotate and draw the pump until the pin is extracted.

Extract the secondary piston elastic pin, in the same way.



BRAKE PUMP

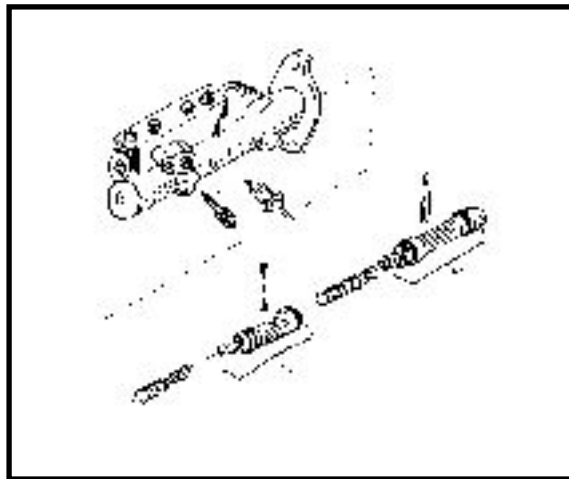
Remove from the pump bore :

- the primary piston assembled with Pp gaskets;
- the primary piston return spring;
- the secondary piston assembled with Ps gaskets;
- the secondary piston return spring.

Wash the parts with alcohol and blow them with compressed air.

Check:

- the pump bore;
- the pistons gaskets the springs.



The parts of the “ primary piston” Pp and those of the “secondary piston” Ps, cannot be repaired. In case one of these parts is damaged, replace the whole” primary piston” and “secondary piston” assembly.

REMOUNTING

Before remounting, the parts and the pump bore will be lubricated with brake fluid.


Mount the “ secondary piston”, retained spring and “primary piston “ assemble.

Compress the pistons and introduce the elastic pins; the elastic pins slot shall be oriented towards the back of the pump (towards the pushing rod).

Mount the purging screw.

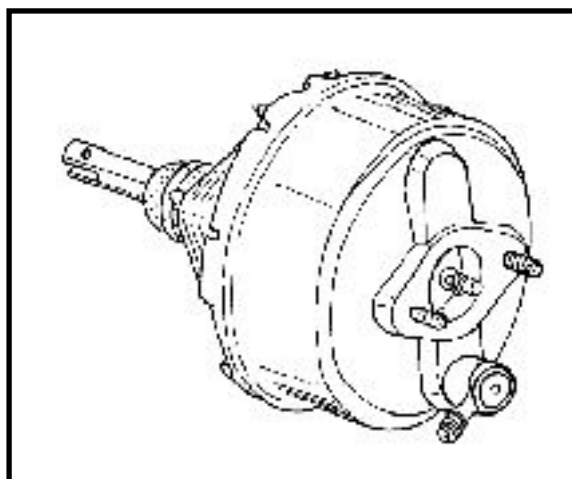
Purge the brake circuit and remount the ICP transducer.

MASTER - VAC SERVOBRAKE

TIGHTENING COUPLE (daNm)	
Servobrake on the iron brake	2
The attachment nut of the central pump with servobrake	1,3

CHARACTERISTICS

The Master-Vac servobrake is a brake booster with the objective of reducing the driver effort on the brake pedal and may be of **152 mm** or **177,5 mm** with a minimal booster rate of **1,9**.

**NOTE :**

In case one circuit is damaged, the pedal stroke shall be longer, the braking being done only by the circuit still working.

The servobrake cannot be repaired.

The only items which are to be replaced are the air filter and the retainer valve.

DISMOUNTING

Drain the liquid out of the reservoir.

Detach the four brake ducts from the pump.

Disconnect the electrical contact from ICP transducer.

Dismount the central pump from the servobrake.

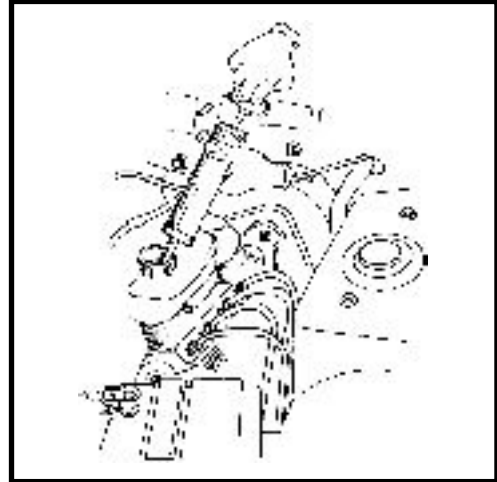
Disconnect the suction hose of the servobrake.

Dismount :

- the connecting fork shaft to brake pedal (**1**);

- the attachment nuts of the servobrake on the iron plate.

Dismount the servobrake.

**REMOUNTING**

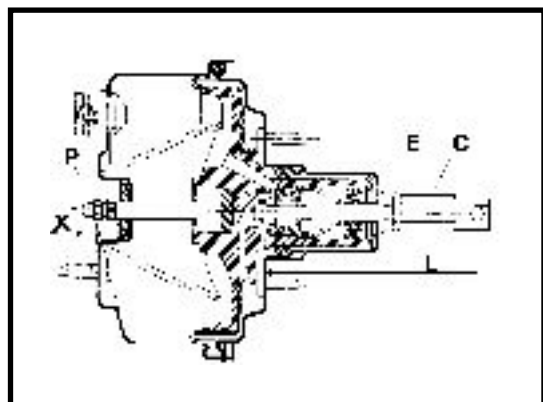
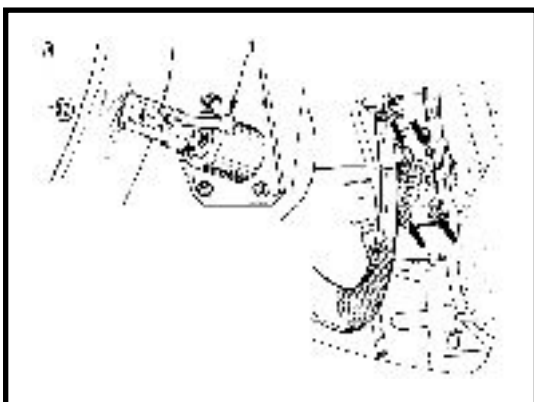
Before remounting, check:

- the adjustment of the main cylinder stroke, which is obtained by acting on the pushing rod (**P**) nut in order to obtain value **X = 9 mm**, between the pushing rod end and the rest surface of the main cylinder;

- the adjustment in order to obtain the value **L = 131 mm** is performed by screwing or unscrewing the fork **C**, followed by blocking the lock nut **E**.

For remounting, perform the dismounting operations in the reverse order.

Purge the brake circuit.



TIGHTNESS CHECKING

The tightness of the servobrake is checked on the vehicle, with the hydraulic circuit under operation.

Connect the vacuum meter between the servobrake and the inlet collector by means of a “ T ” type connector.

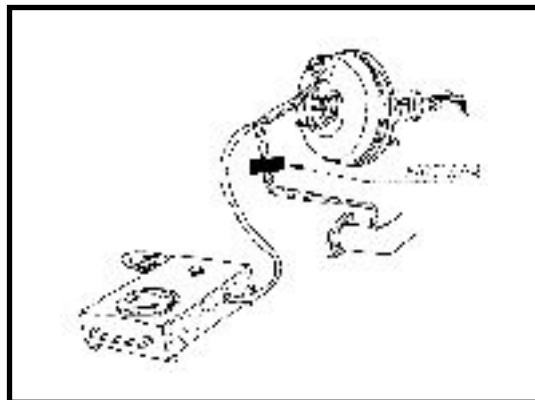
The connecting hose of the vacuum meter shall be as short as possible.

Start the engine and let it idle run for **1min.**

Block the air suction hose by means of the **MOT 453** device.

Stop the engine.

Read the indicator.



If air suction lowers with more than **33 mbar** (25 Hg) in 15' period, it means there is a loss: at the retainer valve - replace the valve or at the servobrake membrane - replace the servobrake.

Dismount the **MOT 453** device.

Dismount the vacuum hose.

Connect the air suction hose to the servobrake.

If the servobrake does not work, but the braking system is working, then the effort on the brake pedal is increased.

DISMOUNTING

Dismount the air filter assembly

Disconnect from the vacuum pump:

- the pawl connection of the depression pipe.
- the plastic pipe making the connection with the vacuum cylinder (tank) (for the integral traction vehicles).

Dismount the three attachment screws of the vacuum pump on the cylinder head.

Dismount the vacuum pump.

**REMOUNTING**

Perform the dismounting operations in the reverse order.

AIR FILTER REPLACEMENT

DISMOUNTING

Dismount the servobrake off the vehicle.

Loosen the lock nut and dismount : the coupling brake and the lock nut.

Remove the old filter, F.

REMOUNTING

Mount the new filter.

Mount:

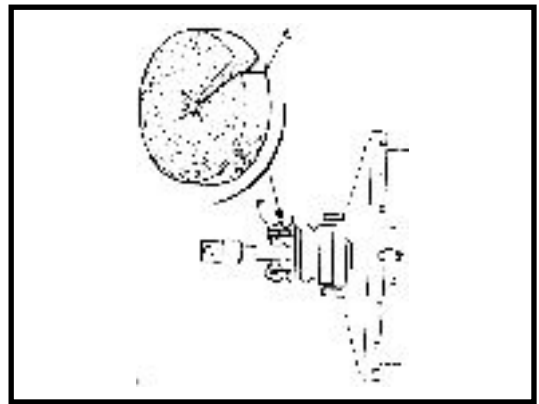
- the lock nut;
- the coupling fork.

Adjust the value L.

Tighten the lock nut on the fork.

Mount the servobrake on the vehicle.

Purge the braking circuit if necessary.



SERVOBRAKE RETAINER VALVE REPLACEMENT

The operation shall be performed without dismounting the servobrake off the vehicle.

DISMOUNTING

Disconnect the air suction hose.

Dismount the valve by rotating and then pulling it.

Dismount the retainer valve gasket.

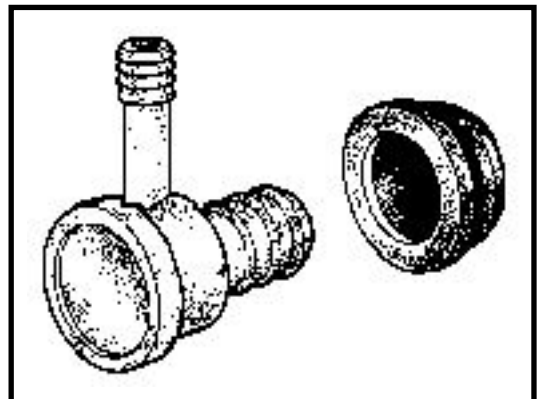
REMOUNTING

Check the state of the retainer valve gasket; replace it if necessary.


Mount the retainer valve gasket.

Mount the new retainer valve.

Connect the air suction hose.



Lever on floor, mechanical controlled, operating on the rear wheels.

TIGHTENING MOMENTS (daNm)	
The attachment screws of the hand brake lever assembly on the floor	1,2
The primary cable tightening nut on swing bar	2

ADJUSTMENT

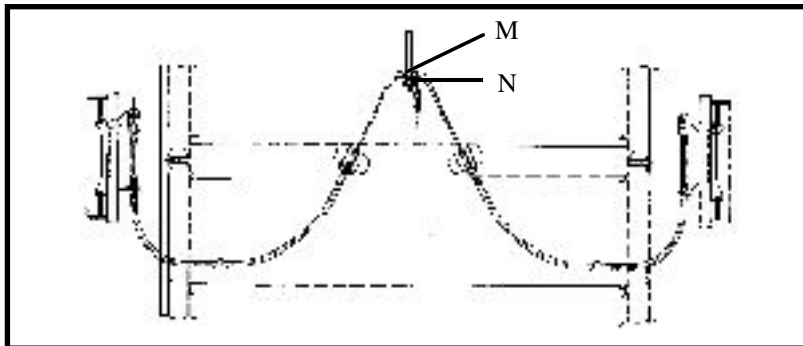
With rear wheels suspended and hand brake lever released ,tighten the castle nut **M** until the shoes gaskets come lightly into contact with the brake drum.

Tighten the lock nut **N** at the required moment.

The adjustment shall be performed so that is insuring a hand brake lever stroke of min.7 teeth until the blocking of all wheels.

The adjustment shall be performed anytime the shoes wear is requiring it.

The hand brake adjustment shall be performed only after the rear brake adjustment.



DISMOUNTING

Disconnect the battery.

Lift the vehicle by means of an elevator.

Release the hand brake.

Disconnect the primary cable from the rocking joint.

Dismount the hand brake ornament case.

Dismount the screws that attach the hand brake lever to the floor.

Release the hand brake lever.

Dismount:

- the locking ring of the primary cable fork shaft;
- the primary fork shaft;
- the hand brake lever.

**REMOUNTING**

Grease the primary cable fork shaft with special **MoS2** grease.

Connect the primary cable.

Mount the hand brake lever.

Mount the hand brake ornament case.

Adjust the hand brake.

Get down the vehicle on ground.

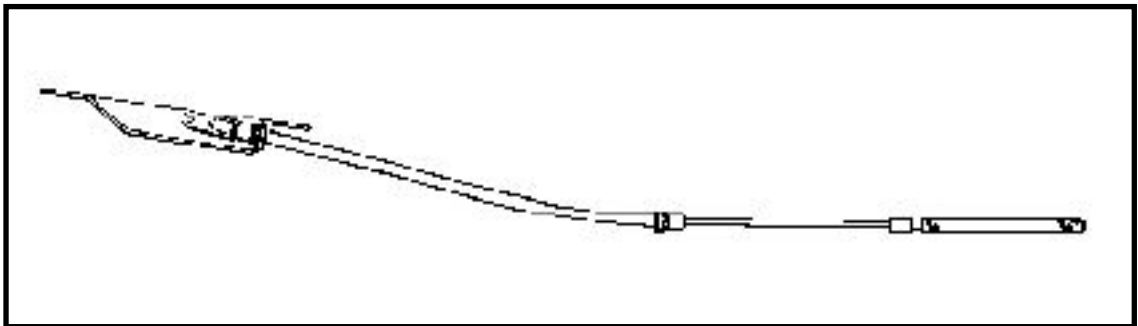
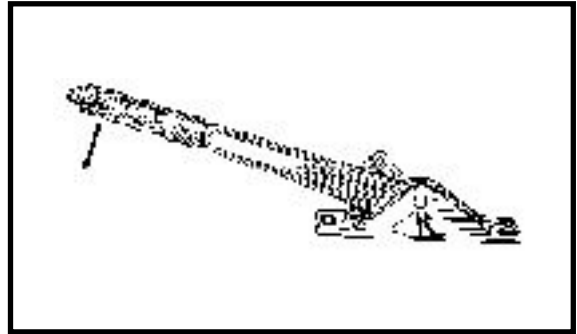
Connect the battery.

THE HAND BRAKE SECONDARY CABLE REPLACEMENT**DISMOUNTING**

Dismount the hand brake lever.

Disconnect the primary cable from the rocking joint.

Dismount the stop sheath of the primary cable.

**REMOUNTING**

Place a sealant material layer between the floor and the primary cable case.

Mount the primary cable.

Mount the stop sheath.

Mount the hand brake lever.

Adjust the hand brake.

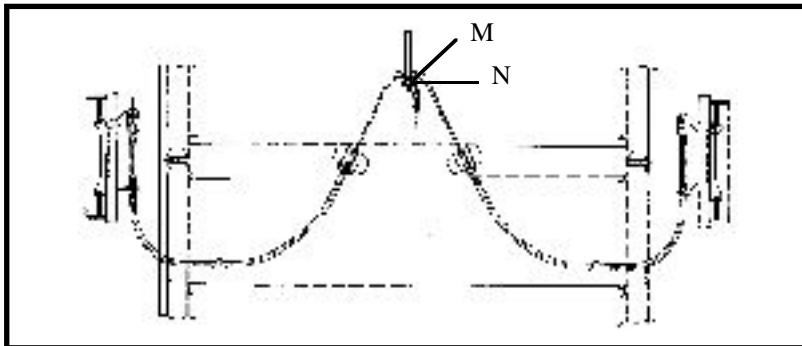
HANDBRAKE SECONDARY CABLE REPLACEMENT

DISMOUNTING

- Disconnect the battery.
- Release the primary cable from the rocking joint.
- Dismount the drums.
- Lift the motor-car by means of a jack.
- Unscrew the nuts **M** and **N**.
- Release the secondary cable from the control levers.
- Dismount the sheaths stops (from the plate and from the floor).
- Dismount the secondary cable.

REMOUNTING

- Position the secondary cable.
- Connect the secondary cable in:
 - the floor;
 - the sheaths stops from the plate;
 - the sheaths stops floor.
- Adjust the hand brake.
- Tighten to the required moment the nut **N**.



BRAKE LIMITER CHECKING-ADJUSTMENT

Place the vehicle on the checking bench so that wheels are in contact with the ground (unloaded pick up and one person on board).

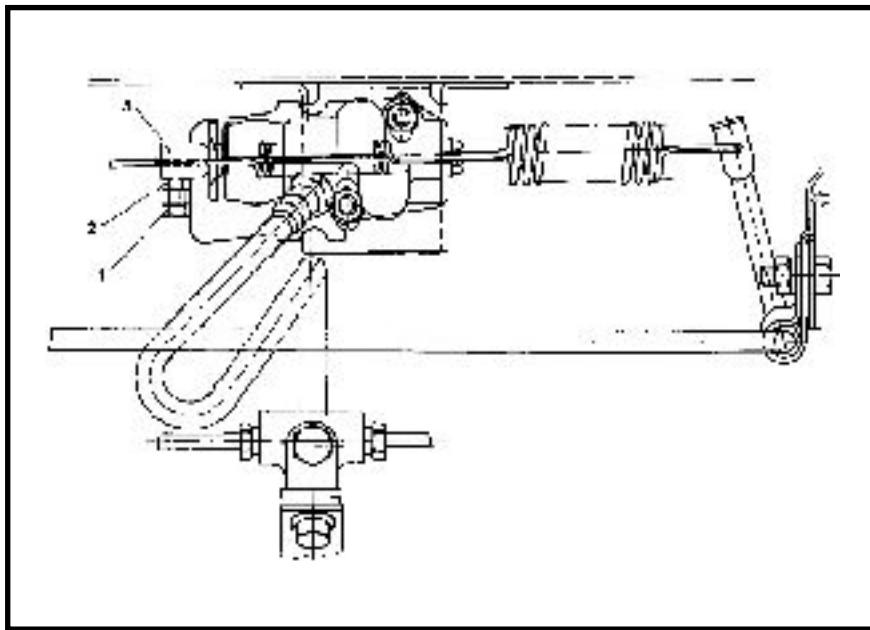
Mount in the place of the purging screw of the brake cylinder, the IR 214 – 02 checking manometer.

Dismount the fork from the big spring.

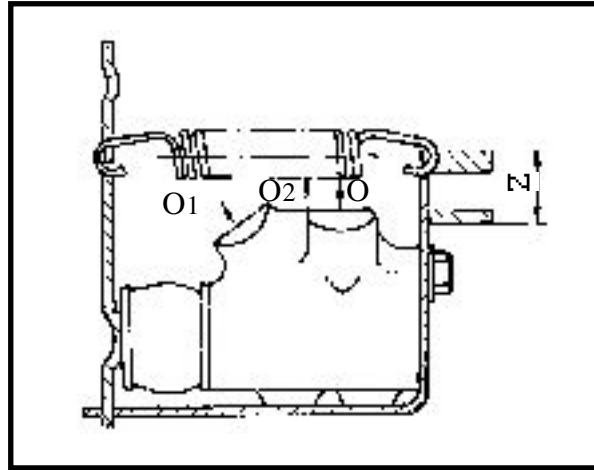
After 3,4 successively pressings, the brake pedal remains pressed.

Read the value of the pressure which must be 20^{+0}_{-2} bars.

In order to obtain this value, strain by bending the limiter support slide from the base (Z area) for lower the pressure (to inner side).



BRAKE LIMITER



After obtaining the pressure of $20 \pm 0,2$ bars, with the brake pedal pressed, slide the passing fork (3) until the contact with the limiter control lever.

In this moment block the passing fork by means of the screw (1) and the nut (2).

Release the brake pedal and purge the braking circuit.

Dismount the manometer and the adjustment is considered ready.

OBSERVATION!

If, with the limiter being mounted, the pressure of $20 \pm 0,2$ bars can not be obtained, proceed to the limiter replacement.

Repairing of the limiter is forbidden !

DISMOUNTING

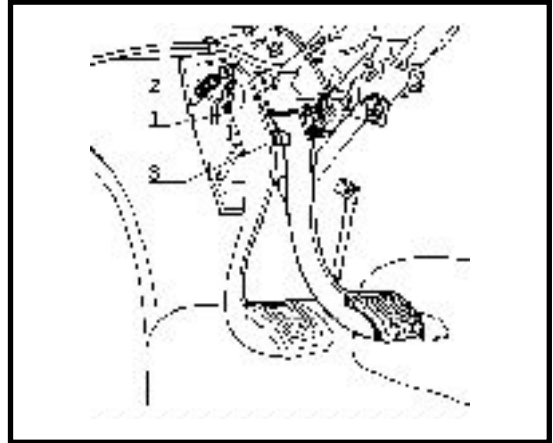
Remove the safety clip (1).

Detach the spring (2) of the clutch cable shaft.

Remove the pins and the shaft (3) of the main cylinder pushing rod.

Remove the clutch pedal from the pedals shaft.

By means of a bronze nail, push the pedals shaft towards the right, then remove the brake pedal.

**REMOUNTING**

Grease the shaft (A) with special grease containing **MoS2**.

Mount in the following order:

- the brake pedal (F);
- the washer (C).

Place the shaft (A) together with the elastic pin (B) in the pedal support.

Place the shaft in the second support bore, then place the following items:

- the washer (D);
- the clutch pedal (E).

Check that the elastic pin (B) is well set in its seat.

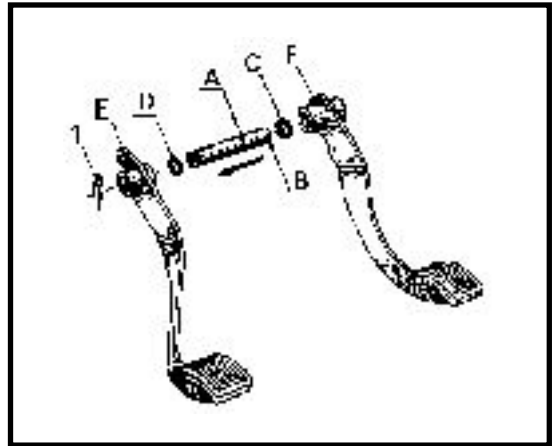
Mount the safety lock (1).

Attach the following parts:

- the clutch cable;
- the pushing rod of the main cylinder, on the brake pedal.

Adjust:

- the clutch stroke;
- the brake stroke.



CLUTCH CABLE REPLACEMENT

DISMOUNTING

Dismount the clutch lever cable.

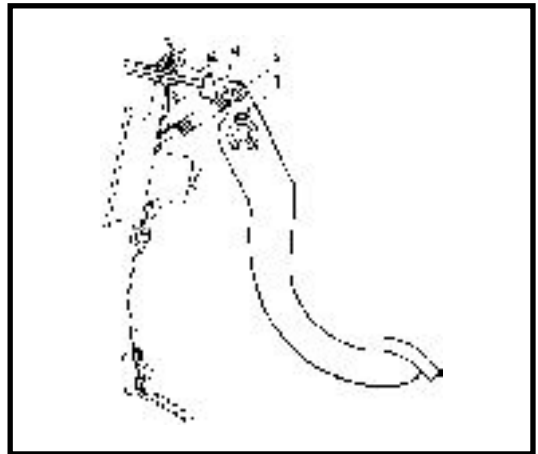
Dismount the attachment clip (1) of the pedal.

Push the shaft rightward and take out the pedal.

Release the spring (2) and the shaft (3) of the fork.

Dismount the fork.

Release the cable from the housing stopper on the pedal support and dismount it.



REMountING

Perform the dismounting operations in the reverse order.

Grease :

- the pedal shaft;
- the fork shaft.

Adjust the clutch stroke.

CLUTCH GEAR STROKE ADJUSTMENT

Loosen the lock nut (1).

Tighten or unscrew the nut (2) until obtaining the 2,5-3,5 mm stroke at the lever end.

Lock the lock nut.



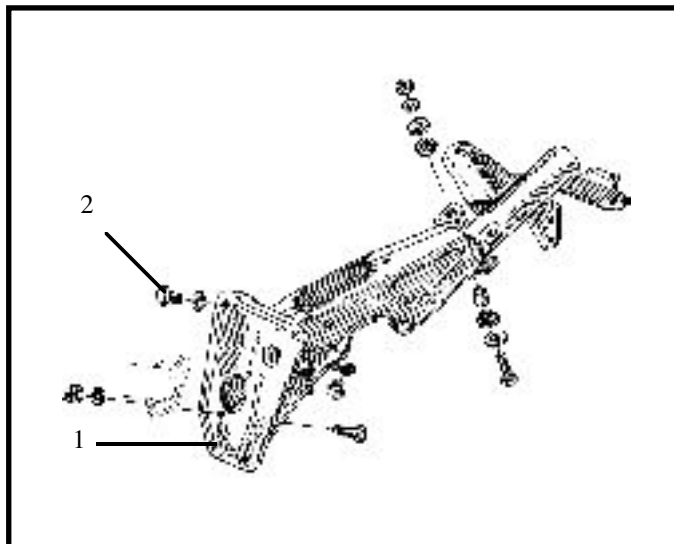
DISMOUNTING

Dismount the throttle, brake and clutch pedals.

Dismount the attachment screws (2) of the steering column mounting (1) on the wall metal.

REMOUNTING

Perform the dismounting operations in the reverse order by screws tightening at the moment of 1,5 – 2,5 daNm.

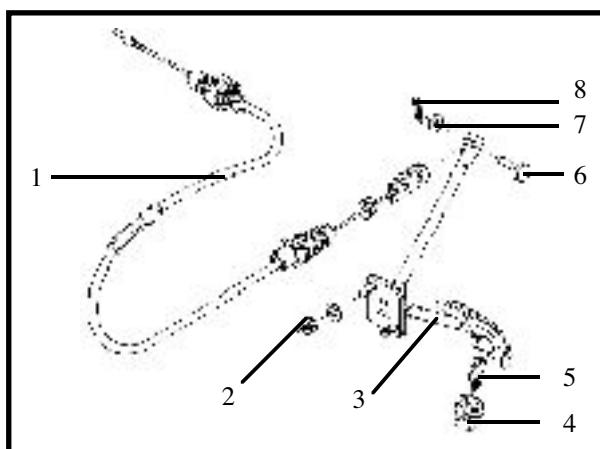


THROTTLEPEDALREPLACING

DISMOUNTING

Release the throttle pedal by dismantling the clip (8), the washer (7) and support shaft (6).

Dismount the attachment nuts of the pedal support (2) and release the throttle pedal (3).



REMOUNTING

Perform the dismantling operations in the reverse order then adjust the throttle stroke at the “ maximum” position of the valve, which is obtained by pedal pressing till its calibration on the limiter (4) and by threaded pin adjustment (5) in this position.

THROTTLE CONTROL CABLE REPLACEMENT

DISMOUNTING

Dismount the attachment screw of the cable (1) from the throttle control lever, then remove the clips (8) the washer (7), and the pedal shaft (6), releasing the attachment throttle pedal.

REMOUNTING

Perform the dismantling operations in the reverse order, followed by the corresponding adjustment of the throttle pedal.

DISMOUNTING

Dismount the return spring (1).

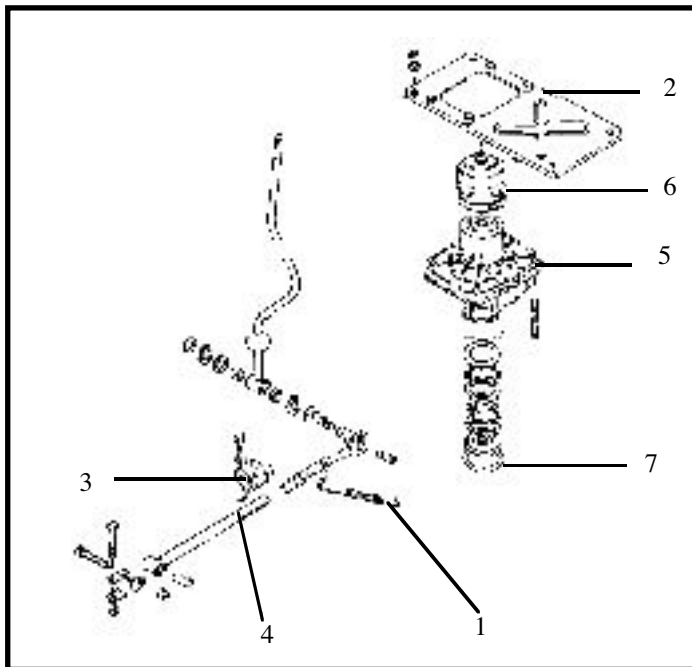
Dismount the control auxiliary connecting rod screw.

Dismount the four attachment support nuts M8 (2) of the gearbox control case.

Dismount the attachment screws M7 of the bellow control lever.

Remove from the vehicle, the gears control assembly .

Dismount the attachment strap (3) from the control rod (4).



Dismount the safety ring from the lever end.

Dismount the control lever from control rod and recover the two elastic washers and the flat washers.

Dismount the four screws M7 of control box assembly (5) with its support.

Dismount the ring and the protection bellows (6).

Dismount the elastic ring D68 (7).

Take out: assembled bellows, spring, elastic ring, elastic washer, the cap and the ball bearing.

Take out the control lever.

Check the wear of bushings for axial-radial clearance taking over.

Replace the damaged or worn parts.

REMountING

Re mounting is done by performing in the reverse order, the dismounting operations.

Before mounting grease the parts with grease **UM 170LiCa Pb2M**.

Tighten at the required moment the attachment nuts and screws:

- nuts M8**1,5 - 2 daNm**
- screws M7 **1 - 1,5 daNm**

GEARS CONTROL ADJUSTMENT

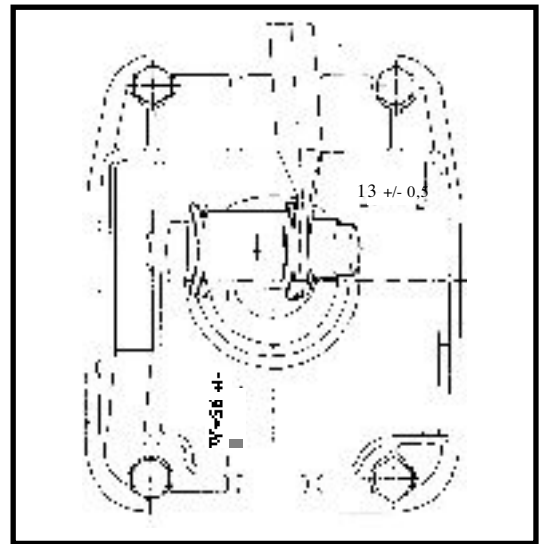
Engage the end lever of the gearbox in the velocity step IV.

Place in contact the plug of the control lever with an adjustment washer of **13 +/- 0,5 mm**, placed between the control box wall and the plug, observing also the value **W = 56 +/-1**.

Tighten at the required moment the strap attachment screws (**1,8 –1,9 daNm**) and the elastic joints at the control shaft end (**1,1 – 1,9 daNm**) observing the value **L=10**.

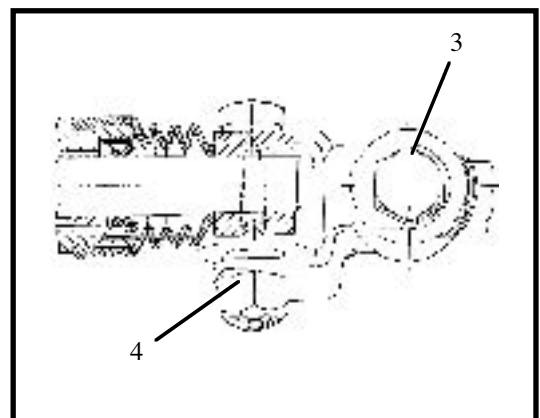
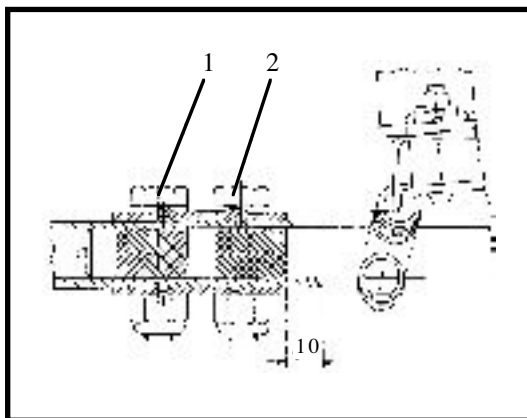
The strap must be in horizontal position with the screws heads down.

Attach the return spring.



NOTE:

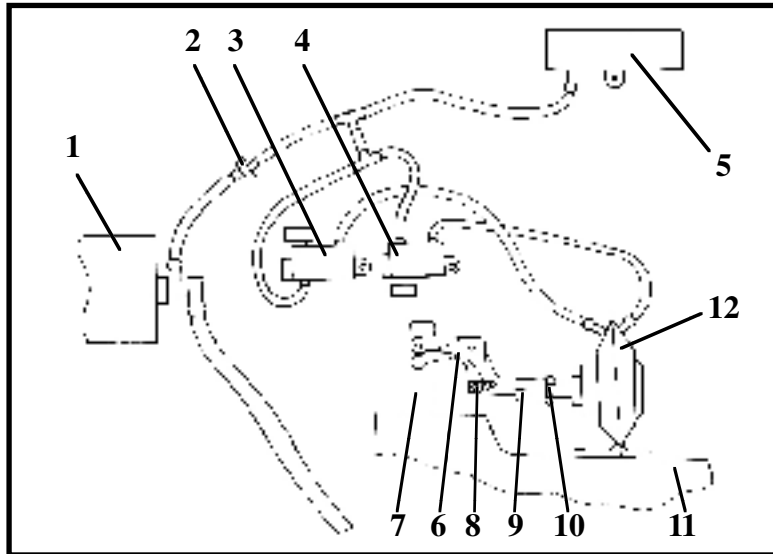
*Before mounting grease the joints with grease **LiMoS2***



VACUUM-ELECTRIC CONTROL SYSTEM 4 X 4 COUPLING Presentation

38

The 4 X 4 vacuum-electric control is used for the commercial vehicles Dacia 1304, 1307 vehicles equipped with 51 C type gearbox, for front transmission coupling. This is allowed after vehicle stopping or during driving, at a speed of max.10 km/h, after declutching.



- The specific elements of this system may be identified in the above drawing
- the vacuum capsule (12) – attached on the gearbox left half casing (11) ; it has the purpose of mechanic control of the front transmission coupling and uncoupling.
 - electric valves (3 and 4) are placed in the engine compartment, on the right wing lining. These are destined to open or close the vacuum route between the inlet manifold and the two vacuum capsule compartments
 - 4x4 switch – is placed on dashboard. When this is operated, the front transmission coupling is controlled.
 - intermediary relay – is placed under the dashboard, on the left side and it is controlling the lighting of the “ 4 x 4 “ warning light on the instruments panel, when front transmission coupling is done.
 - vacuum tank (5) – is placed in the engine compartment, being attached by means of a screw on the right shock absorber column.
 - vacuum control ducts assembly – is performing the vacuum route, between the inlet manifold, the vacuum tank, electric valves and the vacuum capsule.
 - one-way vacuum valve (2) – is placed on the connection hose between the inlet manifold and the electric valves.

The system is working based on the vacuum created by the vacuum pump (1), which, during engine running, is acting on the membrane separating the two vacuum capsule compartments (12). This will impose the longitudinal movement of the capsule axle, which by means of the control lever (6) will act upon the front transmission coupling control axle (7) placed in the gearbox right front part (11). In this way is performed the front transmission coupling and the transit from rear drive to all wheel drive (4 x 4).

VACUUM-ELECTRIC CONTROL SYSTEM 4 X 4 COUPLING

Electric-vacuinating control adjustment

Suspend the vehicle on an elevator.

Dismount the fixing lock pin of the connection bolt (8) between the capsule axle and the control lever (6), then remove the bolt from its place.

Rotate the front right wheel and set the positions coupled-uncoupled, acting upon the front transmission control axle. The front transmission control axle stroke = 11.5 mm.

Operate the front transmission axle (7) in the position uncoupled, then rotate the threaded bushing (9) placed on the capsule axle, so that the hole from the capsule axle fork is corresponding with the hole from the control lever.

Place the bolt (8) in this position and ensure it by means of the lock pin.

Check the uncoupled position of the front transmission; the uncoupling condition is performed when the front right wheel will be freely turning and in the gearbox no gears engagement noises can be heard.

Block the threaded bushing position from the capsule axle by means of the nearby nut.

For the good operation of this system, in case of the reparation, the following requirements must be observed:

- **The system sealing condition** (piping, vacuum tank, electric valves, vacuum capsule) must be performed at a depression of **0.07 Mpa = 0.7 bar**, which must be maintained for **30 seconds**.

- **The vacuum valve** – is to be mounted so that the arrow marked on its body to be oriented from the electric valve towards the inlet manifold.

- **The tightening moment** for vacuum capsule attachment = **1.8 – 2 daN.m**

- **The tightening moments** for capsule support attachment are :

- **1.8 – 2 daN.m** for the screws **M 8 x 1.25 x 18** and

- **1.9 – 2.2 daNm** for the screw **M 10 x 1.5 x 20**

- **The tightening moment** of the vacuum tank attachment screw = **0.32 – 0.6 daN.m**.

- **The vacuum piping connecting mode** between the electric valves and the vacuum capsule is according to the drawing: the pipe from the vacuum capsule axle is connected to the electric valve having the pipes on both sides of its body, and the pipe from the opposite part of the capsule axle is to be connected to the electric valve having the pipes on the same side of its body.

DISMOUNTING

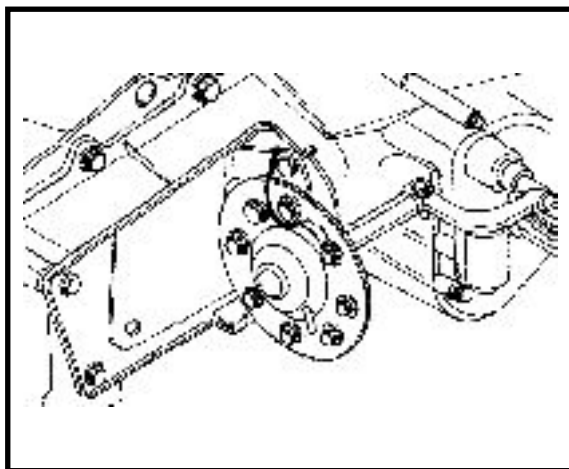
Suspend the vehicle on an elevator

Disconnect the vacuum capsule connector.

Disconnect the vacuum hoses from the capsule.

Dismount the lock pin and remove the bolt which is connecting the capsule axle with the GB control lever.

Dismount the capsule attachment nuts on the support.



REMOUNTING

Perform the dismounting operations in the reverse order.

NOTE :

Observe the connecting position of the hoses to the capsule, from corresponding electric valves. After capsule replacement, perform the vacuum-electric control adjustment.

DISMOUNTING

Disconnect the connector from the electric valve
Disconnect the hoses from the electric valve
Dismount the electric valve attachment screw

REMOUNTING

Perform the dismounting operations in the reverse order.

NOTE :

Observe the connection position of the hoses to the electric valve, before disconnecting.

REPAIR MANUAL

DACIA COMMERCIAL

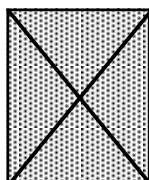
RM 503-2 BODY
ENGINE: F8Q
GERBOX: NG1; NG7
TAPV: U75D; U75E; U75G

The reparation methods prescribed by the manufacturer in the present document are established subject to technical specifications in force at the document issuing date.

These are subject to modifications brought by the manufacturer at the fabrication of different assemblies, subassemblies or accessories of its vehicles.

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4 Body

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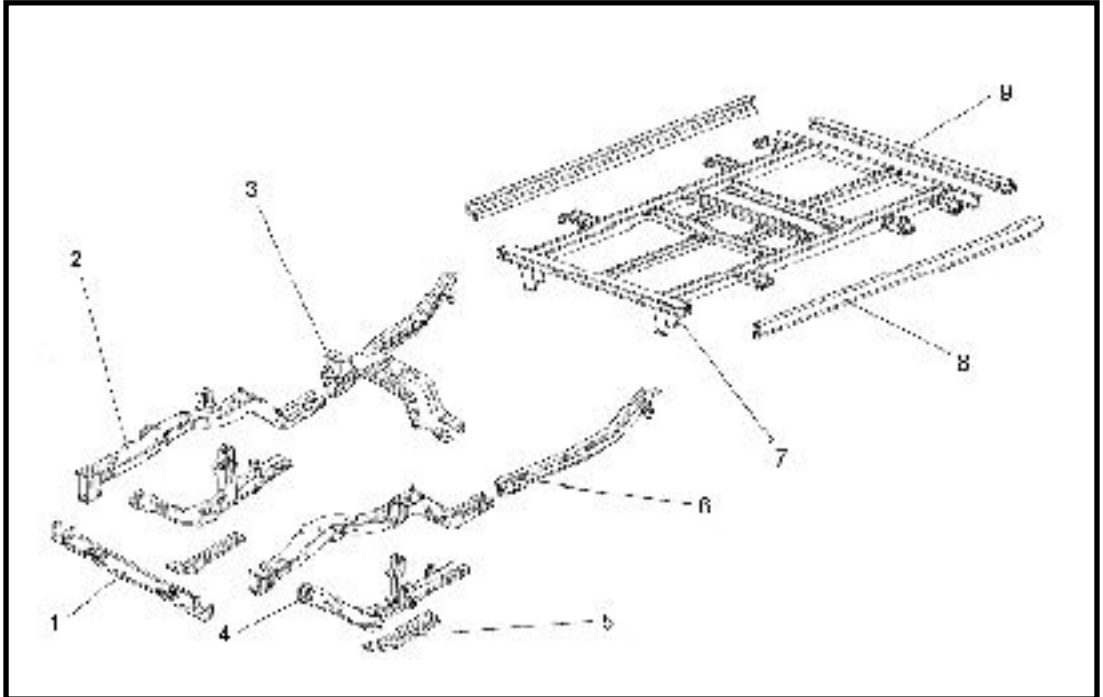
55 EXTERNAL PROTECTIONS

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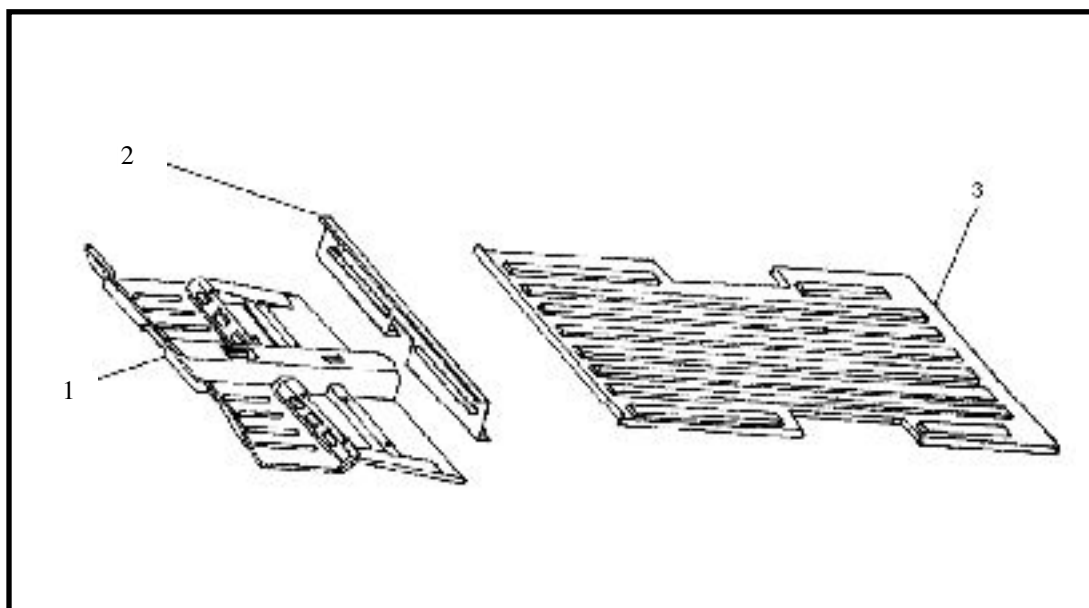
Outside rear view mirror	56-1
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LOWER STRUCTURE COMPOSING ELEMENTS
DACIA 1304



1. Front cross member
2. Upper longitudinal girder assembly
3. Steering cross member
4. Lower longitudinal girder assembly
5. Longitudinal girder closing plate
6. Intermediary longitudinal girder
7. Rear unit assembly
8. Rear longitudinal girder
9. Rear cross member

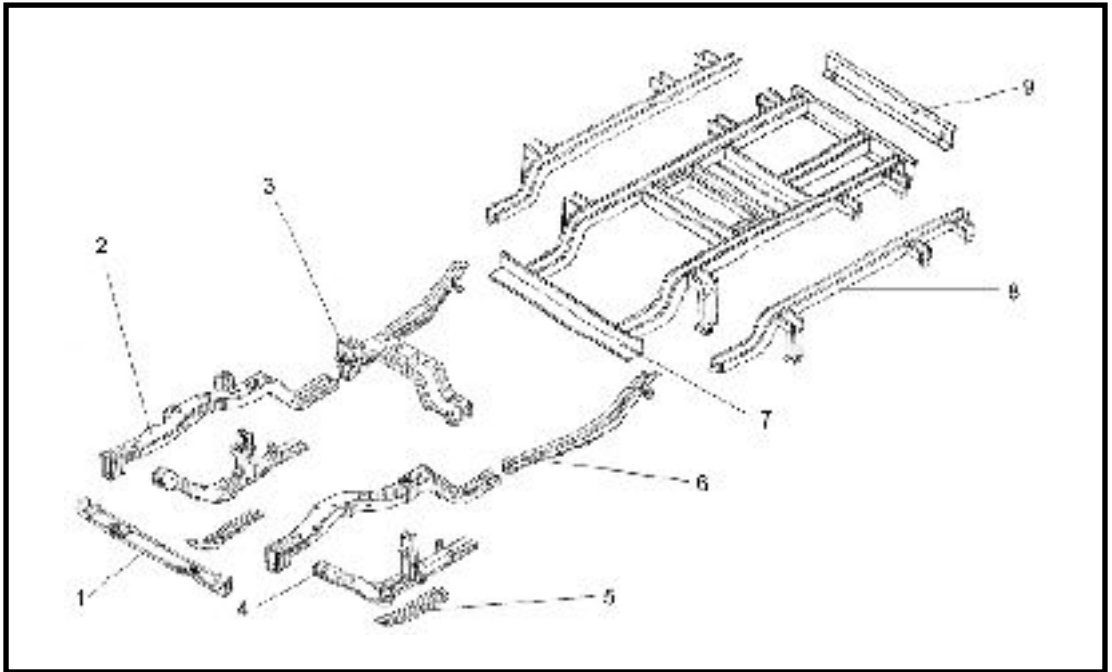
**LOWER STRUCTURE COMPOSING ELEMENTS
DACIA 1304 PICK-UP, DROP - SYDE**



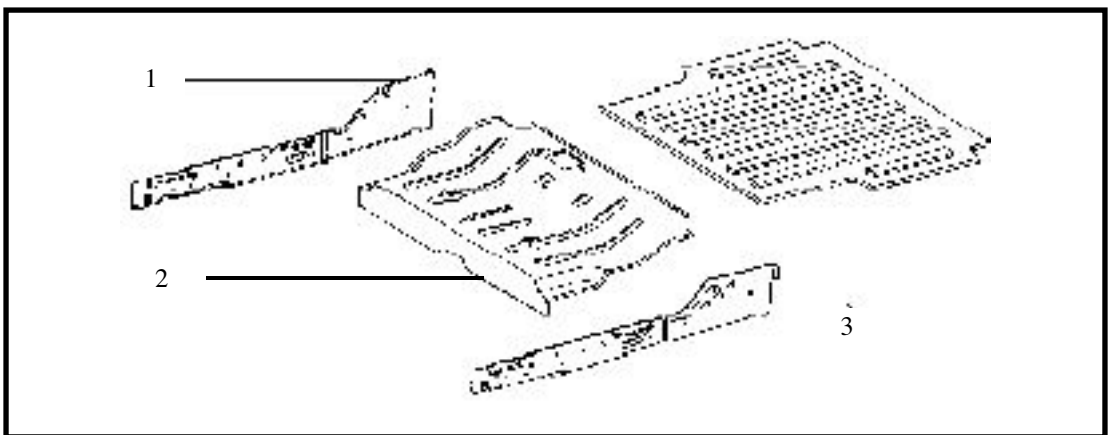
1. Pedals floor
2. Cabin closing panel
3. Central floor panel

DESIGNATION OF PARTS (BLOW-UP)

LOWER STRUCTURE COMPOSING ELEMENTS
DACIA 1307

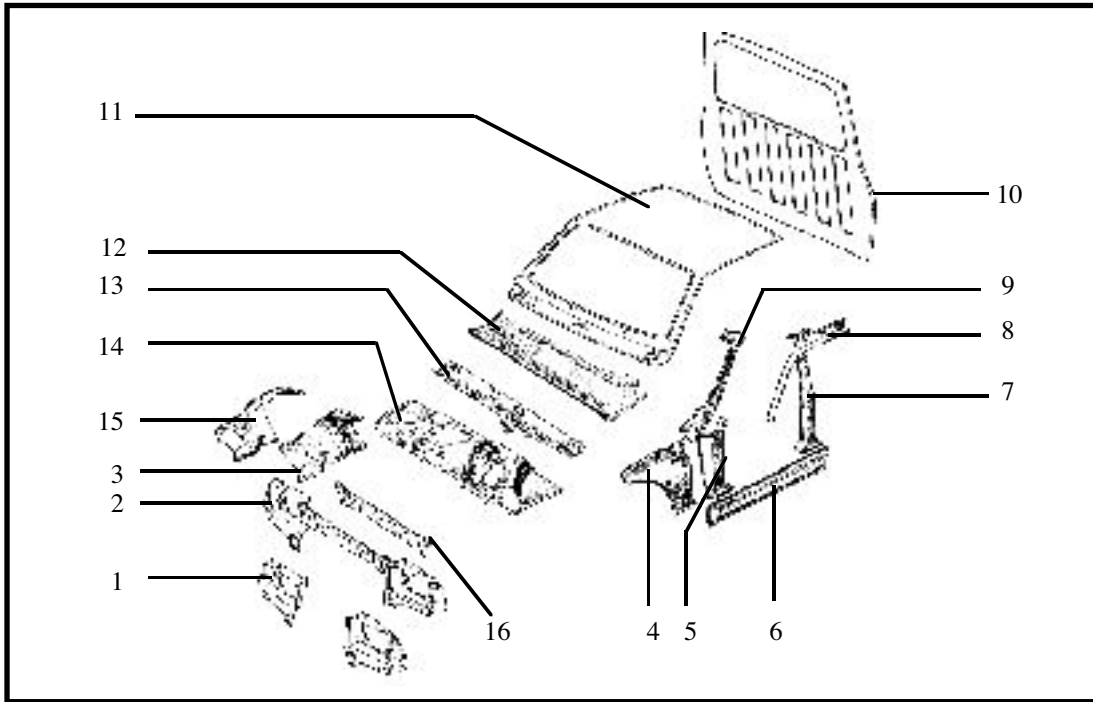


- | | |
|---------------------------------------|-------------------------------------|
| 1. Front cross member | 6. Intermediary longitudinal girder |
| 2. Upper longitudinal girder assembly | 7. Rear unit assembly |
| 3. Steering cross member | 8. Rear longitudinal girder |
| 4. Lower longitudinal girder assembly | 9. Rear cross member |
| 5. Longitudinal girder closing plate | |



1. Front side plate.
2. Central floor
3. Rear floor

UPPER STRUCTURE COMPOSING ELEMENTS
DACIA 1304, 1307



1. Headlamp support

2. Front grill simple

3. Front wing lining

4. Front pillar lining

5. Front pillar

6. Buffer

7. Middle pillar

8. Front part belt

9. Side windscreen lining

10. Separating wall

11. Ceiling

12. Windscreen frame

13. Lower cross member

14. Climate control box

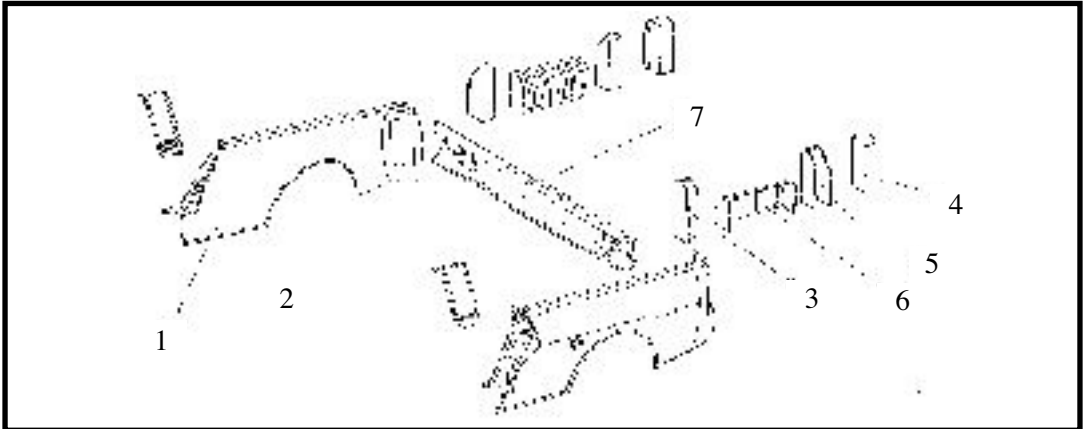
15. Iron plate

16. Upper radiator cross bar

DESIGNATION OF PARTS (BLOW-UP)

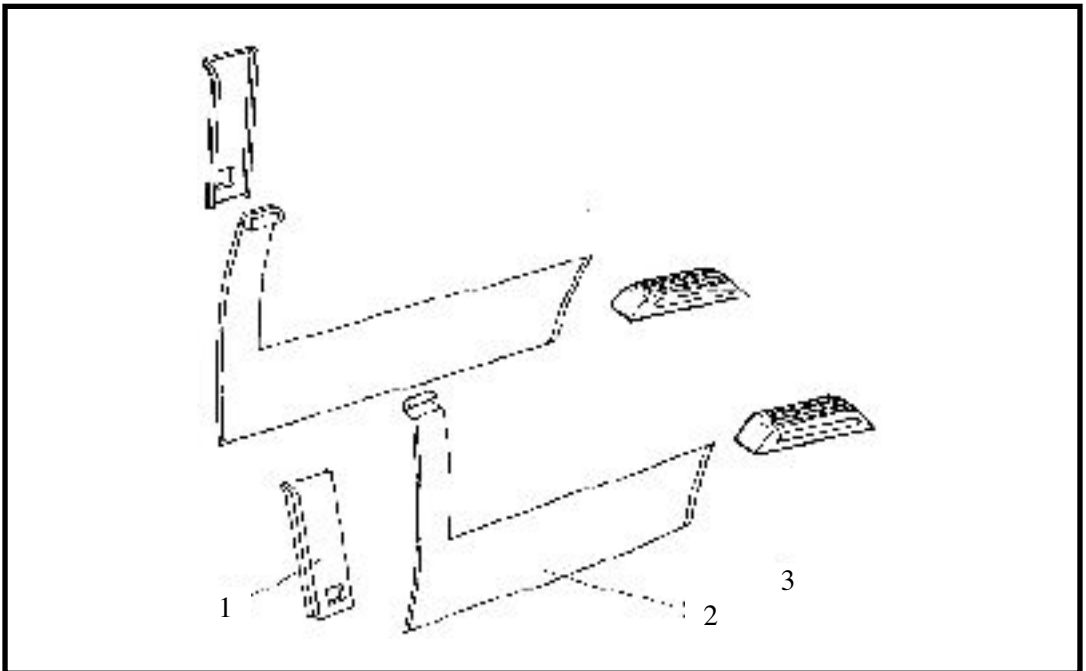
UPPER STRUCTURE COMPOSING ELEMENTS

DACIA 1304 PICK - UP, 1307



- | | |
|--------------------------|-----------------------|
| 1. Side panel | 5. Rear extensor |
| 2. Side panel upper part | 6. Rear wheel passage |
| 3. Front extensor | 7. Rear plate |
| 4. Rear lamp lining | |

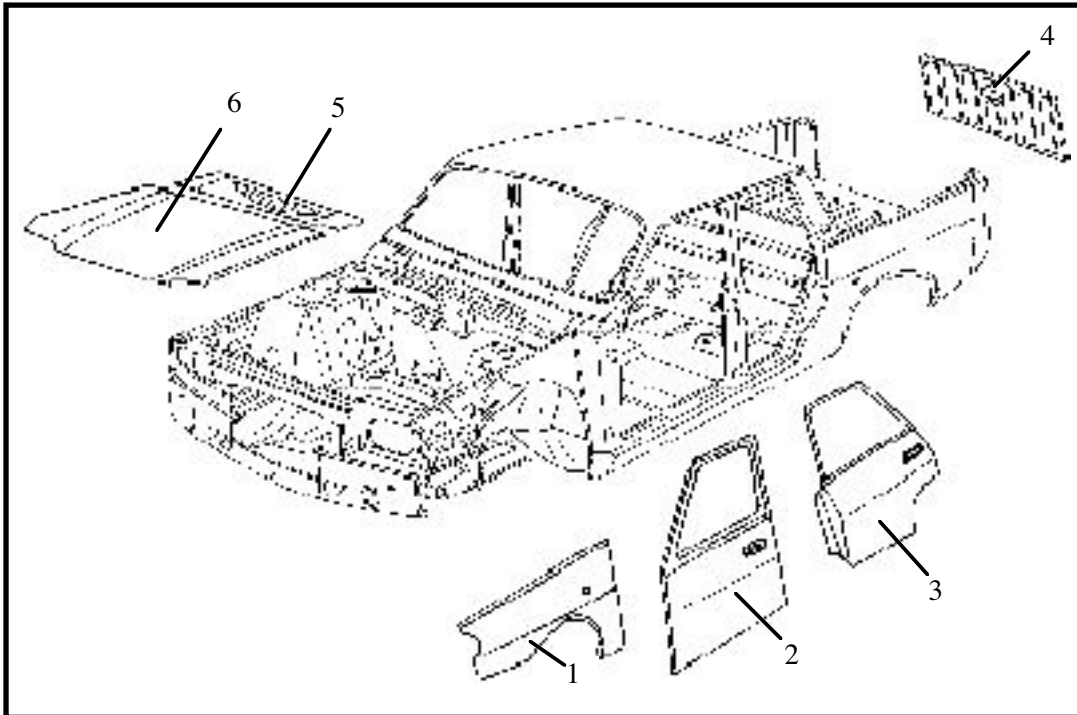
DACIA 1304 DROP - SIDE



1. Side panel
2. Side panel
3. Rear wheel passage

DESIGNATION OF PARTS (BLOW-UP)

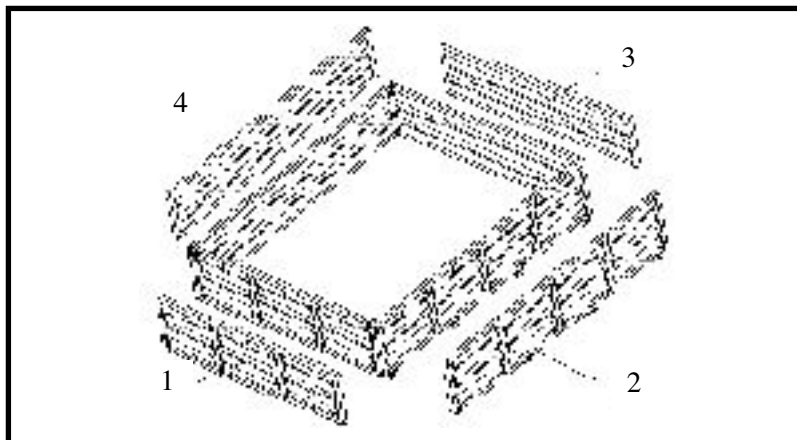
**BODY REMOVABLE ELEMENTS
DACIA 1304 PICK - UP, 1307**



- 1. Front wing
- 2. Front door
- 3. Rear door

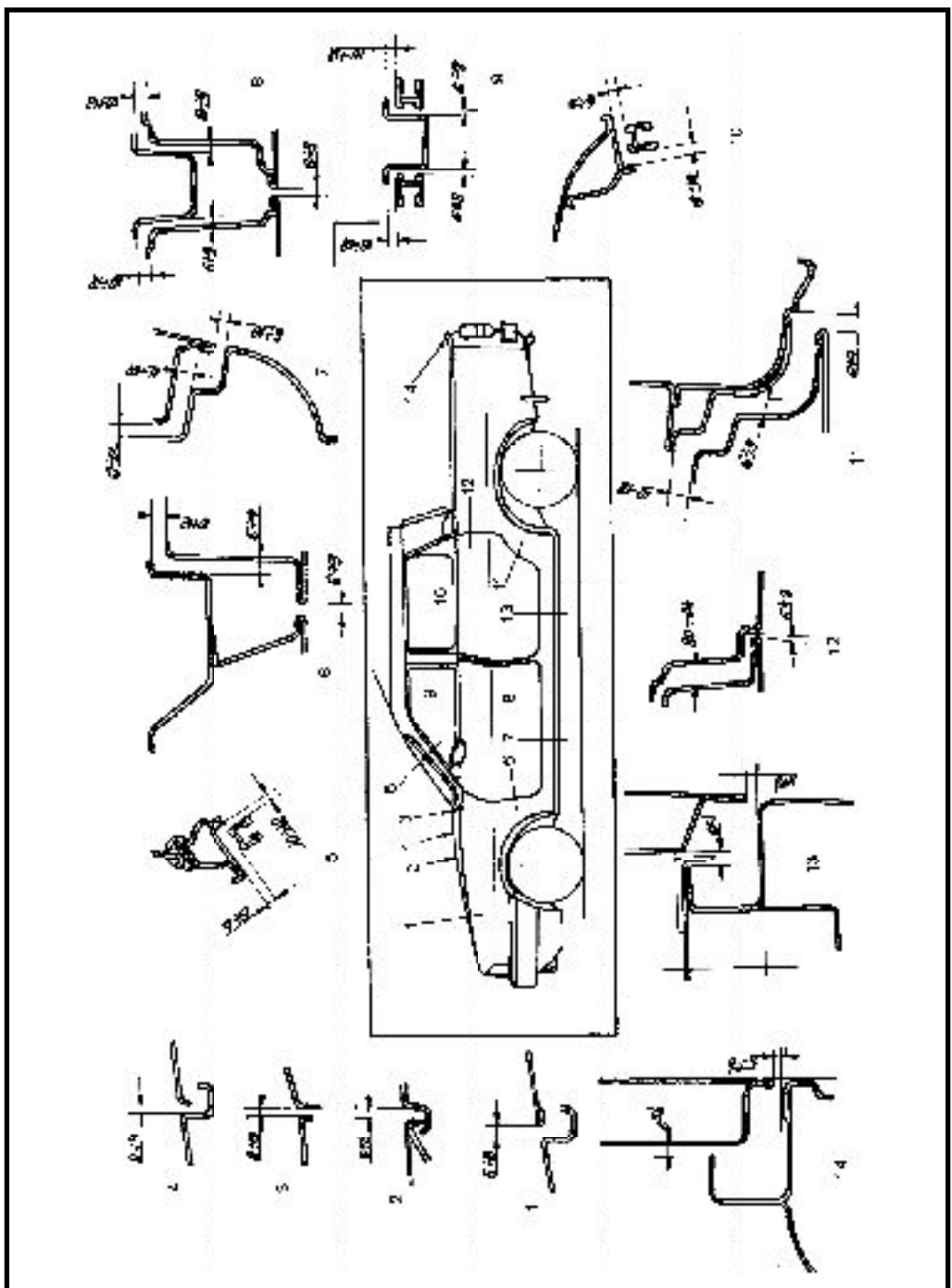
- 4. Rear drop side
- 5. Aerating grill
- 6. Front bonnet

DACIA 1304 DROP - SIDE



- 1. Front drop side
- 2. Left drop side

- 3. Rear drop side
- 4. Right drop side



The replacement (reparation) operations of the weldable elements described in this chapter are specified subject to: removing of the parts to be replaced, access to the welded elements, tools and checking devices accessibility, etc.

In case the vehicle body has suffered important deformations it is recommended the straightening of the damaged body elements, by means of some hydraulic presses, the operation being performed slowly and at cold.

For this range of vehicles, the elements resistance structure which is affecting the vehicle security, are not to be partially replaced (not to be cut), but entirely.

After welding detaching, the body elements must remain straight, without breakage or cracks, the possible holes being covered out with filling material or by tinning. The body elements surfaces are to be pickled (to eliminate possible oxidation marks), dried and initially applied a paint layer.

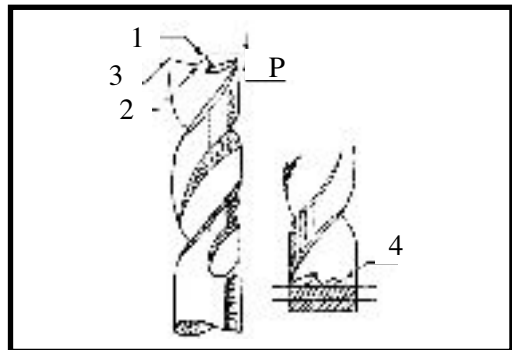
The electric welding detaching of the body elements, is performed as follows:

- with a well sharpened chisel, this method may lead to parts deformation or even parts breaking.

- by using some extractors equipped with steel cutter type **BRENDEO** or **PICKVANT** max. 6 mm, having the cutting head as per shape shown in fig. 1.

1. Centering point
2. Sharpen slope
3. Drill acting edges
4. Gap for catching the welding material

P = cca. 4mm



Whatever method is used, the remaining element must be in good order and to allow performing of a good quality welding joint.

The plates cutting it is recommended to be performed (subject of importance and thickness) using manual scissors or pneumatic portable tools for plates cutting.

During cutting or welding of the body elements it is necessary to protect the electric wiring from the interior of the body structure.

The cutting, welding, or strengthening operation done on body welded elements, are to be performed on body checking/straightening bench type CELETTE.

IMPORTANT !

When removing or straightening the body resistance elements it is forbidden the total or partial heating with flame, in order to avoid the mechanical resistance decreasing and of the metal elasticity.

WELDING TYPES AND PARAMETERS

At the reparation of the welded body elements, three welding categories may be used: protection gas welding (CO₂), electric spot welding and filling materials welding (autogenous).

At the autogenous welding, it is recommended that flame must be slightly inclined so that arch can be seen and the flame extremity to be maintained at aprox. 5 mm from the part to be welded.

1. Spot welding resistive parameters for steel plates with carbon content $C < 0,15 \%$.

Plate thickness (mm)	Welding current (KA)	Welding time(per)	Tightening force (daNm)
0,5	6,5	5	130
0,8	8,0	8	200
1,0	9,5	10	250
1,25	10,5	10	295
1,5	10,0	14	310
2,0	12,0	16	350

NOTE : 1 period = 1/50 part of a second

2. Welding parameters for the welding in protector gas for carbon steel plates or low alloyed steel.

Horizontal welding position (fig. 1)

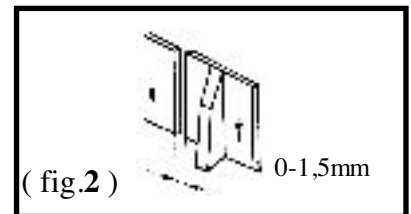
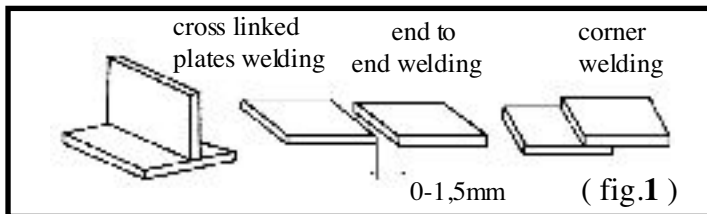


Plate thickness (mm)	0.6		1.0		1.5		2.0	
Electrode diameter (mm)	0,6	0,8	0,8	1,0	0,8	1,0	0,8	1,0
Welding wire speed (m/min)	2,5	1,9	3,2	2,4	4,4	3,8	5,7	4,4
Welding current (A)	35	35	55	80	80	120	100	130
Welding speed (m/min)	0,25	0,25	0,35	0,33	0,33	0,50	0,45	0,45
Welding voltage (V)	17	17	18	18	19	19	20	20
Protection gas flow(l/min)	12 - 17							
Electron free length (mm)	6 - 12							

NOTE:

In case of using Ar + CO₂ mixture, the welding voltage will decrease with 2 V.

Vertical welding position (obligatory from top to bottom) fig. 2

Plate thickness (mm)	0,6		12		2,0	
Electrode diameter (mm)	0,6	0,8	0,8	1,0	0,8	1,0
Welding wire speed (m/min)	2,5	1,9	3,3	3,2	5,7	4,4
Welding current (A)	35	35	70	100	100	130
Welding speed (m/min)	0,25	0,25	0,38	0,48	0,50	0,50
Welding voltage (V)	17	17	18	18	20	20
Protection gas flow (l/min)	12 - 17					
Electron free length (mm)	6 - 12					

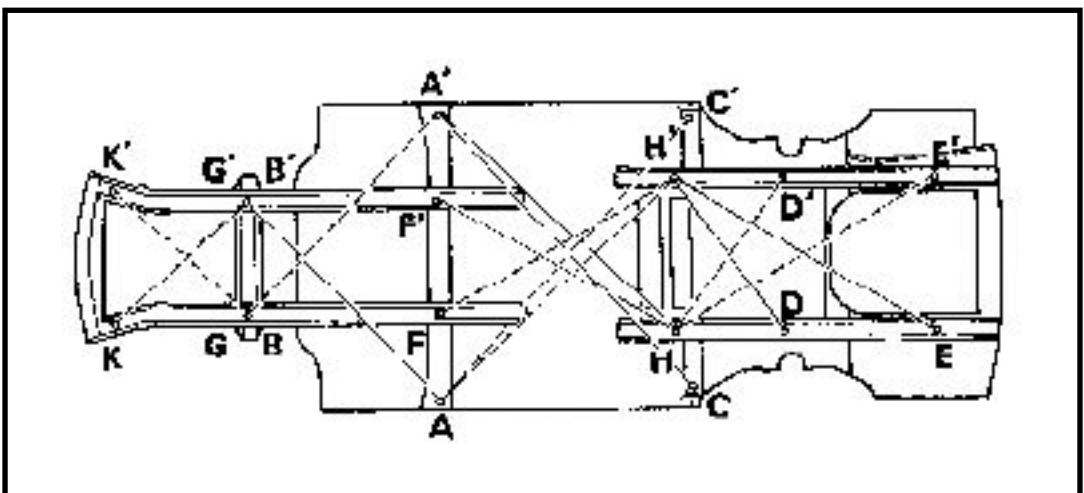
During the vehicle exploitation, the body may suffer different distortions, that lead many times to the wheels setting angles change, body elements breakage, vibrations or even mechanical parts wear.

In these conditions, before performing the vehicle body reparation, some checking is necessary:

Visual checking - consisting in the examination of the mechanics elements attachments and of the distortions that occur in the damaged areas.

Checking with the bar (control gauge) – consisting in comparing the measurements done in symmetric points.

CHECKING OF THE LONGITUDINAL GIRDERS POSITION



The checking of the longitudinal girders position consist in comparing the measurements done on symmetric points.

The checking of **B – B'** , **H – H'** points is affecting the mechanical part of the half-front axles and of the rear axle. Certainly, the distances between the points must be equal, as follows: **BB' = HH'**.

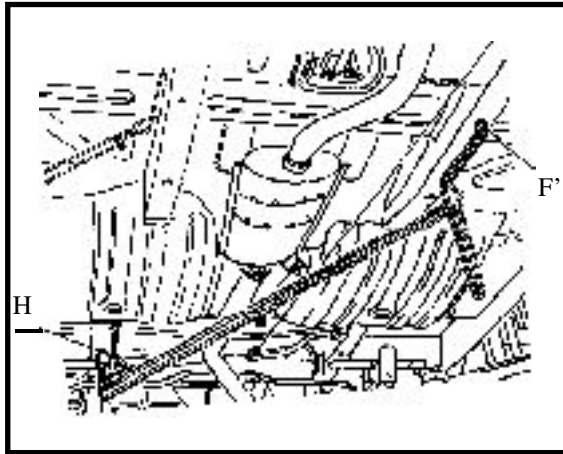
The checking of **A, F, F'** , **A'** points is affecting the centering of removable parts of the body.

The distances between the points must be equals, as follows: **AF = A'F'**.

CHECKING WITH THE BAR GAUGE

CENTRAL PART CHECKING

It is performed in the purpose to establish if one of the distortions is not affecting this part, from which the checking starts.



The checking points are : Holes $A - F - F' - A'$ and consequently $H - H'$ and $B - B'$.

FRONT LONGITUDINAL GIRDERS CHECKING

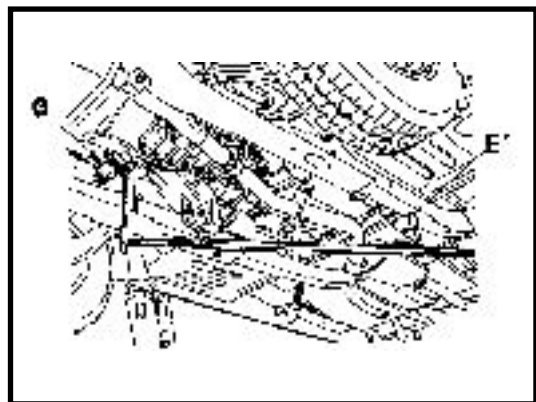
Checking points are: $B - B'$ for lower longitudinal girders and $G - G'$ for upper longitudinal girders.

Lower longitudinal girders:

Compare the diagonal distance $A - B'$ with diagonal $A' - B$.

Upper longitudinal girders:

Compare the diagonal distance $F - G'$ with the diagonal $F' - G$.

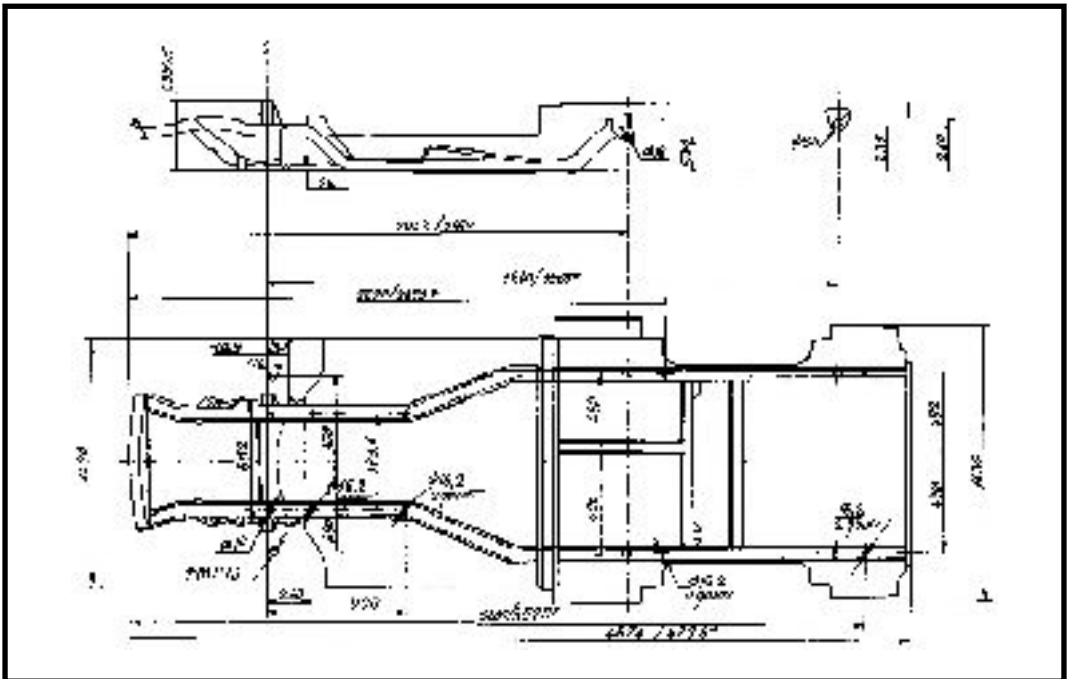


REAR LONGITUDINAL GIRDERS CHECKING

The checking points are **C – C'** , **H – H'**, **D – D'** and **E – E'**. Compare the **A' – H** diagonals, continuous line with **A – H'** **diagonal** broken line and the **A' – C** diagonal continuous line with **A – C'** diagonal broken line.

These four holes being closest to the rear axle, must be first checked. Compare diagonals **H' – D** and **H' – E** continuous line with diagonals **H – D'** and **H – E'** straight line.

FLOOR FRAME CHECKING



*NOTE: The values marked * are for Dacia 1307.*

GENERAL
BODY CHECKING/ STRAIGHTENING BENCH
TYPE CELETTE

For checking, straightening or repairing the DACIA vehicles bodies, the use of the CELETTE bench is recommended.

The checking / straightening bench type CELETTE (service code CAR 500) is composed of:

-CAR 501 (1 mobile bench with four wheels, four parts for vehicle anchoring, one traction arm of 10 t, type “ CAIMAN “).

-CAR 502 - set modular cross bars;

-CAR 503 - 22 towers MZ;

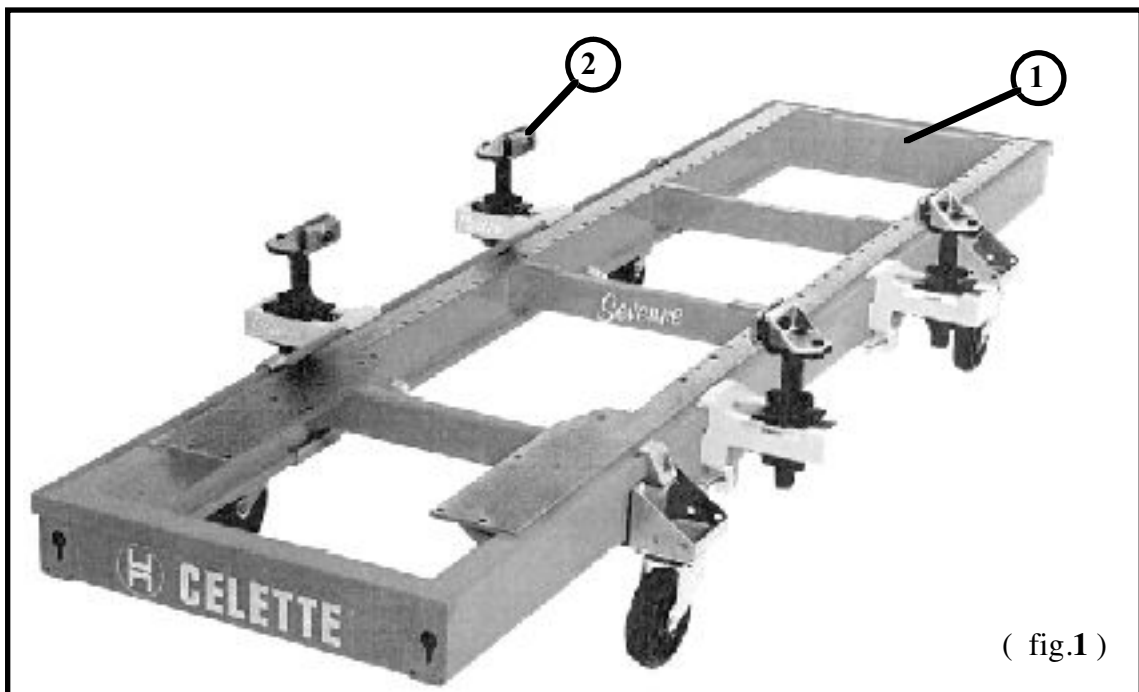
-CAR 504 - set accessories for traction;

-CAR 505 - set of specific supports for DACIA Bl, Bk.;

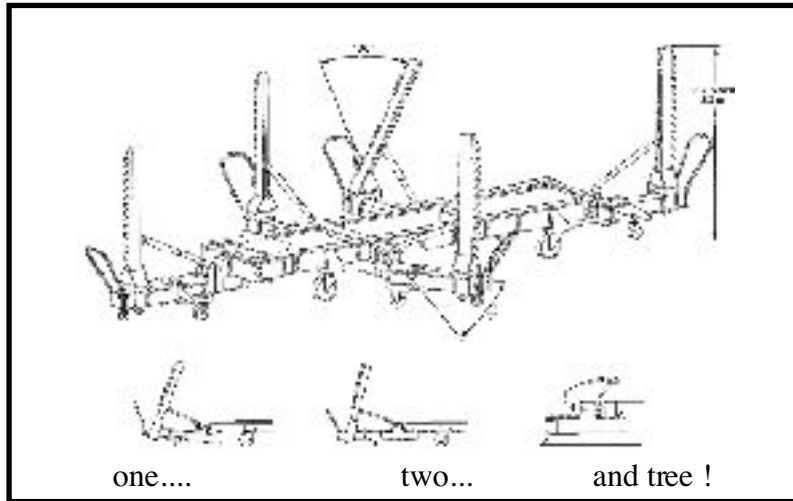
-CAR 506 - set of specific supports for DACIA 1304, 1307 CAR 507 - set of specific supports for DACIA NOVA.

1. CAR 501

The mobile bench (1) is provided with four anchoring parts (2) - (fig 1), which can be used when a body checking / straightening operation is performed.



To straighten the vehicle body, CELETTE bench is provided with a traction arm of 10 tons, Caiman type, 250 mm stroke of the hydraulic cylinder, with rapid anchorage on any side of the mobile bench (fig. 2) stands is.



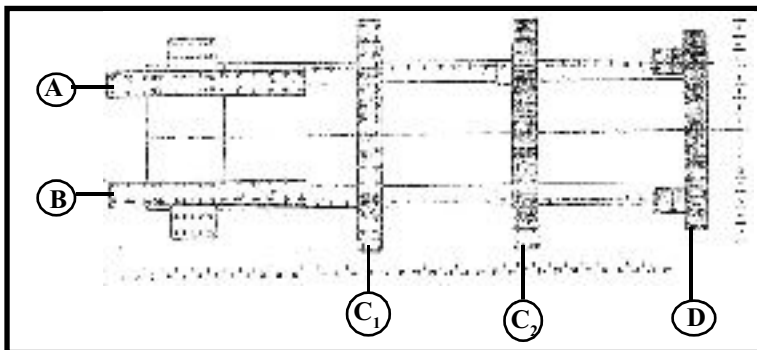
(fig.2)

2. CROSS BAR MODULAR SET CAR 502)

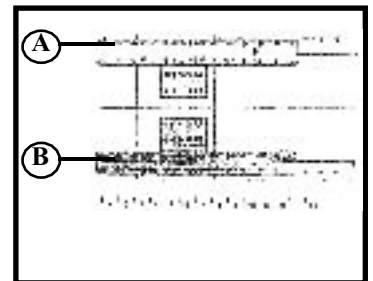
CELETTE bench has in its composition, five modular cross bars (fig.3), as follows:

- two front cross bars A and B (T shaped) there are always ready in the same position (towards front of bench) – fig. 4.
- two straight cross bars C1 and C2 and one D cross bar (U-shaped) which may be placed in different positions subject to vehicle type.

The marked figures (14.....36) are engraved on the mobile bench, every mounting being supplied with a drawing indicating the exact position of the modular cross bars subject to vehicle type.



(fig.3)



(fig.4)

3. TRACTION ACCESSORIES SET(CAR 504)

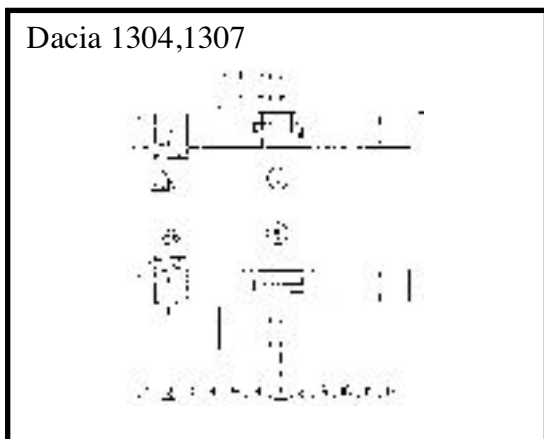
CELETTE bench is equipped with a traction accessories set CAR 504, which allow the operator to achieve different anchoring when a body strengthening is performed (fig. 5).



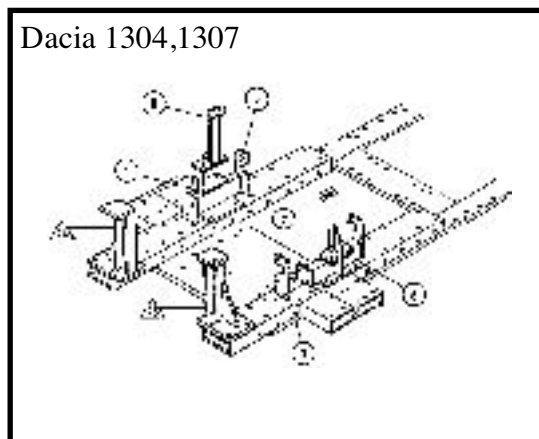
(fig. 5)

4. SET OF SPECIFIC SUPPORTS FOR DACIA 1304, 1307 (CAR 506)

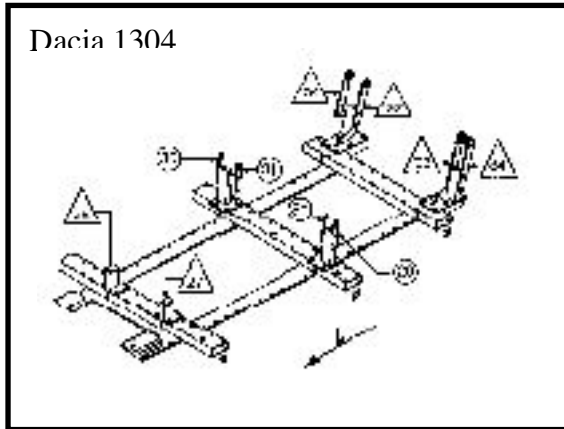
The mounting of the specific supports for DACIA vehicles 1304, 1307 shall be performed according with the mounting diagram which is supplied with this KIT (fig. 6,7,8,9,10,11). This is a compact mounting system.



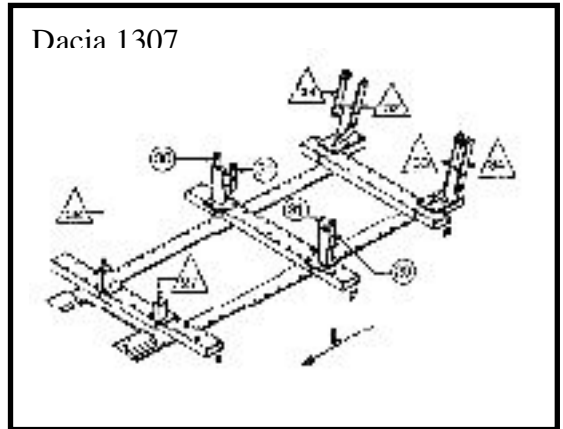
(fig.6)



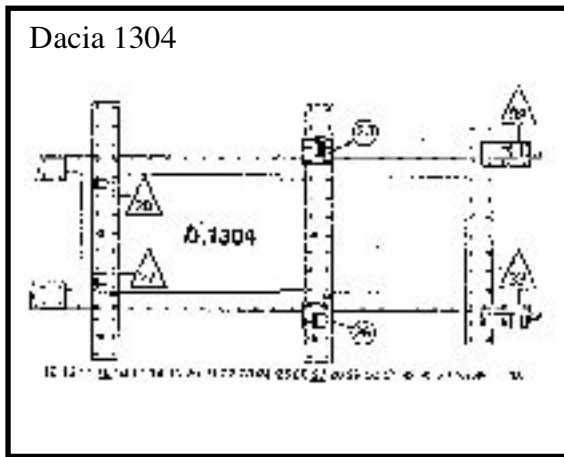
(fig.7)



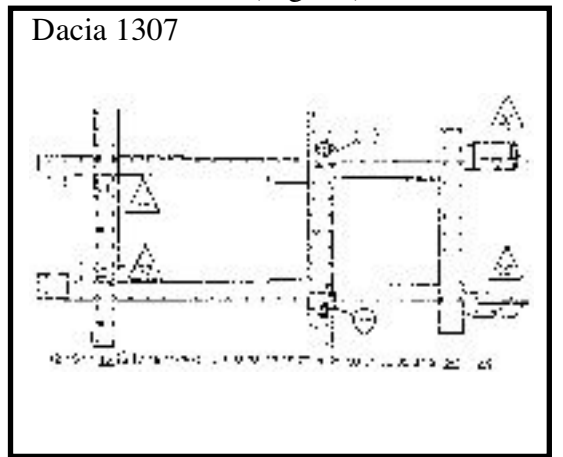
(fig.8)



(fig.10)

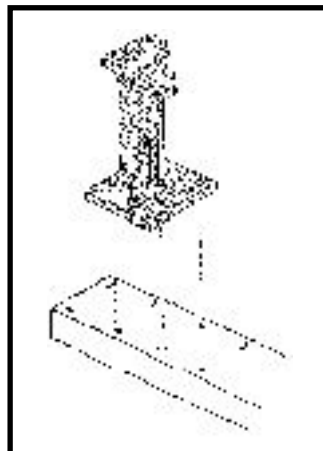


(fig.9)



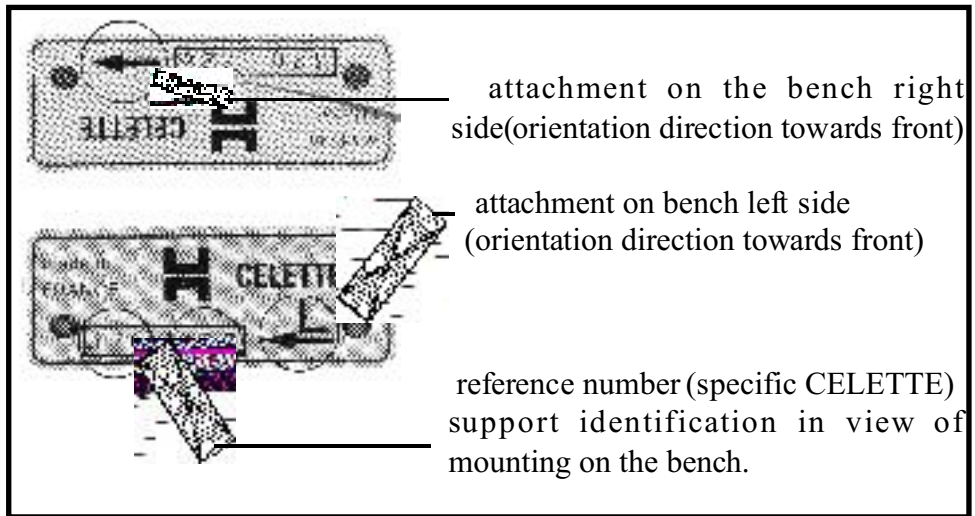
(fig.11)

Each support is identified by a plate showing the CELETTE specific item number, the mounting direction and its orientation on the bench. (fig. 12,13)



(fig.12)

**GENERAL
BODY CHECKING / STRAIGHTENING BENCH
TYPE CELETTE**



Caption:

(fig.13)



- with dismantled mechanic elements



- with or without dismantled mechanic elements.

REFERENCE POINTS ON VEHICLE (DACIA 1304, 1307)

Front longitudinal girder extremity supports fixing

Supports (1) and (2) are used in front straightening, front mechanic elements dismantled.

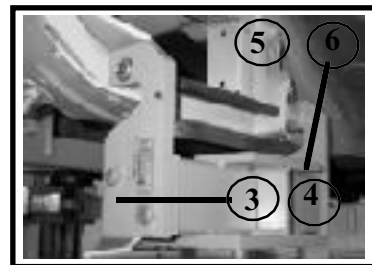
They enable the positioning of the front longitudinal girders extremity (fig. 14).



(fig.14)

Front suspension lower arm supports fixing

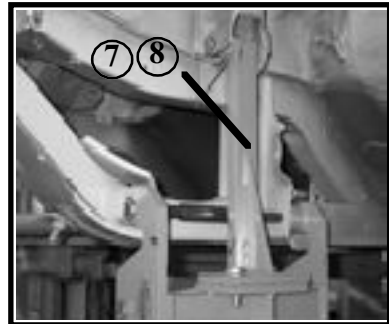
Supports (3) , (4), (5) and (6) are used in front straightening. They enable the positioning and centering of the front longitudinal girders (fig. 15) and consequently the vehicle front alignment on the bench.



(fig.15)

Front suspension upper arm supports fixing

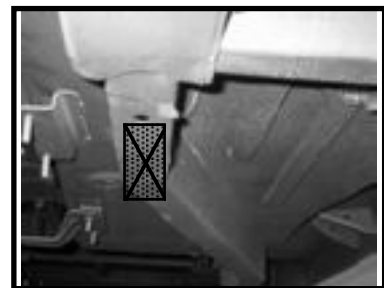
Supports (7) and (8) are used in front straightening. They enable the positioning and centering of the upper longitudinal girders- (fig. 16).



(fig.16)

Centering under front longitudinal girder

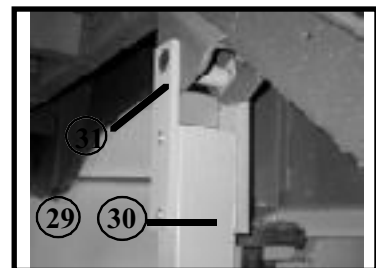
Supports (27) and (28) are used for centering and alignment of the front longitudinal girders. They are to be used for any reparation cases because they are a main reference of vehicle setting on the bench.(fig. 17)



(fig.17)

Rear spring front supports fixing

Supports (29),(30) and (31) are used mainly in rear strengthening for positioning and centering the rear unit or the rear longitudinal girders. In the sametime, they may also be used for vehicle alignment in the front straightening when vehicle front part is replaced. (fig. 18)



(fig.18)

Rear spring front supports fixing

Supports (32),(33) and (34) are used mainly in rear strengthening for positioning the rear unit or the rear longitudinal girders.

In the same time, they may also be used for vehicle alignment in the front straightening when vehicle front part is replaced (fig. 19).



(fig.19)

REPLACEMENT

This operation shall be performed only on the repair bench. For the specific supports mounting on the bench, please see the 40 chapter.

DISMOUNTING

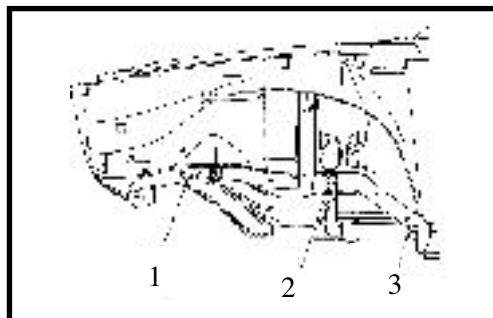
Dismount the damaged elements that are in contact with lower longitudinal girder.

Straighten the areas resulted from disassembling.

Process the areas resulted from disassembling.

In order to reduce the deformation danger of the upper longitudinal girder it is recommended the use of a steel cutter for detaching the welding points.

Detach the welding points of the lower longitudinal girder with the upper longitudinal girder in areas (1),(2),(3).

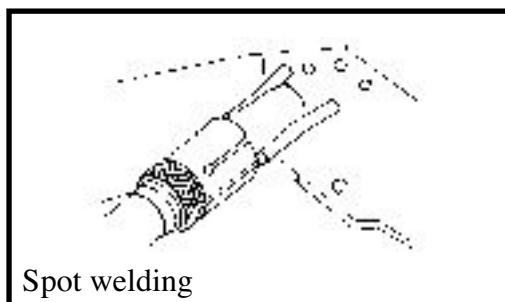


REMOUNTING

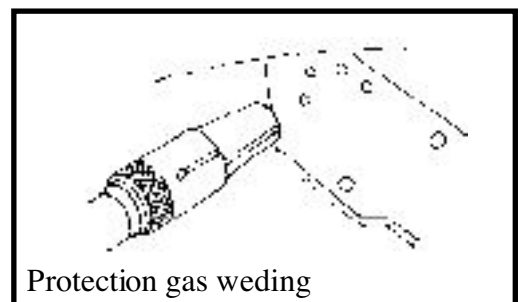
Position and center the new element

Perform a spot welding in the areas (1) ,(2), (3) where the lower longitudinal girder is in contact with the upper longitudinal girder and a protection gas welding in the area connection with the upper longitudinal girder.

Protect the new element with coat of sound deadening compound



Spot welding



Protection gas welding

Protect the lower longitudinal girder with a corrosion preventing and noise absorbent product.

REPLACEMENT

This operation shall be performed only on the repair bench. For the specific supports mounting on the bench, please see the 40 chapter.

DISMOUNTING

Dismount the damaged elements, which are in contact with the longitudinal girder.

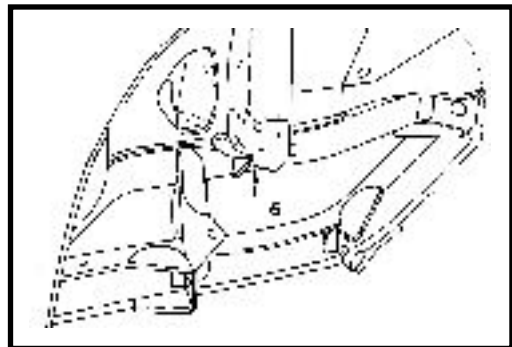
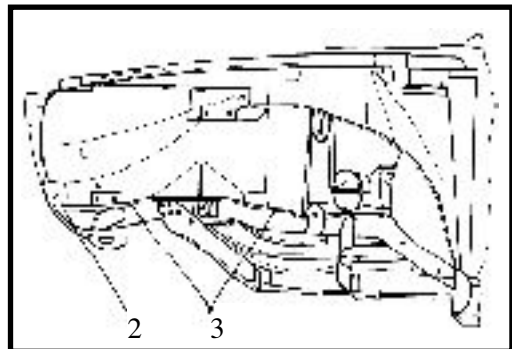
Detach the welding points of the longitudinal girder (1) which are in connection with:

- the front cross bar in the area (2);
- the front wing lining on the outline (3);
- the steering cross bar in the areas (4), (5);
- the gusset in the area (6);
- the pedal and central floor in the area (7);
- the iron plate in the area (8).

Detach the damaged element.

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.



REMOUNTING

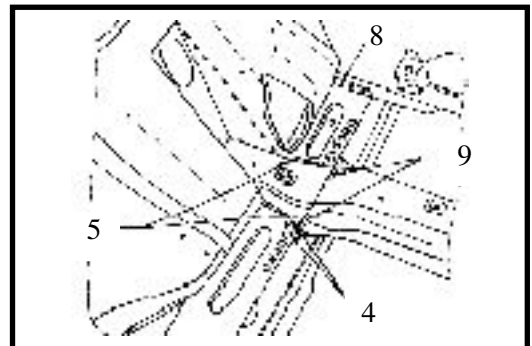
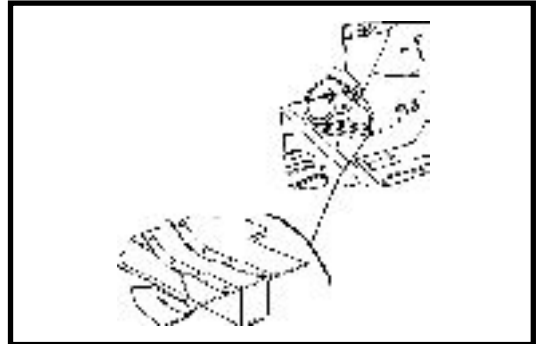
Position the new element.

Perform an electric spot welding as follow:

- in the area (2) connecting the longitudinal girder with the front cross bar;
- in the area (3) connecting the longitudinal girder with the front wing lining;
- in the area (4) connecting the longitudinal girder with the steering cross bar;
- in the area (6) connecting the longitudinal girder with fixing gusset;
- in the area (7) connecting the pedal floor and central floor;
- in the area (8) connecting the longitudinal girder with the iron plate.

Perform a hardening gas welding in the areas (5) and (9) connecting the longitudinal girder with steering cross bar.

Protect the new element with a corrosion preventing and noise absorbent product.



REPLACEMENT

This operation shall be performed only on the repair bench. For the specific supports mounting on the bench, please see the 40 chapter.

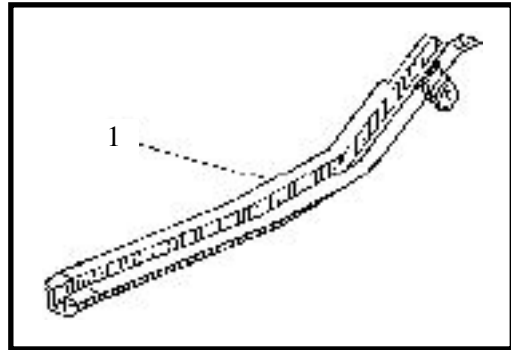
DISMOUNTING

Dismount the elements, which are in contact with the intermediary longitudinal girder.

Detach the welding points of the intermediary longitudinal girder (1) that are connecting with:

- the longitudinal girder in the area (4);
- the pedal floor in the area (2);
- the lateral cross bar in the area (3);
- the central floor in the area (5);
- rear longitudinal girder in the area (7).

Straighten the areas resulted by dismounting.
Grind the areas resulted by dismounting.



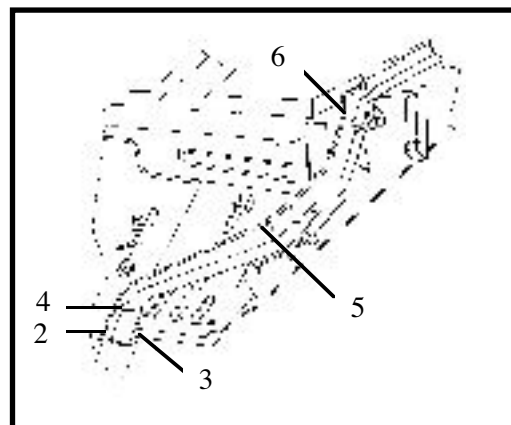
REMOUNTING

Position and center the new element.

Check the correct positioning of the intermediary longitudinal girder.

Weld the intermediary longitudinal girder following the assembly outliners 2,3,4,5,6.

Protect the new element with a corrosion preventing and noise absorbent product.



REPLACEMENT

This operation shall be performed only on the repair bench. For the specific supports mounting on the bench, please see the 40 chapter.

DISMOUNTING

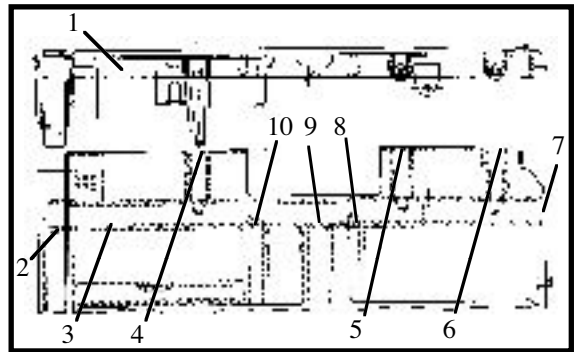
Dismount the elements, which are in contact with the rear longitudinal girder.

Detach the welding points of the rear longitudinal girder (1) which are in contact with:

- the front cross bar in the area (2);
- the inner frame in the areas (4),(5),(6);
- the rear end cross bar in the area (3);
- the middle cross bar in the area (9);
- the spare wheel cross bar in the area (8);
- the central cross bar in the area (10);
- the rear floor in the area (3).

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.



REMOUNTING

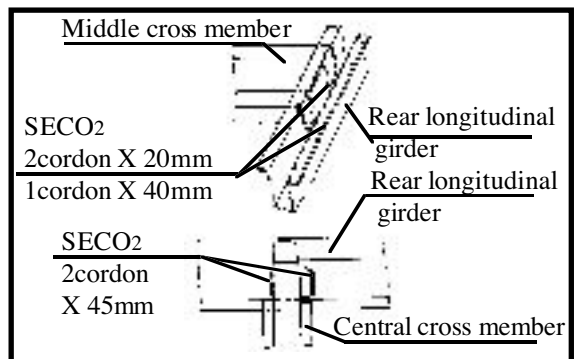
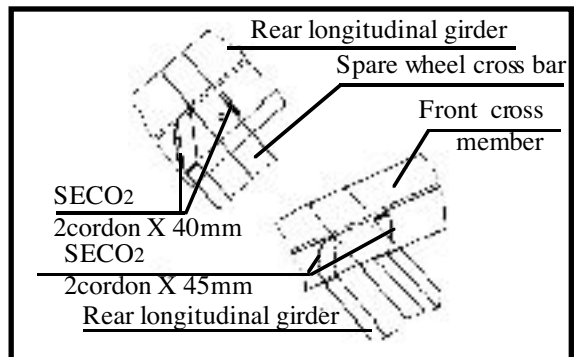
Position and center the new element.

Check the correct positioning of the rear longitudinal girder.

Weld the rear longitudinal girder (1) after the assembling outliners 2,3,4,5,6,7,8,9,10.

Perform two C0 2 welding layers in the connecting area of the rear longitudinal girder with the front cross bar, central, middle and the spare wheel cross bar.

Protect the new element with a corrosion preventing and noise absorbent product.



REPLACEMENT

This operation shall be performed only on the repair bench. For the specific supports mounting on the bench, please see the 40 chapter

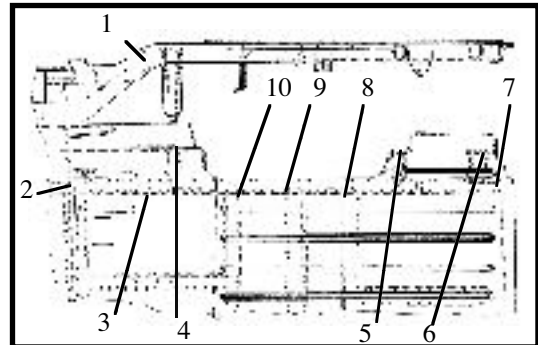
DISMOUNTING

Dismount the elements which are in contact with the rear longitudinal girder.

Detach the welding points of the rear longitudinal girder (1) which are connecting with:

- the front cross bar in the area (2);
- the lateral plate in the areas (4), (5),(6);
- the rear end cross bar in the area (7);
- the middle cross bar in the area (9);
- the spare wheel cross bar in the area (8);
- the central cross bar in the area (10);
- the rear floor in the area (3).

Straighten the areas resulted by dismounting.
Grind the areas resulted by dismounting.



REMOVING

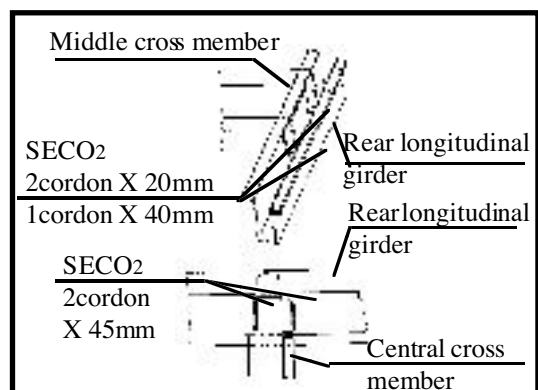
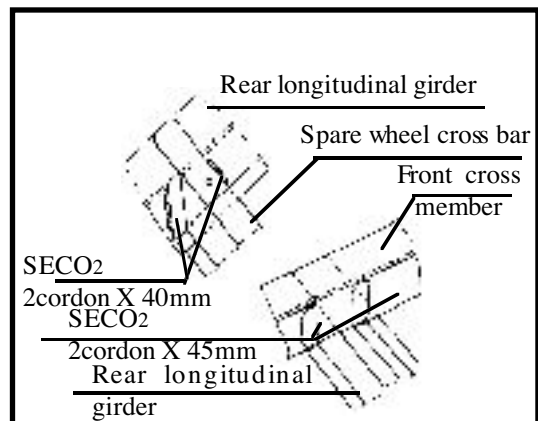
Position and center the new element.

Check the correct positioning of the rear longitudinal girder.

Weld the rear longitudinal girder (1) following the assembling outliners 2,3,4,5,6,7,8,9,10.

Perform two welding layers in the connecting areas of the rear longitudinal girder with the front cross bar, central, middle and the spare wheel cross bar.

Protect the new element with a corrosion preventing and noise absorbent product.

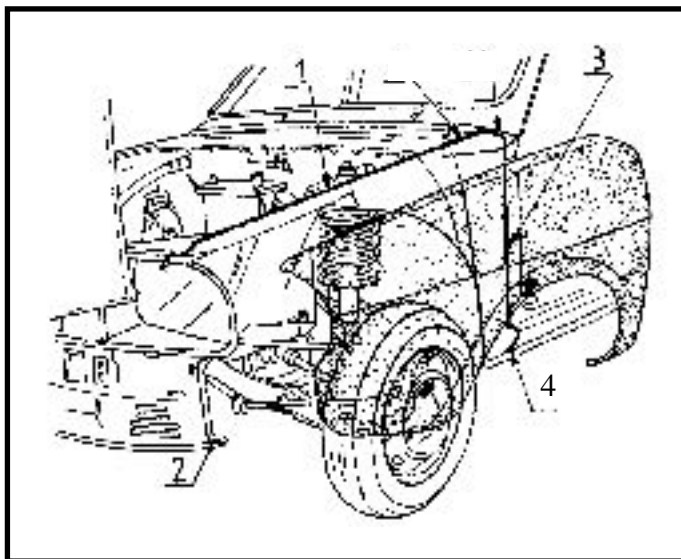


DISMOUNTING

Dismount the elements which are in contact with the front wing (front bumper, the turning lamp from the wing).

Dismount from the front wing the following screws:

- in (1) at the upper part;
- in (2) at the connection of the wing with the front grill, at the lower part;
- in (3) at the connection of the wing with the front pillar (it is not necessary dismounting of the front door);
- in (4) at the lower part of the body.

**PREPARATION**

Apply by means of a brush a layer of thermo-weldable product **class. 33 B CS 4603–202** on the contact areas of front wing with : front wing lining, front grill and front pillar.

Apply a sealant material layer type **223** in the contact area of the front wing with: the front wing lining, the lateral frame, and front pillar.

REMOUNTING

Perform the dismounting operations in the reverse order.

REPLACEMENT

This operation shall be performed only on the repair bench. For the specific supports mounting on the bench, please see the 40 chapter.

DISMOUNTING

Dismount the damaged elements, which are in contact with the front part body.

Perform a checking redressing on the checking/repairing bench, until bringing the carriage body almost at the initial shape.

Detach the welding points from to front part of carriage body as follows :

- in (2) joining area of the front longitudinal girders with the pedal floor;
- in (3) joining area of the front longitudinal girders with the left / right lateral cross bar;
- in (4) joining area of the front longitudinal girders with the intermediary longitudinal girders;
- in (5) joining area of the front wing linings with the iron plate;
- in (6) joining area of the cover reinforcements and climate control box;
- in (7) joining area of the front wing linings with the front pillar linings;
- in (8) joining area of the front longitudinal girder with the iron plate.

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.

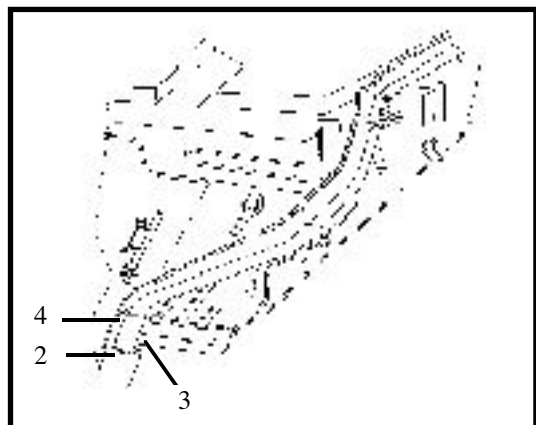
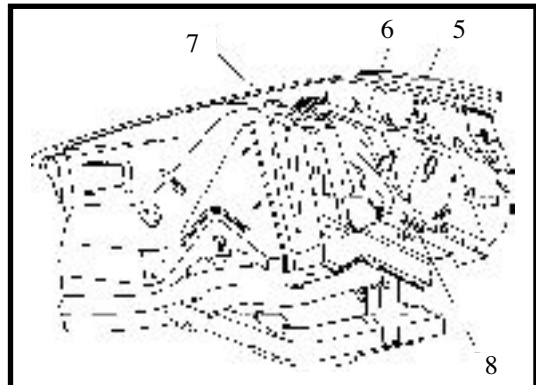
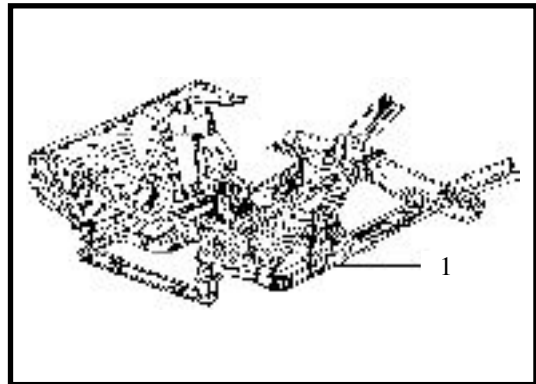
REMOUNTING

Position and center the new element on the repairing bench.

Check the correct positioning of the front unit carriage body.

Weld the front unit carriage body (1) following the assembling outliners 2,3,4,5,6,7,8,9,10.

Protect the new element with a corrosion preventing and noise absorbent product.



REPLACEMENT

This operation shall be performed only on the repair bench. For the specific supports mounting on the bench, please see the 40 chapter.

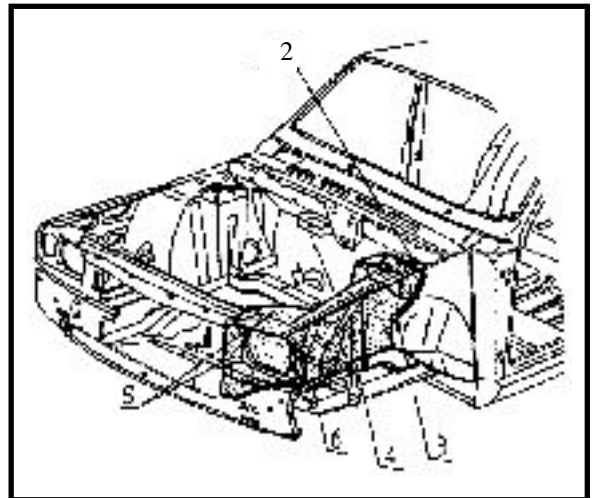
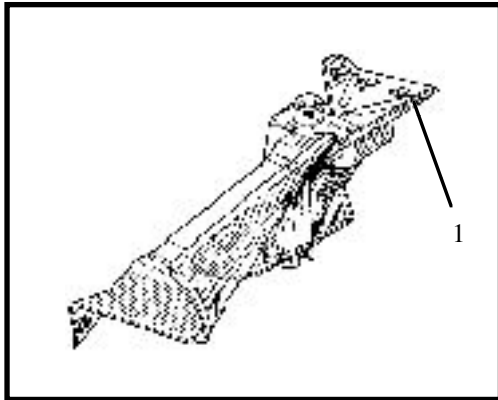
DISMOUNTING

Dismount the damaged elements, which are in contact with the front wing lining. Detach the welding points from to the front wing lining (1) which are in contact with

- the front grill in the (5) area;
- the upper longitudinal girder in (6) area;
- the iron plate in the (3) area;
- the steering cross bar in the (4) area;
- the climate control box in the (2) area.

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.

**RE MOUNTING**

Position and center the new element.

Check the correct positioning of the front wing lining.

Weld the front wing lining (1) following the assembling outliners 2,3,4,5,6.

Protect the new element with a corrosion preventing and noise absorbent product.

UPPER FRONT STRUCTURE

HEAD LAMP SUPPORT

DISMOUNTING

Dismount the elements, which are in contact with the headlamp support.

Detach the welding points of the head lamp (1) support which are in connection with :

- the radiator upper cross member in the area (3);
- the reinforcement in the area (4);
- the lower part of the front wing lining in the area (5);
- the front wing lining in the lateral part in the (6) area.

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.

REMountING

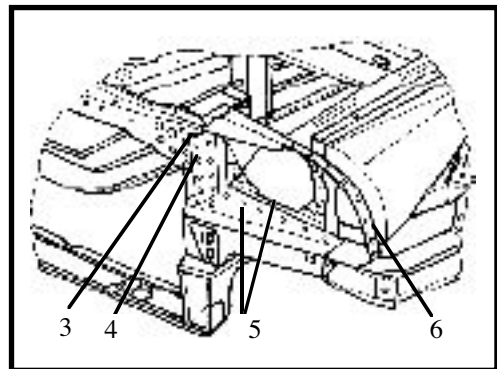
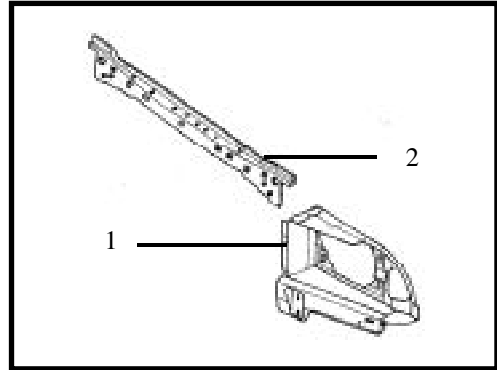
Position and center the new element.

Check the correct positioning of the head lamp support.

Weld the headlamp support (1) following the assembling outliners 2,3,4,5,6.

Protect the welding with a corrosion-preventing product.

Mount the elements, which are connections with the headlamp support.



DISMOUNTING

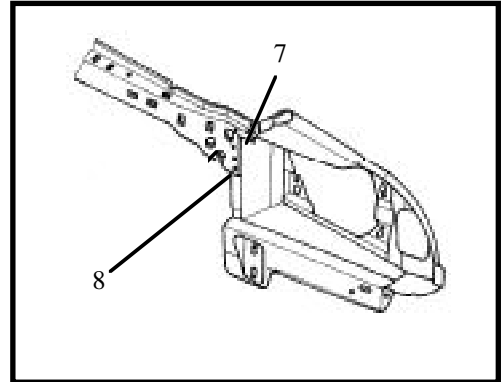
Dismount the elements, which are in contact with the radiator upper cross-member.

Detach the welding points of the radiator upper cross member (2) which are in connection with:

- the head lamp support (7);
- the reinforcement in the (8) area.

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.



REMOUNTING

Position and center the new element.

Check the correct positioning of the radiator upper cross-member.

Weld the tank mask assembly (2) after the assembling outliners 7, 8.

Protect the welds with a corrosion-preventing product.

Mount the elements, which are in connection with the radiator upper cross-member.

DISMOUNTING

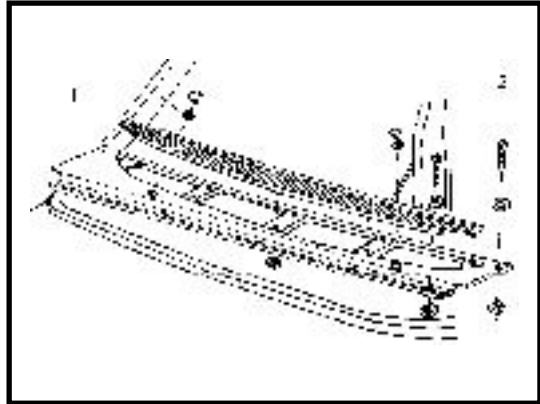
Dismount the two nozzles (1) of the wind-screen washer.

Dismount the attachment screws (2) of the aeration grill.

Take out the clips (3) from the front grill grippers taking care to prevent their distortion or damaging.

REMOUNTING

The mounting shall be done by performing the dismounting operations in reverse order.



FRONT PILLAR LINING

DISMOUNTING

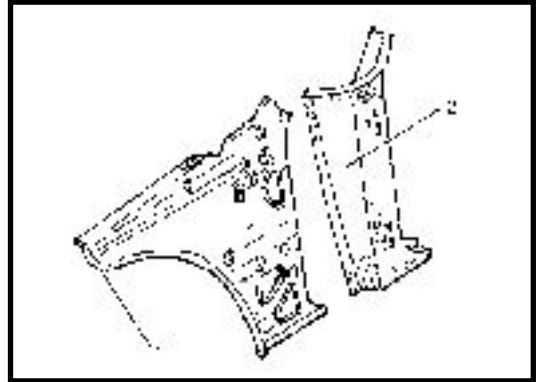
Dismount the elements which are in contact with the front pillar lining.

Detach the welding points of the front pillar lining (1) which are in connection with:

- front pillar in the area (4) and (5);
- floor closing plate in the area (8);
- windscreen lower cross bar in the area (9);
- front wing lining upper edge in the area (10);
- climate control box end in the area (11);
- iron plate in the area (12).

Straighten the areas resulted by dismantling.

Grind the areas resulted by dismantling.

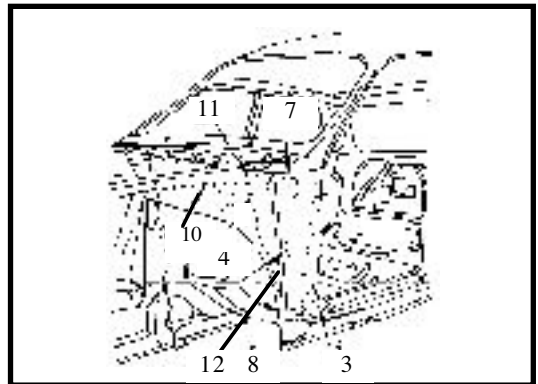
**REMOUNTING**

Position and center the new element.

Check the correct positioning of the front pillar lining.

Weld the front pillar lining (1) following the assembling outlines 4,5,8,9,10,11,12.

Protect the new element with a corrosion preventing and noise absorbent product.



DISMOUNTING

Dismount the elements which are in contact with the front pillar .

Detach the welding points of the front pillar (2) which are in connection with :

- lateral frame in the areas (3);
- front pillar lining in area (4) and (5);
- upper spacer and the lower windscreen

lining in the areas (6), and (7).

Straighten the areas resulted by dismantling.

Grind the areas resulted by dismantling.

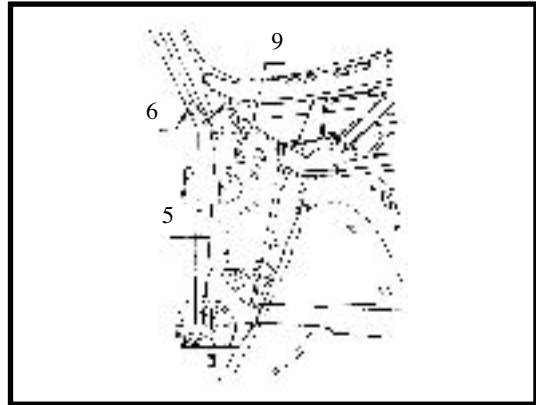
REMOUNTING

Position and center the new element .

Check the correct positioning of the front pillar.

Weld the front pillar (2) following the assembling outliners 3, 4,5,6,7.

Protect the new element with a corrosion preventing and noise absorbent product



FRONT LOWER PANEL

DISMOUNTING

Dismount the elements which are in contact with the front lower panel .

Detach the welding points of the front lower panel

(1) which are in connection with :

- floor closing plate in the area (2);
- front pillar in the (3) area;
- in the length of the area (4) with floor closing plate;

- side panel in the area (5);

- central pillar in the area (6).

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.

REMountING

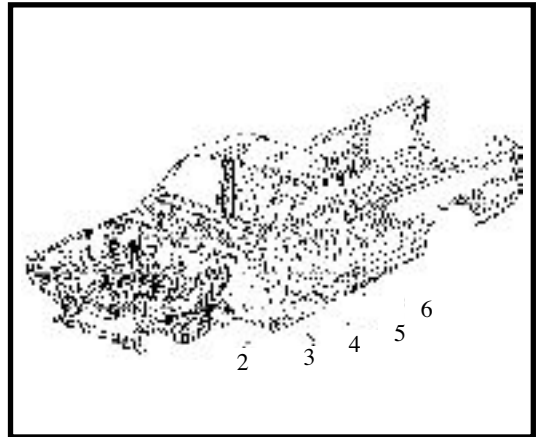
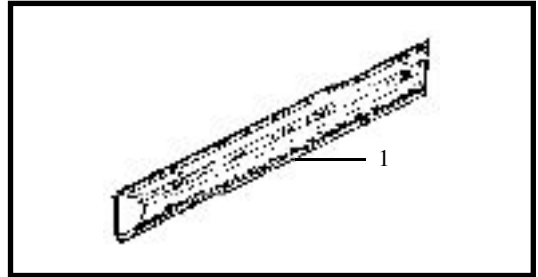
Position and center the new element .

Check the correct positioning of the front lower panel .

Weld the front lower panel (1) following the assembling outliners 2, 3,4,5,6.

Straighten with the autogenous welding the (3) area with the front pillar, the (6) area with the central pillar and the (5) area with side panel.

Leave open the water evacuation holes from the front lower panel.



DISMOUNTING

Dismount the damaged elements which are in contact with the middle pillar.

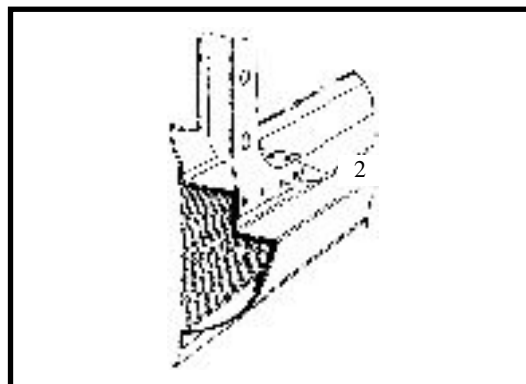
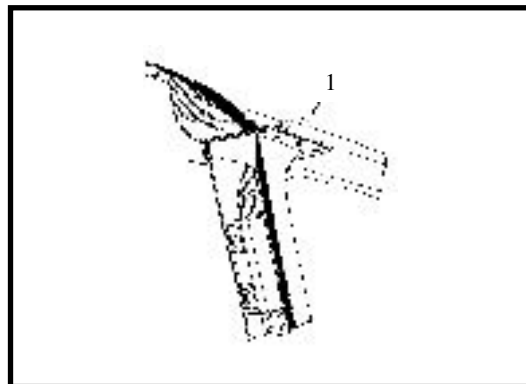
Detach the welding points of the middle pillar which are in connection with:

Ceiling in the area (1).

Front lower panel in the (2) area.

Straighten the areas resulted by dismantling.

Grind the areas resulted by dismantling.

**REMOUNTING**

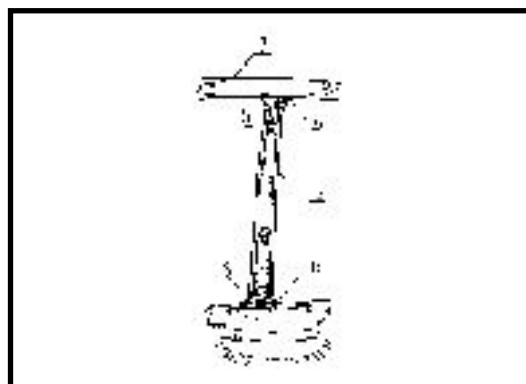
Fit temporarily the middle pillar (3), by introducing the pillar lining under the upper frame (7) and under the lower panel plate (6).

Check the correct pillar positioning using the door as geometric gauge.

Welding the middle pillar following the welding outliner (1), and (2).

Perform a straightening gas protection welding in the areas (4) and (5).

Remount the elements which are in connection with the middle pillar.



DACIA 1304 PICK - UP, 1307

DISMOUNTING

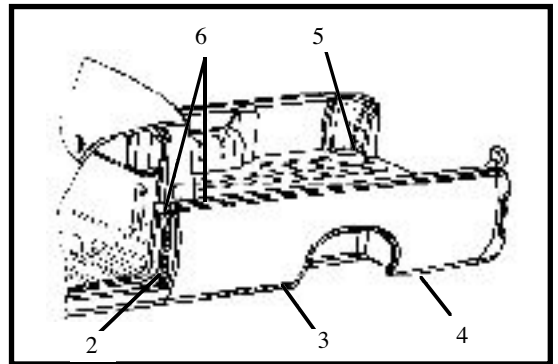
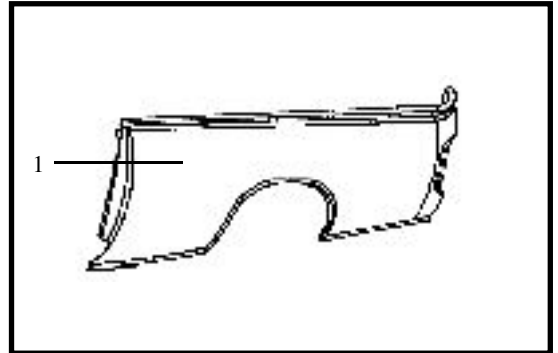
Dismount the elements which are in contact with the side panel.

Detach the welding points of the side panel (1) which are in connection with:

- middle pillar in the area (2);
- floor side plate and front extensor lower edge in the (3) area;
- the rear side plate and rear extensor lower edge in the area (4);
- the platform floor in the area (5);
- the cabin side plate in the area (6).

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.



REMountING

Apply a layer of **5322** material on the joints areas (7) of the side panel with: front / rear extensor, lower panel, side plate, rear side floor cabin, rear plate.

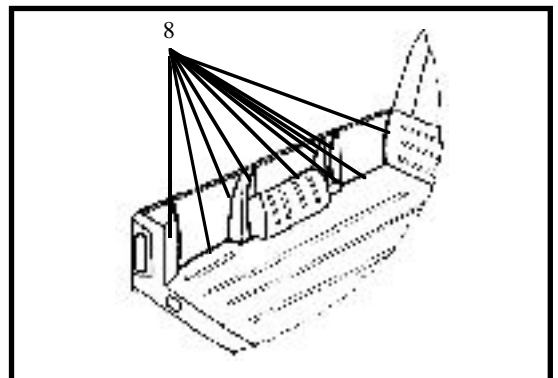
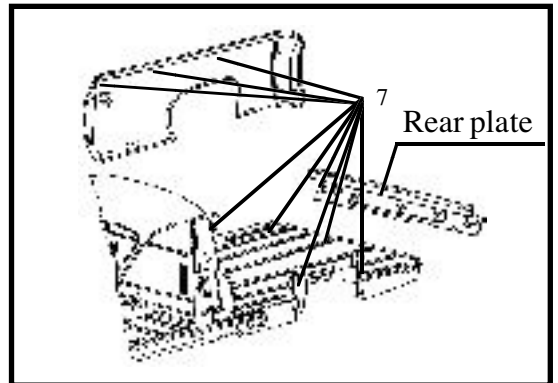
Position and center the new element.

Check the correct positioning of the side panel .

Weld the lateral panel (1) following the assembling outliners **2,3,4,5,6**.

Apply a sealant material layer

PLASTISOL 4 in the joint area (8) of the side panel with : rear side floor, rear lamp lining, front/rear extensor, wheel passage, cabin separating wall.



DACIA 1304 DROP - SIDE

DISMOUNTING

Dismount the elements which are in contact with the side panel.

Detach the welding points of the side panel (1) which are in connection with :

- middle pillar in the area (2);
- separating wall in the (4) area;
- floor side plate in the area (5).

Detach the 5 welding strippers between the side panel and outer frame in the (6) area.

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.

REMOUNTING

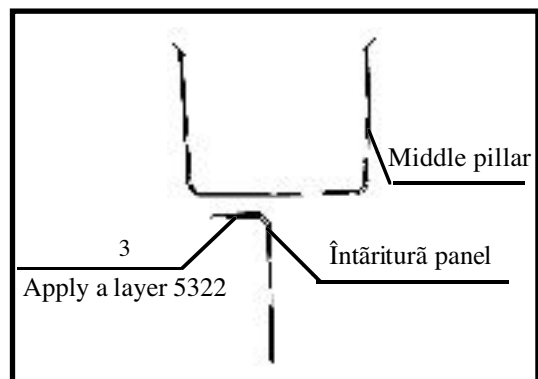
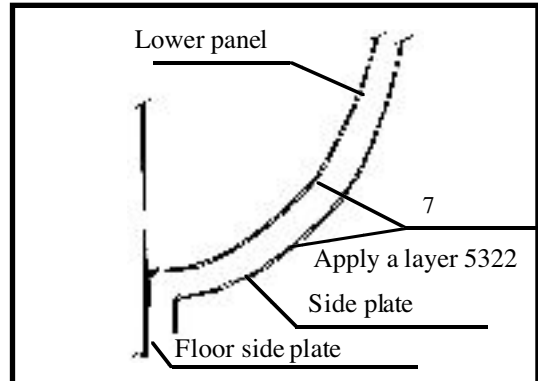
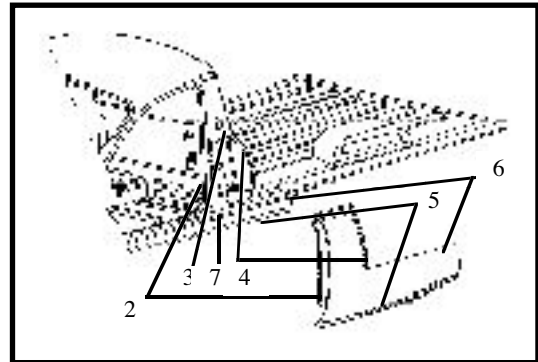
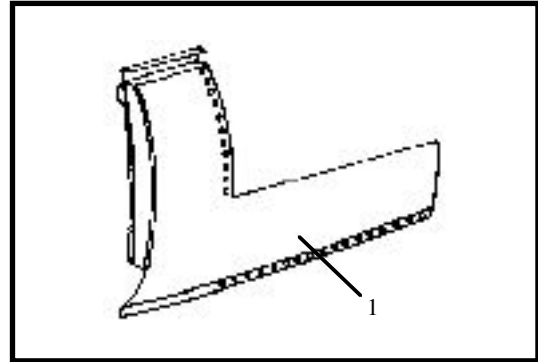
Apply a layer of 5322 a secured stripping on the joints areas (3) and (7) of the side panel with lower panel and cabin closing plate.

Position and center the new element.

Check the correct positioning of the side panel.

Weld the side panel (1) following the assembling outliners 2,4,5,6.

Protect the welding with a corrosion preventing product.



DISMOUNTING

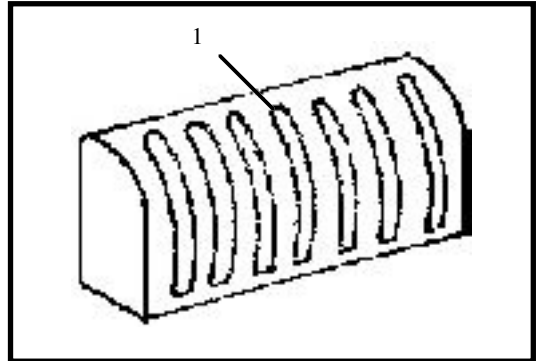
Dismount the elements which are in contact with the rear wheel passage.

Detach the welding points of the rear wheel passage (1) which are in connection with :

- platform floor in the area (2);
- front extensor in the (3) area;
- rear extensor in the area (4).

Straighten the areas resulted by dismounting.

Grind the areas resulted by dismounting.



REMOUNTING

Position and center the new element.

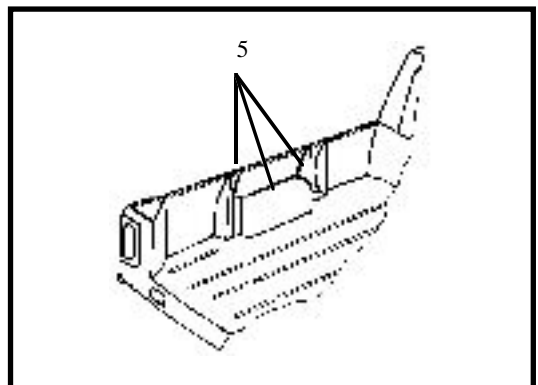
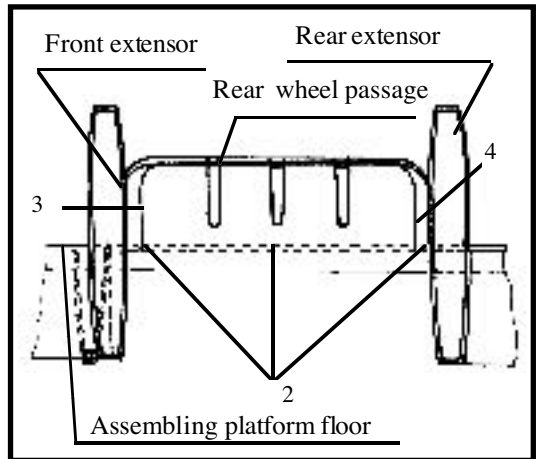
Check the correct positioning of the rear wheel passage.

Weld the rear wheel passage (1) following the assembling outliners 2,3,4.

Protect the welding with a corrosion preventing product.

Apply a sealant material layer

PLASTISOL 4, in the contact areas (5) of the rear wheel passage with: platform floor, front extensor and rear extensor.



DISMOUNTING

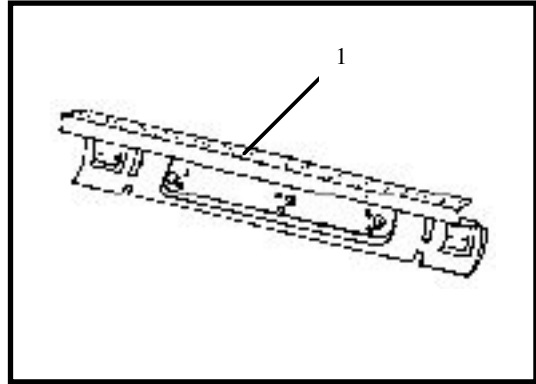
Dismount the elements which are in contact with the rear plate.

Detach the welding points of the rear plate (1) which are in connection with:

- platform floor rear edge in area (2);
- corner plate edge in the area (3).

Straighten the areas resulted from dismounting.

Grind the areas resulted from dismounting.

**REMOUNTING**

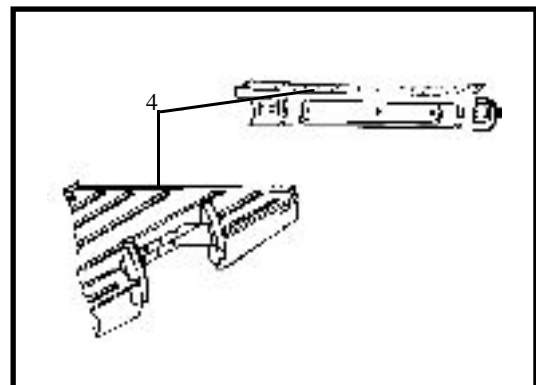
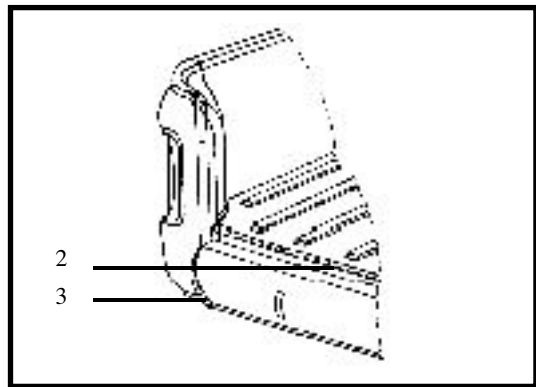
Position and center the new element.

Check the correct positioning of the rear plate.

Apply a secured stripping in the joint area (4) of the rear plate with the rear extreme crossbar.

Weld the rear plate (1) following the outliners (2) and (3).

Protect the welding with a corrosion preventive product.



DISMOUNTING

Dismount the elements which are in contact with the roof (doors, front wings, windscreen, cabin glass, roof sealing of the ceiling and windows gaskets).

Detach the welding points of roof (1) which are in connection with :

- windscreen lower cross-bar in (2) area;
- front pillar in (3) area;
- front safety belt (front side) in the (4) area;
- windscreen pillar lining in the (5) area;
- front safety belt (rear side) in the (6) area.

Upper border of the separating wall in the (7) area.

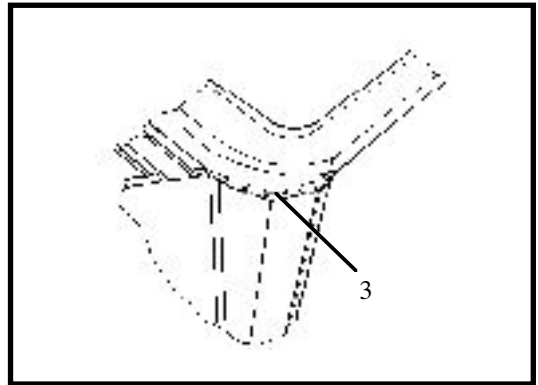
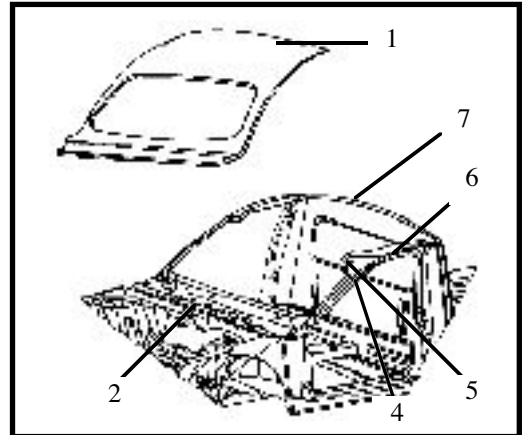
REMountING

Position and center the new element.

Check the correct positioning of the roof.

Weld the roof (1) following the assembling outliners 2,3,4,5,6, 7.

Mount in the reverse order the elements, which are in connection with the roof.

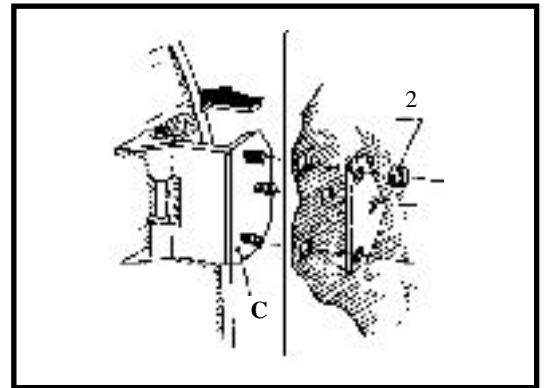
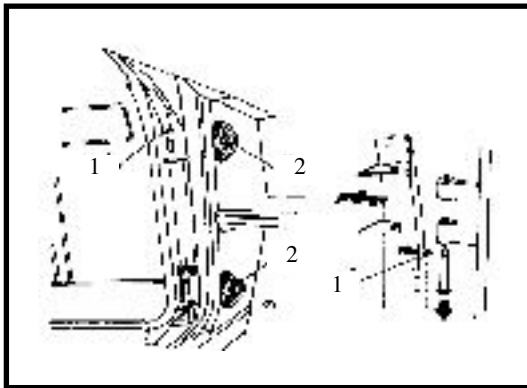


FRONT DOOR

DISMOUNTING

Front door dismounting may be performed in two different ways:

- a) by removing the clips (1) and pushing out the hinge pins.
- b) by removing the attachment screws (2) on the front pillar.



REMOUNTING

Perform the dismounting operations in the reverse order.

ADJUSTMENT

- a) Horizontally, adjustment bush C are to be used.
- b) Vertically, the front pillar holes are to be used.

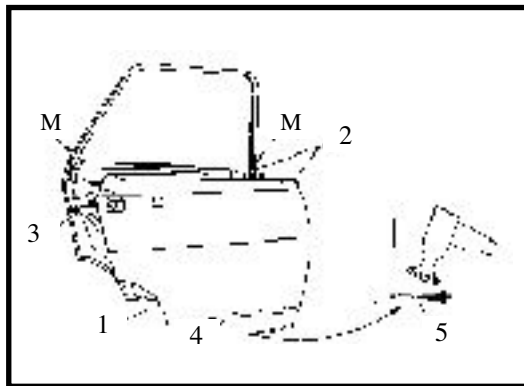
DISMOUNTING

Dismount the front door and the elements which are in contact with this.

Cut the outside panel of the door following the outline (1).

Unscrew the screws (2) from the joint of outside panel-glass frame.

Adjust, if necessary, the extensor (3).

**REMountING**

Apply a strip of zinc on the caisson.

Apply a sealant material layer in the area (4).

Position the new outside plate and weld in the (2) area.

Fit the outside panel on the door caisson by folding in the area (5).

Remount the elements which are in connection with the front door.

FRONT BONNET

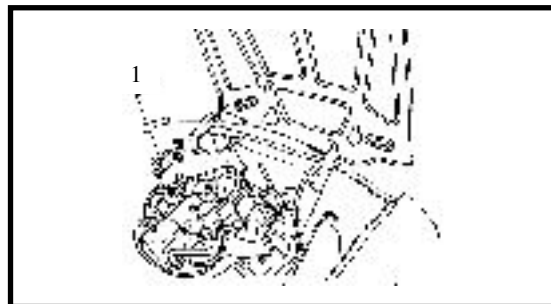
DISMOUNTING

Dismount :

- the attachment screws (1) of the hinges;
- the front bonnet.

REMOUNTING

Perform the dismounting operations in the reverse order.



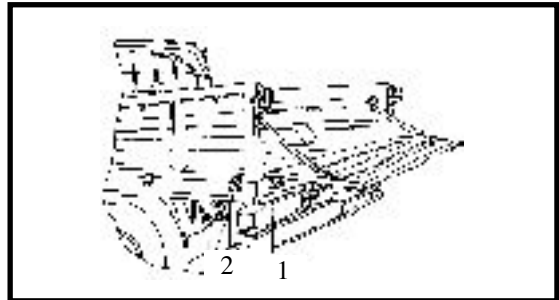
DISMOUNTING

Dismount :

- the attachment screws (1) of the hinges (2);
- the rear drop side (the drop side).

REMOUNTING

Perform the dismounting operations in the reverse order.



DISMOUNTING

Dismount :

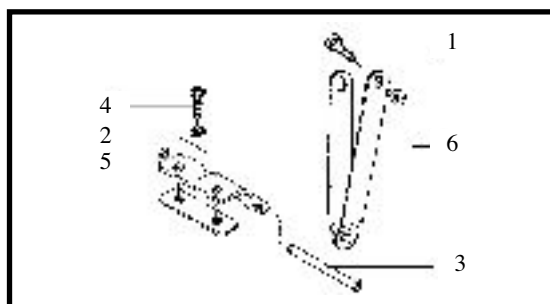
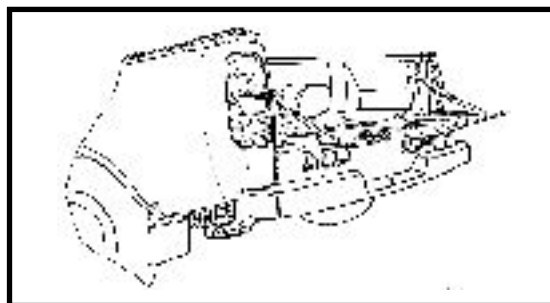
- the screws (1) from the end of the limiting mechanism (6).

Then, the rear drop side dismounting may be performed in two different ways:

a) extract the safety ring (2) and the hinge shaft (3).

b) unscrew the screws (4) of the hinges (5).

Dismount the rear drop side.

**REMOUNTING**

Perform the dismounting operations in the reverse order.

DISMOUNTING

Dismount the arm rest, the window regulator , the locking knob and the front/rear door panel.

Detach the door panel from the door frame.

Dismount the lock control of the front/rear door (1).

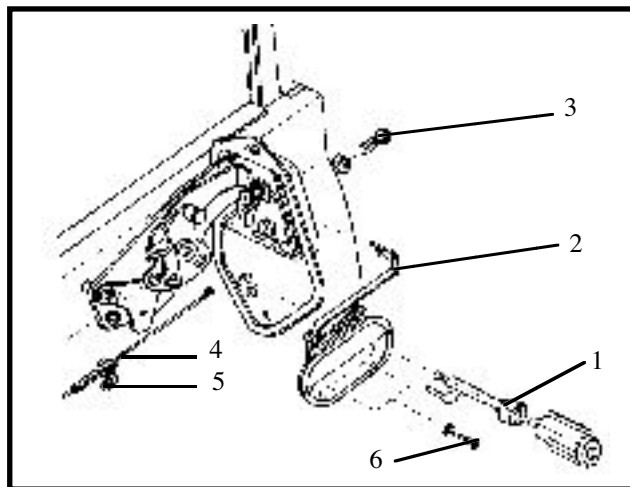
Dismount the attachment screws (3) of the front/rear door lock.

Release the control lever (2) of the outside opening flap.

Release the distance control lever (4) by taking out the clips bracket (5).

Dismount the attachment screws (6) of outside opening flap, releasing the flap.

Dismount the front/rear door lock from the door frame.



REMOUNTING

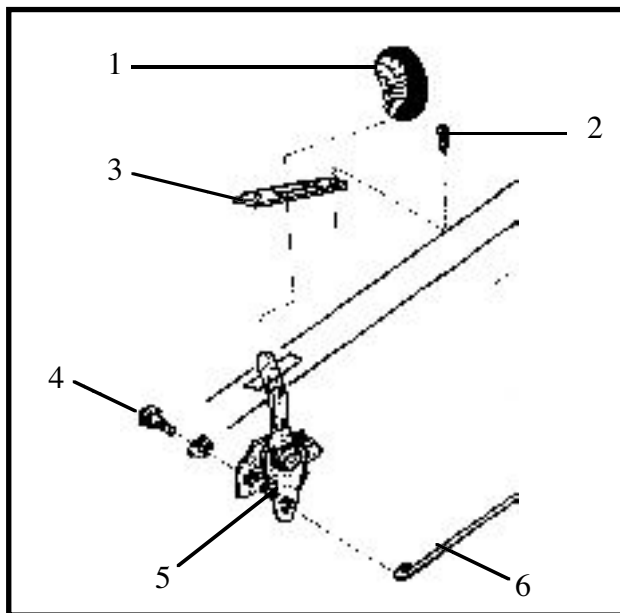
Perform in reverse order the mounting operations.

DISMOUNTING

Before dismounting the door lock control, remove the door panel and leave the window in the lift position.

Dismount:

- opening knob (1);
- ornament (3) attachment screws (2);
- the attachment screw (4) of opening mechanism (5);
- control lever (6) off the hinge, releasing the opening mechanism.

**REMountING**

Perform the dismounting operations in reverse order.

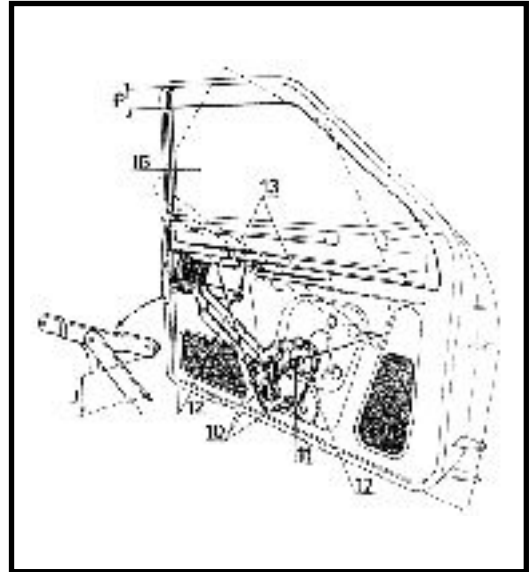
DISMOUNTING

To dismount the door window regulator assembly, perform the following operations:

Bring the window in the position **P = 85 mm**.

Unscrew the attachment nuts (**10**), press the shaft (**11**) for releasing the window regulator towards the inner side.

Easy bend the “ window regulator-window “ assembly, take out the supports (**12**), the slides from the window base (**13**) and the glass slide (**14**).



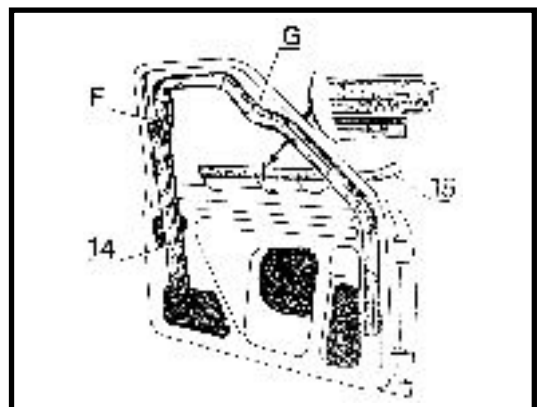
REMountING

For remounting perform the following operations:

Place in it housing the outside wiper (**15**) assembled with bracket (**15'**).

In order to re mount the glass slide, easy curve it in (**F**) and (**G**) ensuring a correct attachment in the door frame.

Lift the window regulator in the position **J = 40mm**, introducing the glass through the door frame, with the top down (**16**) center it in its slide and bring it in position **P = 85mm**.



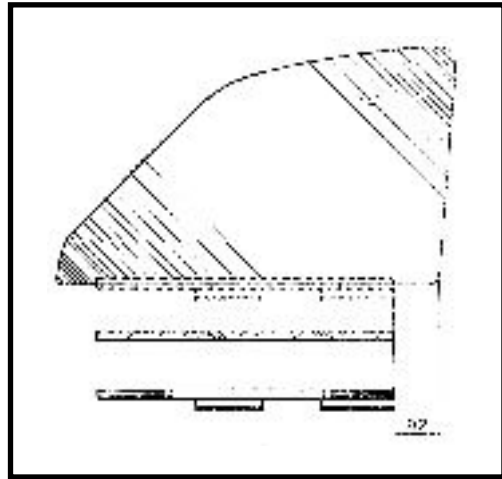
Put in its place the window regulator , introducing the shaft (11) in the frame than the attachment washer (17) and attachment nuts (10).

Place the supports (12) at the glass bottom and perform a first sliding test.

Grease the window regulator hinges and supports and perform the others operations in reverse order.

PREPARING THE GLASS BASE

When fitting the bottom edge and at the glass positioning in the slide-bars, observe the value of **92 mm**.



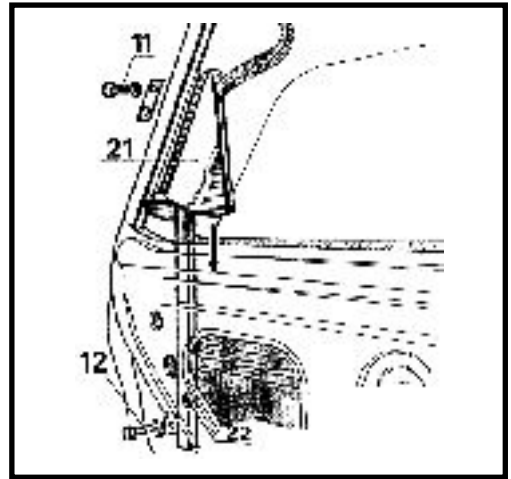
DISMOUNTING

In order to dismount a door window and the window regulator of the back door window, perform the following operations:

Remove the screws (11) and (12).

Using the technological opening (14) in the inner side of the door, remove the elastic washer and the safety washer (20), which make the connection with the window slide-bar, by slightly sliding it to the lower part.

Remove the three screws (15), releasing the back window regulator (19) and remove it from the inner door.



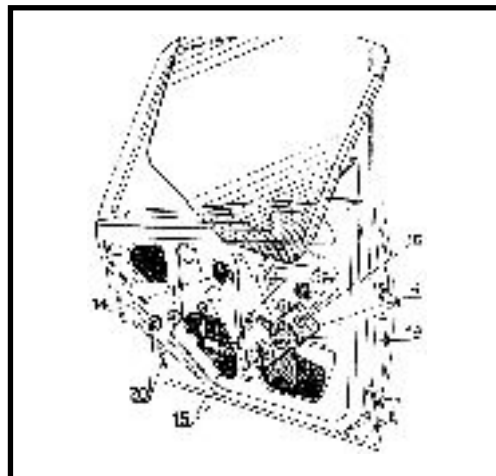
REMountING

For remounting, the operations shall be performed in the reverse order :

Replace the channel support in the rear inner side of the door, place the assembly inside the door frame, then remove again the frame, to allow the placing of the window in the channel support.

Replace the window regulator mechanism (19) and temporarily attach its sealing washer (R).

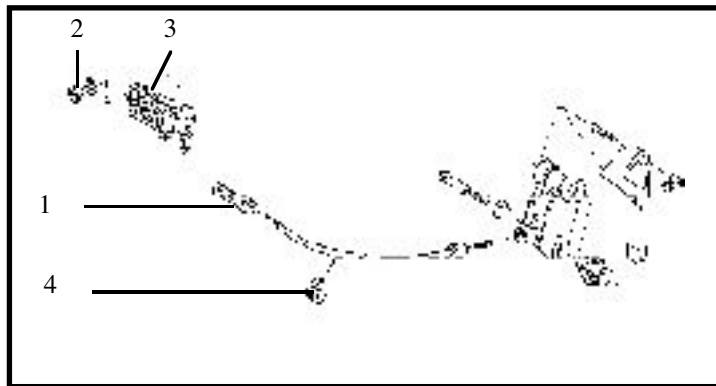
The window placed in the channel support shall be secured by means of the safety gasket and the washer (20) and the lateral frame from the window attachment (21) shall be temporarily attached by means of the screws (11) and (12), using the technological opening (22); test rolling up the window several times, after which completely tighten the screws.



DISMOUNTING

Release the cable of front hood (1) from the connection with lock (3) and take out by lock hook rod (4).

Dismount the attachment front hood lock nuts (2).

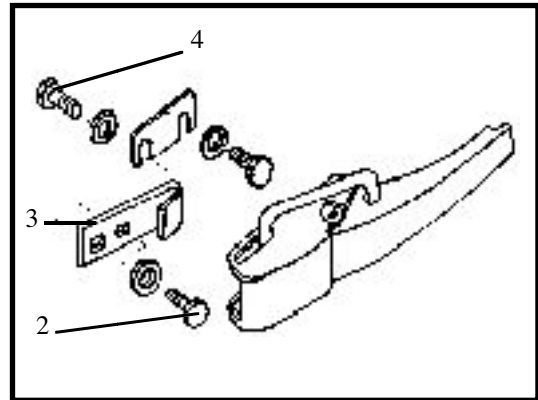
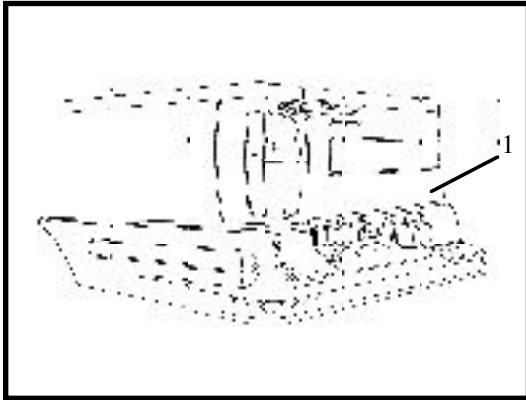


REMountING

Perform in the reverse order the dismounting operations.

DISMOUNTING

To dismount the rear drop side lock (1) unscrew the screws (2) of the closing hook (3) and the screws (4) of the assembled lock (5).

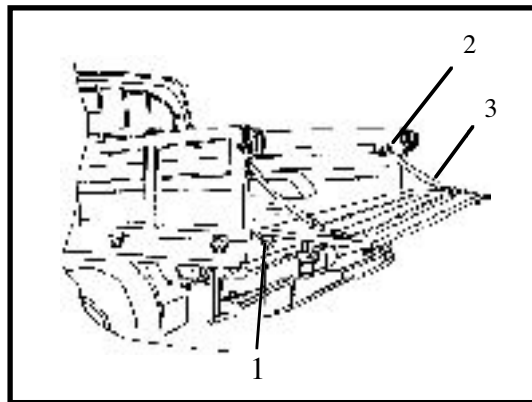
**REMOUNTING**

Perform in the reverse order the dismounting operations.

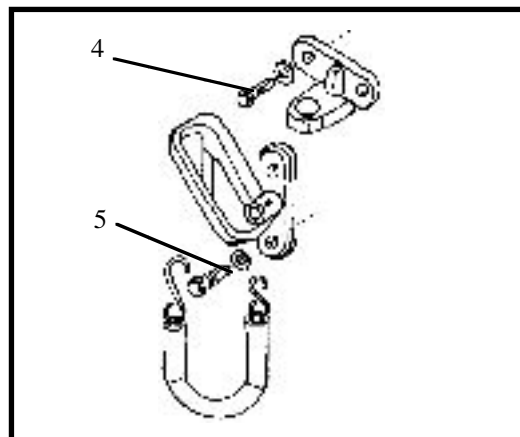
DISMOUNTING

Dismount :

- the screws (1) and (2) of the end of the stopper chain (3);
- the lock attachment screws (4) of the side panel the lock attachment screws (5) of the rear drop side panel.

**REMOUNTING**

Perform the dismounting operations in the reverse order.



WINDSCREEN AND CAB REAR WINDOW

The replacement of these windows is performed in case they are broken, when they are not according to the required overall dimensions or have manufacturing defects (image distortions, cracks, etc).

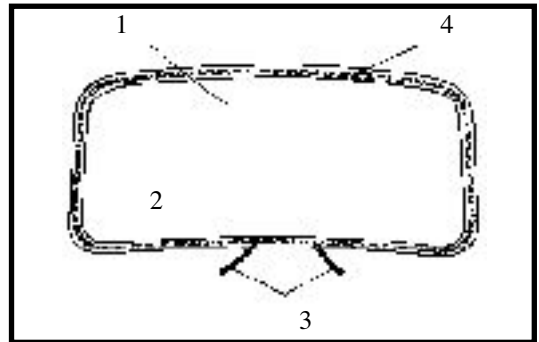
DISMOUNTING OF A BROKEN WINDOW

If the window or part of it did not fall, the window gasket shall be dismantled and the pieces of broken window shall be removed from it easier by sticking a sheet of paper on each surface.

PREPARING FOR MOUNTING

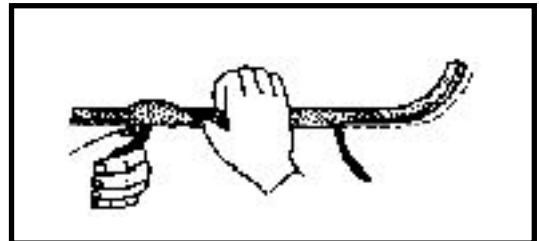
Position the gasket (2) around the window (1) and place the assembly on a protection plate.

Place in the gasket channel all around the gasket frame; a cotton cord (4) of 3 – 4 mm diameter, so that at its ends (3) to have some more 20 cm of cord, and between the ends, the distance shall not be more than 10 cm.



MOUNTING OF WINDSCREEN AND REAR WINDOW

The windscreen – gasket – cord assembly is placed on the frame, for mounting, so that the cord ends are placed towards the inside of carriage body.



From the inside of the vehicle, successively draw the ends of the cord, beginning with the lower parts, in this way the window gasket edge is lifted and then lowered on the frame. At the outside, the window gasket is seated by slightly pressing it on window, so that the tightening is uniform on the whole windscreen contour and frame.

The cord is always removed through the upper part of the windscreen.

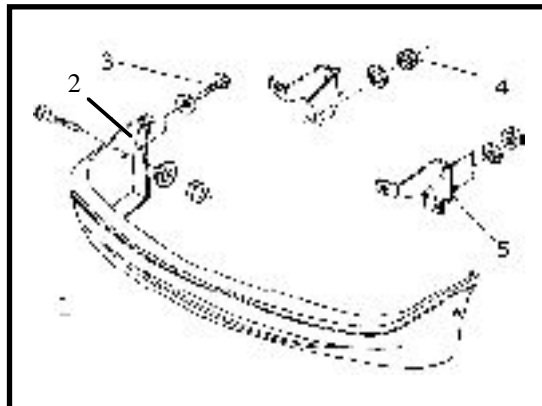
Each time a windscreen or rear window is mounted, ensure the uniform setting of the whole assembly on the carriage body by tapping several times with a rubber hammer, on the edge of the window frame.

FRONT BUMPER

DISMOUNTING

Dismount :

- the attachment screw (1) and (3) of the front bumper (2) on the front wings;
- the nuts (4) which attach the bumper supports (5) on the front grill;
- release the front bumper.

**REMOUNTING**

Perform the dismounting operations in the reverse order.

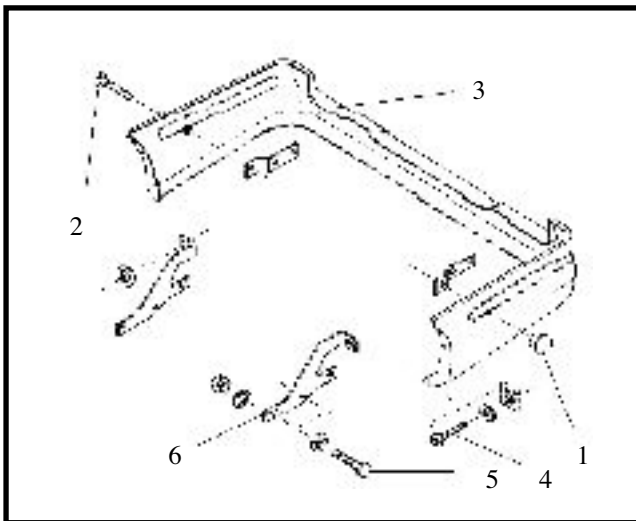
REAR BUMPER

(for vehicles Dacia 1304 Pk., 1307)

DISMOUNTING

Dismount :

- the protectors (1) and the side attachment screws (2) of the rear bumper (3);
- the attachment screws (4) of the rear bumper on side panels ;
- the attachment screws (5) of the rear bumper supports (6) on the rear girders;
- release the rear bumper.



REMOUNTING

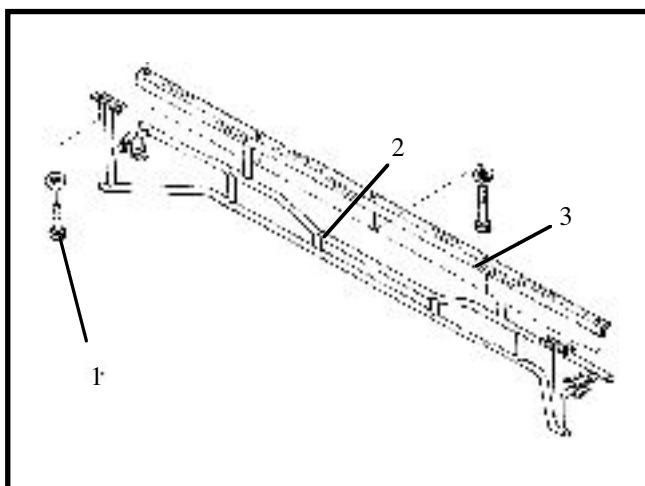
Perform the dismounting operations in the reverse order.

REAR BUMPER

REAR BUMPER
(for Dacia 1304 platform drop side)**DISMOUNTING**

Dismount :

- the attachment screws (3) of the rear bumper (2) on the end rear cross bar;
- the attachment screws (4) of the rear bumper supports on the rear girders;
- release the rear bumper.

**REMOUNTING**

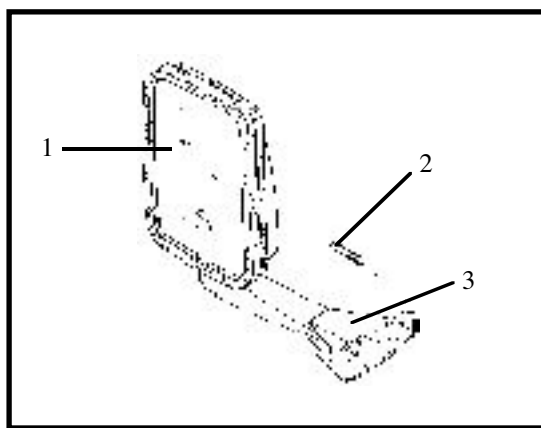
Perform the dismounting operations in the reverse order.

DISMOUNTING

Detach the protector of the outside rear view mirror (3).

Dismount the attachment screws (2) of outside rear view mirror (1).

Release the outside rear view mirror.

**REMOUNTING**

Perform the dismounting operations in the reverse order.

REPAIR MANUAL

DACIA COMMERCIAL

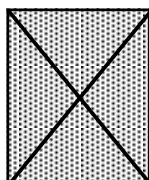
RM 503-3 SEALING, ELECTRICITY
ENGINE:F8Q
GEARBOX: NG1; NG7
TAPV: U75D; U75E; U75G

The reparation methods prescribed by the manufacturer in the present document are established subject to technical specifications in force at the document issuing date.

These are subject to modifications brought by the manufacturer at the fabrication of different assemblies, subassemblies or accessories of its vehicles.

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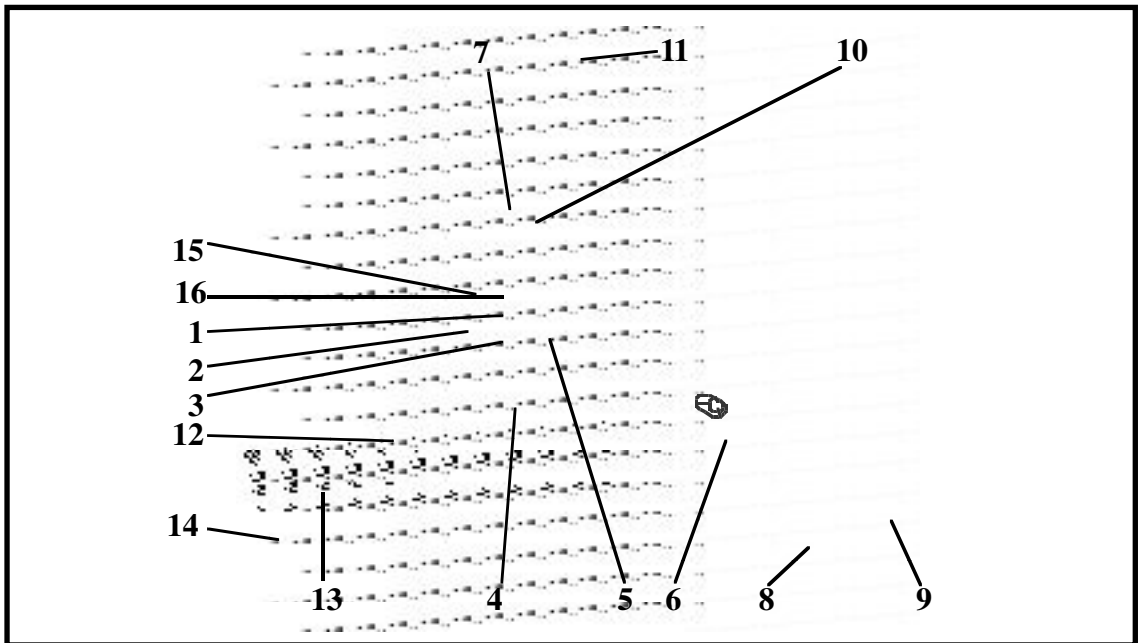
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DISMOUNTING

Dismount the battery

Dismount:

- the windscreen,
- the steering wheel and the lower/upper casing.

Dismount the attachment nut (12) of the coupling bar for dashboard sustaining.

Dismount the dashboard attachment screws (8) on the side support (9).

Dismount the dashboard attachment screws (11) on the windshield lower frame cross member.

Dismount the headlamp adjustment switch (5) and the two attachment screws.

Dismount from the engine compartment:

- the control cable from the climate control valve,
- the vacuum hose from the servobrake valve,

Detach the dashboard and swing it over, in order to have access to the wiring disconnecting.

Disconnect the following connectors:

- dashboard,
- fog lamp switch,
- hazard switch,
- electronic clock,
- blower switch,
- blower wiring connection,
- 4 X 4 switch,

- fog headlamps switch,
- windscreen wiper timer,
- radio-cassettes player.

Disconnect the following wires:

- lighter lighting,
- climate control lighting,
- ashtray lighting,
- documents compartment lighting.

Dismount the followings: diagnostic socket and the three hoses from the climate control unit, observing the corresponding positions.

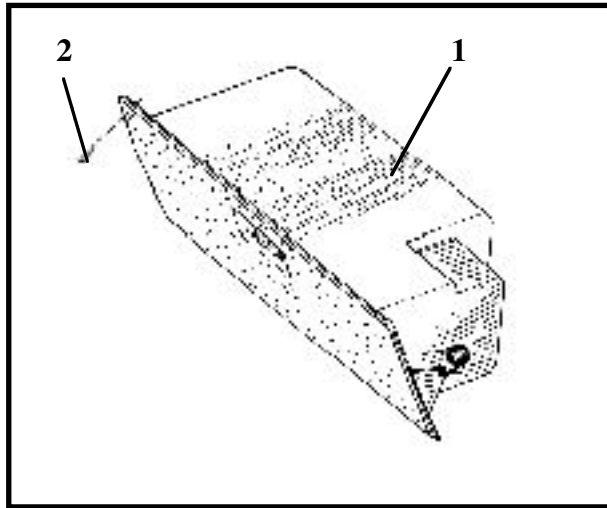
Extract the dashboard from cockpit.

Dismount the followings:

- the instrument panel,
- the hazard switch **(7)**,
- the climate control unit
- the documents compartment **(6)** (see page 57 -3),
- the radio-cassettes player and its support **(4)**,
- the coupling bar **(13)** attached on the dashboard by means of the screw **(14)**,
- the electronic clock,
- the lighter **(2)**,
- the ashtray **(3)**,
- the windscreen wiper timer **(15)**,
- the fog headlamps switch **(16)**,
- the 4 X 4 switch **(1)**,
- the fog lamps switch,
- the blower switch.

REMOUNTING

Perform the dismounting operations in the reverse order.
Check the operation of the board instrument and switches.



DISMOUNTING

Disconnect the battery.

Dismount the diagnostic socket.

Dismount the documents compartment attachment screws (2) on the dashboard.

Disconnect the documents compartment lighting wires.

Extract the documents compartment from the dashboard.

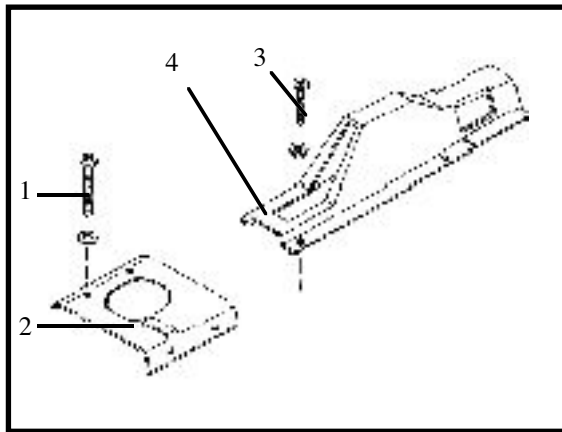
REMOUNTING

Perform the dismounting operations in the reverse order.

DISMOUNTING

Dismounting the screws (1) and release the gear box lever ornament (2).

Dismounting the screws (3) and release the hand brake casing (4).



REMOUNTING

Perform the dismounting operations in reverse order.

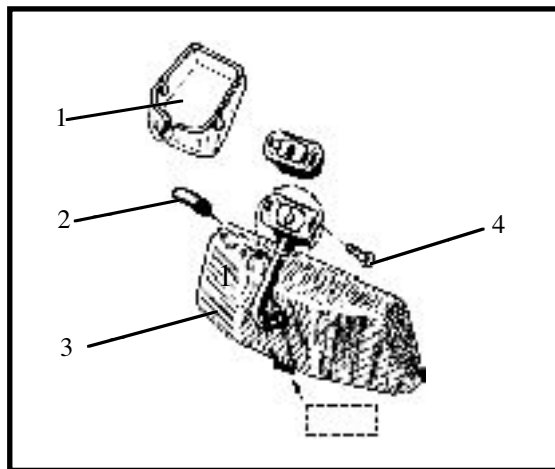
DISMOUNTING

Dismount the protector support (1).

Dismount the rubber buffer (2).

Detach from clips the sun visors rod from the inside rear view mirror support.

Release the inside rear view mirror (3) by dismantling the attachmentscrews (4).

**REMOUNTING**

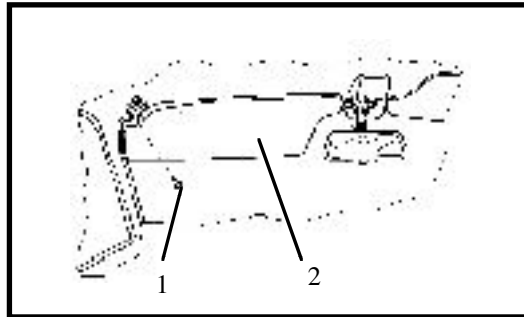
Perform the dismounting operations in reverse order.

DISMOUNTING

Take out inside rear view support protector.

Detach the sun visors (2) rod from the inside rear view mirror support.

Release the sun visors (2) by dismount the attachment screws (1).

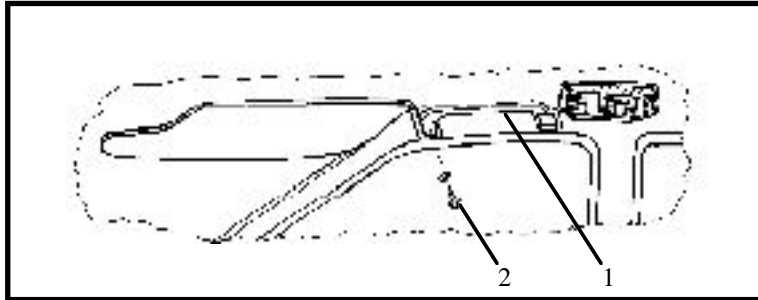
**REMOUNTING**

Perform the dismounting operations in reverse order.

TURN HANDLES

DISMOUNTING

Dismount the turn handles (1) attachment screws (2) from the stretcher.
Dismount the turn handles.

**REMOUNTING**

Perform the dismounting operations in reverse order.

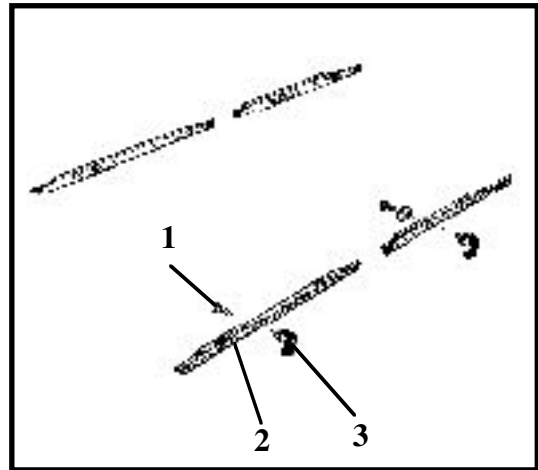
DISMOUNTING

Dismount the screws (1) from the cable supports (3).

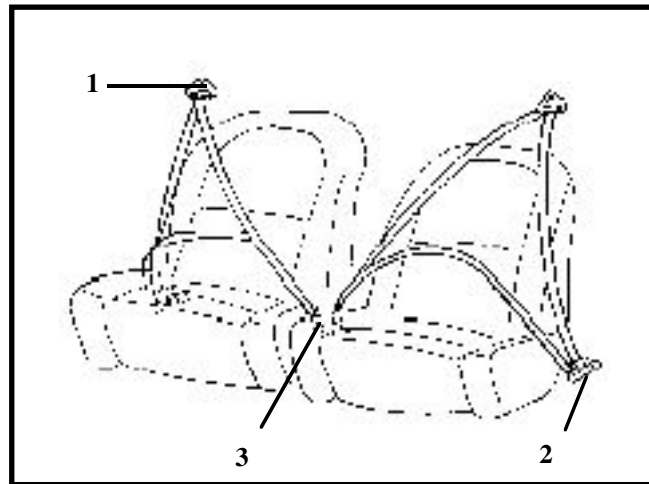
Release the front doors (2) respectively rear doors thresholds.

REMOUNTING

Perform the dismounting operations in the reverse order.



DISMOUNTING

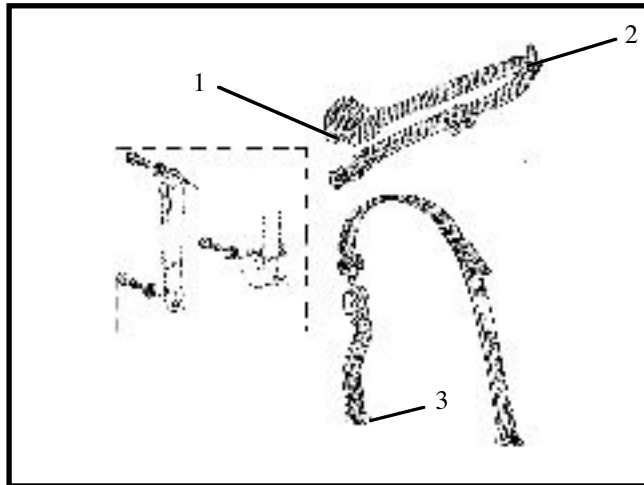


Dismount :

- the protector and attachments front safety belts screws on the upper middle pillar (pos. 1);
 - the attachments front safety belts screws on the lower middle pillar (pos.2);
 - the attachment screw of lock front safety belts on the front plate protection (pos.3)
- of fixing front belt on middle pillar – lower part;
- front safety belt.

REMOUNTING

Perform the dismounting operations in reverse order.

DISMOUNTING**Dismount :**

- the protector and the attachment rear safety belt screw on the upper part of lateral panel (pos. 1);
- the attachment rear safety belt screw on the inner lateral frame (pos. 2);
- the attachment screws of the rear belt lock on central floor (pos.3);
- rear safety belt.

REMOUNTING

Perform the dismounting operations in reverse order.

DISMOUNTING

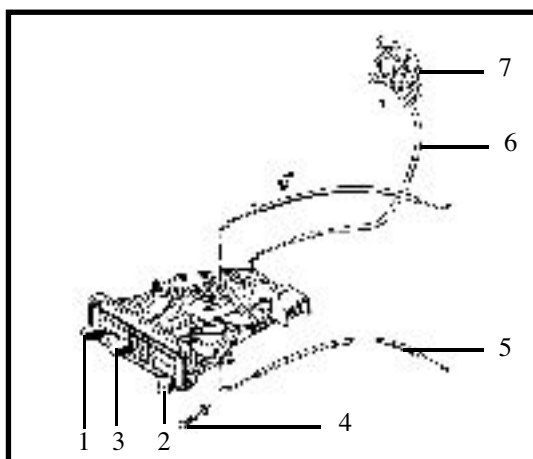
Disconnect the battery.

Dismount the ash try from the dash board.

Dismount the attachment screws (4) of the block on the dash board and detach the block from its place.

Disconnect:

- the control cables (5) of the flaps;
- the control cable (6) of the climate control valve.

**REMountING**

Perform the dismounting operation in the reverse order, observing the following conditions:

- when remounting the flaps cables, operate one by one other, the levers (1) and (2) to the left, leaving a clearance of **3 – 4 mm**, the cable sheath being attached in this position, by means of a clip and check the correct operation of the lever and the flap closing;

- the control cable (6) of the climate control valve (7) is mounted to the lever (3), so that the valve is set in the open position (the arrow direction) and the lever (3) is moved towards right, leaving a clearance of **3 – 4 mm**. In this position attach the cable sheath by means of clip, than check the correct operation of the lever in the position corresponding to the valve closing, respectively opening.

DISMOUNTING

In case AC system can not be used, the classis climate control system may be used according to necessities.

Dismount the dashboard.

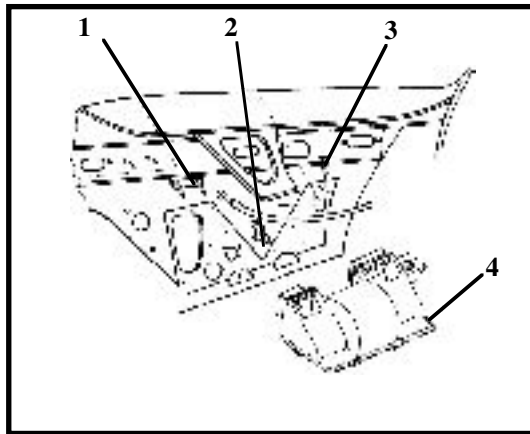
Disconnect the wires from the dashboard wiring.

Dismount the control cables of the distribution flaps and mixing flaps from the control levers and the recycling flaps cable from the climate control panel.

Dismount the ducts of the heating valve and the aeration connection.

Dismount the attachment nuts of the climate control unit (4) - positions (1),(2) and (3).

Detach the climate control unit through inside cockpit, together with the ducts, through the iron plate shutter.



REMOUNTING

Perform the dismounting operations in the reverse order.

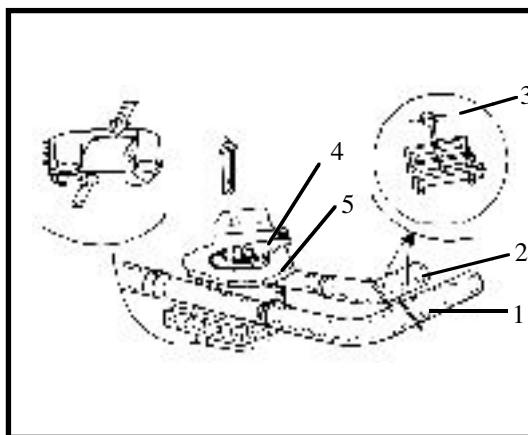
CLIMATE CONTROL VALVE

DISMOUNTING

Clamp the heating hoses (1) , (2) by means of the clamp (3) – **MOT 453** and dismount the hoses from the valve.

Dismount the control cable (4) of the valve (5) and bring the valve in the OFF position.
Dismount the climate control valve.

NOTE: The valve cannot be repaired.

**REMOUNTING**

Valve remounting is to be done by performing the dismounting operations in the reverse order, observing the following conditions:

- the valve control cable is mounted at the valve control lever so that valve is set in open position and the control lever is moved to the right, leaving a clearance of 3-4 mm. In this position attach the cable sheath by means of clip, than check the correct operation of the lever and valve closing;

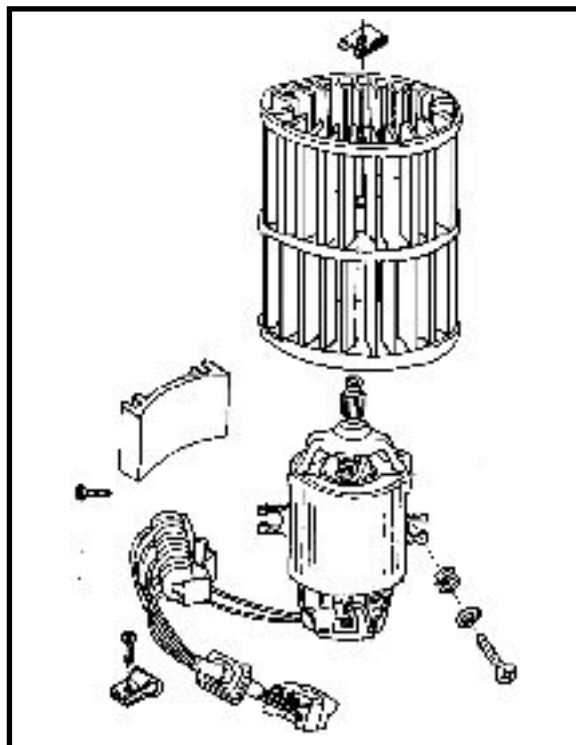
- after remounting the climate control valve, the purging of the cooling system and the checking of the cooling fluid in the expansion vessel must be obligatory performed.

DISMOUNTING

The climate control blower is mounted on the climate control unit. It is placed under the dashboard, in the central area, being attached on the cowl panel and it has 4 speeds.

In order to dismount the blower off the vehicle, proceed as follows:

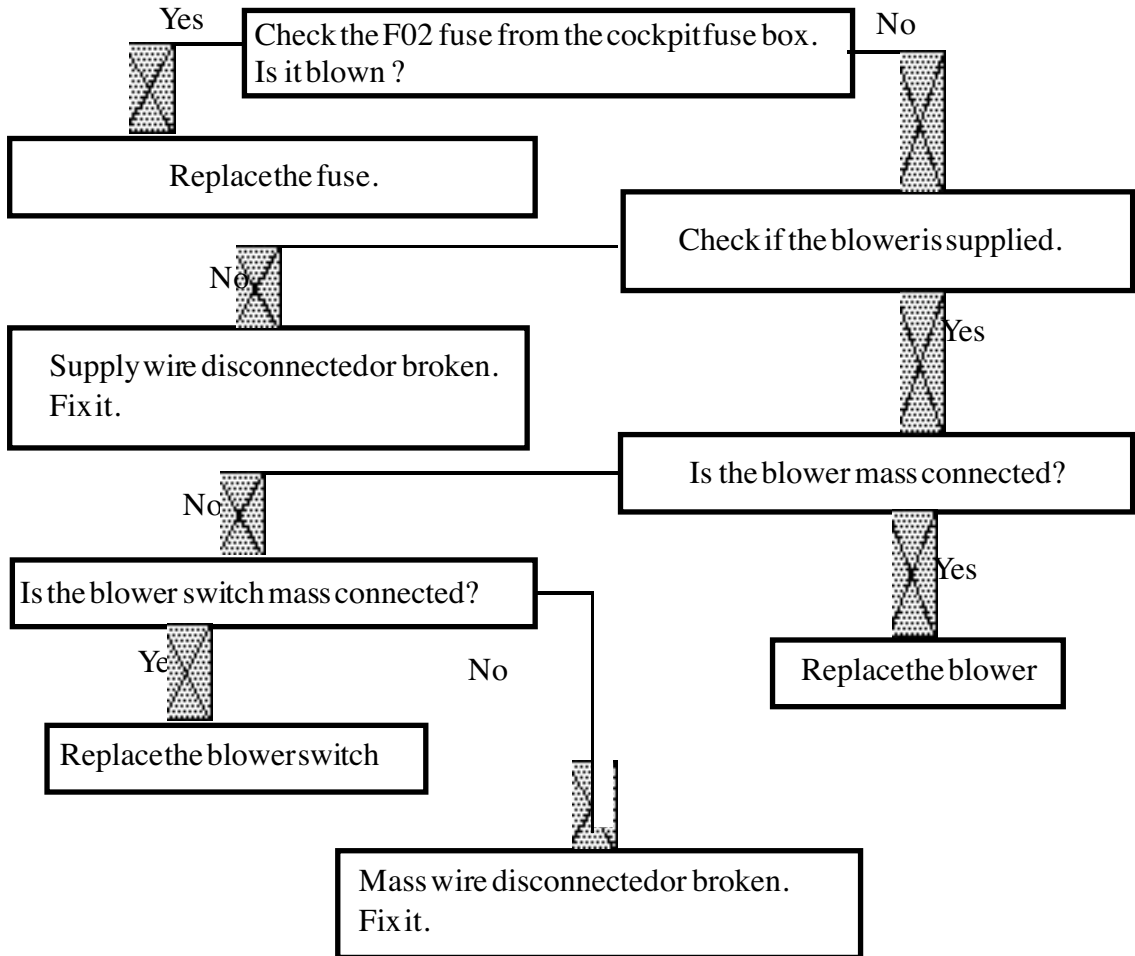
- dismount the climate control unit off the vehicle,
- release the clips attaching the two half-cases of the unit, allowing in this way, the access to the climate control blower,
- dismount the two attachment screws of the climate control blower,
- check, then, replace the damaged components.



REMOUNTING

Perform the dismounting operations in the reverse order.

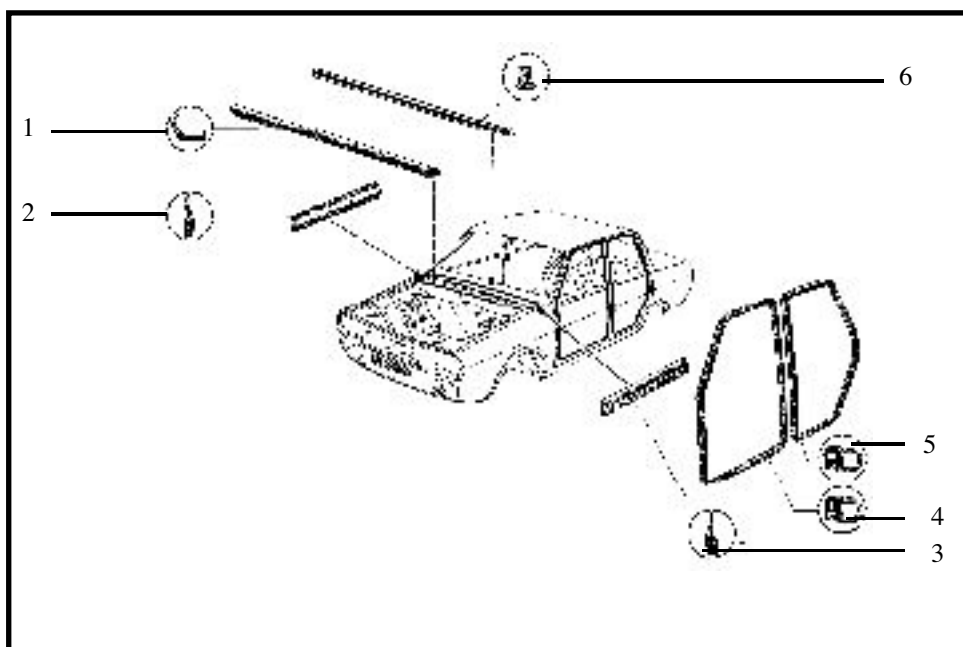
CLIMATECONTROLBLOWER NOT WORKING



DISMOUNTING

- 1 - gasket under front grill
- 2 - front bonnet gasket
- 3,4 - wing chute gaskets
- 5,6 - rear/front doors frames gaskets

Manually dismount by pulling one end toward applying area external.

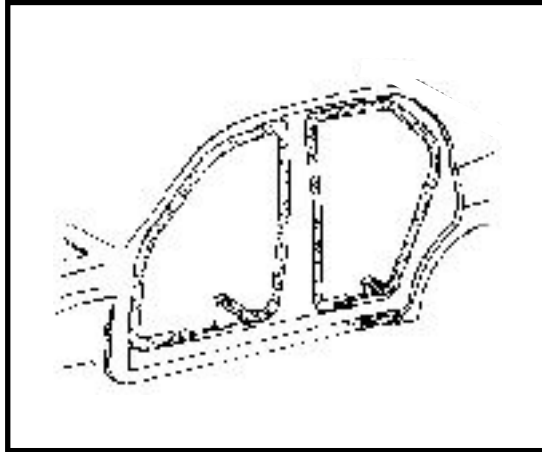


REMOUNTING

To be mounted by hammer tapping. Cut the extra ends. Tighten the clipping areas

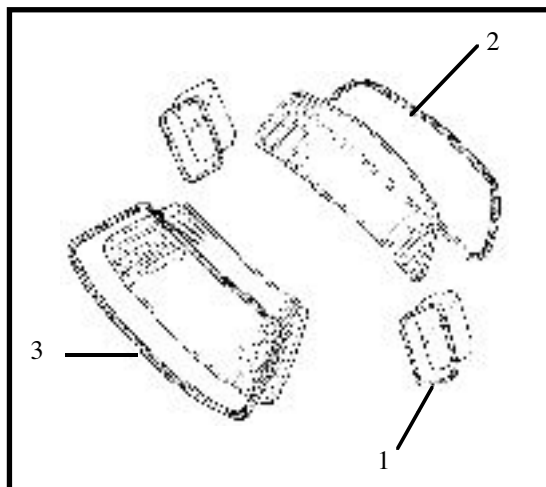
DISMOUNTING

Dismount the gaskets from the door profile, by pulling them towards exterior, following the door outline.

**REMOUNTING**

Perform the dismounting operations in the reverse order.

Mounting of the sealing gaskets on the door frames is performed by plastic hammer tapping.



- 1 - Side glass rubber gasket (D 1304 King - cab)
- 2 - Separating wall glass rubber gasket
- 3 - Windshield rubber gasket

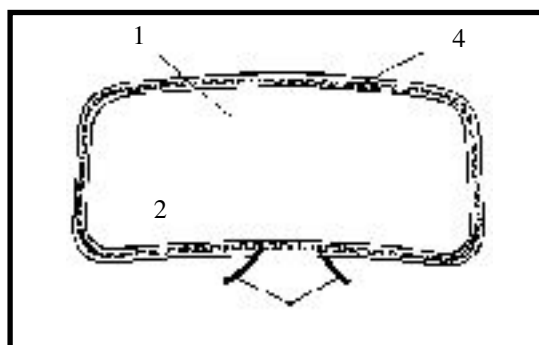
DISMOUNTING

Remove the glass together with the rubber gasket, by pushing it from the interior of the vehicle.

Clean the rubber gasket if it will be reused or replace it with a new one.

REMOUNTING

Place the rubber gasket around the glass on all its contour, where previously has been introduced a cotton rope (4) with the diameter of **3-4 mm** leaving some 20 cm of free rope at each end (3) but no more than **10 cm** between ends.



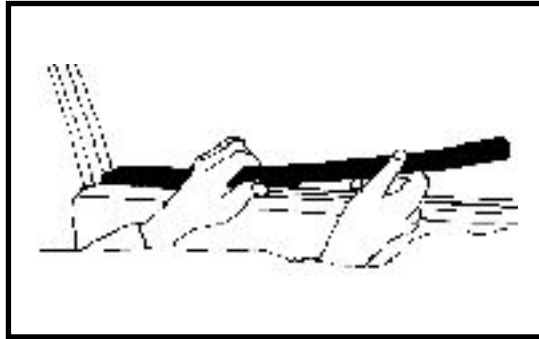
For glasses dismounting/remounting please see s/chapter 54.

DISMOUNTING

Dismount the arm rest at the upper part.

Dismount the window regulator handle and the inner opening mechanism.

Dismount the panel by removing it from clips and take out the inner wiper.

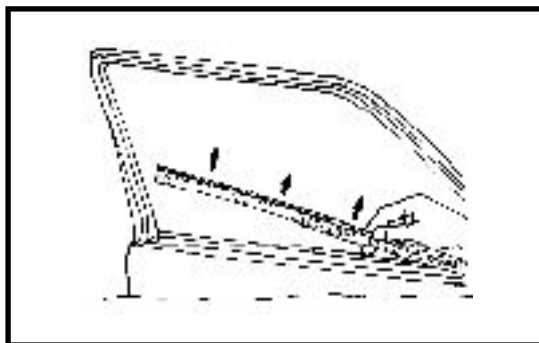
**REMountING**

Perform the dismounting operations in the reverse order.

DISMOUNTING

Lower the window to the minimum position

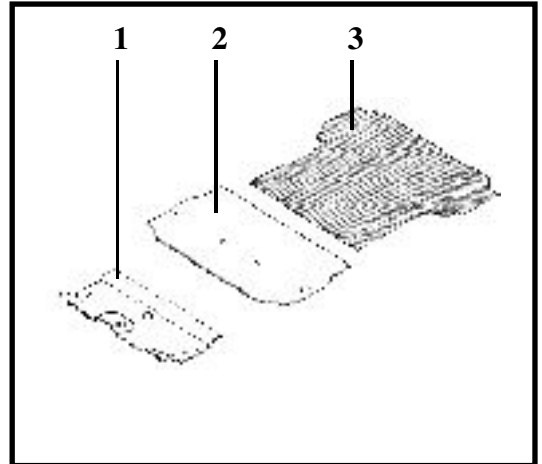
The dismounting of the outside wiper is performed by removing it from the fixing clips.



REMOUNTING

Perform the dismounting operations in the reverse order.

1. molded carpet
2. under bench carpet (Dacia Double Cab)
3. platform carpet (bed mat)

**MOLDED CARPET****DISMOUNTING**

Dismount:

- the front seats
- the front safety belts locks
- the gearbox lever ornament
- the front/rear doors thresholds.

Dismount by hand the molded carpet.

REMOUNTING

Perform the dismounting operations in the reverse order.

UNDER BENCH CARPETS (DACIA DOUBLE CAB)**DISMOUNTING**

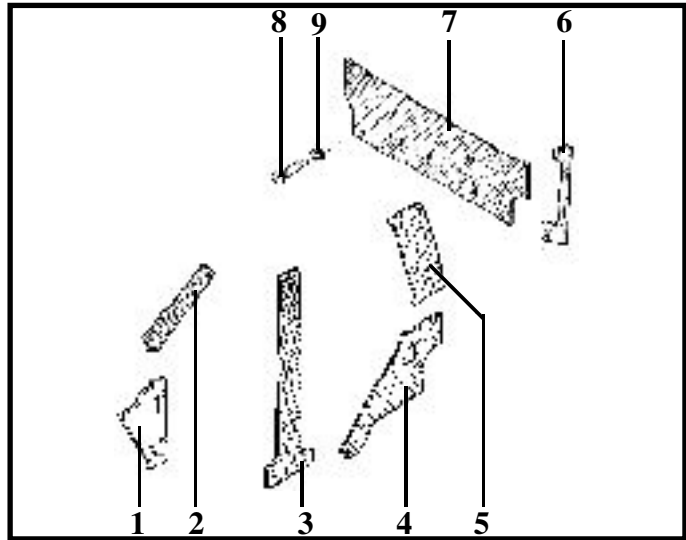
Dismount :

- the rear bench
 - the rear safety belts locks that are attached on the intermediary floor.
- Dismount by hand the carpet under the bench.

REMOUNTING

Perform in the reverse order the dismounting operations.

1. front pillar covering
2. windscreen covering
3. middle pillar lining
4. side lining lower covering
5. upper side panel lining
6. side panel covering
7. cabin wall lining
8. plate screw
9. flat washer



REPLACEMENT OF THE WINDSCREEN COVERING

DISMOUNTING

Dismount :

- the windscreen
- partially the front doors weather-strip.

Unstuck the windscreen covering

REMOUNTING

Perform the dismounting operations in the reverse order.

REPLACEMENT OF THE MIDDLE PILLAR LINING

DISMOUNTING

Move ahead the front seat, in order to enable the access at the middle pillar.

Dismount :

- the front thresholds
- partially the front/rear doors weather-strips
- the front safety belts at their upper/lower part attachment on the middle pillar.

Unstuck in the reverse order of the dismounting operations.

REMOUNTING

Perform the dismounting operations in the reverse order.

REPLACEMENT OF THE UPPER SIDE PANEL LINING

DISMOUNTING

Swing over the rear bench back

Dismount :

- the rear safety belts at the upper part.
- partially the rear doors weather-strip.

Unstuck the upper side panel lining.

REMOUNTING

Perform the dismounting operations in the reverse order.

REPLACEMENT OF THE CABIN WALL LINING

DISMOUNTING

Swing over the rear bench back

Dismount :

- the rear glass grill
- the rear cabin glass
- the screws and washers attaching the cabin wall lining.

REMOUNTING

Perform the dismounting operations in the reverse order.

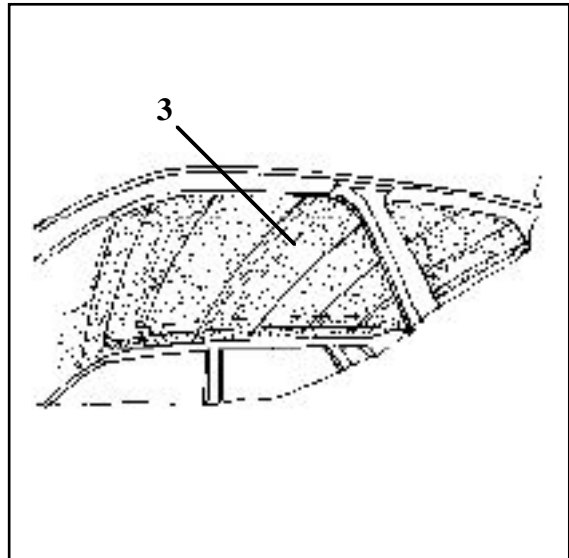
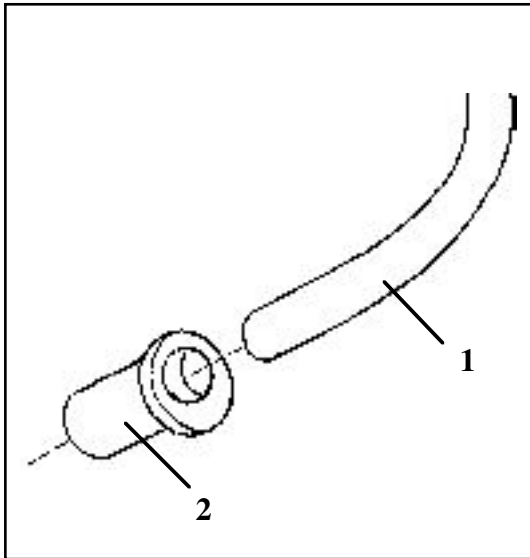
REPLACEMENT OF THE CEILING COVERING**DISMOUNTING**

Dismount :

- the front and rear doors weather-strips;
- the front windshield and the cabin separating glass;
- the side lamps, sun visors and turn handles ;
- the ceiling covering from the front doors upper frames, rear doors upper frames (Dacia Double Cab, windshield fixing frame and the cabin rear glass in the contact areas with the ceiling covering.

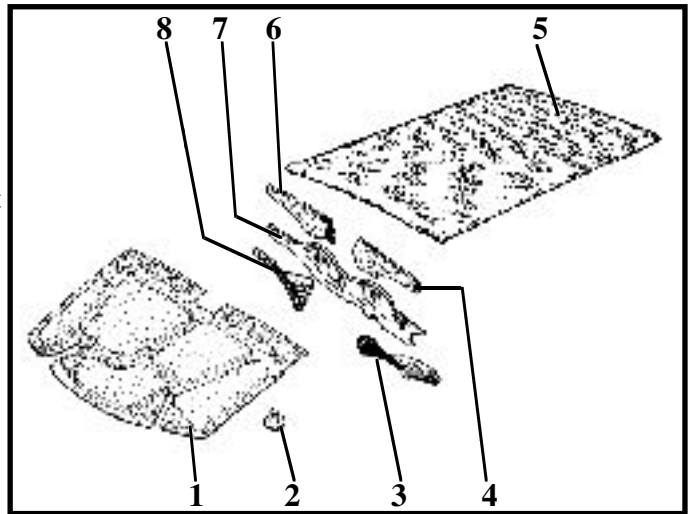
Remove the rods (1) assembled with the plastic bushings (2) (arch ends) from the side taps.

Release the covering (3) by unstuck it and remove the rods from the corresponding sleeves.

**REMOUNTING**

Perform the dismounting operations in the reverse order, by consecutive mounting of the rods, positioning and stacking of the ceiling covering edges on the windshield fixing frame, on the front and rear (Dacia Double Cab) upper frames and creating the access for the side lamps.

- 1 – front bonnet noise absorbent
 2 – clips
 3;8 – front wheel passage noise absorbents
 4;6 – climate control box noise absorbents
 5 – roof noise absorbent
 6 – cowl panel noise absorbent



REPLACEMENT OF THE FRONT BONNET NOISE ABSORBENT

DISMOUNTING

In order to dismount the front bonnet noise absorbent, perform the following operations:

- open the front bonnet and fix it by means of the bonnet sustaining rod;
- detach from clips the front bonnet noise absorbent.

REMOUNTING

Position and fix the new front bonnet noise absorbent by means of the clips (2), being necessary a clips attaching effort of **maximum 3daNm**.

DISMOUNTING

Dismount:

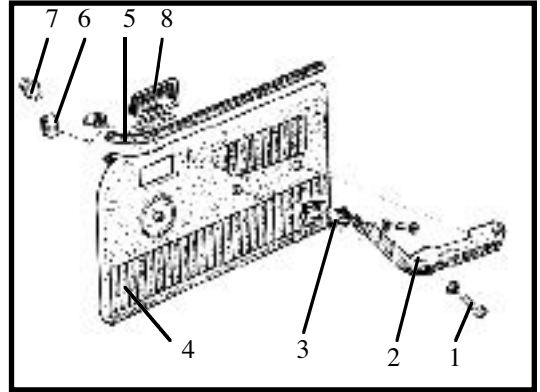
- the arm rest connection (3);
- the arm rest (2) from the screws (1);
- the window regulator handle;
- the distance control cover (8) by

dismounting the attachment screw;

- the inner wiper (5) from the clips (6);
- the store box (9).

Detach the front door panel from its clips.

Pull toward exterior to enable the panel releasing from the attachment done by clips (7).

**REMOUNTING**

Perform the dismounting operations in the reverse order.

DISMOUNTING**Dismount:**

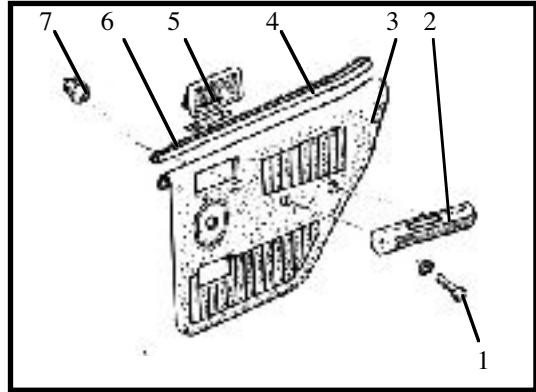
- the arm rest (2) from the screws (1);
- the window regulator handle;
- the distance control cover (5) by

dismounting the attachment screw;

- the inner wiper (4) from the clips (6);
- the store box (9).

Detach the rear door panel from its clips.

Pull toward exterior to enable the panel releasing from the attachment done by clips (7).

**REMOUNTING**

Perform the dismounting operations in the reverse order.

Front bonnet boss

DISMOUNTING

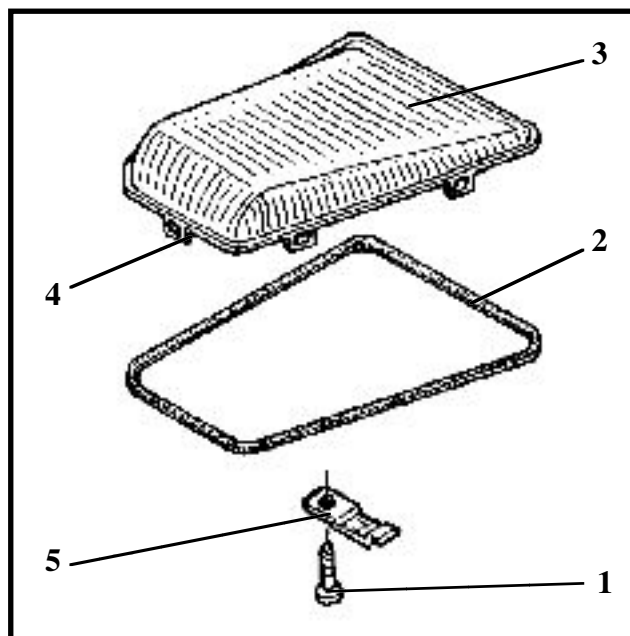
In order to dismount the front bonnet boss, proceed as following:

Open the vehicle front bonnet and fix it on its sustaining rod.

Detach from clips the bonnet noise absorbent.

Dismount the boss (3) attachment screws (1) by means of the clamps (5) and of the gasket (2).

Release the bonnetboss, by pushing it from inside to outside, releasing it from attachment clips (4) and recover the gasket.

**REMOUNTING**

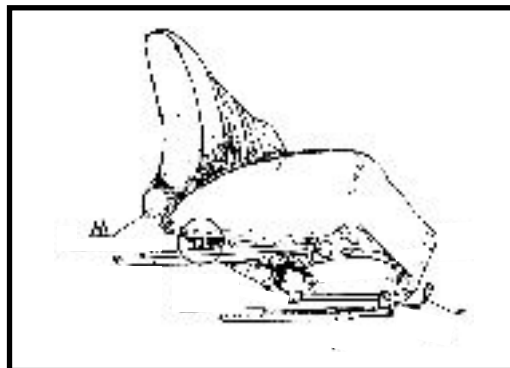
Perform the dismounting operations in the reverse order.

ADJUSTMENTS

The front seats equipping the Dacia vehicles offer the following adjustment possibilities:

- longitudinal displacement back and forth which may be performed by using the control lever (**L**).

- the back rest rocking until the horizontal position is obtained by using the button (**M**).

**DISMOUNTING**

In order to dismount the seat, perform the following operations :

Lift the control lever (**L**), bring the seat in the front position and dismount the screws (**5**) as well as the seat attachment cross-pieces (**6**) on the central floor (the rear part).

Bring the seat in the back position and dismount the seat attachments screws (**2**) and cross-pieces (**1**) on the central floor (the front part).

REMOUNTING

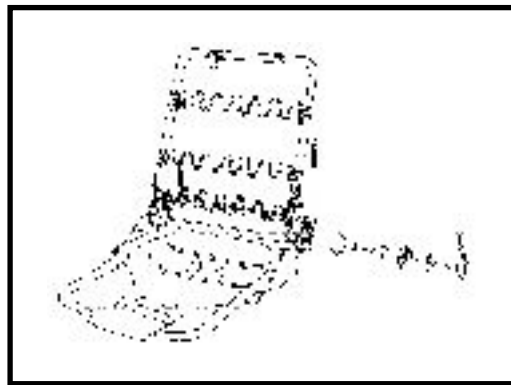
Perform the dismounting operations in the reverse order.

REPLACEMENT**DISMOUNTING**

Dismount the seat off the vehicle.
Dismount the slide guides from the front seat.
Remove the upholstery and the clothing from the armature.

REMOUNTING

Perform the dismounting operations in the reverse order.



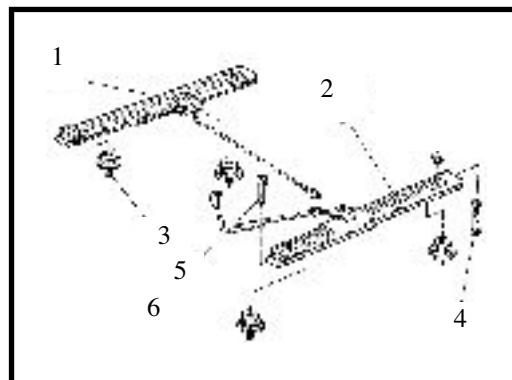
DISMOUNTING

Dismount:

- the front seat attachment screws (5) and cross- pieces (3) and (6) on the central floor;
- the slide guides (1) and (2) attachment screw (4) on the seat armature;
- release the slide guides (1) and (2).

REMOUNTING

Perform the dismounting operations in the reverse order.



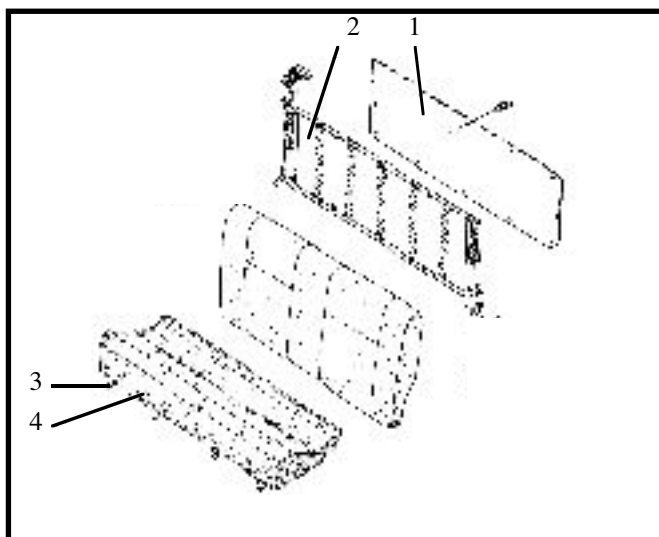
DISMOUNTING

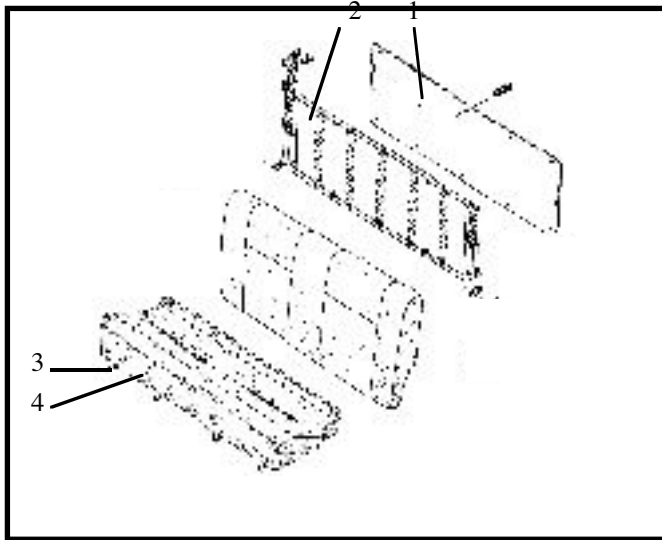
Dismount the closing plate (1) by removing it from the clips of the rear bench back rest.

Dismount the upholstery and clothing from the rear bench back rest (2).

REMOUNTING

Perform the dismounting operations in the reverse order





DISMOUNTING

The rear bench seat (4) is dismantled by rocking it in the supports (3).
Remove the upholstery from the seat clothing.

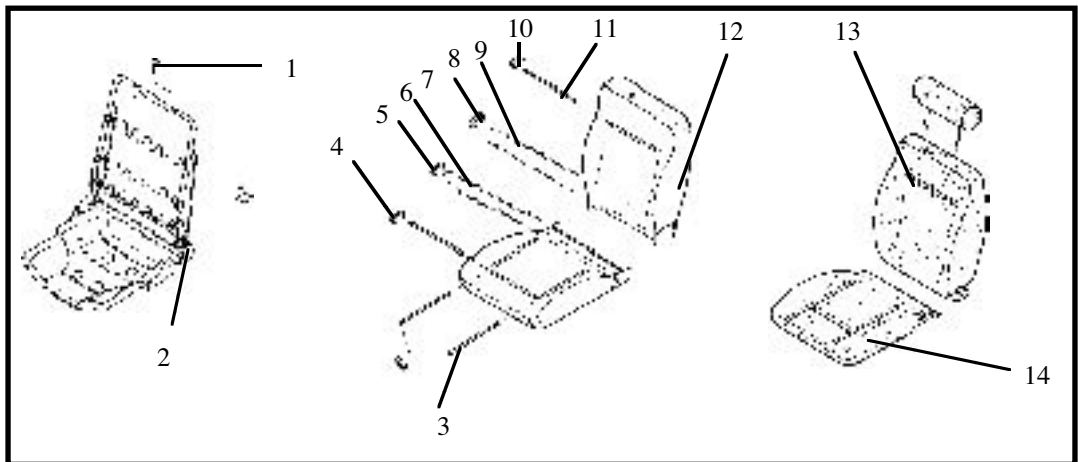
REMOUNTING

Perform the dismantling operations in the reverse order .

DISMOUNTING

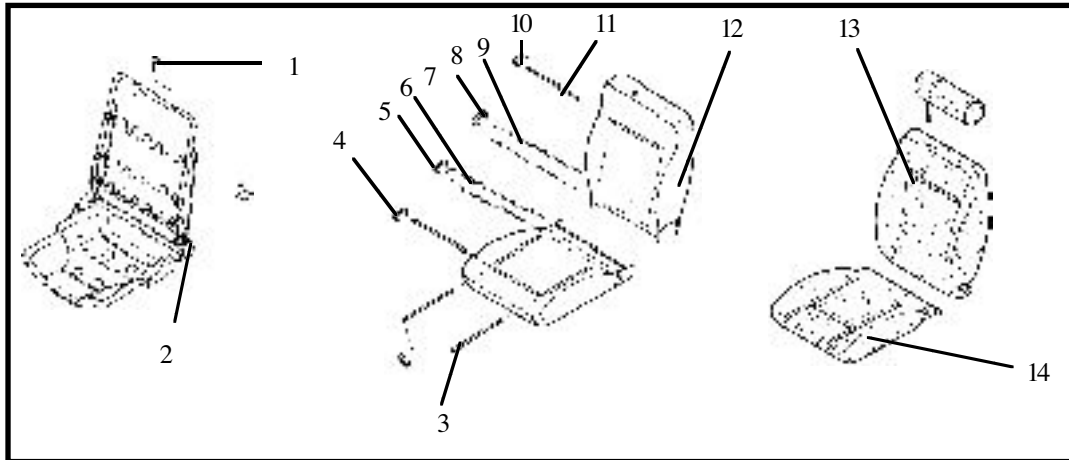
Take out the rods (3) from the seat upholstery (7) attachment clips (4) on the clothing (14).

Take out the rods (6) from the attachment clips (5) with the front seat armature.

**REMOUNTING**

Perform the dismounting operations in the reverse order.

FRONT SEAT TRIM BACKREST UPHOLSTERY



DISMOUNTING

Dismount the back rest control button (2) releasing the screw, the washer, the plate and the counter plate.

Remove the sleeves for the headrest from the pipes (1) welded on the front seat armature. Take out the rods (9) from the clips (8).

Take out at the second criss cross arch level the rod (11) from the attachment clips (10) of the back rest upholstery (12) on the clothing (13) and remove the back rest upholstery.

REMOUNTING

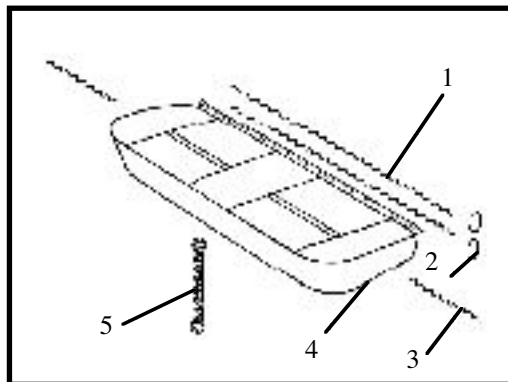
Perform the dismounting operations in the reverse order.

DISMOUNTING

Take out the rods (1) from the attachment clips (2) of the seat upholstery (4) with the seat clothing.

Dismount the rods (3) from the chains (5), consequently the attachment clips from the bench seat armature rod.

Remove the upholstery from the seat clothing.

**REMOUNTING**

Perform the dismounting operations in the reverse order.

REAR SEAT TRIM BENCHBACK RESTUPHOLSTERY

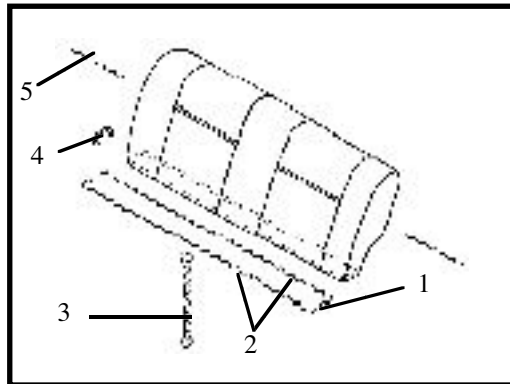
DISMOUNTING

Dismount the back rest plate from its plastic clips.

Take out from clips the rods (2) at the lower part and the side ends rods (1) from the clips (4)

Release the clipping rods (5) from the attachment with the back rest clothing, by means of the chains (3).

Remove the back rest upholstery from the bench back rest clothing.



REMOUNTING

Perform the dismounting operations in the reverse order.

BATTERY**CHECKING**

It is recommended to check the following:

- cracks or breaches of the battery box (case);
- the battery upper part cleanness;
- the plugs condition.

It is required to strictly check the following:

- lack of plugs sulfate composite;
- proceed, is necessary to their cleaning and greasing with neutral grease;
- check the correct wiring plugs tightening at the battery plugs. The existence of an imperfect contact may generate incidents at engine starting or at battery charging, sparks producing risk being possible to occur, which may cause the battery explosion;
- check the electrolyte level;
- check that aeration holes from the access plugs are closed.

For the batteries provided with access plugs, which may be dismantled, proceed as follows:

- remove the plugs;
- check the electrolyte level in each element;
- if necessary, refill the level, using only distilled water, till maximum 1.5 cm above the plates;
- check that aeration holes from the access plugs are not closed.

ATTENTION !

Never fill up with electrolyte, but only with distilled water.

PRECAUTIONS

It is important to know that:

- the battery contains sulfuric acid which is a dangerous substance;
- during battery charging, oxygen and hydrogen are produced, so check these hoses to be not closed. The mixture of these two gases is forming a detonate gas, which may lead to the explosion risk.

1. DANGER=ACID

The sulfuric acid solution is a very aggressive, toxic and corrosive product. This is attacking the skin, the clothes and may lead to the corrosion of most of the metals.

Also, it is very important, that, when you handle a battery, to consider the following precautions:

- protect the eyes by using protective glasses;
- wear anti-acid gloves and clothes.

ATTENTION !

In case of acid slashes on body, abundantly wash with water all affected parts. If eyes have been touched, urgently call for a doctor.

2. DANGER=EXPLOSION RISK

During battery charging, connected to a charger-rectifier, oxygen and hydrogen emissions are generated. These gases emission is stronger when the battery has reached the complete charge condition and the produced gas quantity is in direct connection with the charging current.

The oxygen and hydrogen are associating in the free spaces, at the plates surface, forming a detonate mixture, which is very explosive. The littlest spark is sufficient to generate an explosion, followed by the battery case brooking and acid splashing in the proximate environment. The persons, who are around, are in danger to be hurt by the exploded case chips or by the acid, which may come in contact with the eyes, hands, or face.

ATTENTION !

Strictly observe the following recommendations:

- before connecting or reconnecting a battery, ensure that all consumers are shouted off;*
- during battery charging in a room, using a charger-rectifier, turn it off before connecting or reconnecting the battery to this one;*
- do not place metallic objects on the battery for not producing a short-circuit between its plugs;*
- never bring closer to a battery, an open flame, a welding lamp or another fire source.*

THE ELECTRIC EQUIPMENT PROTECTION

In case of an intervention on the vehicle, some measures must be taken, for the electric equipment protection against damages or for avoiding a short-circuit that may lead to vehicle firing. The battery is to be all with disconnected by first disconnecting the negative plug and then the positive one. Connection is to be done by performing the disconnecting operations in the reverse order.

Before starter acting, check if the battery is correctly connected (the negative plug connected to the ground), and if the plugs are clean and well tightened. Never disconnect the battery when the engine is running, in order not to damage the voltage regulator, the alternator or some components of the vehicle checking electronic systems. The alternator, voltage regulator disconnecting, and the interventions at their connections, are to be performed only when the engine is stopped (the alternator is not turning) and the contact is taken off.

In case the battery is connected to a charger-rectifier, for charging (without dismantling the battery off the vehicle), it is obligatory to disconnect the wiring from the battery plugs.

DISMOUNTING

After identification and elimination of the real cause of the battery discharging, proceed as follows:

Dismount the attachment nut of the ground wiring from the minus plug of the battery.

Remove the plastic protector from the plus plug of the battery.

Dismount the attachment nut of the wiring from the plus plug of the battery.

Remove the duct air from the air filter.

Dismount the battery attachment clamp

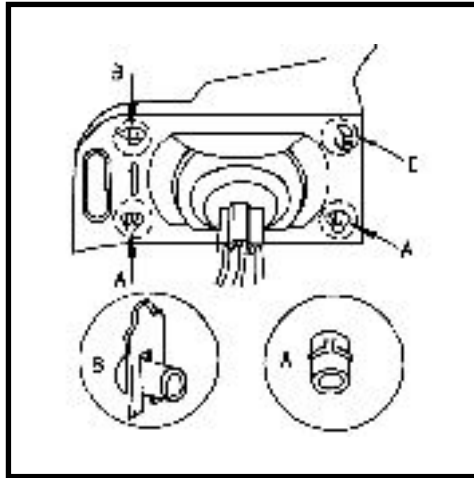
Carefully take off the battery.

REMOUNTING

Perform the dismounting operations in the reverse order. After that, reset the radio by introducing the radio code (if the vehicle is equipped with radio) and adjust the on board clock.

BATTERY-FRONT HEADLIGHTS

LIGHT UNIT AND INDICATOR



DISMOUNTING

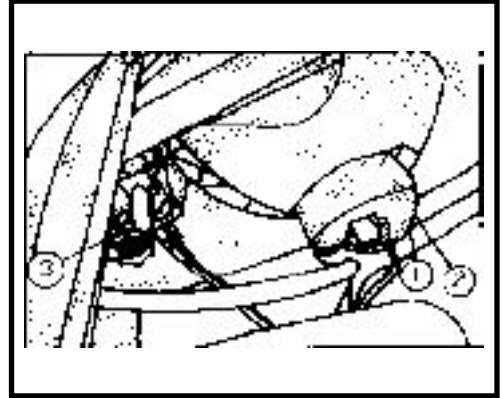
- Disconnect the battery.
- Remove the attachment clip from the headlamp adjustment device (B).
- Dismount the headlamp adjustment control screw (C).
- Disconnect the headlamp and turning lamp connectors.
- Push ahead the headlamp assembly.

REMOUNTING

- Insert by pressing the adjustment screws (A) of the headlamp assembly (by pushing the headlamp assembly towards the engine).
- Mount the headlamp adjustment control screw (C).
- Ensure the headlamp assembly by means of the attachment clip (B).
- Reconnect the battery and adjust the headlamp.

HEADLAMP BULB REPLACEMENT**DISMOUNTING**

Disconnect the connector (1).
Remove the rubber protector (2).
Release the attachment clamps sustaining the bulb.
Replace the bulb.

**REMOUNTING**

Perform the dismounting operations in the reverse order.

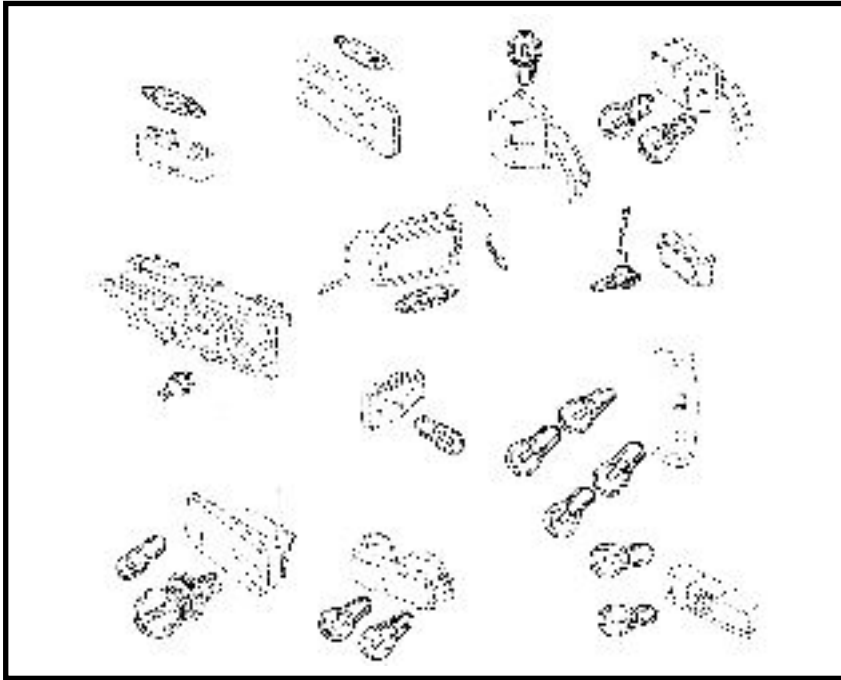
NOTE:

After replacement of the headlamp assembly or of the headlamp bulb, it is recommended the checking of its adjustment.

FRONT TURNING BULB REPLACEMENT**DISMOUNTING**

Disconnect the signaling lamp wires.
Rotate the holder (3) then remove it (pull).
Remove the bulb.
Place the holder (3) in the turning lamp, then fix it by rotating it.

TYPES OF BULBS



Headlamps	Two phases bulb R2-H, holder P45-41	12 V - 40/45 W
Front parking	Bulb T4W, holder BA9s	12 V - 4W
Front turning lamps	Bulb PY21W, holder BAU 15 s	12 V - 21W
Side signaling lamps	Bulb W5W, holder 2,1 x 9,5 d	12 V - 5W
Fog projectors	Bulb H3, holder P16225	12 V - 55W
Rear stop/parking lights	Bulb P 21/5W, holder BAY 15d	12 V - 21/5W
Rear turning lights, rear driving, rear fog lamps	Bulb P 21 W, holder Ba 15s	12 V - 21W
License plate lighting	Bulb R5W, holder Ba 15s	12 V - 5W
Ceiling lamps, document compartment lighting	Bulb C5W, holder SV 8.5	12 V - 5W
Instrument panel lighting and indicators	Bulb 12V - 1.2 W	12 V - 1,2W

FOGG PROJECTOR DISMOUNTING – REMOUNTING

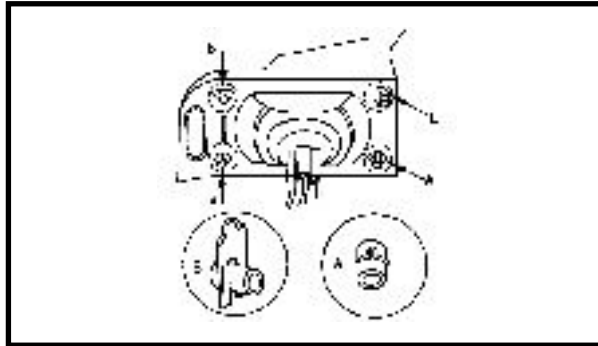
Disconnect the battery.

Detach the projector supply wires from the front wiring.

Dismount the attachment screws of the projector from front bumper.

Mounting is done by performing in the reverse order the dismounting operations.

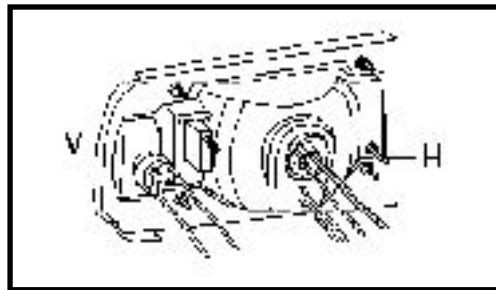
The DACIA pick up vehicles are equipped with two rectangular headlights.



The headlamps adjustment is performed observing the following conditions :

- the vehicle shall be placed on a horizontal surface;
- the vehicle shall be empty (without load or passengers on board)
- the tires shall be inflated at the prescribed pressure;
- the dynamic adjustment switch in position "empty" (without load – rotate it to the right).

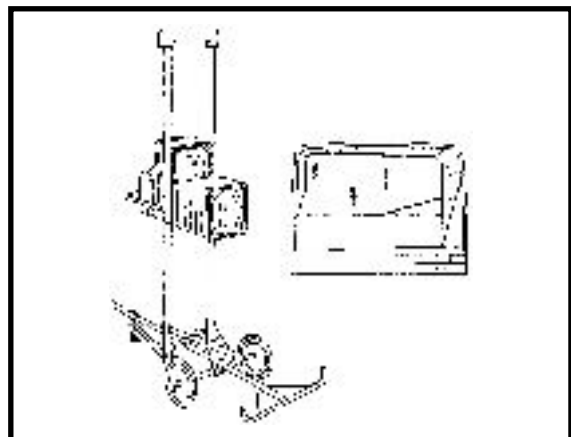
The adjustment is performed with a special headlamps adjustment device.



ADJUSTMENT OF MEETING LIGHTS (LOW BEAM)

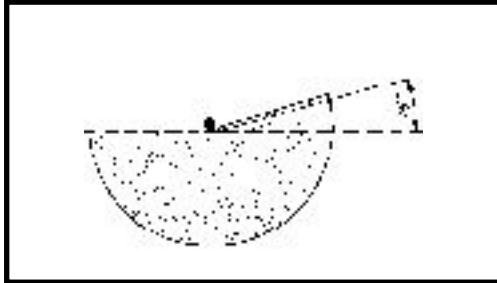
This is performed by actuating the screw (C) or (V) for adjustment in the vertical plan. By screwing up the light beam "descends" and by unscrewing it, the light beam "goes up".

Check if the lighted area is centered on the vertical axis of the adjustment device and if the separation between the lighted area and the dark one from the headlamps adjusting device, is coinciding with the marked line. It is admissible a 1-cm error.

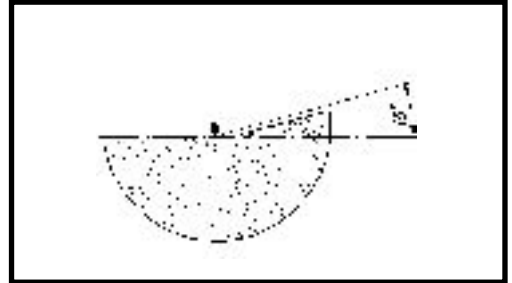


ADJUSTING BEAM HEIGHT

A lightening fascicle deviated to the left side is shown as in figure a, and a lightening fascicle deviated to the right is shown as in figure b.



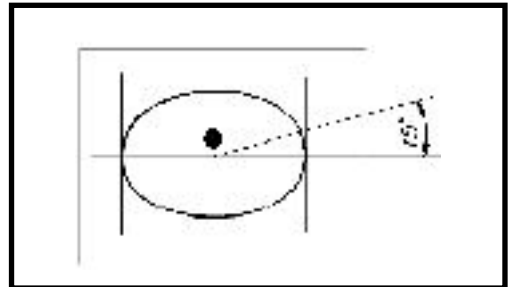
(figa)



(figb)

HIGH BEAM ADJUSTMENT (HIGH BEAM)

Check that the position to coincide with the adjustment made for the low beam, and the lightening fascicle shall be uniform distributed between the two vertically lines on the panel.



When checking the high beam, the lightening center of the ellipse must be situated on the cross sign marking the screen center.

If a major deviation compared to the short beam is noticed, it is recommended the replacement of the bulb, this one being in most of the cases responsible for this defect.

LICENSE PLATE LAMP MOUNTING – DISMOUNTING

Dismount the lamp glass, then the lamp body attachment screws on the carriage body.

Disconnect the lamp from the vehicle wiring.

For remounting, perform the dismounting operations in the reverse order.

REAR LAMP MOUNTING – DISMOUNTING

Dismount the screws attaching the glass (Dacia 1304 pick-up)

Dismount the screws attaching the lamp body on the carriage body (Dacia 1304 Pick-up)

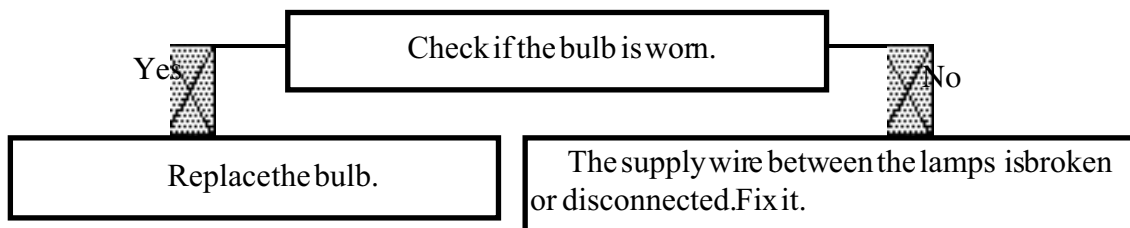
Dismount the nuts attaching the lamp body on the carriage body (Dacia 1304 Drop-Side).

Disconnect the lamp from the vehicle wiring.

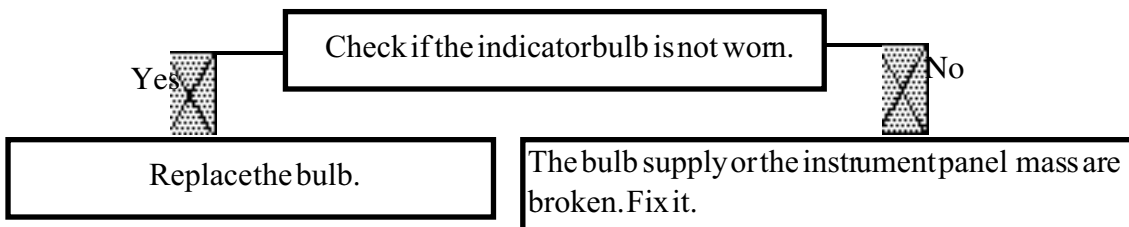
For remounting, perform the dismounting operations in the reverse order.

FOGLAMP DEFECTS DIAGNOSTIC - INTERPRETATION

THE REAR FOGLAMP IS NOT WORKING



THE REAR FOGLAMP IS WORKING;
THE INDICATOR IS NOT WORKING

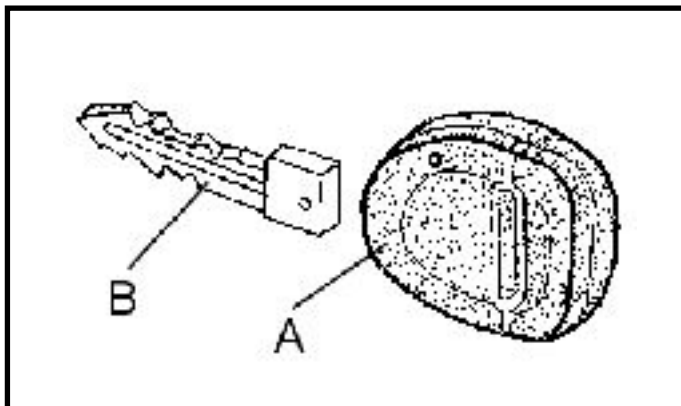


HORN - ENGINE IMMOBILISER

SPECIFICATION

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This type of anti starting system is based on the key recognition, which has a special construction. It may be separated in two elements which can be identified in the following way : the key head (picture A.) made of plastic, which can be dismounted and the metal insertion (picture B.), which is fixed and ensured by clipping in the key head.



Inside the key head, there is a coded independent electronic circuit, which is functioning without battery. When setting the contact on, the anti starting bushing, placed around the starting contact, is enquiring and catching the coded signal emitted by the key head, then sends it to the Electronic Control Unit (ECU) decoder. This one is attached on the right wall of the left side table, placed under the dashboard and has the function of receiving the code sent from the bushing. If the decoder recognises the key code then it will send a coded signal to the injection computer, which compares it with the previous memorised code and will authorise or not the start of the engine.

The anti starting system is activated after approximate 10 seconds from setting off the contact and is visualised by the blinking of the anti starting indicator placed on the instrument panel.

ATTENTION !

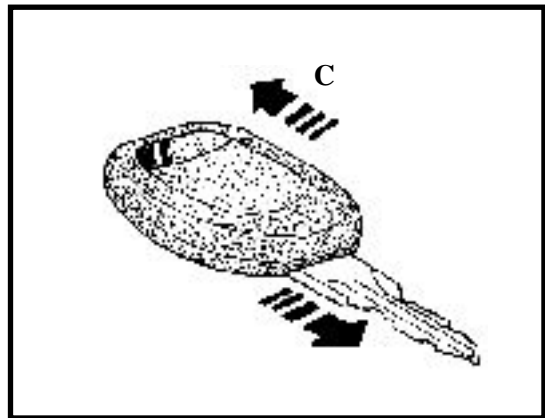
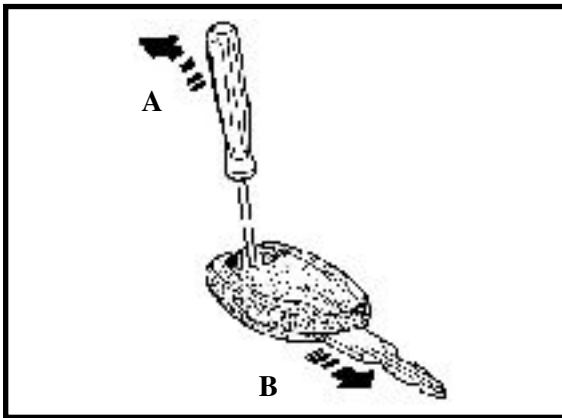
If the battery is low charged, the tension drop on the starter, at starting, may cause the activation of the anti starting system and the start of the engine is impossible.

THE KEY HEADS

The key head has marked inside, a number of identification, formed by 8 alphanumeric characters (letters and figures) and this one is mentioned on the vehicle's invoice.

If the reading of the code marked inside the key head is necessary, this can be opened as follows:

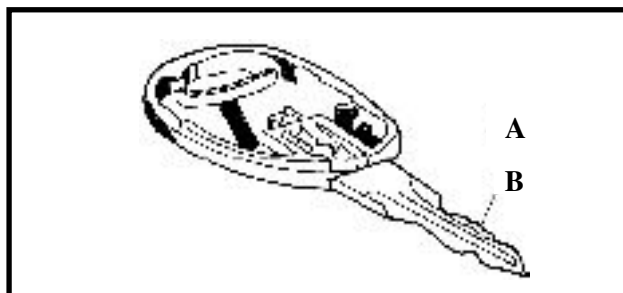
- keep the key in horizontal position, the half with the metal insertion being downwards ;
- with a little screwdriver, act upon the key head in the direction indicated by the arrows (A) and (B), in order to begin the dismantling.
- move carefully the upper side of the key in the direction indicated by the arrow (C) then the two parts of the key will separate.



If the replacement of the metal insertion (the mechanical part) of the key is needed, proceed as follows :

- open the key head according to the a.m. procedure ;
- unlock carefully the maintaining claw (A) of the metal insertion (B).
- remove the metal insertion by sliding from the key head.

introduce by sliding the new metal insertion until a « click » is heard, which confirms its attachment on the key head.

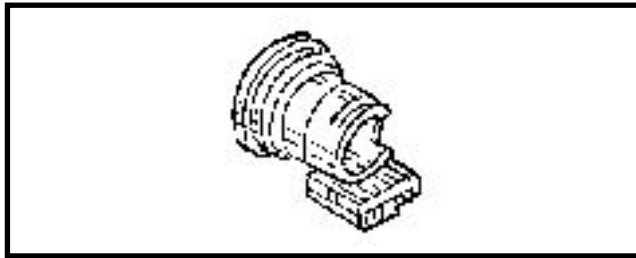


ATTENTION !

After dismantling the key head, it is forbidden to touch the electric circuit located inside of it, as this can cause the further non-operation of the anti starting system and impose a replacement of the key head.

NOTE :

In case both keys were lost, the code of the key head (8 characters) and the code of the metal insertion (4 characters) can be read from the vehicle invoice. If also the invoice was lost, the two mentioned codes can be found out based on the chassis series number of that vehicle, accessing the database of the DACIA manufacturer, calling the TECH LINE.

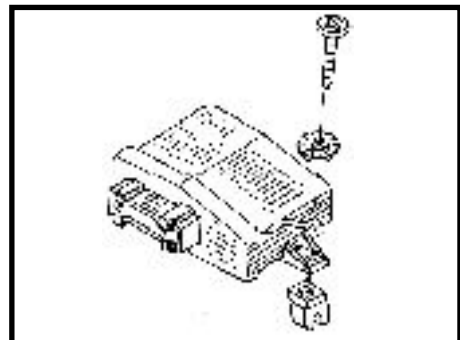
ANTISTARTING BUSHING

The anti starting bushing is located around the starting contact and is accessible after the dismounting the steering wheel's cases. It catches the signal from the key head and then sends a coded signal to the ECU decoder.

ECU DECODER

The ECU decoder has the following functions :

- decoding the signal received from the anti starting bushing ;
- sending a code to the injection computer in order to authorise the engine starting.
- controlling the anti starting indicator of the instrument panel
- controlling the dome light of the ceiling lamps, for the vehicles provided with this system.

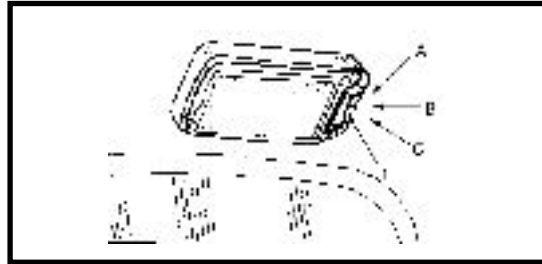


HORN - ENGINE IMMOBILISER SPECIFICATION

The ceiling dome light is activated subject to the position of its switch (1)

- position A the ceiling lights permanently
- position B the ceiling turned off
- position C ceiling dome light; this will light for 10 seconds after a door closing.

This timing turns out in the moment of setting the contact.



ANTISTARTING INDICATOR

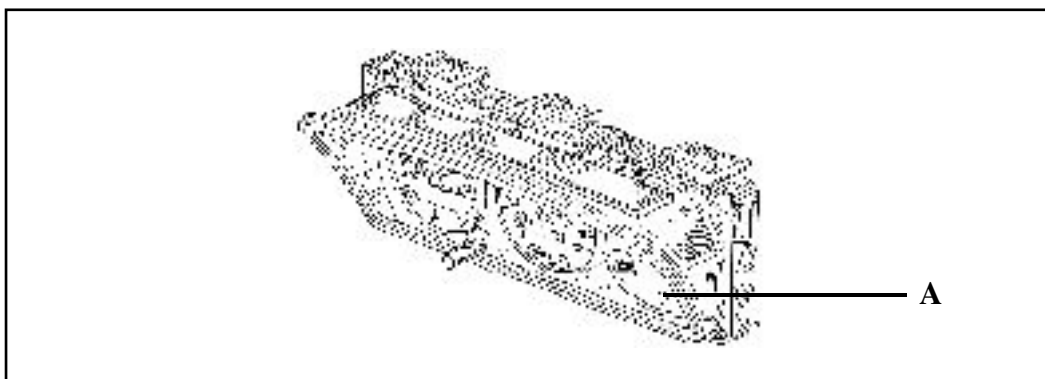
It is located on the instrument panel and has the following functions:

- signal the activation of the anti starting system
- signal the case of non identifying the key head

When the contact is off and the anti starting system is activated, without any existing failure, the anti starting indicator (A) must blink slowly (a blink per second).

After setting the contact on, the anti starting indicator must light for 3 seconds and then turn off.

If after setting the contact on, the anti starting system doesn't work properly, then the anti starting indicator will blink rapidly (2 blinks per second).



ONE KEY HEAD REPLACEMENT

After ordering a new key head, based on the alphanumeric code mentioned on the invoice, dismount the old key head and remove the metal insertion (mechanical part), then introduce the old metal insertion in the new key head according to the previously mentioned procedure.

ECU DECODER REPLACEMENT

All the new decoders, are not coded. After the mounting on the vehicle it is necessary the memorisation of the key head code by the decoder in order to be operational. If only the decoder is replaced, no intervention is necessary to the injection computer, which will keep the old anti starting code. If further to the diagnostic of the anti starting system, using the CLIP tester, the replacement of the decoder is imposed, proceed as follows:

- disconnect the front wiring connector from the ECU. decoder (the contact being off);
- dismount the attachments screws of the E. C. U. decoder on the left board table, placed under the dashboard;
- mount the new ECU decoder;
- connect the front wiring to the new ECU decoder.

Proceed then to the insertion of the anti starting code using the contact key, then to its memorising (validation) in the ECU decoder, using the CLIP tester. For this purpose, perform the “ECU decoder replacement procedure and anti starting code memorising”. Check then the correct operation of the anti starting system with both keys.

ATTENTION!

Once the decoder has memorised the keys code, this code cannot be erased or replaced with another one.

If it is necessary the replacement of the kit (ECU decoder and two key heads), then the “Kit replacement procedure” must be performed.

ANTI STARTING BUSHING REPLACEMENT

If further to the diagnostic, using the CLIP tester, it is established the necessity of the replacement of the anti starting bushing, proceed as follows:

- dismount the attachment screws of the steering wheel casing;
- remove the steering wheel upper casing;
- disconnect the anti starting bushing connector from the front wiring;
- remove the bushing;
- mount the new bushing outside the starting contact (anti theft mechanism);
- connect the bushing connector to the front wiring;
- mount the steering wheel casings;
- check the operation of the indicator and the anti starting system when the contact is off, then with the contact on and then with the engine started.

ELECTRIC CONTROL UNIT INJECTION REPLACEMENT

If further to the diagnostic using the CLIP tester, it is necessary the replacement of the ECU (computer) injection, for its dismantling proceed as follows:

- disconnect the battery (the contact being off);
- disconnect the injection computer from the engine wiring;
- dismount the two attachment nuts of the injection computer.

For mounting perform in the reverse order the dismantling operations.

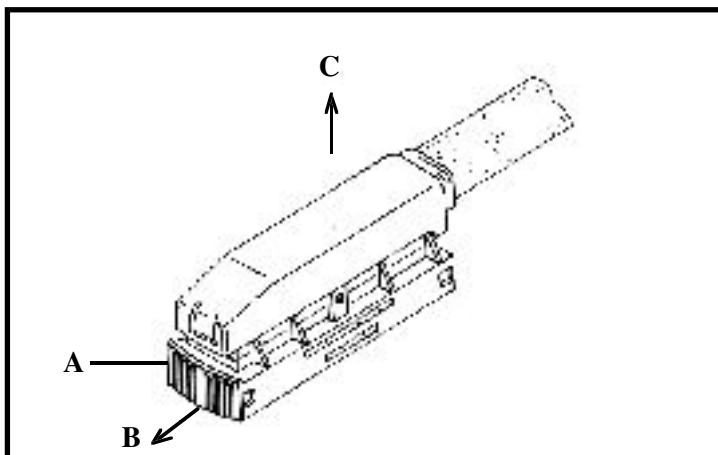
The injection computer is delivered not coded. It is necessary the memorising of an anti starting code in the computer, after this has been mounted.

Proceed as follows:

1. Set the contact on, without starting the engine, for 5 seconds.
2. Set off the contact; after 10 seconds, the anti starting function is activated, and the anti starting indicator will blink rarely (one blink per second).
3. Set the contact on. The anti starting indicator must turn off and the engine can be started.

In order to disconnect the injection computer (ECU injection) act upon the blocking lever (A) of the connector in the direction of the (B) arrow, then the connector will be lifted in the direction of the (C) arrow.

In case the vehicle is blocked on the road further to serious failure of the anti starting system, the "Procedure repairing code introduction" may be used, which allows the moving of the vehicle to the nearest DACIA service center, for complete repairing. In order to perform this procedure, the CLIP tester and the specific repairing code of that vehicle are needed.



**A. REPLACEMENT PROCEDURE OF ELECTRONIC CONTROL UNIT
DECODER AND MEMORISATION OF IMMOBILISER CODE**

The new ECU decoder is always not coded. After its mounting on the vehicle it is necessary that this one is memorising the anti starting code in order to be operational.

NOTE:

If only the ECU decoder is replaced, there is no need of an intervention to the ECU injection (injection computer), which will keep the old anti starting code.

ATTENTION!

After the ECU decoder memorised the anti starting code, this code cannot be erased or replaced with another one.

In order to perform this procedure, one of the keys of the vehicle and the CLIP tester are needed. Perform as follows:

1. Connect the CLIP tester to the diagnostic socket and to the battery (or the lighter socket) of the vehicle.

2. Read the configuration of the old ECU decoder in the following way, before dismantling it from the vehicle:

- select the vehicle type and the equipping level corresponding to this vehicle
- enter the menu "COMPUTER TEST" then choose "ANTI STARTING"
- access "COMMAND MODE" then "CONFIGURATIONS READING"
- note the configurations found: gasoline, programming with one or two keys, ceiling dome light etc

3. Get back to the menu "TEST COMPUTERS"

4. Remove the old ECU decoder and replace it with a new one, the contact being off.

5. Enter the menu "ANTI STARTING", then select "STATE LIST". If the ECU decoder is new, you must find the following states:

18G FIRST KEY MEMORISING..... PASSIVE
19G NOT PERFORMED KEY PROGRAMMING..... ACTIVE
19D UNLOCKED KEY PROGRAMMING..... ACTIVE

OBSERVATION:

If the states 19G and 19D are not "ACTIVE" this means the ECU decoder has been already used, so it isn't new and cannot memorise another anti starting code.

6. Access the menu "COMMAND MODE" and then "CONFIGURATION", where you will configure the new ECU decoder in the same way as the old one: ENGINE, 1 key, ceiling dome light, etc. selecting one by one these configurations, which you'll validate with "CLICK" on the blue button on right top of the screen.

**A. REPLACEMENT PROCEDURE OF ELECTRONIC CONTROL UNIT
 DECODER AND MEMORISATION OF IMMOBILISER CODE**

7. Get back to "TEST COMPUTERS"
8. Set the contact on for 2 seconds in "M" position, without starting the engine. The anti starting indicator will begin to blink rapidly
9. Access the menu "STATE LIST", where the following states must exist:

9D RECEIVED KEY CODE	ACTIVE
19G NOT PERFORMED KEY PROGRAMMING	PASSIVE
10. Set the contact off. In the menu "COMMAND MODE" select "ACTUATORS", then validate "FINISHED CALIBRATION" launching the command on the blue rectangle situated on the right top of the screen. The message "COMMAND IN PROGRESS" will appear, followed by "FINISHED COMMAND".
11. The anti starting indicator will blink rarely
12. Get back to the "STATE LIST", which now, must be like that:

18G FIRST KEY MEMORISING	ACTIVE
19G NOT PERFORMED KEY PROGRAMMING	PASSIVE
19D UNLOCKED KEY PROGRAMMING	PASSIVE
13. Set the contact in "M" position for 2-3 seconds in order to send the code to the ECU injection. The anti starting indicator must light for 3 seconds, then turn off.
14. Set off the contact. After 10 seconds, the anti starting indicator will blink rarely.
15. Check the engine starting with both keys, and then set the contact off.
16. Check in the menu "STATE LIST" if the state 10G "ANTI STARTING" is "ACTIVE". Perform the synchronisation of the TRF remote control with the decoder (with 1 or 2 keys).

OBSERVATION:

With the CLIP tester, a starting interdiction may be simulated, proceeding as follows:

- set the contact off; wait for 10 seconds, then the anti starting indicator will blink (one blink per second).
- in the menu "COMMAND MODE" access "ACTUATORS" then validate "FORCED PROTECTION MODE" launching the command from the blue button situated on the right topside of the screen. "COMMAND IN PROGRESS" will be displayed and then "FINISHED COMMAND".
- in the menu "STATE LIST" search for the state 10G "ANTI STARTING", which must be "ACTIVE";
- set the contact on "M" position; the anti starting indicator will blink rapidly, and the engine starting is impossible;
- remove the key from the contact and check then the engine starting with both keys, so the procedure is finished.

B. REPLACEMENT PROCEDURE OF KIT
(ELECTRONIC CONTROL UNIT DECODER AND TWO KEY HEAD)

In case of one kit replacement perform the following steps:

- memorising the anti starting code by the ECU decoder
- memorising of the new anti starting code by the injection computer, it is necessary the repairing code (found out based on the old key heads code) and the CLIP tester.

Perform the actions in the following sequence:

1. Mount the metal insertions of the old keys to the new key heads.
2. Send to Tech Line the key heads code, written on the vehicle invoice, in order to get the repairing code.
3. Connect the CLIP tester to the diagnostic socket and to the battery (or to the lighter socket) of the vehicle. Read the configuration of the old ECU decoder before dismounting off the vehicle, as follows:

- select vehicle type and the corresponding equipping level;
 - enter the menu "COMPUTER TEST" then choose "ANTI STARTING"
 - access "COMMAND MODE" then "CONFIGURATIONS READING"
 - note the configurations found: diesel, programming with two keys, ceiling dome light, etc
4. Get back to the menu "ANTI STARTING";
 5. Dismount the old ECU decoder and replace it with a new one, the contact being off.
 6. Check the configuration of the new ECU decoder selecting "STATE LIST"; here you must find the following states:

18G FIRST KEY MEMORISING.....PASSIVE
19G NOT PERFORMED KEY PROGRAMMINGACTIVE
19D UNLOCKED KEY PROGRAMMINGACTIVE

NOTE:

If the state 19G and 19D are not "ACTIVE" this means the ECU decoder is not a new one and cannot memorise another anti starting code.

7. Set the contact in "M" position with one of the keys (without starting the engine), for about 2 seconds and then check the following states, which must be:

9D RECEIVED KEY CODEACTIVE
19G NOT PERFORMED KEY PROGRAMMING ACTIVE

8. Set the contact with the second key (without starting the engine) for about 2 seconds. Check then the following states:

- case (a)- the second key belongs to the vehicle;

9D RECEIVED KEY CODE.....ACTIVE
19G NOT PERFORMED KEY PROGRAMMING PASSIVE

**B. REPLACEMENT PROCEDURE OF KIT
(ELECTRONIC CONTROL UNIT DECODER AND TWO KEY HEAD)**

- case(b)- the second key does not belong to the vehicle or the first key was used once again

- 9D RECEIVED KEY CODE PASSIVE
- 19G NOT PERFORMED KEY PROGRAMMING ACTIVE

9. The anti starting indicator blinks rapidly.

10. Set off the contact. In the menu "COMMAND MODE" select "ACTUATORS" and validate "FINISHED CALIBRATION" launching the command on the blue rectangle situated on the right top of the screen. The message "COMMAND IN PROGRESS" will appear, followed by "FINISHED COMMAND".

11. The anti starting indicator will blink rarely

12. Get back to the "STATE LIST", which now must be as follows:

- 18G FIRST KEY MEMORISING ACTIVE
- 19G NOT PERFORMED KEY PROGRAMMING PASSIVE
- 19D UNLOCKED KEY PROGRAMMING PASSIVE

13. In the menu "COMMAND MODE" choose "ACTUATORS" Select the command "FORCED PROTECTION MODE" launching the command from the blue button situated on the right topside of the screen. The display will show "COMMAND IN PROGRESS" and then "FINISHED COMMAND".

Get back to the "STATE LIST" and check the state:

- 9G FORCED PROTECTION MODE ACTIVE

14. Set the contact on "M" position. The anti starting indicator will start to blink rapidly. Check in the "STATE LIST" if the state "ANTI STARTING" is "ACTIVE".

15. In the menu "COMMAND MODE" access "ACTUATORS", then select the command "MANUAL INTRODUCTION CODE". Type the four figures of the repairing code, then validate with the key "ENTER". On the screen the message "COMMAND IN PROGRESS" will appear and then "FINISHED COMMAND".

16. Set off and then set on again the contact, without starting the engine, in order to send the new anti starting code to the injection computer. The anti starting indicator will light for 3 seconds, and then it will turn off.

17. The procedure is finished. Check the engine starting with both keys.

C. PROCEDURE FOR ENTERING THE SECURITY CODE

The repairing code may be introduced only by the means of the CLIP tester. This is possible only if when setting the contact on, the anti starting indicator blinks rapidly, this being confirmed by the state:

10G ANTI STARTINGACTIVE

After getting from DACIA database the repairing code (based on the code from the vehicle's key head), perform the following operations.

1. Connect the CLIP tester to the diagnostic socket and to the battery (or to the lighter socket) of the vehicle.

2. The anti start up indicator must blink rarely (one blink per second), the contact being set off.

3. Set the contact in "M" position. The indicator must blink rapidly (two blinks per second).

4. Select vehicle type and the corresponding equipping level;

5. Select the menu "COMPUTER TEST" then choose "ANTI STARTING".

6. In the menu " STATE LIST" find the state 10G "ANTI STARTING" which must be "ACTIVE".

7. Access "COMMAND MODE" then select "ACTUATORS".

8. Select the command "MANUAL INTRODUCTION CODE" where you will write the repairing code (formed of 4 figures), then validate it with the key "ENTER". The message "COMMAND IN PROGRESS" will be displayed followed by the message "FINISHED COMMAND".

9. Now the procedure is finished and you may start the vehicle engine.

ATTENTION!

You may perform three attempts of repairing code introduction; if after the third attempt the code is not valid, wait for 15 minutes, set off the contact and then put it again, other three attempts being allowed.

NOTE:

This procedure does not decode the injection computer, but allows only the start of the vehicle's engine. After ten minutes have passed from the first introduction of the repairing code or after the disconnection of the battery, the vehicle's engine cannot be started unless a new repairing code is introduced.

1. FAILURE OF COMMUNICATION CLIP TESTER/ ECU DECODER

RECOMMENDATION	Check if the lines K and L are not disturbed by another computer of the vehicle.
-----------------------	--

Check the F08 fuse condition from the cockpit fuse box.

Replace the fuse if necessary.

Check if the CLIP tester is not the cause of the failure; check if the tester communicates with another computer of the same vehicle (injection computer).

Measure the tension of the vehicle's battery ($U > 10,5V$). If necessary, charge the battery.

Check if the ECU decoder is well connected to the vehicle's wiring.

Check the right supply of the ECU decoder:

- presence of the mass at pin A8 of the ECU decoder
- supply + I.C. at pin A9 of the ECU decoder

Be sure that the diagnostic socket is properly supplied, according to the circuit diagram.

Check the continuity and the isolation of the electric wiring on the corresponding pins layout.

ECU decoder $\left\{ \begin{array}{l} A3 \rightarrow 7 \\ A4 \rightarrow 15 \end{array} \right\}$ diagnostic socket

If the connection tester CLIP – ECU decoder can't be established, then replace the decoder.

AFTER REPAIRING	After establishing the communication with the tester, fix the possible failures. Perform a conformity checking
------------------------	---

2. STATE 4D: + 12V (+DC) SUPPLY, EXISTENT

RECOMMENDATION	Observation : - 4D state= ACTIVE when the contact is on “M” position - 4D state= PASSIVE when the contact is not on “M” position
-----------------------	--

	Check the F09 fuse condition from the cockpit fuse box. Replace the fuse if necessary.
	Place the contact on “M” position and check the presence of +12V at the pin A7 of the ECU decoder. Is there +12V?

YES	Replace the ECU decoder if it can not be realised its communication with the tester.
------------	--

NO	Repair the electric wiring on the supply layout to the pin A7 of ECU decoder.
-----------	---

AFTER REPAIRING	Perform a conformity checking. Check the operation of the anti starting system.
------------------------	--

3. FAILURE: MISSING SIGNAL ON THE CODED LINE ECU DECODER-COMPUTER INJECTION

RECOMMENDATION	-
-----------------------	---

Check the continuity and the isolation related to the mass and + 12 V of the wiring between the ECU decoder in A6 → pin 20 injection computer.
Fix if necessary.

Set the contact on and perform the detection test by the CLIP tester at pin A 6 of the ECU decoder.
Are there any impulses?

YES	Replace the injection computer.
------------	---------------------------------

NO	Replace the ECU decoder.
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AFTER REPAIRING	Remove the memorised failures by means of the CLIP tester. Perform a conformity test. Check the operation of the anti starting system.
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4. FAILURE : DEFECTIVE COMMUNICATION ANTI STARTING SYSTEM - ECU DECODER

RECOMMENDATION	-
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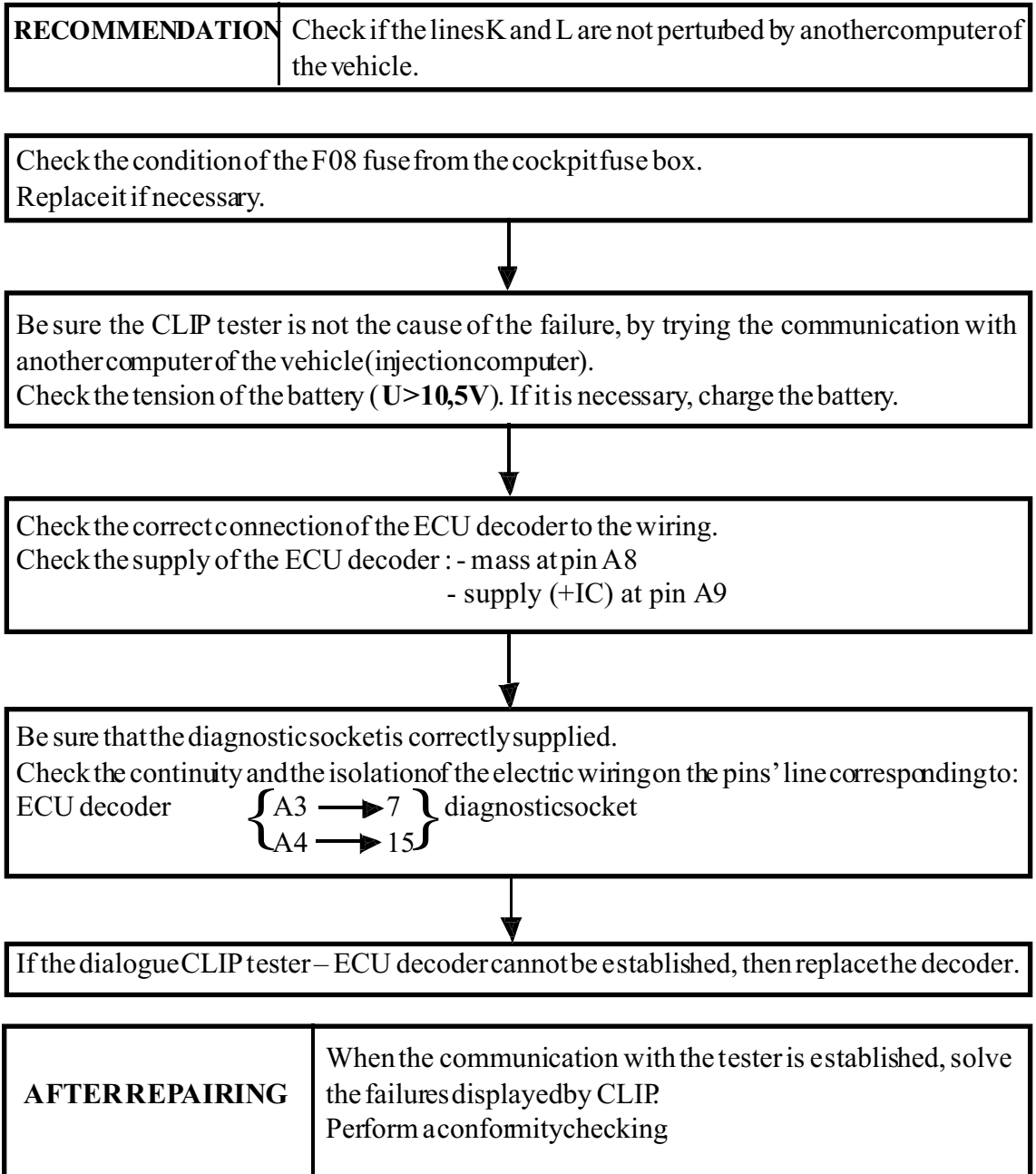
<p>Check the continuity and the isolation related to the mass and + 12 V voltage of the wiring between the anti starting system pin 4 → pin A2 ECU decoder Fix if necessary.</p>
<p>Check the anti starting bushing supply : + 12V to the pin 3 and the mass to pin 2.</p>
<p>Disconnect the ECU decoder and measure the presence of +12 V to the pin A2 of the decoder, the contact being set off. If there it isn't +12 V, check the F08 fuse condition from the cockpit fuse box. If the problem persists, replace the anti starting bushing.</p>
<p>Set the contact on and perform the impulse detection test at the pin A2 of the ECU decoder. Is there an impulse ?</p>

YES	Replace the anti starting bushing.
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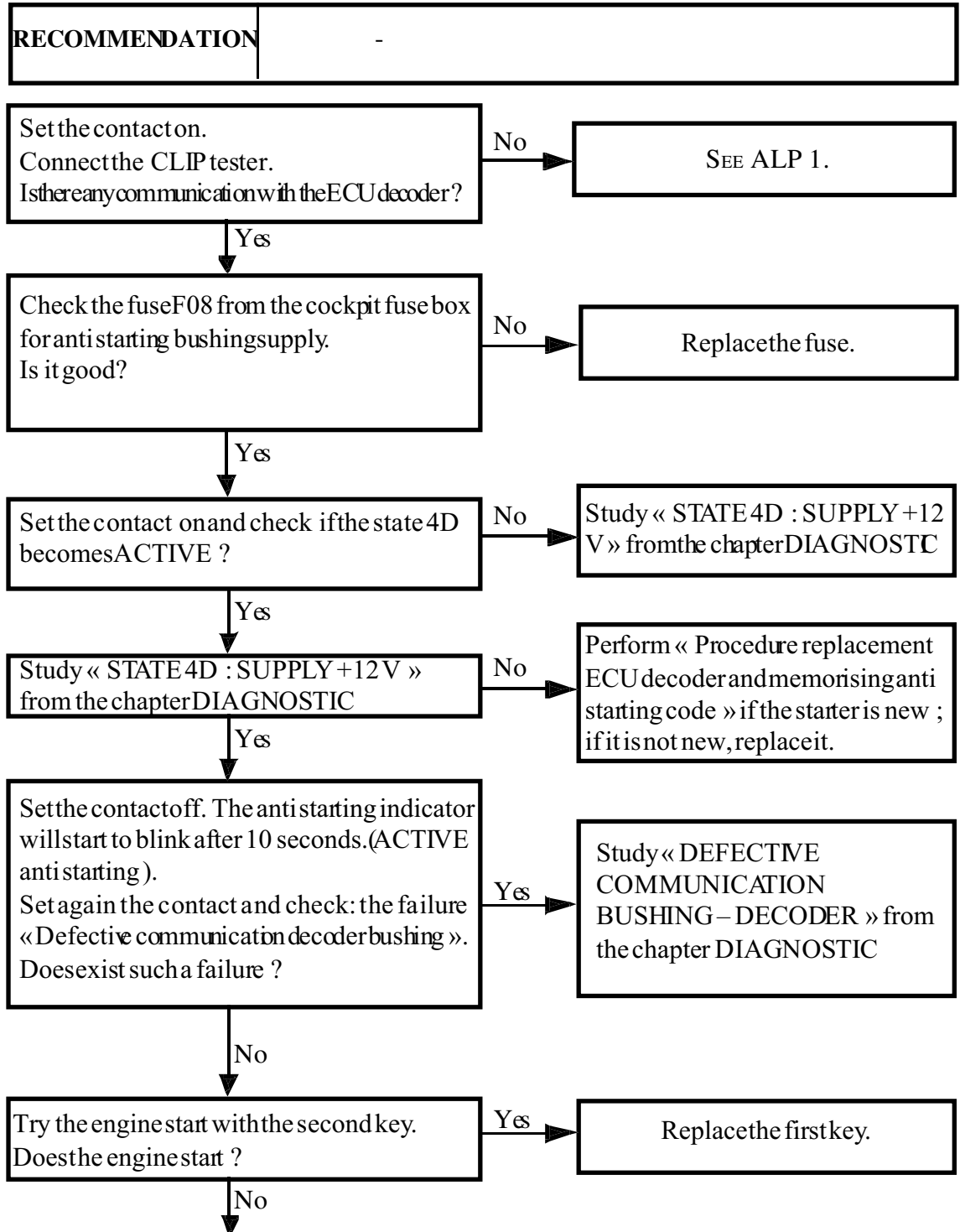
NO	Replace the ECU decoder.
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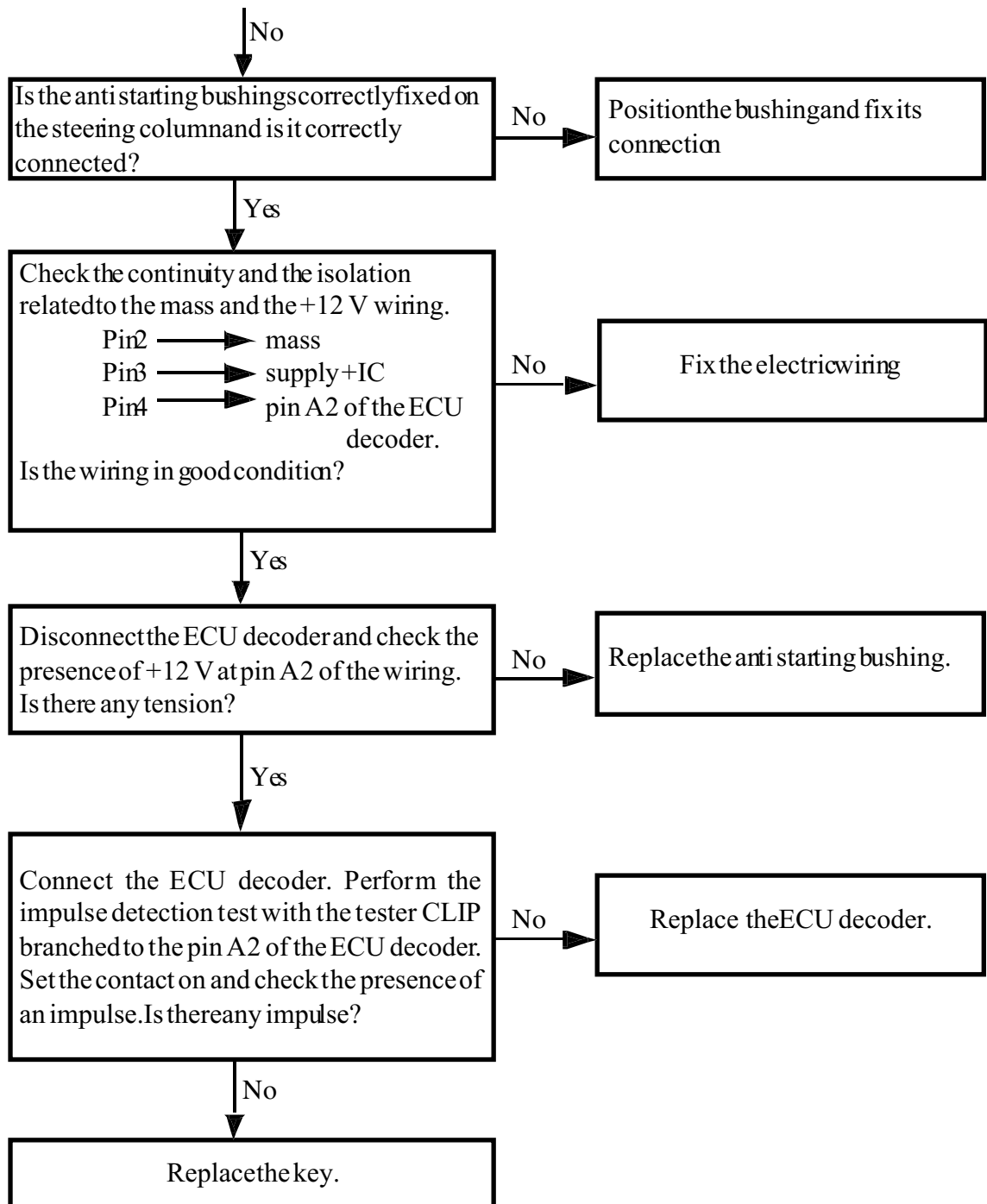
AFTER REPAIRING	<p>Remove the memorised failures by means of the CLIP tester. Perform a conformity test. Check the operation of the anti starting system.</p>
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ALP1. MISSING COMMUNICATION CLIPTESTER/UCR DECODER



**ALP2. CONTACT SET ON. THE ANTI STARTING INDICATOR BLINKS.
(ENGINE NOT STARTING)**





ALP3. THE ANTI STARTING INDICATOR REMAINS PERMANENTLY LIGHTED (even when the contact is set off) OR IT REMAINS PERMANENTLY TURNED OFF.

RECOMMENDATION	Check if the "Procedure ECU decoder replacement" was correctly performed
-----------------------	--

Check the fuse F08 condition from the cockpit fuse box. Is the fuse good?	No	Replace the fuse.
--	----	-------------------

Yes

Check the continuity and the isolation related to the mass, between the pin A 5 of the ECU decoder and the instrument panel. Is the wiring good?	No	Replace the wiring.
---	----	---------------------

Yes

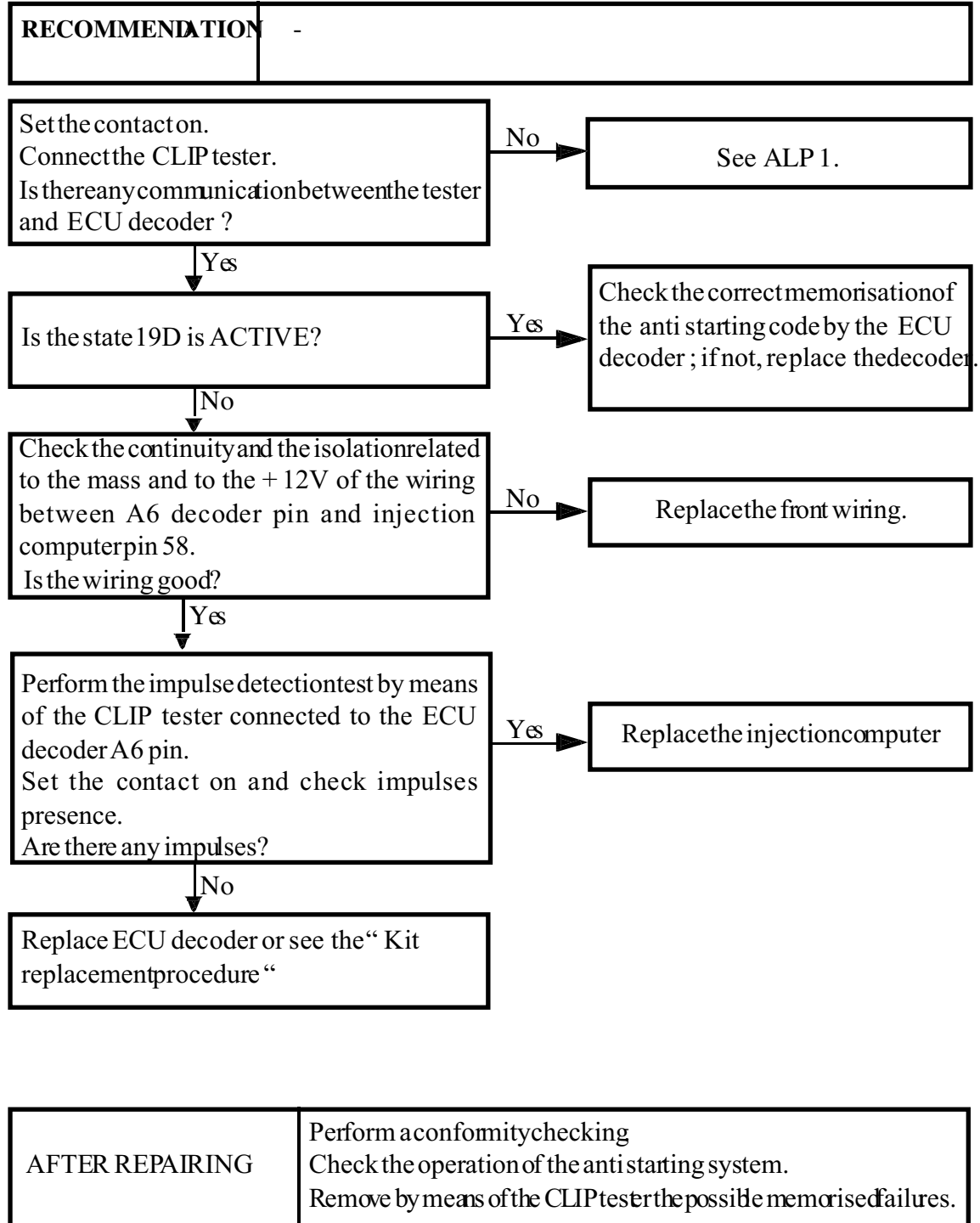
Perform the following tests in order to find the failure element: - if the anti starting indicator is permanently lighted, disconnect the connector of the ECU decoder and check if the indicator is turning off; - if the anti starting system is turned off, connect the pin A5 of the wiring connector from the ECU decoder to an electric mass and check if the indicator turns on. Are the answers affirmative?	No	Replace the instrument panel
---	----	------------------------------

Yes

Replace the ECU decoder.

AFTER REPAIRING	Perform a conformity checking Check the operation of the anti starting system. Remove by means of the CLIP test the possible memorised failures.
------------------------	--

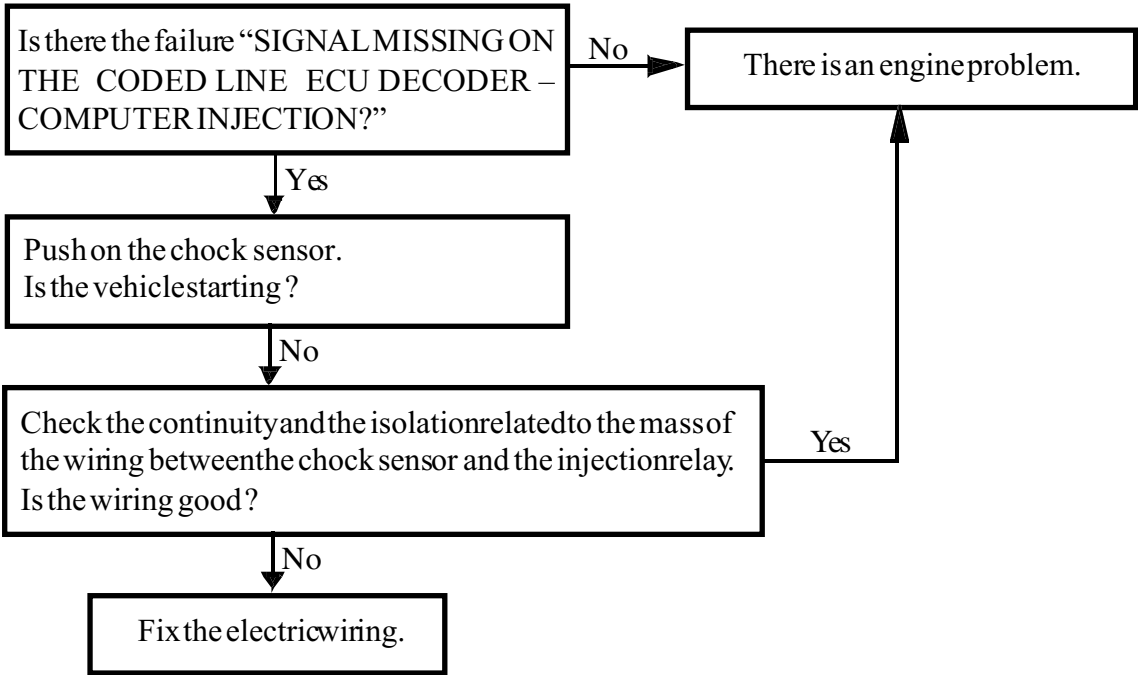
ALP4. CONTACT ON. THE ANTI STARTING INDICATOR BLINKS QUICKLY (engine not starting)



**HORN - ENGINE IMMOBILISER
FAULT FINDING CHART**

ALP5. VEHICLE NOT STARTING

RECOMMENDATION	-
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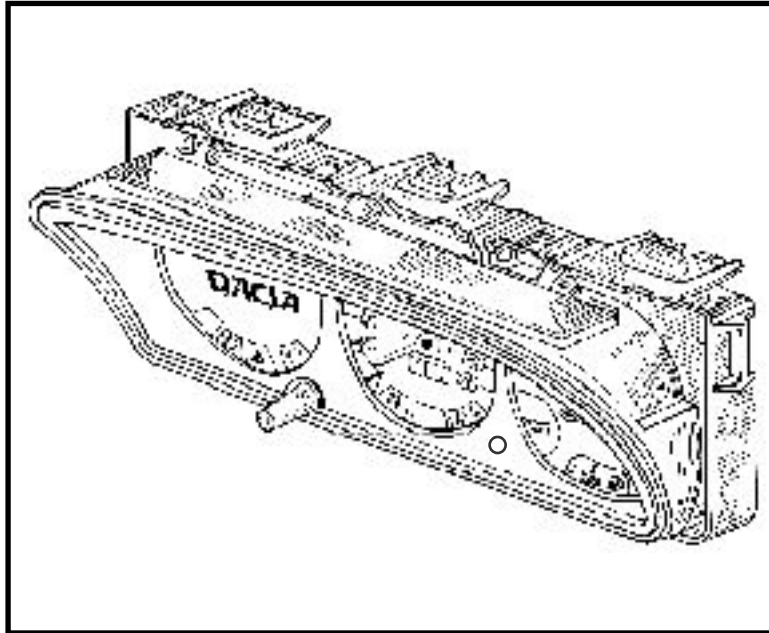


AFTER REPAIRING	Perform a conformity checking Check the operation of the anti starting system. Remove by means of the CLIP tester the possible memorised failures.
------------------------	--

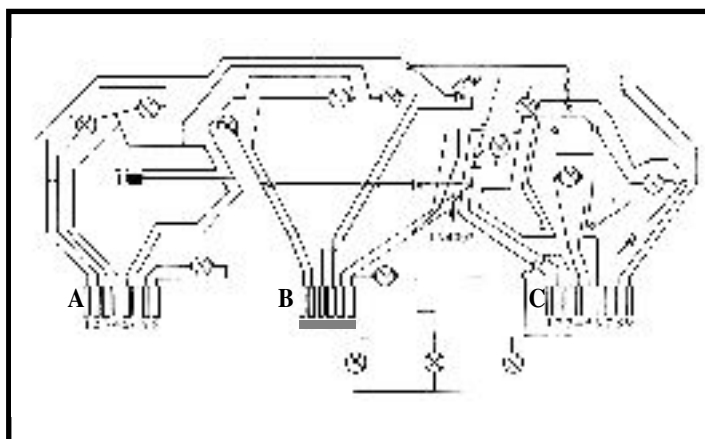
Next, the checking of different states and configurations of the anti starting system is to be performed.

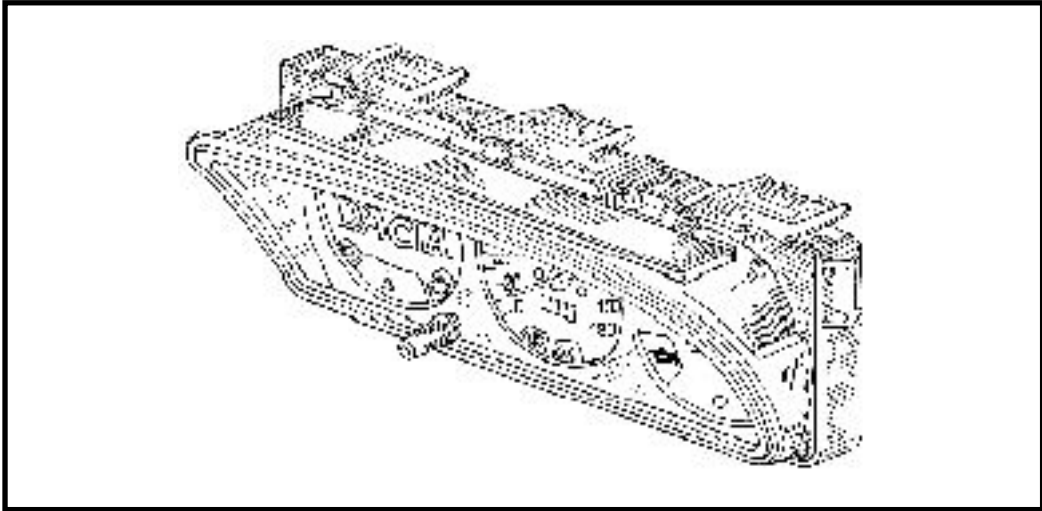
RECOMMENDATION	In case of finding some failures at the diagnostic by means of CLIP tester, analyse them based on the diagnostic (ALP) corresponding to the respective failure.
-----------------------	---

Crt. Nr.	Function	State / configuration	Observations
1.	Conformity E.C.U decoder	Computer identification	Display of the ECU decoder item.
2.	Remote control type	-	-
3.	Ceiling dome light	Without ceiling dome light or with ceiling dome light	Validation on the blue button on CLIP screen.
4.	Key programming	-	-
5.	Configuration diesel	3D = configuration coded diesel electric valve.	Without = for diesel engine without coded diesel electric valve
6.	Forced starting protection	9D = forced protecting mode	ACTIVE = only after validation on the blue button.
7.	Anti starting state	10G = anti starting	ACTIVE = with the contact set off or after 10 seconds from the contact set off.
8.	Key presence	8D = key present	ACTIVE at the setting on the contact if there is a coded key. NOTE: the states 8D, 9D, D must be ACTIVE at a correct operation.
9.	Code key receiving	9D = received key code	ACTIVE at the setting on the contact if the coded key and the ECU decoder are good
10.	Correct key code	10D = right key code	ACTIVE at the setting on the contact if the key is coded in a good format and has the correct code. NOTE: after the analyse of the states 8D, 9D, 10 D the contact will be set on when the LED indicator blinks (ACTIVE anti starting).
11.	The state of the doors contact	16G = door contact	ACTIVE when the left door is opened.

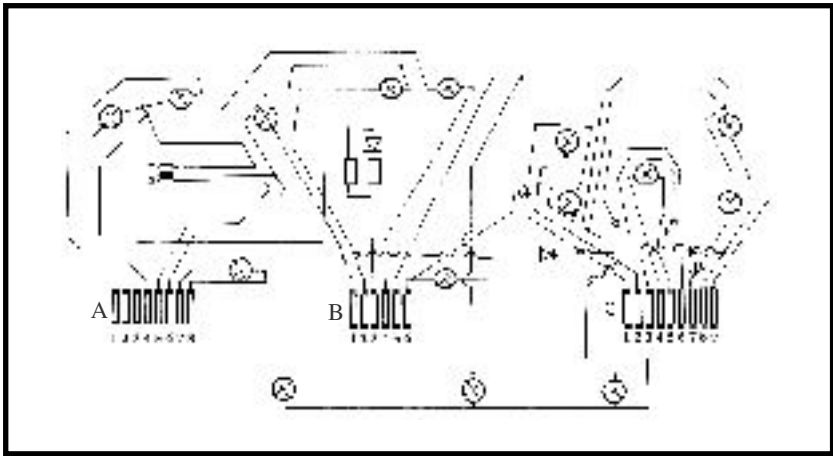


Connectors disposal– as seen face of the instrument panel:





Connectors disposal– as seen back to the instrument panel:



CONNECTOR A

1. Hazard indicator
2. Roadlights indicator
3. Supply (+IC) anti-starting indicator
4. Mass (-)
5. Free
6. Supply (+DC) after contact
7. Fog lamps indicator mass
8. Fog lamps indicator control

CONNECTOR B

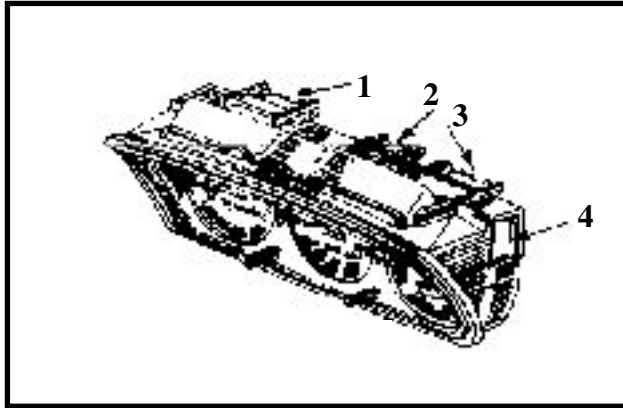
1. O.B.D. (anti pollution indicator)
2. Spark plugs pre-heating indicator
3. Anti-starting indicator control
4. 4 X 4 coupling indicator
5. Instrument panel lighting
6. Handbrake and braking system failure indicator

CONNECTOR C

1. Supply (+DC) after contact
2. Oil pressure warning
3. Mass (-)
4. Right turning signaling indicator
5. Left turning signaling indicator
6. Fuel level indicator
7. Battery charging warning
8. Water temperature warning
9. Fuel minimum level warning

Instrument panel replacement

The instrument panel replacement does not imply the dashboard dismounting.



DISMOUNTING

Disconnect the battery

Unseal the speedometer cable from the instrument panel

Disconnect the instrument panel connectors (1, 2 and 3)

Disconnect the connectors from the switches placed on the dashboard.

Dismount the speedometer cable, by detaching it from clips, from behind the instrument panel.

Dismount the wipers timer

Dismount the headlamps adjustment device

Dismount the four attachment screws of the panel-fixing frame: two of them are placed in front of the panel, the other two are placed under the dashboard ashtray.

Remove the panel-fixing frame, on which the instrument panel is attached.

Release the two-side clips (4) attaching the instrument panel on the dashboard.

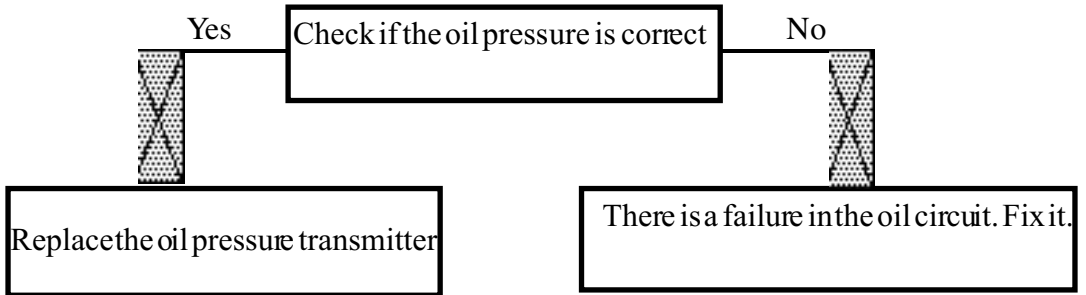
Remove the instrument panel.

REMOUNTING

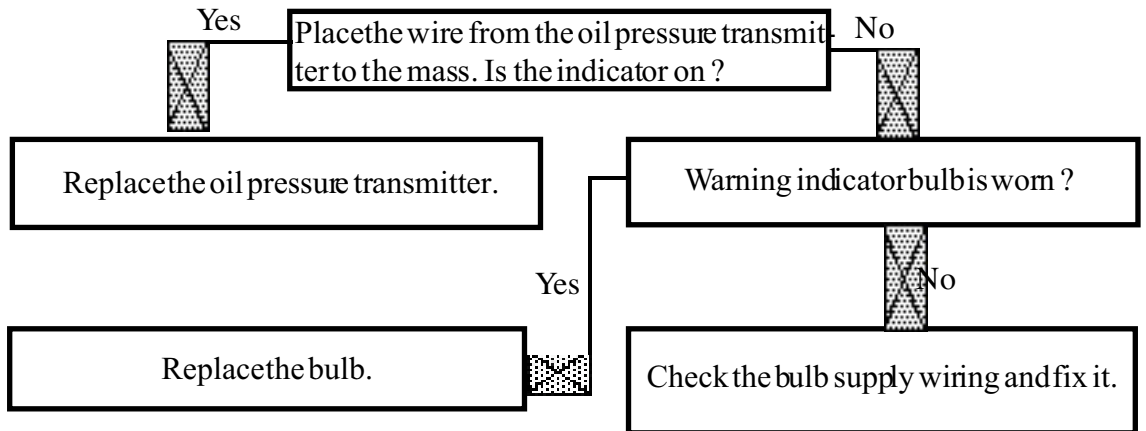
Perform the dismounting operations in the reverse order.

Diagnostic

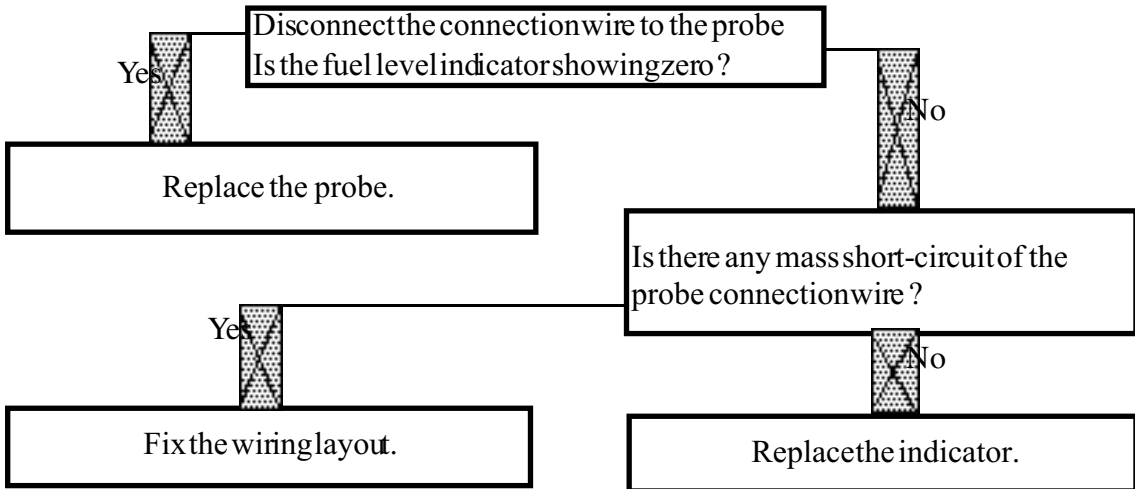
**OIL PRESSURE WARNING LIGHT STILL ON
AFTER ENGINE STARTING**



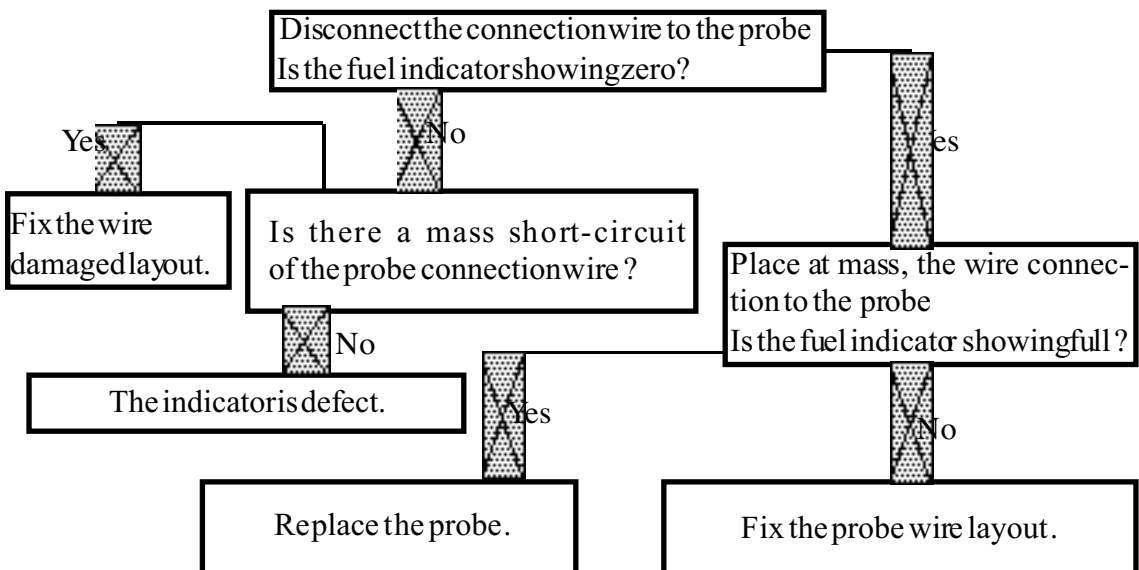
**OIL PRESSURE WARNING LIGHT IS NOT ON
WHEN CONTACT SET ON**



FUEL LEVEL INDICATOR SHOWING ALWAYS FULL

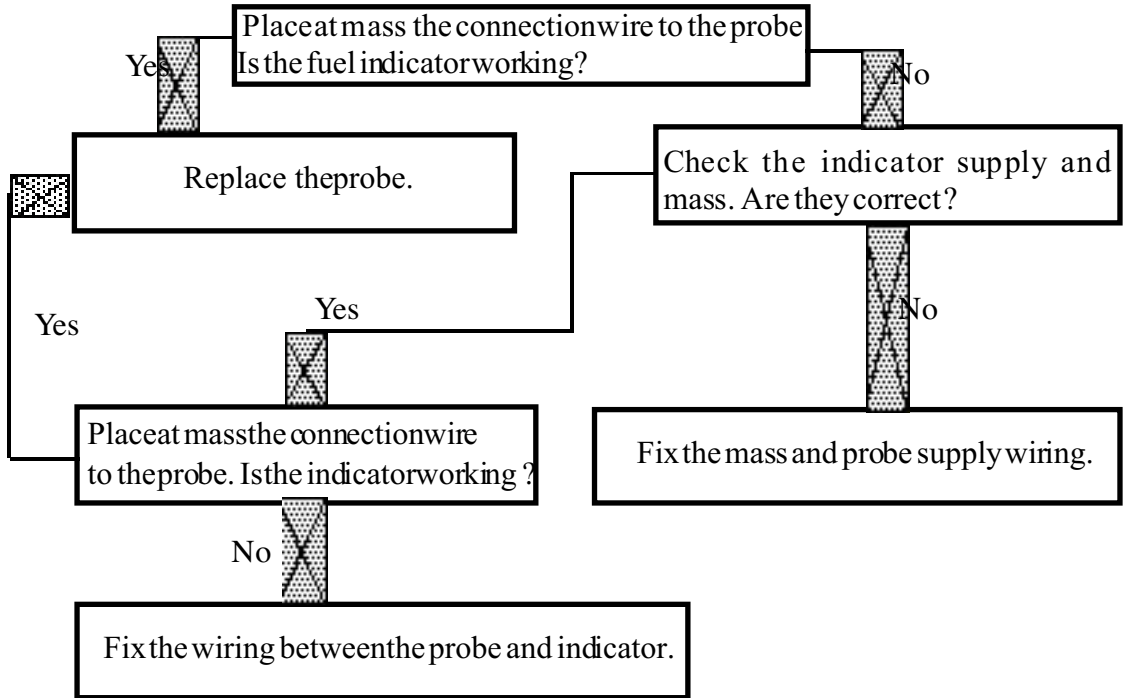


FUEL LEVEL INDICATOR NOT SHOWING CORRECTLY



Diagnostic

FUEL LEVEL INDICATOR NOT WORKING



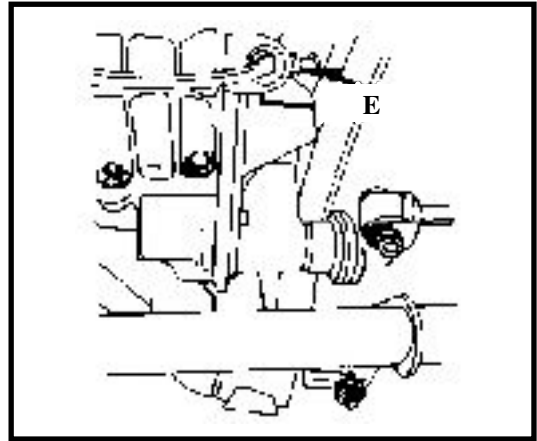
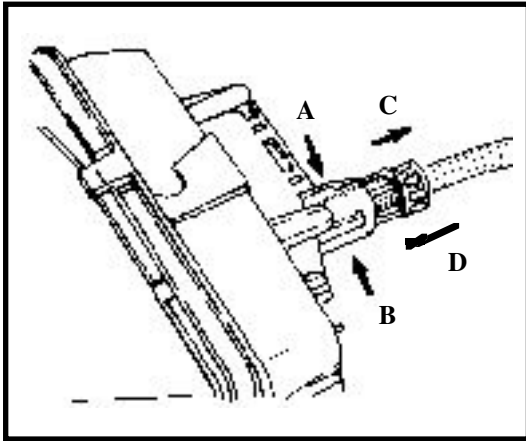
Dismounting of the speedometer cable does not imply the dismounting of the instrument panel from the dashboard.

DISMOUNTING

Push in the direction of **A** and **B** arrows, then pull in the **C** direction.

Loosen the attachment screw **E** at the gearbox and pull the cable.

Detach the cable from the attachment clips on the longitudinal girder.



REMOUNTING

Center the speedometer cable in the instrument panel socket, then push in the direction of **D** arrow, until a “click” is heard, confirming the coupling.

Center the cable in the speedometer endless screw, tighten the screw and lock it with the locking nut.

Position it in the attachment clips of the longitudinal girder, observing the curve. (**R min= 150 mm**).

Starting - Ignition switch

The anti theft mechanism is placed on the right part of the steering column and has the purpose to starter control, electric system connecting and disconnecting, being provided in the same time also with a steering locking device, with anti theft lock..

NOTE:

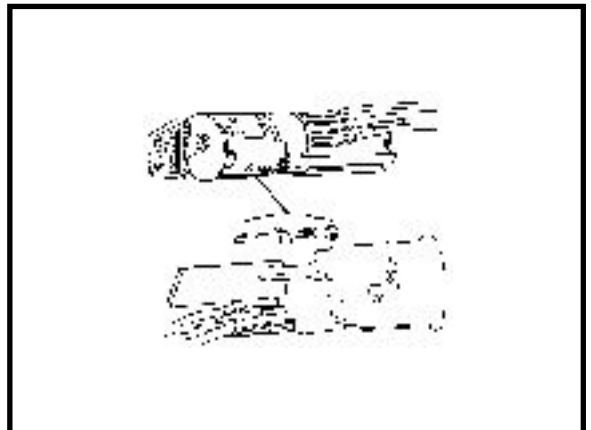
At the anti theft mechanism there is not any more marked G position (garage), between position A (accessories) and M (engine), because is not allowing the taking out of the key in this position but helping at pin unblocking for removing the mechanism from the steering column.

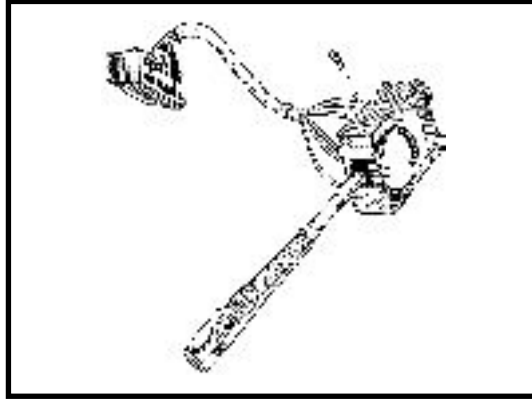
DEMOUNTING

- Disconnect the battery.
- Dismount the steering wheel casings.
- Disconnect the anti-starting bushing.
- Remove the bushing off the steering column.
- Disconnect the switch connection wires.
- Bring the key in the intermediary position (ex G).
- Dismount the attachment screw .
- Push the mobile pin and pull backwards the switch.

**REMOUNTING**

- Mount the switch in its place;
- Tighten the attachment screw.
- Connect:
 - the switch
 - the battery
- Position and mount the anti-starting bushing
- Connect the anti-starting bushing to the vehicle wiring
- Check the switch operation;
- Mount the steering wheel casings.





NOTE : *The lighting control switch is not to be repaired.*

DISMOUNTING

Disconnect the battery.

Dismount the lower steering wheel casing.

Cut the plastic collar which is attaching the wiring on the steering column.

Disconnect: - the switch connector from the front wiring

- the wires attached by means of the nut

Dismount the switch attachment screws from the steering column.

Remove the switch.

REMOUNTING

Tighten the switch attachment screws.

Connect: - the wires attached by means of the nut.

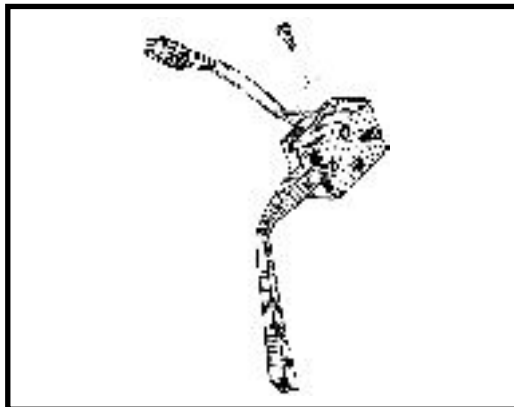
- the switch connector to the front wiring.

Position and fix the wiring with a new plastic collar.

Connect the battery.

Check the lighting switch operation.

Mount the steering wheel lower casing.



DISMOUNTING

Disconnect the battery.

Dismount the lower steering wheel casing.

Cut the elastic collar attaching the wiring on the steering column.

Disconnect the connection connector from the front wiring.

Dismount the turningswitch attaching screws on the steering column.

Dismount the switch.

REMOUNTING

Mount the switch.

Tighten the switch attachment screws.

Connect the switch to the front wiring.

Position and fix the wiring with a new plastic collar.

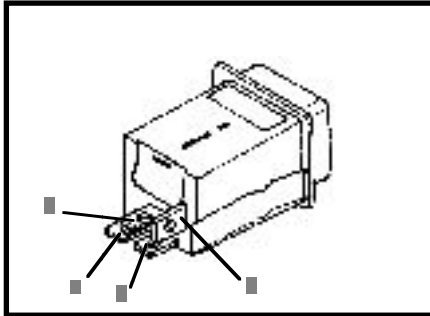
Connect the battery.

Check the operation of the turningswitch.

Mount the lower steering wheel casing.

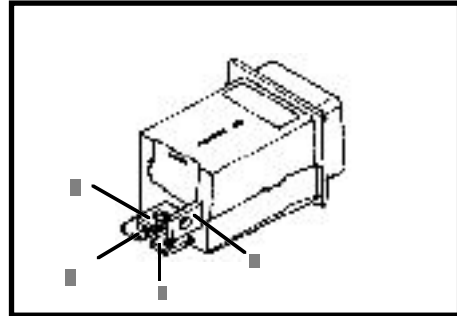
Dashboard switches

4X4SWITCH



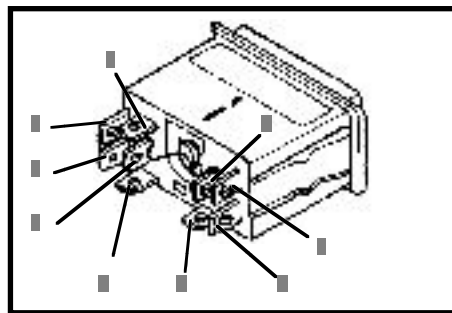
Pos	Destination
1	Supply+ after contact
2	4 X 4 coupling control
4	Mass
5	+ Parking lights

FOGLAMPS SWITCH



Pos	Destination
1	Meeting lights/Road lights
2	Fog lights control
4	+ Parking lights
5	Mass

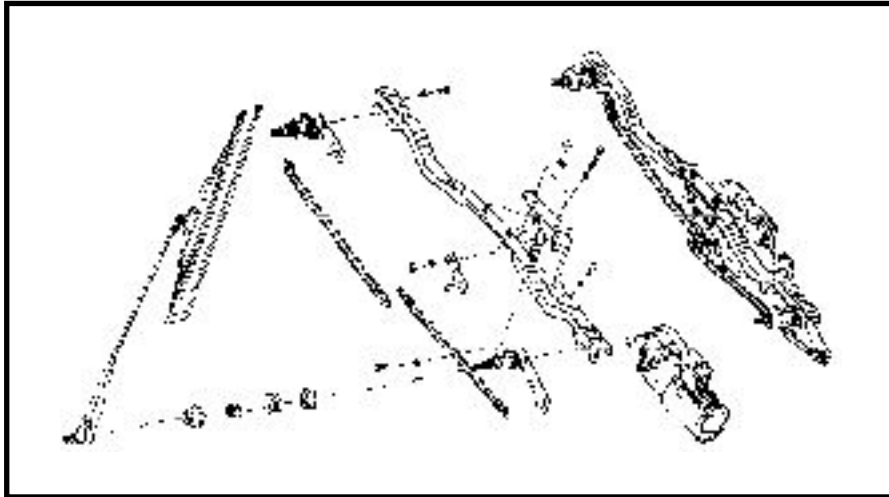
HAZARD SWITCH



Pos	Destination
1	Turning lights switch
2	Left turning
3	Hazard indicator
4	Right turning
5	Mass
6	+ Parking lights
7	Supply + signaling relay
8	Supply + after contact
9	Supply + permanently

Windscreen wiper mechanism

The windscreen wiper mechanism equipping the Dacia commercial vehicles and its components may be seen in the following detailed drawing:



The windscreen wiper is provided with a timer, mounted on the dashboard.

DEMOUNTING

Disconnect the battery.

Dismount the attachment nuts (1) of the windscreen wiper arms and blades.

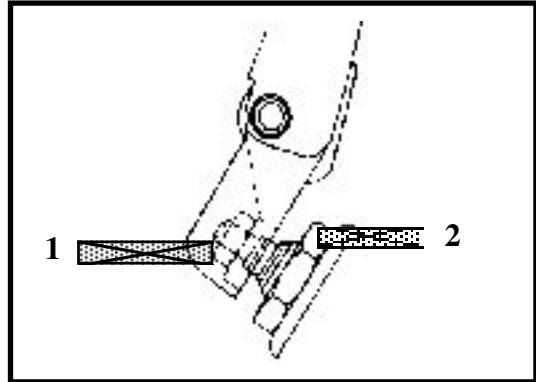
Dismount the attachment nuts (2) of the shafts on the windscreen lower frame, recover the rubber washers and bushings.

Dismount the dashboard.

Disconnect the wiring connector from the windscreen wiper electric motor.

Dismount the mechanism attachment nuts on the cowl panel.

Pull back the mechanism and remove it on the steering wheel right side.

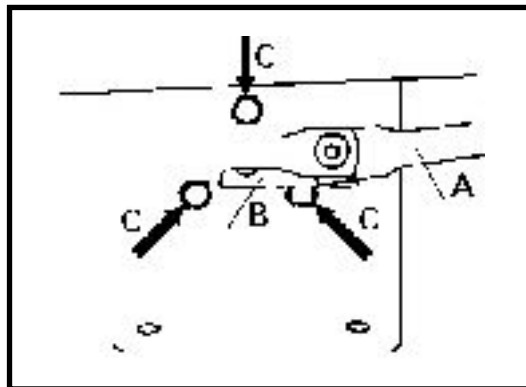
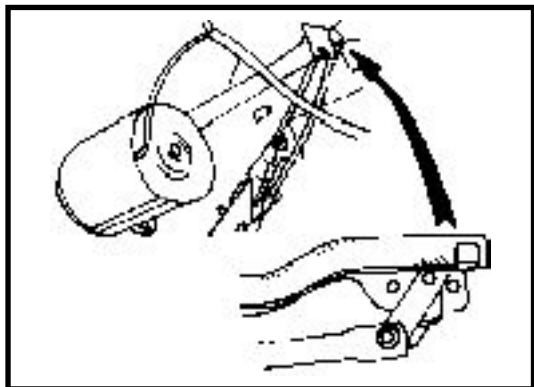
**REMOUNTING**

Perform in the reverse order the dismounting operations.

NOTE : *When mounting the windscreen wiper arms, the wiper electric motor must be in the position “ stopped in fixed point ”.*

Windscreen wiper electric motor

The replacement operation is to be performed after dismantling the windscreen wiper mechanism off the vehicle.

**DISMOUNTING**

Dismount the attachment nut of the control connecting rod (**B**) on the electric motor shaft.
Dismount the attachment screws (**C**) of the electric motor on the mechanism support.

REMOUNTING

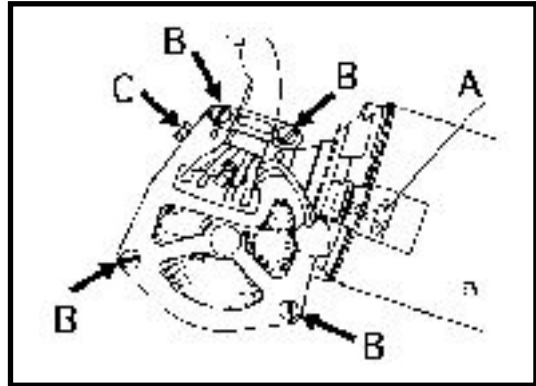
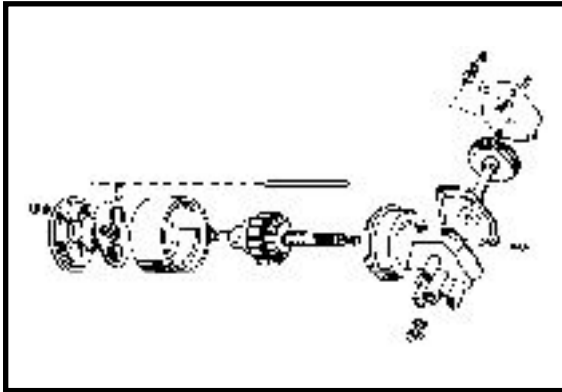
Perform in the reverse order the dismantling operation

NOTE :

When remounting, A and B connecting rods are to be lined up, the motor being “stopped at fixed point”.

REPAIRING OF THE WINDSCREEN WIPER ELECTRIC MOTOR

Windscreen wiper electric motor (detailed drawing)

**DISMOUNTING**

Dismount the electric motor off the mechanism support

1. Reductor dismounting: - dismount the cap attachment screws (**B**)
- loosen the adjustment screw (**C**) of the rotor axial clearance

Dismount: reductor cap and the gear.

2. Rotor dismounting: - dismount the attachment screws (**A**) of the reductor casing on the electric motor.

Dismount: reductor casing, rotor rear gear and the rotor.

REMOUNTING

Clean the parts.

Check the parts condition (pinions, gears, and collector); replace the damaged or worn parts.

Grease the parts with **LiCaPb** type **II** grease.

Mount: the rotor, rotor rear gear, reductor casing, pinion and the reductor cap.

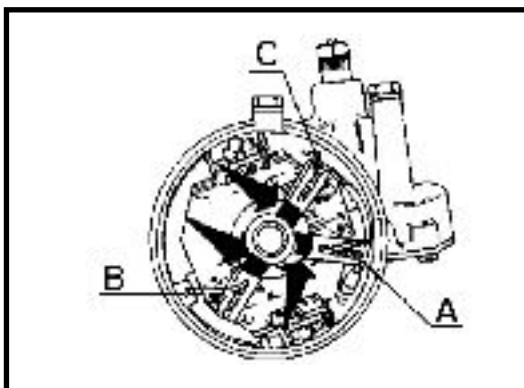
Adjust the rotor axial clearance; the screw (**C**) must slightly push on the rotor axle end.

Mount the electric motor on the mechanism support.

Windscreen wiper electric motor

REPLACEMENT OF THE WIPER ELECTRIC MOTOR BRUSHES

The operation is to be performed after dismantling the mechanism off the vehicle.

**DISMOUNTING**

Dismount the electric motor off the windscreen wiper mechanism.

Dismount : the reductor and the rotor.

Unstick the brushes **A**, **B** and **C**.

Remove the brushes.

REMOUNTING

Check the collector condition and its grooves. If there is a wear, rectify and then clean its grooves with a hard wooden blade.

Stick the new brushes and check their free sliding in the supports.

Mount : the rotor and the reductor.

Adjust the rotor axial clearance, by means of the adjustment screw.

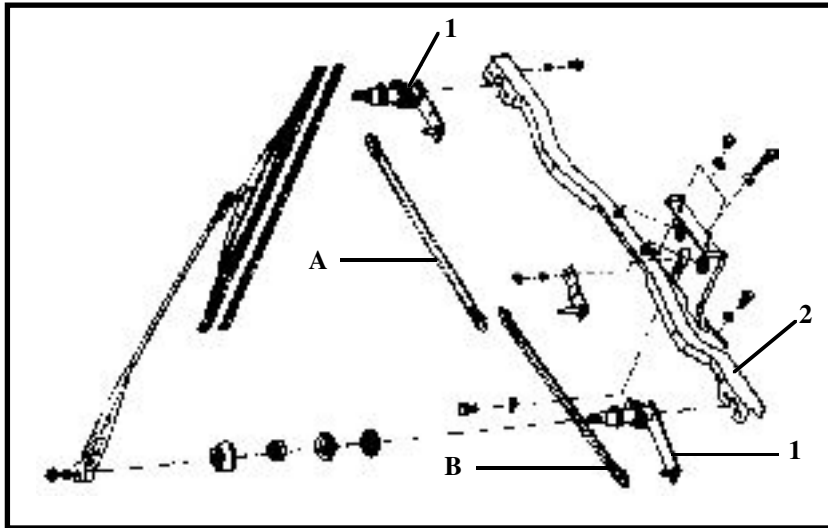
Mount the electric motor on the mechanism.

WINDSCREEN WIPER

Windscreen wiper electric motor

WIPER ARM DRIVE SHAFT REPLACEMENT

The operation is to be performed after dismantling the mechanism off the vehicle.



DISMOUNTING

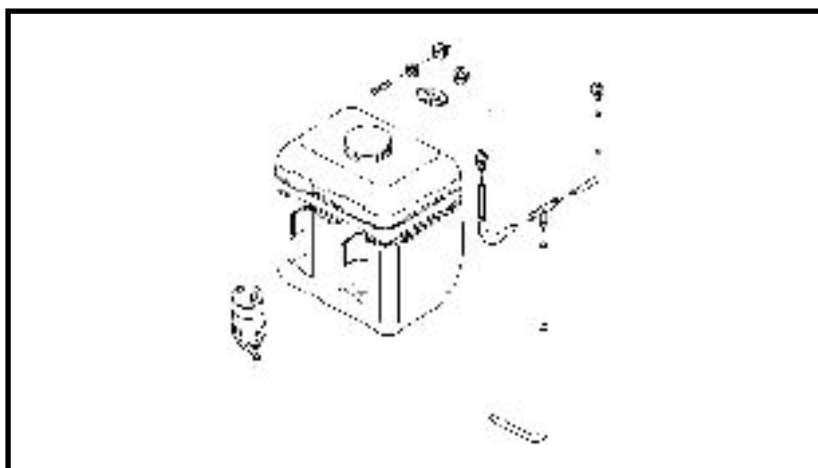
Detach the connecting rods (A) and (B) from axles.
 Dismount the axles (1) off the mechanism support (2).
 Depress the windscreen wiper reductor splined bushing.
 Dismount the shaft; recover the bushing and the rubber gasket.

REMOUNTING

Check the rubber gaskets condition.
 Clean the parts, to be free of oxides.
 Grease the parts with **LiCaPb** type II grease.
 Remount : the rubber gasket on the axle, shaft with the rubber gasket, and the splined bushing.
 Press the splined bushing.
 Mount the axles on the mechanism support.
 Grease the joints with **LiCaPb** type II grease and couple the connecting rods (A) and (B) on axles.

Windscreen washing assembly

The windscreen washing assembly is located in the engine compartment, being attached on the front right wing lining. It has the electric pump attached on the wash tank.

**DISMOUNTING**

Disconnect the battery, the supply connector from the electric pump.

Disconnect the suction and upsetting pipes from the adjusting nozzles and connections.

Dismount the attachment screws of the washing tank support.

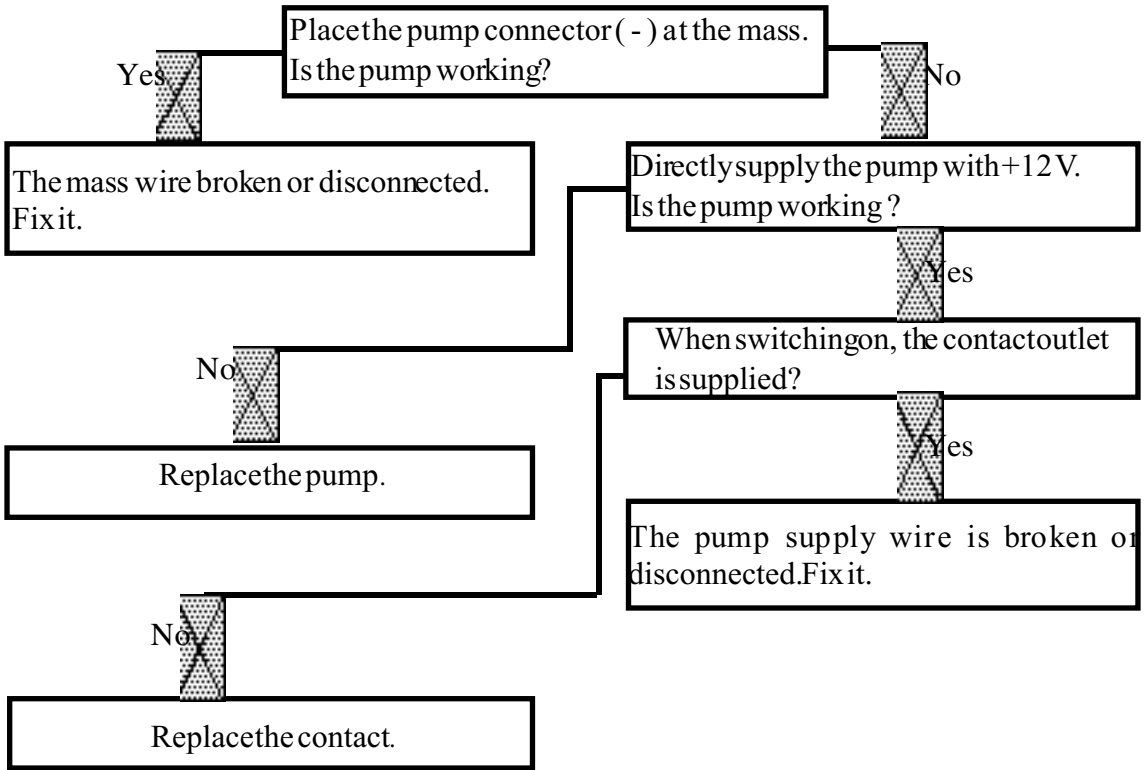
Dismount the electric pump from the front right wing lining.

REMountING

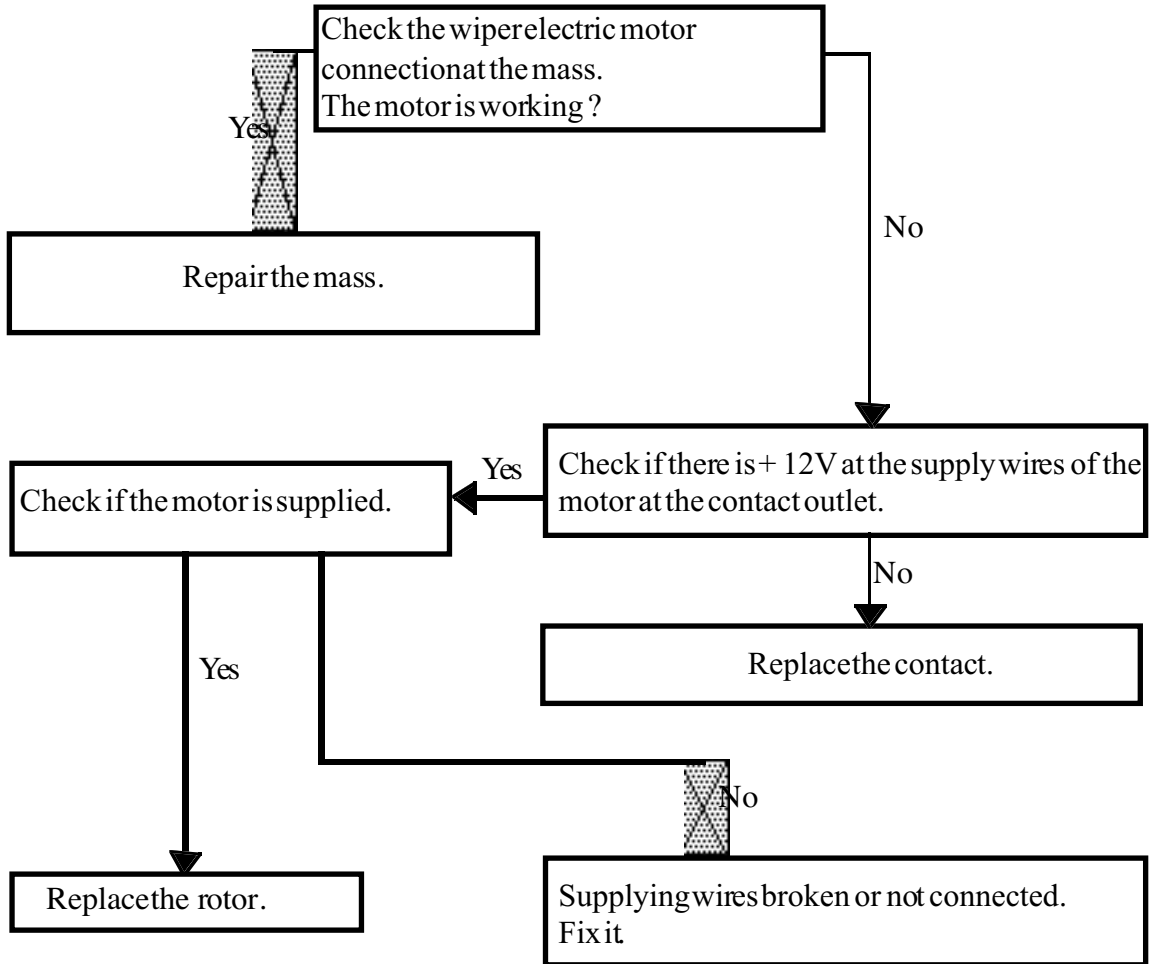
Perform the dismounting operations in reverse order.

Check the operation and eventually, adjust by means of a needle the nozzles, in order to obtain a correct windscreen washing.

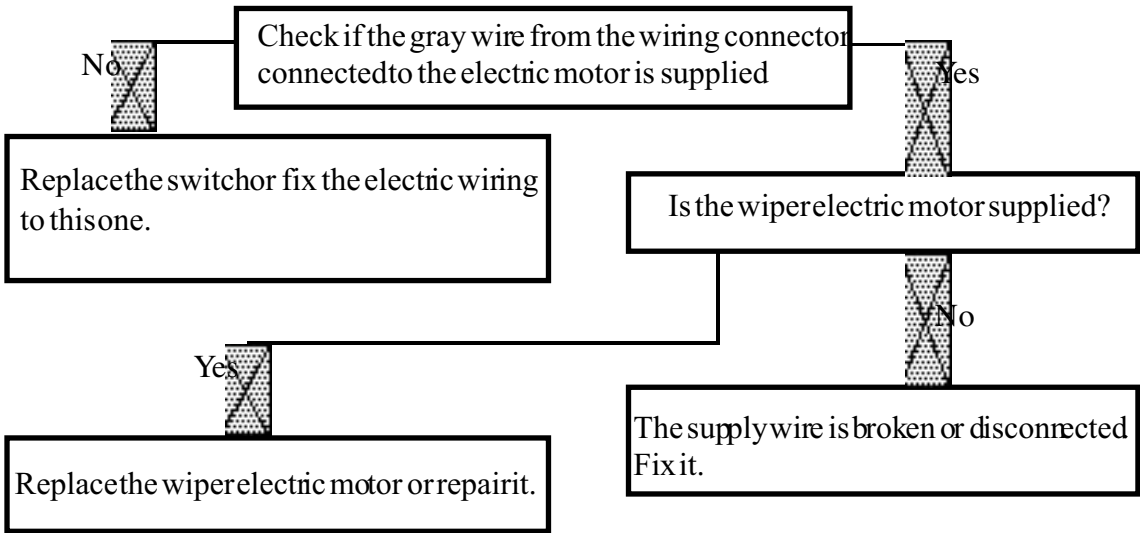
THE WINDSCREEN WIPER IS WORKING
THE WASHER PUMP IS NOT WORKING



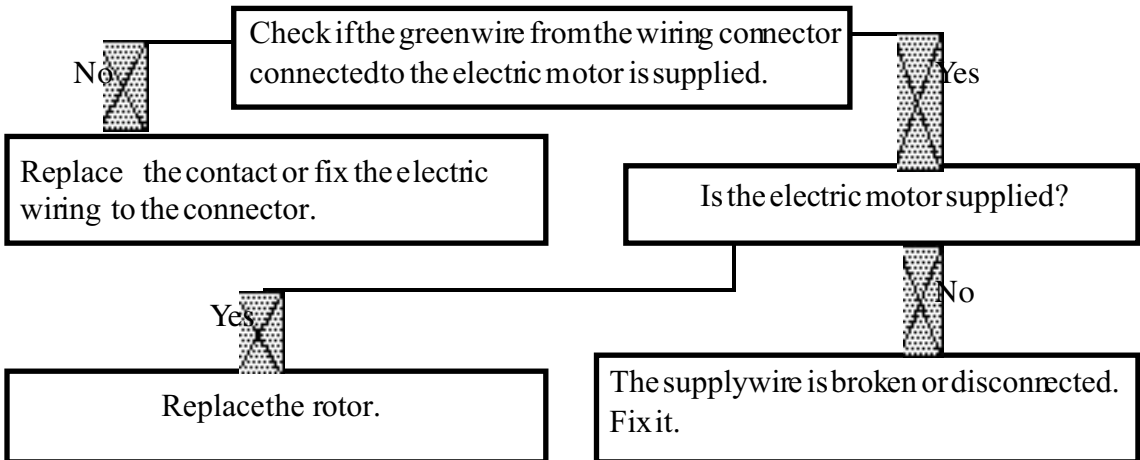
THE WINDSCREEN WIPER IS NOT WORKING
THE PUMP IS WORKING



WINDSCREEN WIPER NOT WORKING AT HIGH SPEED; PUMP IS WORKING

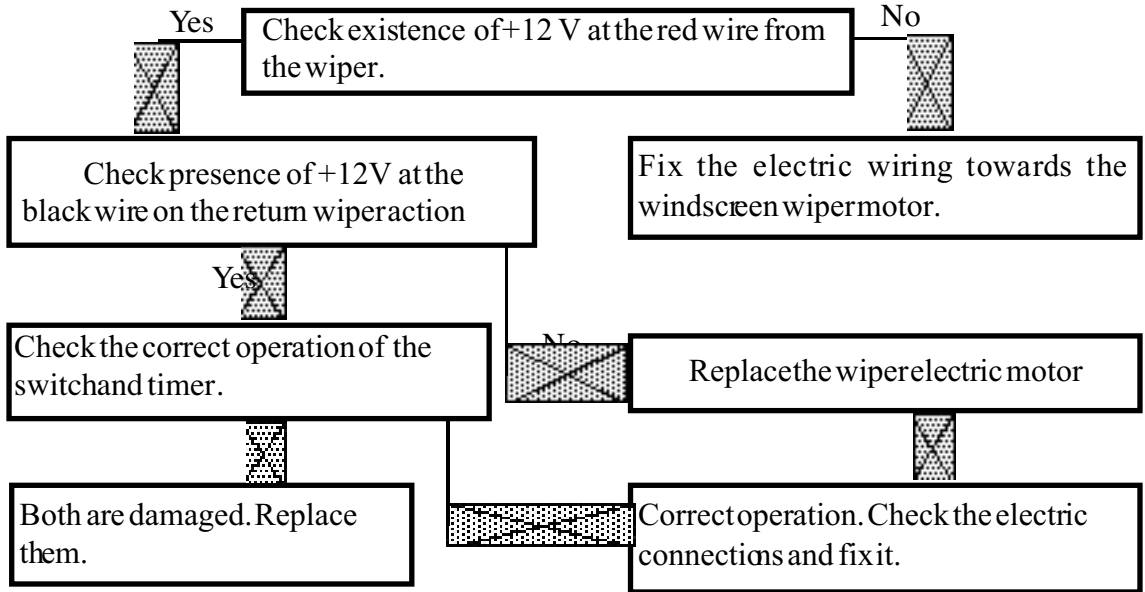


WINDSCREEN WIPER NOT WORKING AT LOW SPEED; NOT STOPPING AT FIXED POINT; PUMP IS WORKING



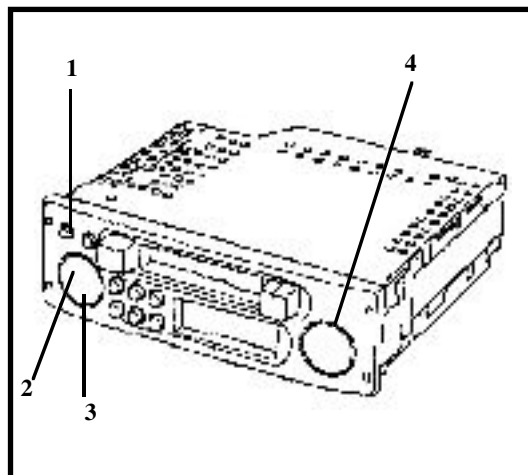
Diagnostic

WINDSCREEN WIPER WORKING ON BOTH SPEEDS, BUT NOT STOPPING AT FIXED POINT; PUMP IS WORKING



On the front side of the radio, the following functional keys may be identified:

1. ON / OFF
2. Keys < and > allowing configuration changing
3. Keys + and - allowing adjustment changing
4. Key "source".



The auto radio may be fitted in radio-cassettes version with the possibility of a CD controlling.

The auto radio is ensuring the following functions:

- radio listening (on FM four geographical areas may be programmed)
- displaying of the station name in RDS on the best transmitter (AF function), automatically switched.
- receiving of traffic information (TA function)
- receiving of short information and emergency announcements (PTY NEWS).

Radio function

- on FM four geographical areas may be programmed

The radio receiver is using three selection modes that may be seen on the screen and approached on the radio front side:

- manually (MANU)
- by pre-selection (PRESET)
- in alphabetical order (LIST)

Cassettes player function

This function is completely automatic, immediately the source has been selected.

NOTE : Only Dolby and both direction unwinding, with the blank searching (empty spaces), are approachable by means of specific keys.

OBSERVATION :

The MUTE function by vocal synthesis or telephone, is stopping the cassette winding.

Thermal protection

If the radio temperature is too high for an optimal operation, the volume is automatically reduced (without modification of the volume on the display).

Code protection

The radio is protected by means of a four digit code. This code is introduced by the radio keys at each battery disconnection.

Code introduction by means of the radio keys: in order to valid one digit introduction, push the next key (see the operation technical book).

In case of a wrong code, the instrument is getting blocked (one minute for the first error, two minutes for the second error, four minutes for the third...)

After first code introduction, some configurations must be programmed (see **chapter "Configuration"**). These are remaining programmed till battery disconnection.

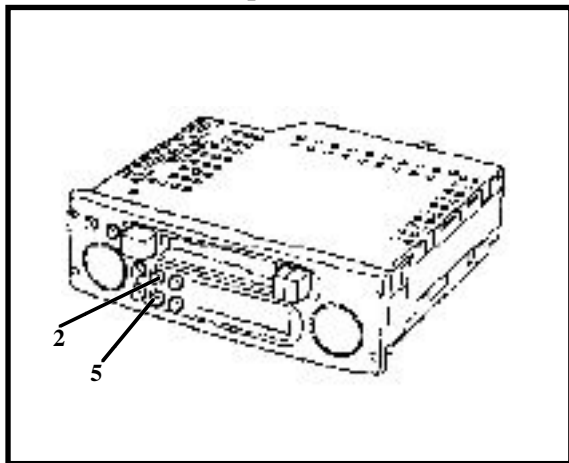
NOTE :

The return to the "wave jammer" mode is possible by simultaneously pushing of the keys 2 and 5, putting the radio under tension. Wait then for two minutes.

OBSERVATION :

In order to select the radio operation area, push simultaneously keys 2 and 5, putting the radio under tension. Wait then for about two minutes. Introduce the four digits code, then:

- select the adequate area



-America

-Japonia

-Asia

-Arabia

-Others (Europa, Africa, others...)

- select the sound tonality curves:

- 0 : inactive adjustment

- 1 : Twingo

- 2 : Clio

- 3 : Mégane

- 4 : Laguna

- 5 : Top range

- speakers number configuration – with or without rear speakers (REAR OFF).

NOTE : it is not necessary to perform the configuration after radio code introduction, further to a supply failure.

“ Expert “ operation mode.

In order to pass in configuration (**Expert** mode), perform a long pushing (4 sec) on “source” key until a beep is heard. This is allowing the following functions adjustment:

- **AF** mode activation (automatic resetting)

- Volume modification subject to the vehicle speed (**5** for maximal modification, **0** for modification canceling)

- **Loudness** mode activation

- **Assisted radio receiver** mode activation

- Number of **speakers** activation (2 speakers)

- Manual or dynamic list selection

NOTE :

During configuration, one impulse on “source” key, is canceling the modifications.

Volume

The volume may be settled subject to vehicle speed. For the activation of this function, select the desired volume modification curve, by means of the “Expert “ mode (push longer on the “ source” button, until a beep is heard): 5 for maximal modification, 0 for modification canceling.

NOTE : In order this function becomes operational, check that radio is correctly connected.

OBSERVATION :

The auto radio is provided with a sound tonality modification subject to vehicle type. To modify that, see chapter “ configuration”.

This mode is allowing some main functions controlling:

- **speakers testing**

by simultaneously pushing of **2** and **4** keys, the speakers are supplied one by one. The display is enabling their location.

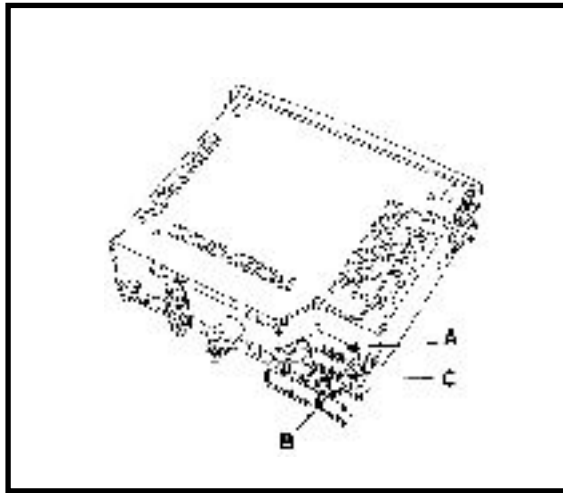
- **reception level testing (after frequency displaying)**

by simultaneously pushing of **1** and **6** keys, the display is showing the radio reception criteria:

- 9 or letter = good reception
- 3 = defective signal
- 2 = stereo sound loosing

Keys testing

The introduction of this mode is performed by simultaneously pushing of **3** and **ON/OFF** keys. Each key pushing may be seen on display. The exit from this checking mode is automatic, after all keys have been pushed.



Connectors

Black connector(A)

White transparent connector(C)

Way	Denomination
4	Supply+ permanently
6	Lighting supply
7	Supply+ after contact
8	Mass

Way	Denomination
1	Free
2	Free
3	+ Right front speaker
4	- Right front speaker
5	+ Left front speaker
6	- Left front speaker
7	Free
8	Free

OBSERVATION :

The speakers are individually connected on each exit.

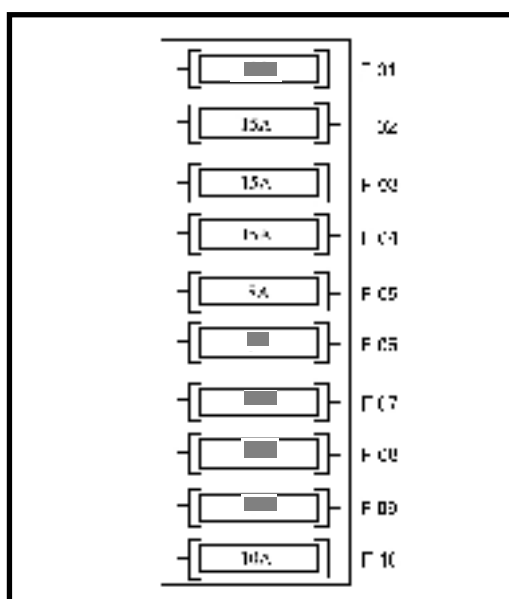
The cockpit fuse box

The Dacia commercial vehicles are provided with a fuse box with 10 bridge fuses, placed inside the passenger compartment (cockpit), on the left side, under the dashboard.

In case an accident occurs in the electric system, before making any other operations, check first the condition of the fuses and of the out of order equipment.

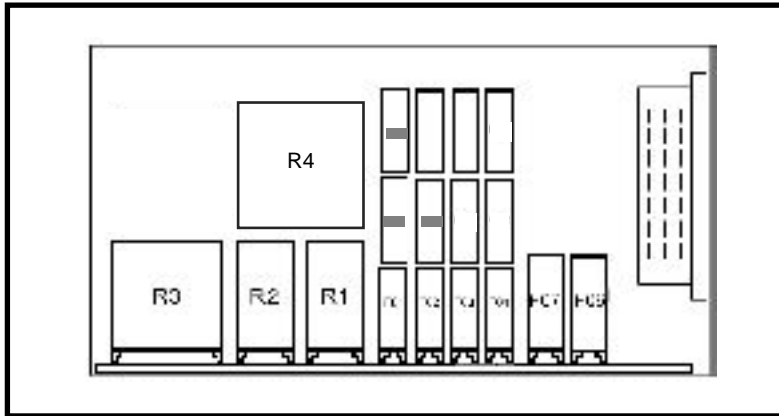
The fuses are protecting the following electric circuits:

FUSE NUMBER	FUSE TYPE	PROTECTED CIRCUIT
F 01	15 A	Windscreen wiper-washing
F 02	15 A	Climate control blower
F 03	15 A	STOP lights, rear driving lights
F 04	15 A	Fog lamps, clock (+IC), radio, anti-starting LED indicator, wiper fixed point stopping
F 05	8 A	Hazard and turning lights
F 06	8 A	Parking lights, lighting: instrument panel, ash tray lighter, radio, climate control, documents compartment, contacts, fog lamps.
F 07	10 A	Ceiling lamps, lighter.
F 08	10 A	Diagnostic socket, UCE anti-starting, anti-starting bushing (+IC)
F 09	10 A	Diagnostics socket, UCE anti-starting (+DC)
F 10	10 A	Clock (+DC), radio, instrument panel (+DC), 4X4 coupling control.



Relays and fuse box from the engine compartment

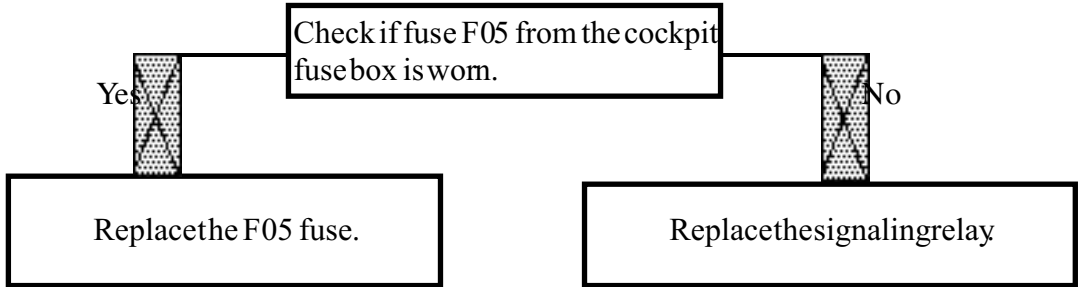
The electric equipment of the DACIA commercial vehicles is provided with another relays and fuse box placed in the engine compartment, being attached on the left wing lining having the following configuration:



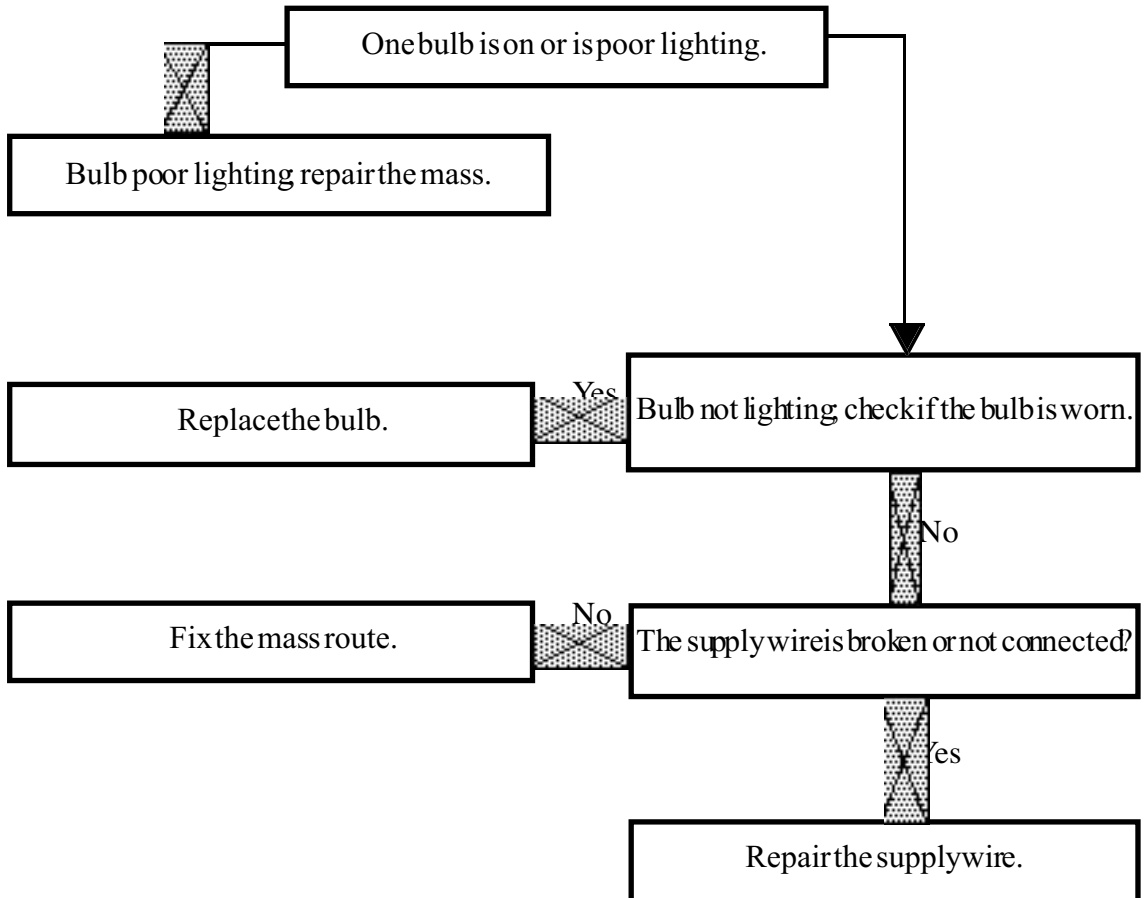
FUSE	TYPE	PROTECTEDCIRCUIT
F 01	10 A	Right meeting lights(low beam)
F 02	10 A	Left meeting lights (low beam)
F 03	10 A	Right roadlights (high beam)
F 04	10 A	Left roadlights(high beam).
F 05	15 A	Pre-heatingrelay, dieselheatingrelay, UCE injection(+DC)
F 06	70 A	Pre-heatingspark plugs
F 07	50 A	Dieselheatingrelay, cooling blower
F 08	15 A	Gasesrecyclingelectric valve, UCE injection(+IC), diesel pump, injectionrelay (R1), chock sensor.
F 09	15A	Fog headlamps

RELAY	PROTECTEDCIRCUIT
R 1	Gasesrecyclingelectric valve, UCE injection,dieselpump
R 2	Dieselheatingresistance
R 3	Cooling blower
R 4	Fog headlamps

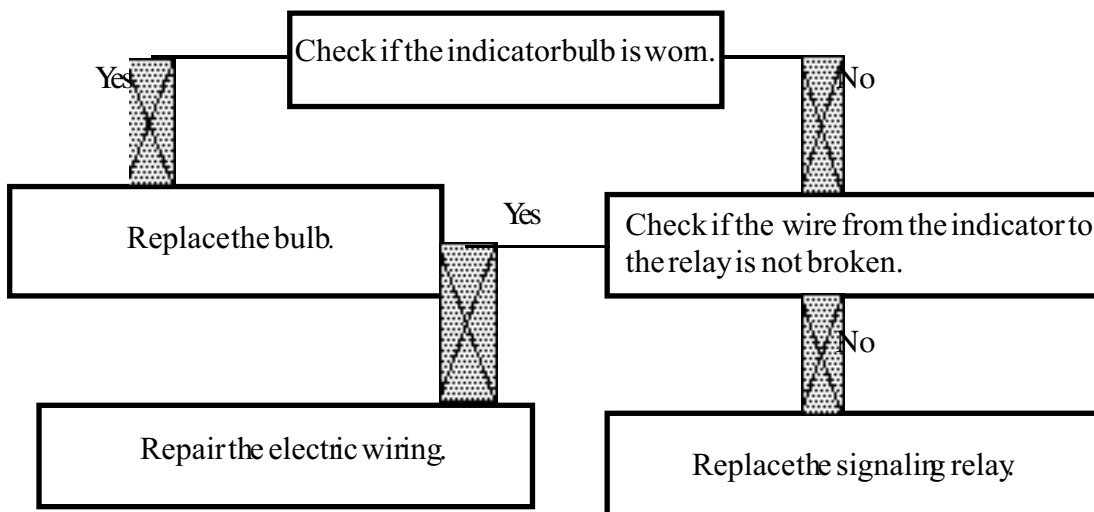
TURNING SIGNALING AND HAZARD NOT WORKING



ONE SIDE TURNING SIGNALING NOT WORKING WORKING ON THE OPPOSITE SIDE

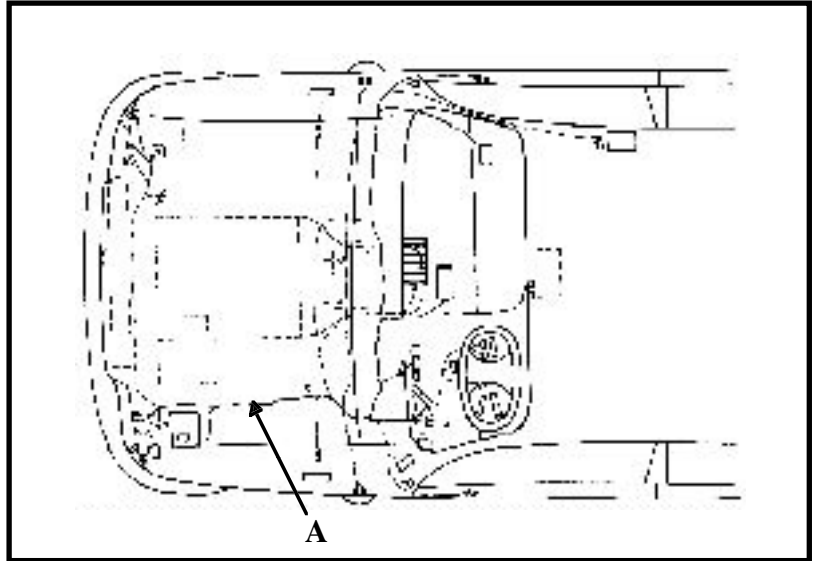


TURNING SIGNALING WORKING,
TURNING SIGNALING INDICATOR NOT WORKING

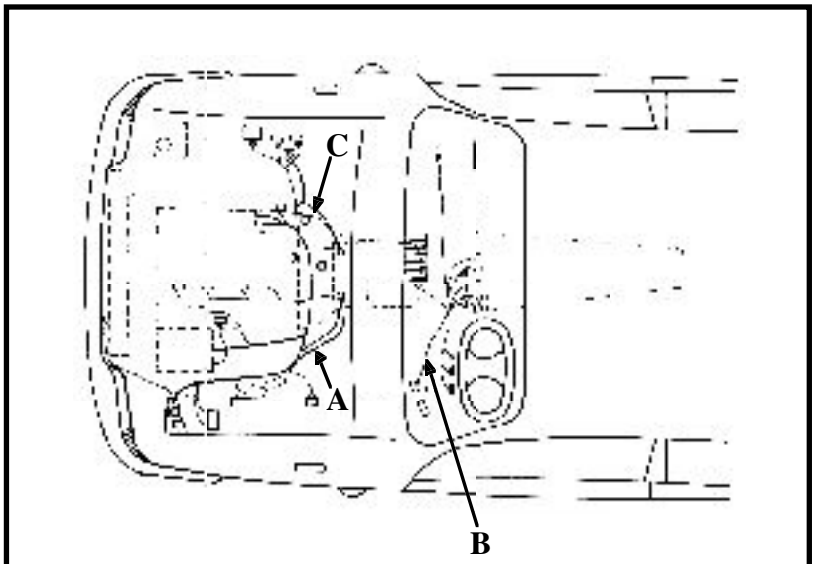


The wiring disposal on the carriage body

A. Front wiring

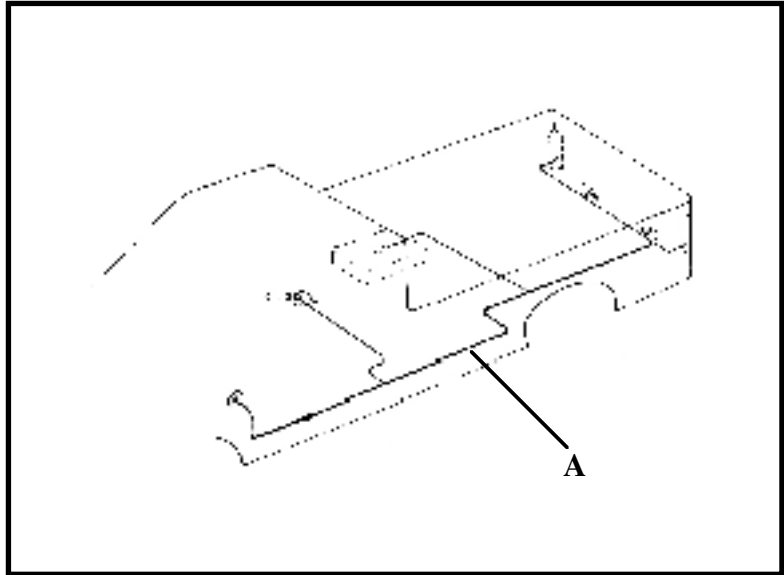


- A. Engine wiring
- B. Dashboard wiring
- C. Battery mass wiring



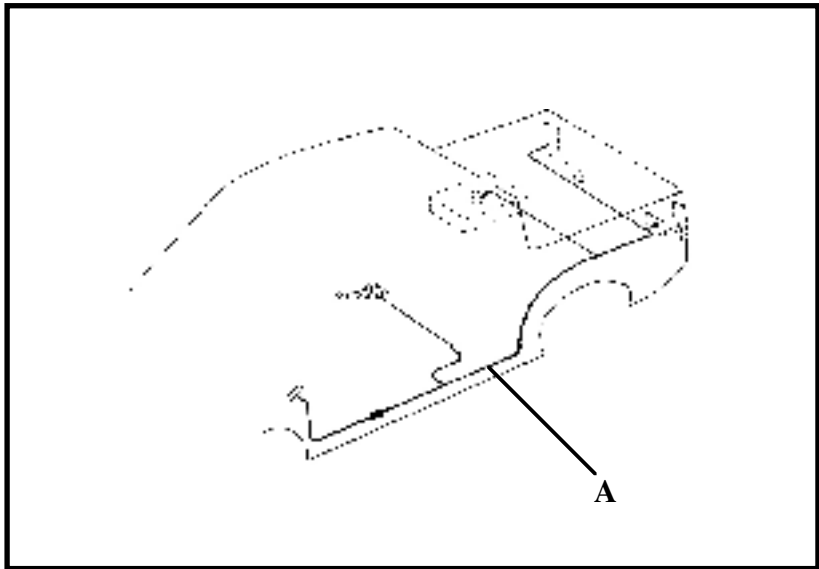
DACIA 1304 PICK UP

A. Rearwiring



DACIA DOUBLE CAB

A. Rearwiring



GENERAL PRESENTATION

From electric point of view, the vehicle electric diagrams have been structured as Applied Principle Schemes (APS), presented according to each system function. These APS diagrams also contain details concerning the internal function of some simple electric components (contacts, relays), thus contributing to a better understanding of the system functioning and of the incident good diagnosis.

● **Chapter 2** includes the list of the vehicle functional diagrams (APS). They are divided in electric supply diagrams, mass connection diagrams and system functional diagrams.

● **Chapter 7** includes the electric functional diagrams (APS), identified as follows:

1. Electric components marked by 3-4 figures. Their identification on the electric diagrams can be achieved by means of “index of components” – see **Chapter 3**.

2. Connections between the electric wirings, marked by an **R** followed by figures; they are indicated in the **Chapter 4** list

3. Mass connections, marked by an **M** followed by figures or letters; they are indicated in **Chapter 4**.

Each wire is marked in the electric diagrams by an alphanumeric code representing the wire function, followed by figures representing the wire section.

● **Chapter 11** includes the connectors and connections between wiring, drawn from the later inlet towards the connector/connection. The wires entering each connector socket are identified by means of the above-mentioned drawings. The **Chapter 11** also includes detailed tables about each wire entering the connector: wire location in the connector socket, wire section, wire function code and its destination.

● **Chapter 10** includes the index of all wire functions in connectors and connections, namely the list of all the connectors and connections, which helps to their easy identification in **Chapter 11**.

● **Chapter 5** includes the mass and connection positions on vehicle and helps to identify the electric mass fixing points on it, as well as location of the connections between its wirings.

● **Chapter 6** includes the electric component position on vehicle. The position of the various components with electric functions on the vehicle can be identified by means of the component list

ELECTRIC FUNCTIONAL DIAGRAMS INTERPRETATION

The information of functional diagrams interpretation, presented in Chapter 7, are to be defined taking into consideration the explanations related to the following example.

- 1 = vehicle class
- 2 = manufacturing year
- 3 = functional electric diagram denomination
- 4 = equipment differentiation criteria for identifying the functional electric diagram
- 5 = electric connector colour*
- 6 = connector graphical representation
- 7 = electric component index number
- 8 = number of the fuse box on which the relay or safety fuse is mounted
- 9 = safety fuse identification on fuse box
- 10 = safety fuse value
- 11 = identification of wiring joints
- 12 = electric mass identification
- 13 = electric connection colour between wirings*
- 14 = electric connection identification
- 15 = electric connection graphical representation
- 16 = symbol, pages containing functional diagrams
- 17 = wire function code
- 18 = wire section
- 19 = functional diagram number

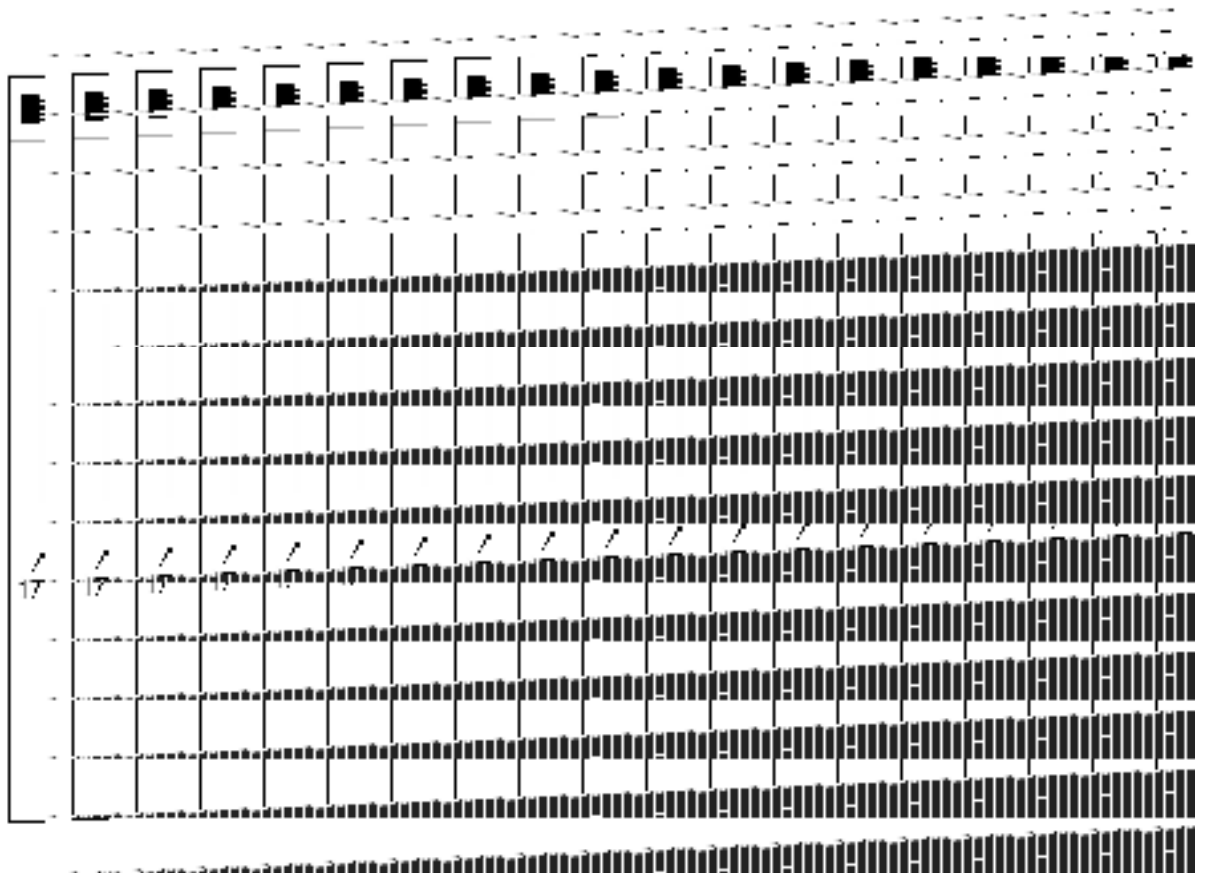
OBSERVATION:

1. The electric connectors (5) and connections (13) are symbolised as follows:

BA = white	GR = grey	RG = red
NO = black	MA = brown	CY = white
BE = blue	VE = green	

2. The zone (4) specifies the differentiating elements serving to the various functional diagrams identification, considering the following symbols:

- **RAD 01** rado provided vehicles
- **4x4** for vehicles provided with 4X4 traction
- **PROJAB** fog headlights provided vehicles
- **U75** representing DACIA 1304 Pick Up
- **E75** representing DACIA 1304 Drop Side
- **H75** representing DACIA 1307 Double Cab



INTERPRETATION OF CONNECTORS WIRES FUNCTION INDEX

The information concerning the function of the connectors and connection wires, included in **Chapter 11**, are to be interpreted taking into account the explanations based upon the following example:

- 1 = symbol of pages containing connectors and connections
- 2 = connector destination
- 3 = vehicle class
- 4 = manufacturing year
- 5 = name of the wiring on which the respective connector is placed
- 6 = wire colour
- 7 = connector code
- 8 = component mark, to which the described connector is to be connected
- 9 = connector colour
- 10 = connector symbol
- 11 = connector socket marking
- 12 = wire section (mm²)
- 13 = wire functional code
- 14 = wire destination
- 15 = chapter number and connector drawing number

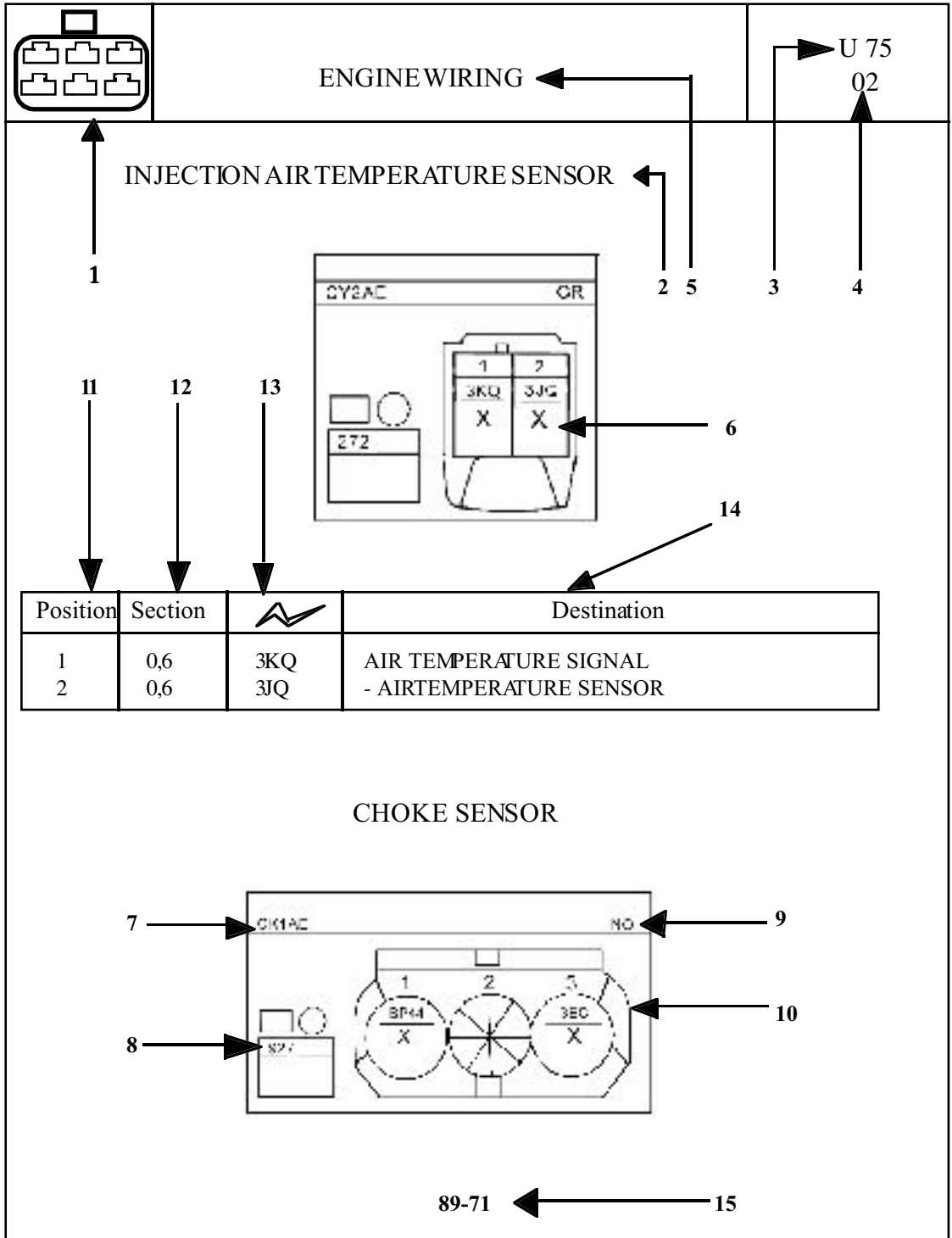
NOTA:

Concerning position 6, please note that one X is to be marked for one wire, while two Xs are to be marked for two wires. The wire colour is to be symbolized only in case the wire electric track represents one of the fundamental statuses:

- < + permanent (+ IC),*
- < + after contact (+ DC),*
- < Mass (-) or controls.*

The used wire colour symbols are the following:

<i>A = white</i>	<i>AS = blue</i>	<i>GR = grey</i>
<i>N = black</i>	<i>G = yellow</i>	<i>V = green</i>
<i>M = brown</i>	<i>VI = violet</i>	<i>R = red</i>
<i>OR = orange</i>	<i>BJ = beige</i>	



2. FUNCTIONAL DIAGRAMS LIST

NR.	ELECTRIC DIAGRAMS DENOMINATION	E75	U75,H75	4X4	PROJAB
1.	ANTI-STARTING	S	S		
2.	ELECTRIC LIGHTER	S	S		
3.	CLIMATE CONTROL	S	S		
4.	ASHTRAY LIGHTING	S	S		
5.	CEILING LAMPS LIGHTING	S	S		
6.	CLOCK	S	S		
7.	RADIO PRE-SETTING	S	S		
8.	RADIO	S	S		
9.	4X4 TRANSMISSION	O	O		
10.	ELECTRONIC INJECTION	O	O	O	
11.	ELECTRONIC INJECTION (EURO 2000)	S	S		
12.	STARTER CIRCUIT	S	S		
13.	ENGINE COOLING CIRCUIT	S	S		
14.	PRE-HEATING ENGINE CIRCUIT	S	S		
15.	ALTERNATOR CIRCUIT	S	S		
16.	MASS 01	S	S		
17.	MASS 02	S	S		
18.	MASS 03	S	S		
19.	MASS 04	S	S		
20.	MASS 05	S	S		
21.	MASS 06	O	O	O	
22.	MASS 07	O	O		O
23.	SAFETY FUSE BOX AND ENGINE RELAYS	O	O	O	O
24.	SAFETY FUSE BOX AND ENGINE RELAYS (EURO 2000)	S	S		
25.	COCKPIT SAFETY FUSE BOX	S	S		
26.	COCKPIT SAFETY FUSE BOX	S	S		
27.	COCKPIT SAFETY FUSE BOX	S	S		
28.	COCKPIT SAFETY FUSE BOX	S	S		
29.	FUEL LEVEL INDICATING CIRCUIT	O	O		O
30.	DIAGNOSIS SOCKET	O	O	O	O
31.	INSTRUMENT PANEL	O	O	O	
32.	INSTRUMENT PANEL	S	S		
33.	INSTRUMENT PANEL	S	S		
34.	INSTRUMENT PANEL (EURO 2000)	O	O	O	
35.	HANDBRAKE INDICATOR AND BRAKE SYSTEM FAILURE	S	S		
36.	OIL PRESSURE WARNING CIRCUIT	O	O	O	
37.	WATER TEMPERATURE WARNING CIRCUIT	S	S		
38.	SOUND WARNING (HORNS)	S	S		

Functional diagrams list

NR.	DENUMIRE SCHEME ELECTRICE	E75	U75,H75	4X4	PROJAB
39.	WINDSCREEN WIPER-WASHING	S	S		
40.	REAR FOG LIGHTS		S		
41.	REAR FOG LIGHTS	S			
42.	FOG HEADLIGHTS	O	O		O
43.	LOW BEAM LIGHTS	S	S		
44.	REVERSE DRIVING LIGHTS		S		
45.	REVERSE DRIVING LIGHTS	S			
46.	PARKING LIGHTS		S		
47.	PARKING LIGHTS	S			
48.	HIGH BEAM LIGHTS	S	S		
49.	STOP LIGHTS		S		
50.	STOP LIGHTS	S			
51.	HAZARD AND TURNING LIGHTS		S		
52.	HAZARD AND TURNING LIGHTS	S			

REMARK: *S = equipment series, O = optional equipment.*

(EURO2000)

CODE	COMPONENT DENOMINATION	CODE	COMPONENT DENOMINATION
101	Electric lighter	227	Left headlight
103	Alternator	230	Fog lights relay
104	Anti-theft mechanism	231	Fog headlights relay
105	Acoustic warning	234	Blower cooling control relay
107	Battery	238	Main relay
113	Windscreen wiper timer	244	Injection water temperature sensor
120	Injection computer (U.C.E.)	247	Instrument panel
121	Fog lights switch	255	Right front turning light
122	Fog headlights switch	256	Left front turning light
124	Blower switch	257	Pre-heating relay
125	Hazard switch	261	Radio
137	Turning relay	267	Right front side signalling light
145	Windscreen wiper-washing switch	268	Left front side signalling light
149	RPM sensor	272	Injection air temperature sensor
155	Reverse driving contact	329	Right front ceiling lamp
156	Handbrake contact	398	Gazes re-circulation electric-valve
160	Stop contact	449	Diesel oil heating resistance
163	Starter	450	Diesel oil heating relay
166	Right licence plate lamp	478	4x4 contact
167	Left licence plate lamp	484	4x4 connection electric-valve
168	Documents compartment lighting	503	U.C.E. decoder
172	Rear right lamp	597	Safety fuse box and engine compartment relays
173	Rear left lamp	600	Blower climate control
176	Right fog headlight	654	Anti-starting bushing
177	Left fog headlight	680	Pre-heating pug 1
180	Front left door contact	681	Pre-heating pug 2
184	Front right parking light	682	Pre-heating pug 3
185	Front left parking light	683	Pre-heating pug 4
188	Blower cooling	711	Injection pump
191	Right speaker	921	Acceleration potentiometer
192	Left speaker	927	Choke sensor (for EURO 2000)
199	Fuel level transmitter	1016	Cockpit fuse box
205	Manual contact	1091	Braking system I.C.P.
209	Lights, signalling, turning and horn switch	1155	4x4 indicator control relay
210	Electronic clock	1187	Vacuum capsule contact
212	Windscreen wiper motor	1335	Front astray lighting
221	Windscreen washing motor	1468	Climate control lighting
225	Diagnosis socket	1469	Climate control lighting
226	Right headlight		

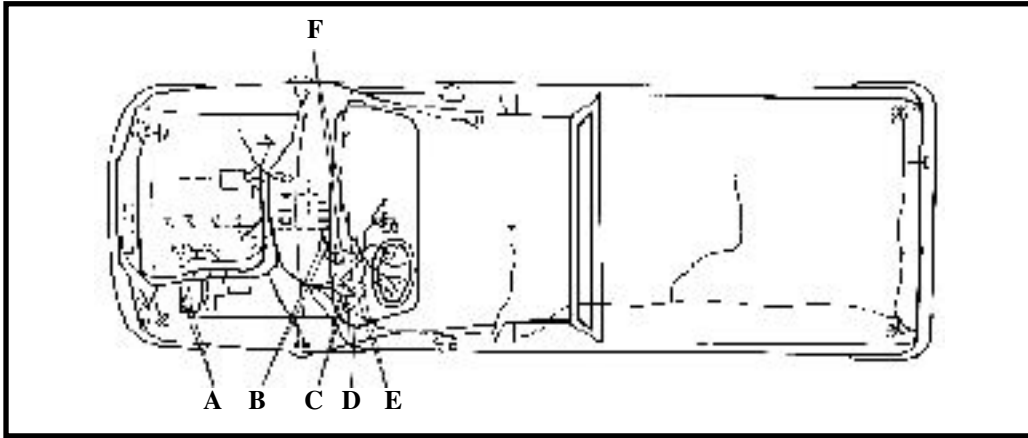
CONNECTION LIST

**R99 = CLIMATE CONTROL SWITCH WIRING CONNECTION / BLOWER
CLIMATE CONTROL (B)**
R107 = FRONT WIRING CONNECTION / DASHBOARD
R111 = DASHBOARD WIRING CONNECTION / BLOWER CLIMATE CONTROL
R212 = FRONT WIRING CONNECTION / ENGINE (A)
R265 = FRONT WIRING CONNECTION / REAR (D)
R318 = FRONT WIRING CONNECTION / DASHBOARD (E)

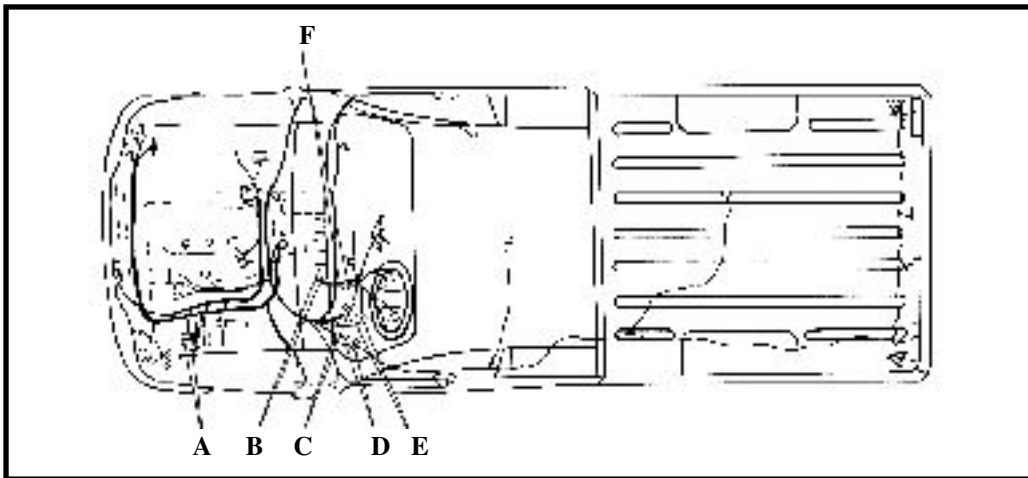
MASS LIST

MA = RIGHT FRONT ELECTRIC MASS
MB = LEFT FRONT ELECTRIC MASS
ME = BODY GENERAL MASS
MG = LEFT REAR ELECTRIC MASS
MH = ENGINE ELECTRIC MASS

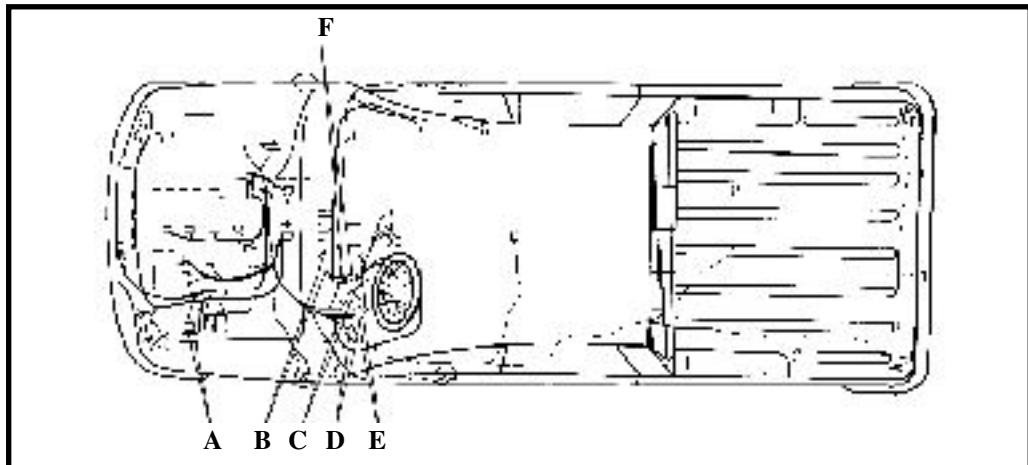
A. FOR U75 (Pick Up)



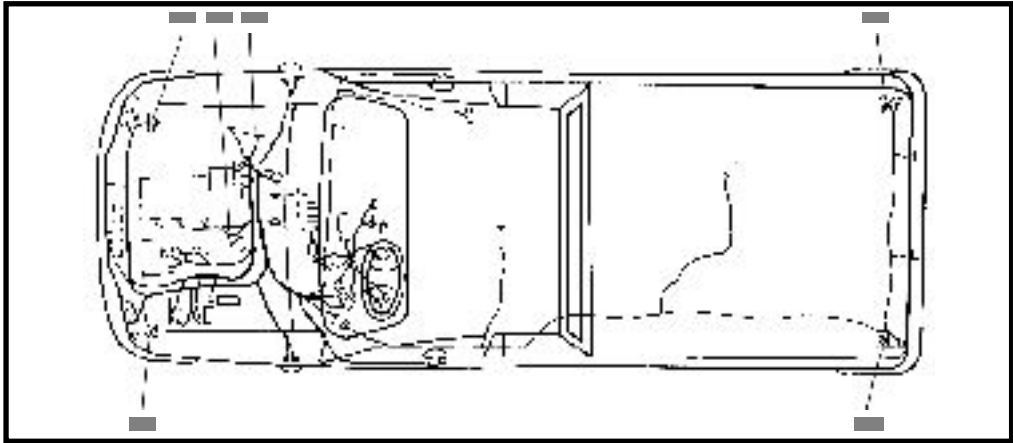
B. FOR E75 (Drop Side)



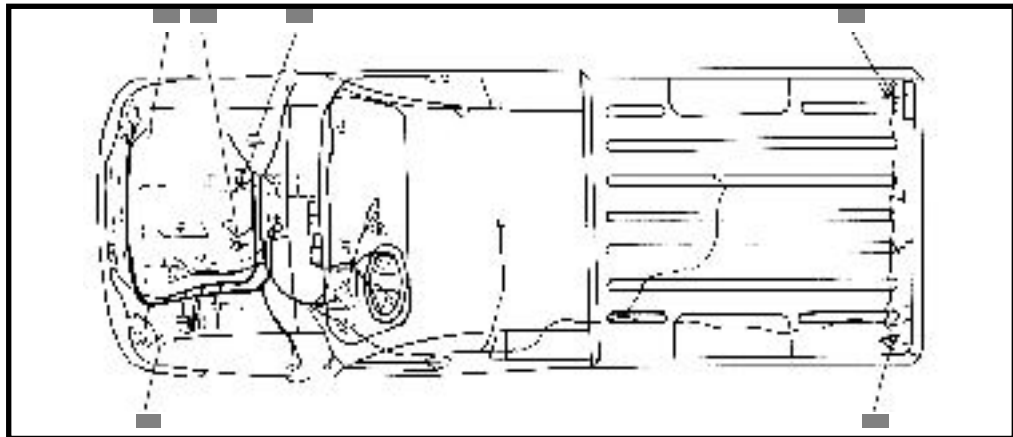
C. FOR H75 (Double Cab)



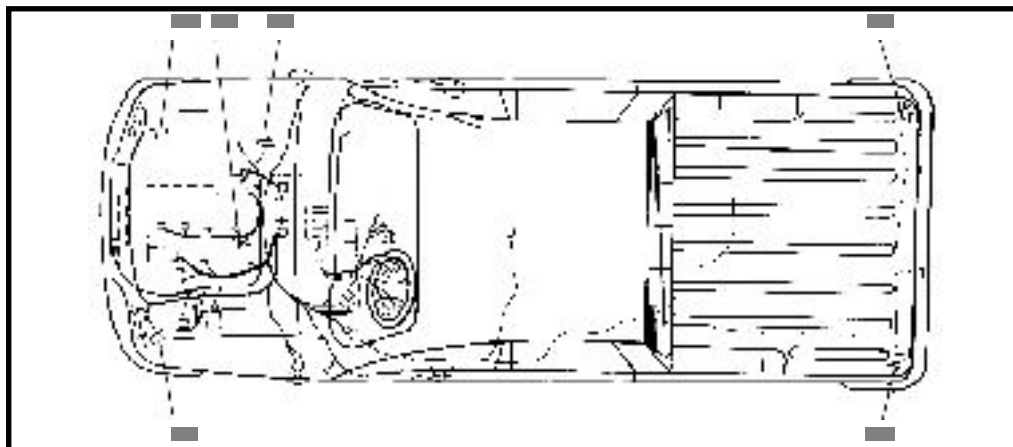
A. FOR U75 (Pick Up)



B. FOR E75 (Drop Side)



C. FOR H75 (Double Cab)

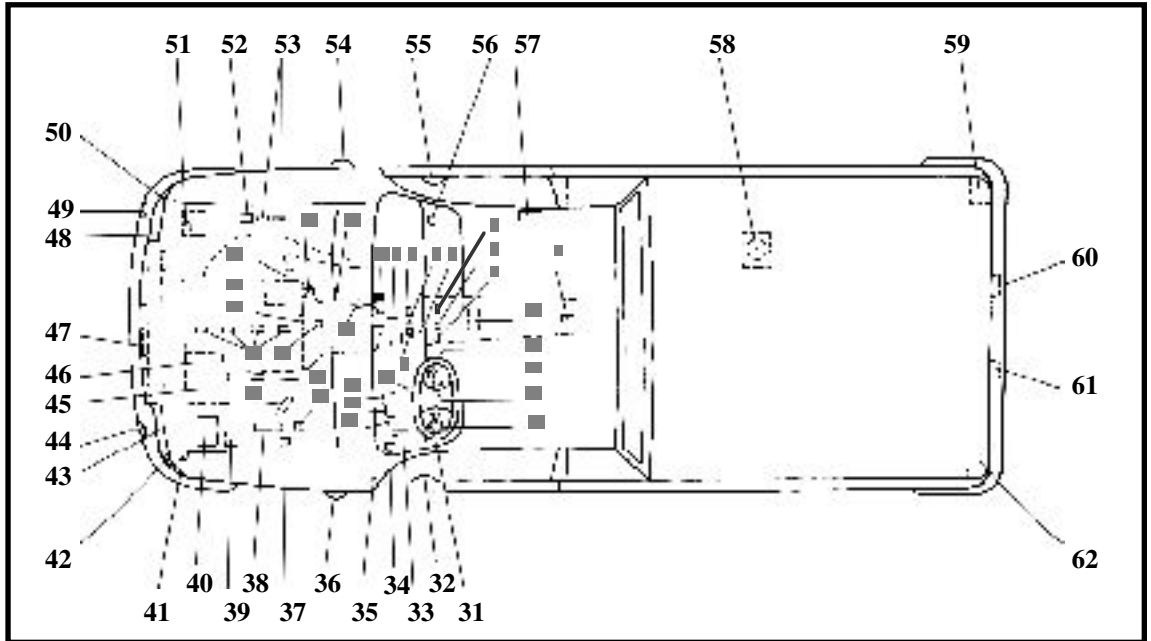


Electric components location on the vehicle

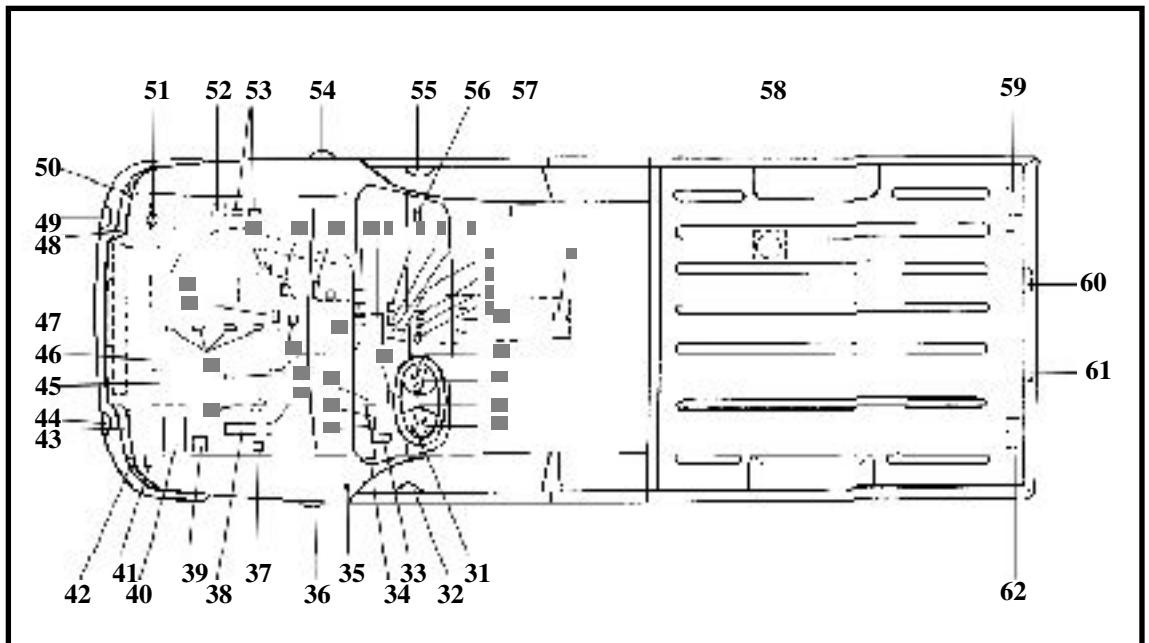
1	Handbrake contact	32	Left speaker
2	Windscreen wiper timer	33	U.C.E. decoder
3	4x4 switch	34	Cockpit fuse box
4	Fog headlights switch	35	Left front door contact
5	Blower switch	36	Left front sidesignalising light
6	Fog lights switch	37	Choke sensor
7	Hazard switch	38	Injection U.C.E.
8	Electronic clock	39	Pre-heating relay
9	Windscreen wiper motor	40	Engine compartment safety fuses and relays box
10	Blower climate control	41	Acoustic warning
11	Vacuum capsule contact	42	Left front tuning light
12	Gazes re-circulation electric-valve	43	Left headlight
13	Injection air temperature sensor	44	Left fog headlight
14	Starter	45	Alternator
15	Injection water temperature sensor	46	Injection pump
16	Pre-heating spark plugs	47	Blower cooling
17	Acceleration potentiometer	48	Right headlight
18	Braking system I.C.P.	49	Right fog headlight
19	Manual contact	50	Right front tuning light
20	RPM sensor	51	Windscreen washing pump
21	Reverse driving contact	52	Diesel oil heating resistance
22	Fog lights relay	53	4x4 connection electric-valve
23	Signalising relay	54	Right front side signalising light
24	4x4 indicator control relay	55	Right speaker
25	STOP contact	56	Diagnosis socket
26	Radio	57	Right front ceiling lamp
27	Anti-theft mechanism	58	Fuel level transmitter
28	Windscreen wiper-washing switch	59	Right rear light
29	Anti-starting bushing	60	Right licence plate lamp
30	Lights and horn switch	61	Left licence plate lamp
31	Tuning signalising switch	62	Left rear light

Electric components location on the vehicle

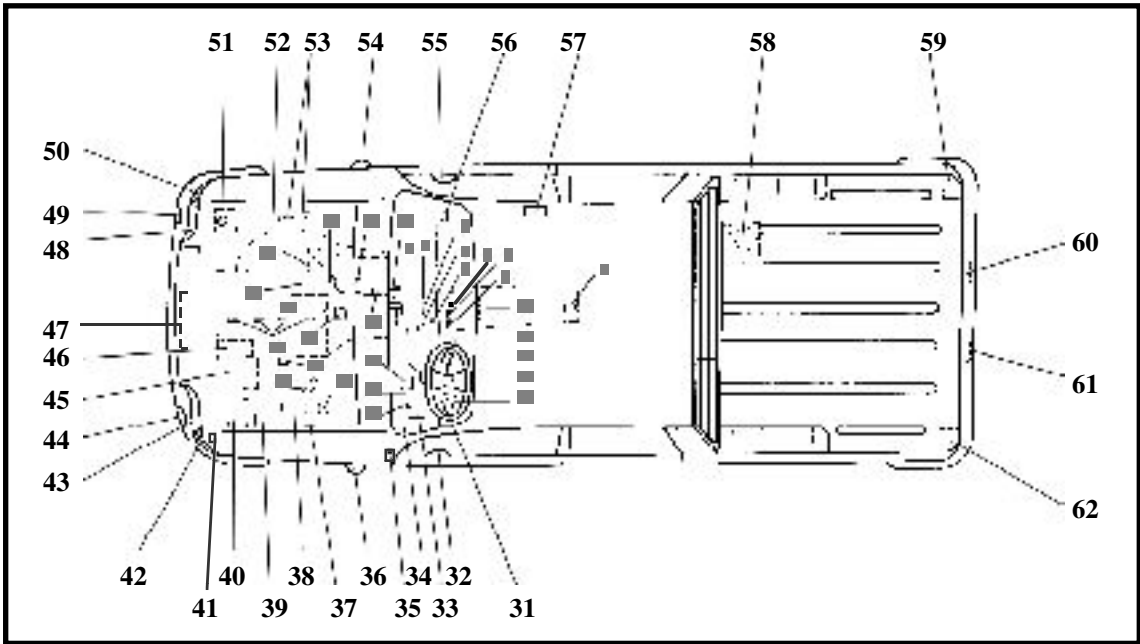
A. FOR U75 (Pick Up)



B. FOR E75 (Drop Side)



C. FOR H75 (Double Cab)



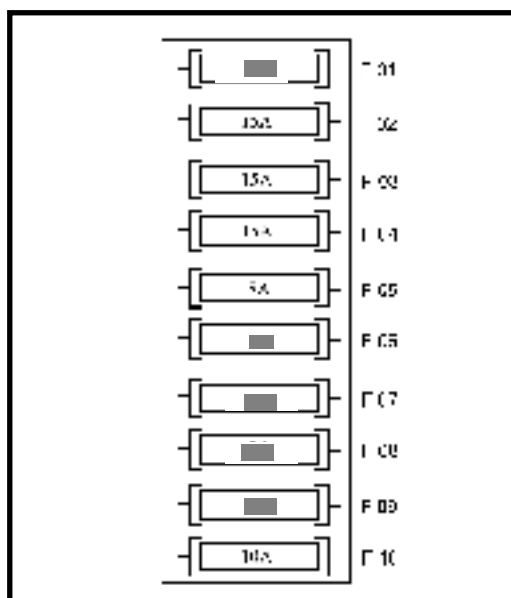
Cockpit fuse box

All DACIA commercial vehicles are provided with a fuse box containing **10** safety-fuses, situated left side under the dashboard, in the cockpit.

In case of electric system failure, prior any other intervention, the equipment fuses and connections are to be checked, power OFF.

The fuses protect the following electric circuit:

FUSE NUMBER	FUSE	PROTECTED CIRCUIT
F 01	15 A	Windscreen wiper-washing;
F 02	15 A	Blower climate control;
F 03	15 A	STOP lights, reverse driving lights;
F 04	15 A	Fog lights (+IC), radio, anti-starting indicator LED, and windscreen wiper stopping on fixed points;
F 05	8 A	Turning and hazard signalling;
F 06	8 A	Lights and lighting of: instrument panel, ashtray, lighters, documents compartment and contacts box and fog lights;
F 07	10 A	Ceiling lamps, lighters;
F 08	10 A	Diagnosis socket, U.C.E. decoder, anti-starting bush (+IC)
F 09	10 A	Diagnosis socket, U.C.E. decoder;
F 10	10 A	Clock (+DC), radio, instrument panel, 4x4-connection control.

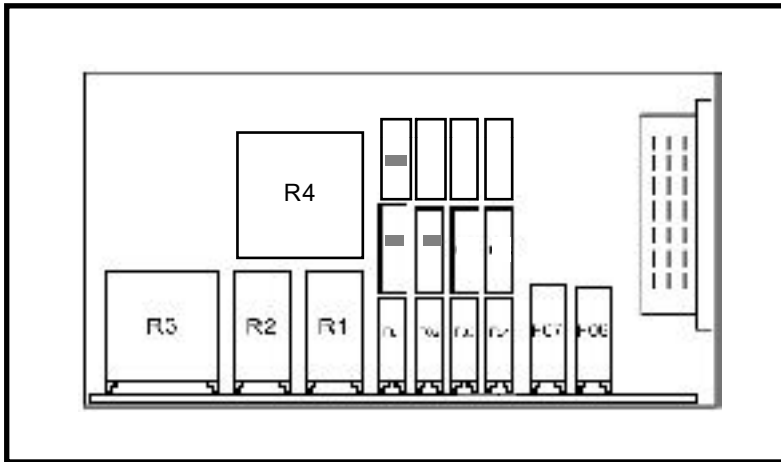


ELECTRIC DIAGRAMS

Engine compartment fuse box

The electric equipment of DACIA commercial vehicles is provided with safety fuses and relay, situated in the engine compartment and fixed on the left wing lining.

Electric circuits protected by fuses and relays are as follows:



FUSE NUMBER	FUSE TYPE	PROTECTED CIRCUIT
F01	10 A	Right low beam lights
F02	10 A	Left low beam lights
F03	10 A	Right high beam lights
F04	10 A	Left high beam lights
F05	15 A	Pre-heating relay, diesel oil relay, injection U.C.E. (+DC)
F06	70 A	Pre-heating spark plugs
F07	50 A	Diesel oil heating resistance, blower cooling
F08	15 A	Gases re-circulation electric-valve, U.C.E. injection (+IC), Diesel pump, injection relay R1
F09	15 A	Fog headlights

RELAY	PROTECTED CIRCUIT
R 1	Gases re-circulation electric-valve, U.C.E. injection, Diesel pump
R 2	Diesel oil heating resistance
R 3	Blower cooling
R 4	Fog headlights

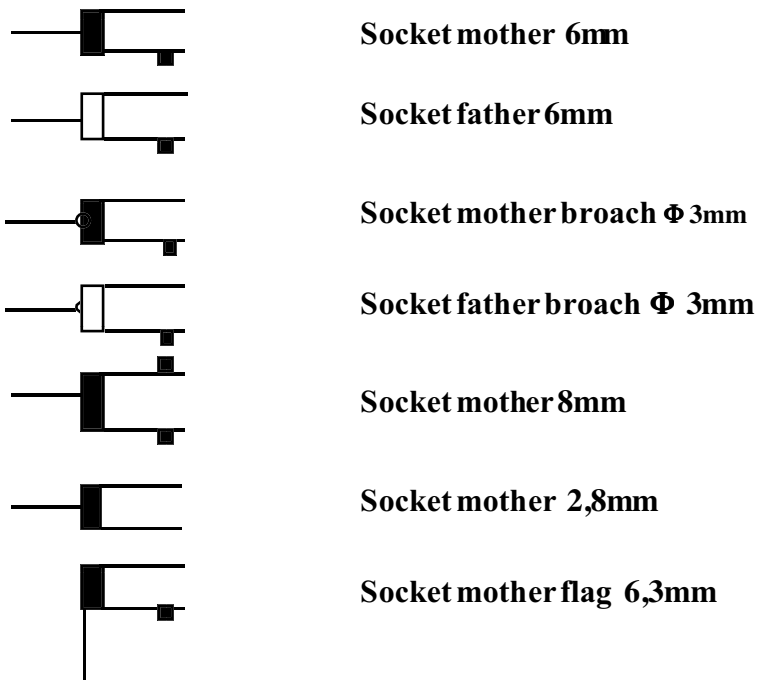
CONNECTOR NO	DENOMINATION	PAGE
484	4X4CONNECTIONELECTRIC-VALVE	89 - 100
1155	4X4INDICATOR CONTROIRELAY	89 - 99
478	4X4SWITCH	89 - 109
921	ACCELERATIONPOTENTIOMETER	89 - 83
105	ACOUSTIC WARNING	89 - 101
103	ALTERNATOR	89 - 89
654	ANTI-STARTINGBUSHING	89 - 97
104	ANTI-THEFT MECHANISM	89 - 97
107AB	BATTERYTERMINAL(-)	89 - 87
107	BATTERY TERMINAL(+)	89 - 87
107AC	BATTERY TERMINAL(+)	89 - 106
188	BLOWERCOOLNG	89 - 90
1091	BRAKING SYSTEM I.C.P	89 - 93
927	CHOKESENSOR(EURO2000)	89 - 75
1469	CLIMATECONTROLLIGHTING	89 - 118
1468	CLIMATECONTROLLIGHTING	89 - 118
1016	COCKPITFUSEBOX	89 - 107
225	DIAGNOSISSOCKET	89 - 95
449	DIESELOILHEATINGRESISTANCE	89 - 78
168	DOCUMENTS COMPARTMENT LIGHTING LAMP	89 - 116
101	ELECTRICLIGHTER	89-115
210	ELECTRONICCLOCK	89 - 110
MH	ENGINEELECTRICMASS	89 - 88
597	ENGINEFUSE BOXAND RELAYS (EURO 200)	89 - 81
597	ENGINEFUSE BOXAND RELAYS (EURO 96)	89 - 79
122	FOGHEADLIGHTSSWITCH	89 - 102
230	FOGLIGHTSCONTROIRELAY	89 - 98
121	FOGLIGHTSSWITCH	89 - 116
1335	FRONTASHTRAY LIGHTING	89 - 115
199	FUELLEVELTRANSMITTER	89 - 123
398	GAZESRE-CIRCULATIONELECTRIC-VALVE	89 - 83
156	HANDBRAKE CONTACT	89 - 119
125	HAZARD SWITCH	89 - 117
209	HORN ANDLIGHTS SWITCH	89 - 94
272	INJECTIONAIR TEMPERATURE SENSOR	89 - 75
711	INJECTIONPUMP	89 - 86
120	INJECTIONU.C.E.	89 - 73
247	INSTRUMENT PANEL	89 - 111

177	LEFTFOGHEADLIGHT	89 - 93
192	LEFTFRONTDOORSPEAKER	89 - 103
185	LEFTFRONTPARKINGLIGHT	89 - 102
268	LEFTFRONTSIDESIGNALISINGLIGHT	89 - 92
256	LEFTFRONTTURNINGLIGHT	89 - 92
227	LEFTHEADLIGHT	89 - 91
173	LEFTREARLIGHT	89 - 121
205	MANUALCONTACT	89 - 90
257	PRE-HEATINGRELAY	89 - 77
680	PRE-HEATING SARK PLUG 1	89 - 84
681	PRE-HEATING SARK PLUG 2	89 - 84
682	PRE-HEATING SARK PLUG 3	89 - 85
683	PRE-HEATING SARK PLUG 4	89 - 85
261	RADIO	89 - 109
167	LICENCEPLATELEFTLIGHT	89 - 119
166	LICENCEPLATERIGHTLIGHT	89 - 119
155	REVERSEDIVINGCONTACT	89 - 76
176	RIGHTFOGHEADLIGHT	89 - 93
329	RIGHTFRONTCEILINGLAMP	89 - 104
191	RIGHTFRONTDOORSPEAKER	89 - 103
184	RIGHTFRONTPARKINGLIGHT	89 - 102
267	RIGHTFRONTSIDESIGNALISINGLIGHT	89 - 92
255	RIGHTFRONTTURNINGLIGHT	89 - 91
226	RIGHTHEADLIGHT	89 - 91
172	RIGHTREARLIGHT	89 - 121
149	RPM SENSOR	89 - 76
163	STARTER	89 - 88
160	STOP CONTACT	89 - 101
137	TURNINGRELAY	89 - 98
209AC	TURNINGSIGNALISINGSWITCH	89 - 95
503	U.C.E.DECODER	89 - 96
1187	VACUUMCAPSULE CONTACT	89 - 99
244	WATER INJECTIONTEMPERATURE SENSOR	89 - 78
221	WINDSCREEN WASHING PUMP	89 - 105
212	WINDSCREEN WIPER MOTOR	89 - 104
113	WINDSCREEN WIPER TIMER	89 - 114
145	WINDSCREEN WIPER-WASHING SWITCH	89 - 105

R99	CLIMATE CONTROL SWITCH WIRING CONNECTION / CLIMATE CONTROL	89- 119
R107	FRONT WIRING CONNECTION DASHBOARD	89- 122
R111	DASHBOARD WIRING CONNECTION / CLIMATE CONTROL BLOWER	89- 129
R212	FRONT WIRING CONNECTION ENGINE	89- 120
R265	FRONT WIRING CONNECTION BACK	89- 127
R318	FRONT WIRING CONNECTION DASHBOARD	89- 123

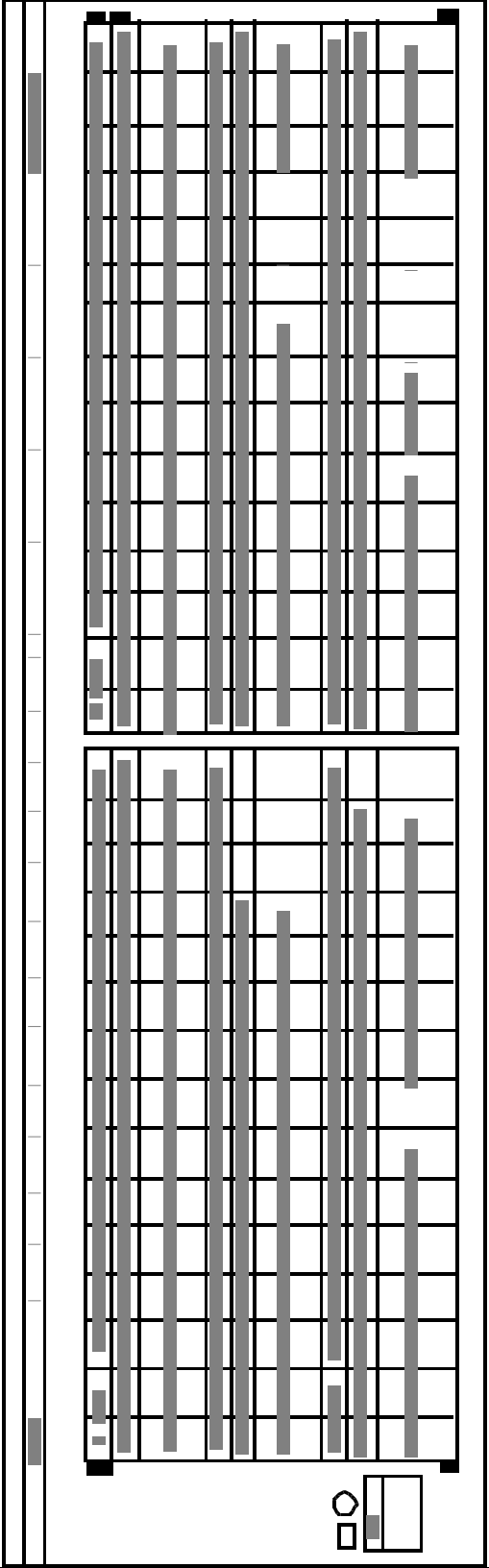
REMARKS:

- All connectors and connections are backwards seen (from wires forward)
- Some electric components are not connected to the vehicle wiring by means of multi-way connectors, but by means of protected individual sockets. For illustrating the type of the respective socket, the following symbols are to be used:

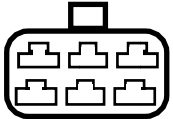





U.C.E. INJECTION




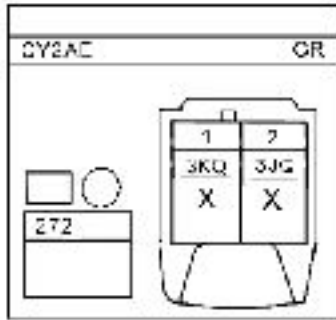
Connectors and connections wires functions

		ENGINE WIRING		U75 02
Position	Sectioning		Destination	
3	0,35	HL	DIAGNOSIS SIGNAL -LINEL	
4	0,6	3KQ	AIR TEMPERATURE SIGNAL	
8	0,35	3LS	SIGNAL+ACCELERATION POTENTIOMETER 1	
9	0,35	TB9	SCREENING-INJECTIONPUMP	
11	0,35	3BL	ENGINE RPM - SIGNAL >RPM SENSOR	
12	0,35	3KB	ROTOR COMPENSATION SIGNAL > INJECTION PUMP	
13	0,35	3KC	CAM POSITION SENSOR SIGNAL	
14	0,35	3KT	ROTOR SENSOR SIGNAL & INJECTION PUMP	
15	0,35	3KR	INDUCTIVE SENSOR SIGNAL > INJECTION PUMP	
19	0,35	3KD	SPARK PLUG DIAGNOSIS SIGNAL	
20	0,35	H17	INJECTION CODED SIGNAL > ANTI-STARTING	
24	0,35	3BK	PRE-HEATING INDICATOR - CONTROL	
30	0,6	3FW	STOP ELECTRIC - VALVE CONTROL	
33	0,35	HK	DIAGNOSIS SIGNAL LINE K	
34	0,35	3C	WATER TEMPERATURE SENSOR + SIGNAL	
35	0,35	3EL	SIGNAL + POTENTIOMETER E.G.R.	
36	0,35	3FAB	SIGNAL + FUEL TEMPERATURE	
37	0,35	3LW	SIGNAL + ACCELERATION POTENTIOMETER 2	
39	0,35	3KH	+ POTENTIOMETER E.G.R.	
41	0,35	3LR	+ ACCELERATION POTENTIOMETER 1	
42	0,35	3LU	+ ACCELERATION POTENTIOMETER 2	
46	0,35	65A	CONTROL + BRAKE INFO STOP CONTACT	
49	0,35	3FY	PRE-HEATING RELAY DIAGNOSIS SIGNAL	
51	0,35	3KL	INJECTION PUMP MEMORY SIGNAL	
52	0,35	3FF	PRE-HEATING RELAY CONTROL	
53	0,35	3JN	PRE-HEATING RELAY BLOWER	
54	0,35	31A	WATER TEMPERATURE INDICATOR - CONTROL	
59	1,0	3CX	E.G.R. CONTROL	
60	0,6	3KU	INCREASED FLOW ELECTRIC - VALVE CONTROL	
61	0,35	3LT	- ACCELERATION POTENTIOMETER	
62	0,35	3LV	- ACCELERATION POTENTIOMETER 2	
63	0,35	3JM	- POTENTIOMETER E.G.R.	
65	0,6	3JQ	- AIR TEMPERATURE SENSOR	
66	0,35	3JK	- WATER TEMPERATURE SENSOR	
67	0,6	3KP	- FUEL TEMPERATURE > INJECTION PUMP MEMORY	
74	0,35	3BG	ENGINE RPM SIGNAL > RPM SENSOR	
76	1,0	3FB	+ INJECTION > INJECTION RELAY	
77	1,0	3FB	+ INJECTION > INJECTION RELAY	
78	2,0	M	MASS	
79	2,0	M	MASS	
81	0,35	AP29	ENGINE SECURITY FUNCTION PROTECTED + D.C.	
82	0,35	3AA	INJECTION RELAY - CONTROL	
83*	0,35	3FH	CONTROL - ANTI POLLUTION FAILURE INDICATOR > INDICATOR O.B.D.	
89	0,6	3FZ	ADVANCE ELECTRIC - VALVE - CONTROL	
90	0,6	3KV	LOW FLOW ELECTRIC - VALVE CONTROL	




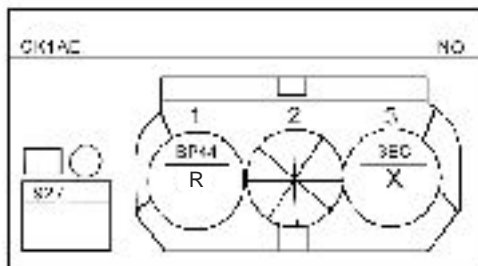
INJECTION AIR TEMPERATURE SENSOR

Position	Sectioning		Destination
1	0,6	3KQ	AIR TEMPERATURE SIGNAL
2	0,6	3JQ	-AIR TEMPERATURE SENSOR



CHOKE SENSOR (for EURO 2000)


Position	Sectioning		Destination
1	0,6	BP44	+ PROTECTED BATTERY > ENGINE FUSE OUTLET F08
3	0,6	3EC	INJECTION RELAY CONTROL

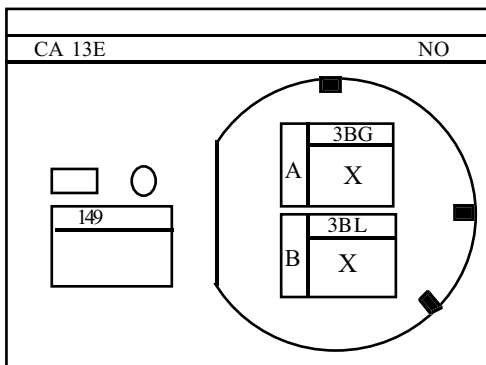


Connectors and connections wires functions




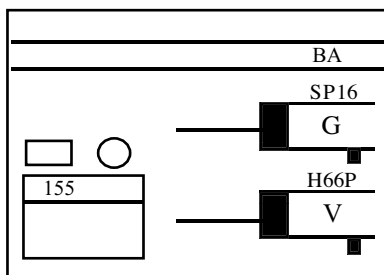
RPM SENSOR

Position	Sectioning		Destination
A	0,35	3BG	ENGINE RPM SIGNAL > INJECTION U.C.E.
B	0,35	3BL	ENGINE RPM - SIGNAL > INJECTION U.C.E.




REVERSE DRIVING CONTACT

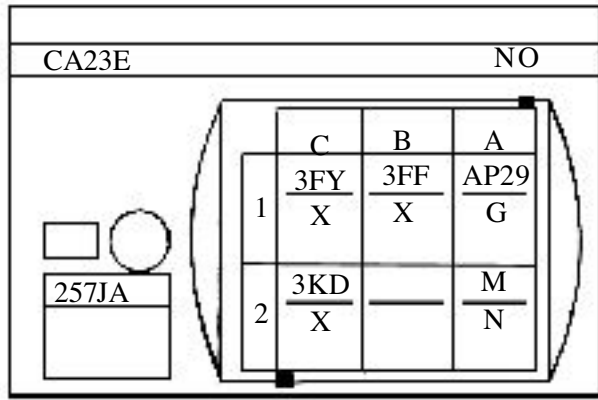
Position	Sectioning		Destination
1	0,6	SP16	+ PROTECTED ACCESSORIES > COCKPIT FUSE OUT F03
2	0,6	H66P	CONTROL + REVERSE DRIVING LIGHTS




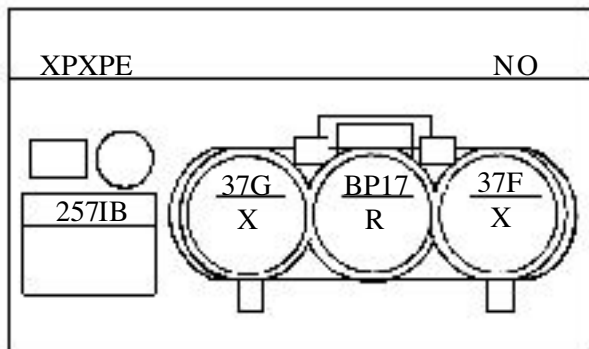


PRE-HEATING RELAY

Position	Sectioning		Destination
A1	0,6	AP29	ENGINE SECURITY FUNCTION PROTECTED + D.C.
B1	0,35	3FF	CONTROL- PRE-HEATING RELAY
C1	0,35	3FY	PRE-HEATING RELAY DIAGNOSIS SIGNAL
A2	0,35	M	MASS
C2	0,35	3KD	SPARK PLUG DIAGNOSIS SIGNAL




Position	Sectioning		Destination
1	5,0	37F	CONTROL+ SPARK PLUGS 43
2	7,0	BP17	+ PROTECTED BATTERY > FUSE OUTLET F06
3	5,0	37G	CONTROL+ SPARK PLUGS 24

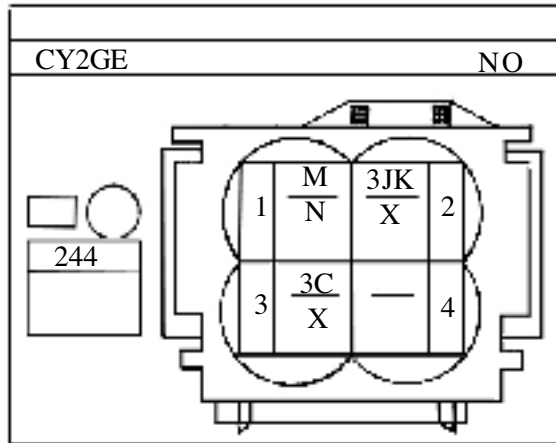


Connectors and connections wires functions


	ENGINE WIRING	U75 02
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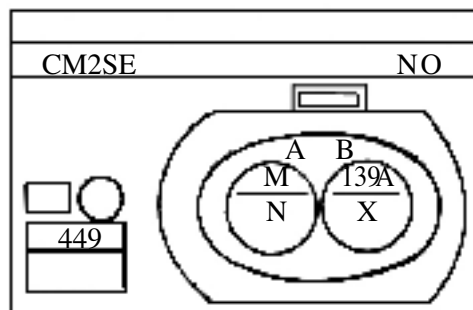
INJECTION WATER TEMPERATURE SENSOR

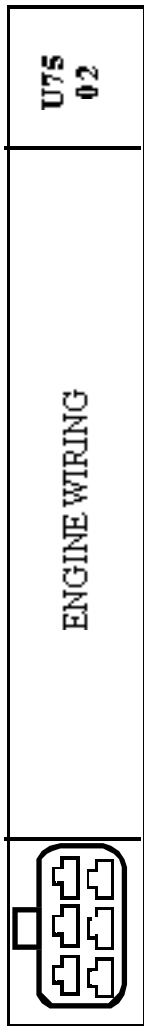
Position	Sectioning		Destination
1	0,35	M	MASS
2	0,35	3JK	- WATER TEMPERATURE SENSOR
3	0,35	3C	SIGNAL + WATER TEMPERATURE SENSOR



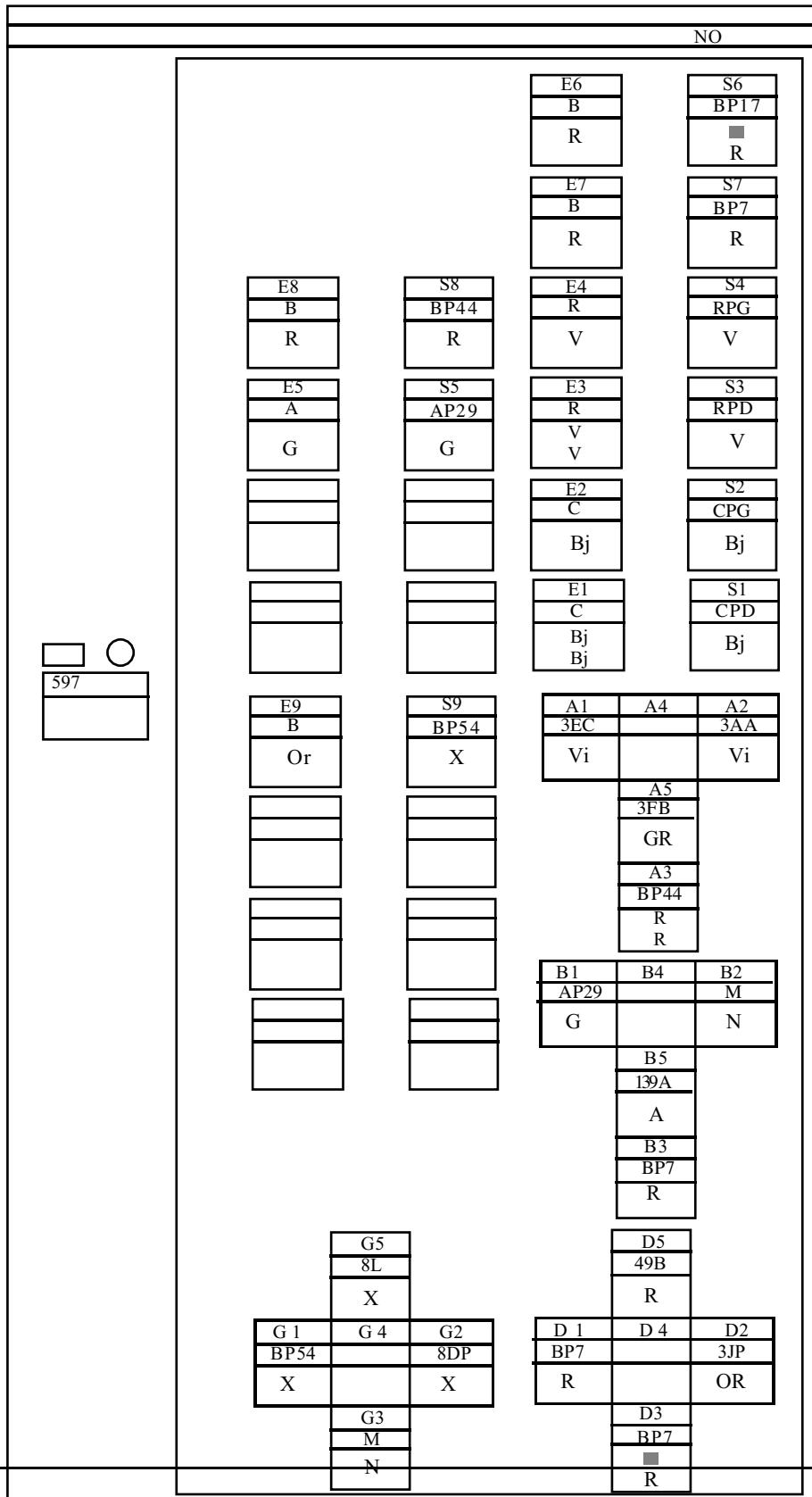
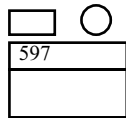
DISELE HEATING RESISTANCE

Position	Sectioning		Destination
A	1,4	M	MASS
B	1,4	139A	CONTROL+ DIESEL OIL HEATING

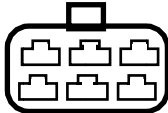





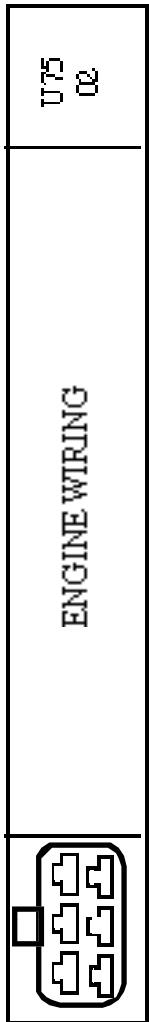
ENGINE RELAYS AND SAFETY FUSE BOX (EURO 96)



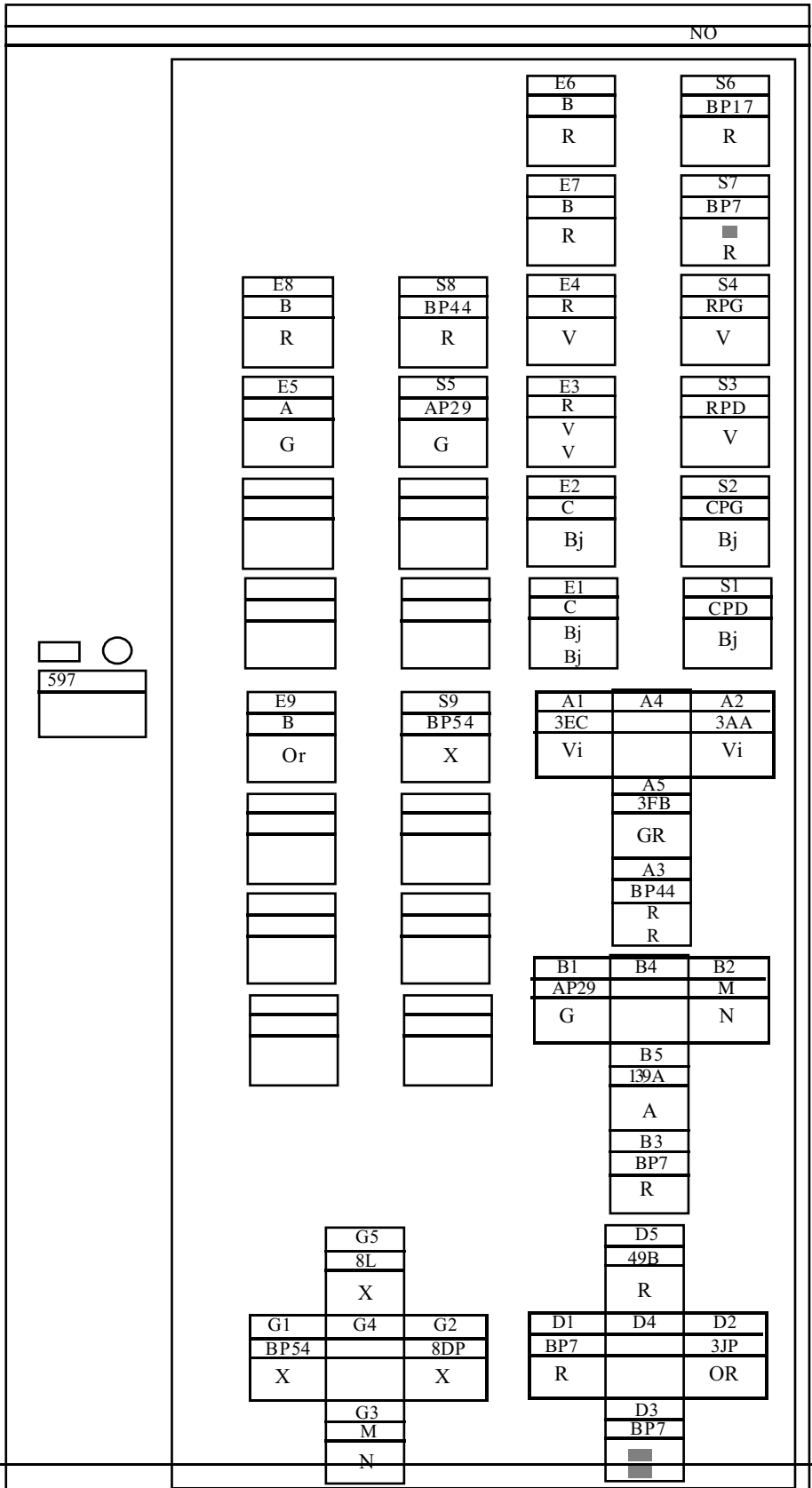
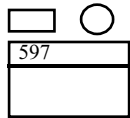
Connectors and connections wires functions

	ENGINE WIRING	U75 02
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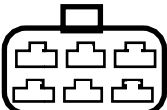
Position	Section		Destination
B1	0,35	AP29	ENGINE SECURITY FUNCTION + D.C. PROTECTED
B2	0,35	M	MASS
B3	1,4	BP7	+ PROTECTED BATTERY > FUSE OUTLET F07
B5	1,4	139A	CONTROL + DIESEL OIL HEATING
D1	1	BP7	+ PROTECTED BATTERY > SHUNT
D2	0,35	3JP	CONTROL - BLOWER RELAY
D3	5,0	BP7	+ PROTECTED BATTERY > FUSE OUTLET F07
D3	1,0	BP7	+ PROTECTED BATTERY > SHUNT
D5	5,0	49B	CONTROL + BLOWER RELAY
A1	0,35	BP44	+ PROTECTED BATTERY > SHUNT
A2	0,35	3AA	INJECTION RELAY CONTROL
A3	1,4	BP44	+ PROTECTED BATTERY > CHOKE SENSOR
A3	0,35	BP44	+ PROTECTED BATTERY > SHUNT
A5	1,4	3FB	+ INJECTION
G1	0,35	BP54	+ PROTECTED BATTERY > ENGINE FUSE OUTLET F09
G2	0,35	8DP	CONTROL + PROTECTED FOG HEADLIGHTS
G3	2,0	M	MASS
G5	2,0	8L	CONTROL + FOG HEADLIGHTS RELAY
<hr/>			
E1	1,4	C	+ LOW BEAM LIGHTS
E1	1,4	C	+ LOW BEAM LIGHTS > FUSE INLET F02
S1	1,0	CPD	+ PROTECTED RIGHT LOW BEAM LIGHTS
E2	1,4	C	+ LOW BEAM LIGHTS
S2	1,0	CPG	+ PROTECTED LEFT LOW BEAM LIGHTS
E3	1,4	R	+ HIGH BEAM LIGHTS
E3	1,4	R	+ HIGH BEAM LIGHTS > FUSE INLET F04
S3	1,0	RPD	+ PROTECTED RIGHT HIGH BEAM LIGHTS
E4	1,4	R	+ HIGH BEAM LIGHTS
S4	1,0	RFG	+ PROTECTED LEFT HIGH BEAM LIGHTS
E5	2,0	A	+ AFTER CONTACT
S5	1,0	AP29	+ ENGINE SECURITY FUNCTION PROTECTED D.C.
E6	7,0	B	+ BATTERY
S6	7,0	BP7	+ PROTECTED BATTERY > PRE-HEATING RELAY
E7	7,0	B	+ BATTERY
S7	5	BP7	+ PROTECTED BATTERY > CLIMATE CONTROL BLOWER RELAY
S7	1,4	BP7	+ PROTECTED BATTERY > DIESEL OIL PRE-HEATING RELAY
E8	1,4	B	+ BATTERY
S8	1,4	BP44	+ PROTECTED BATTERY > INJECTION RELAY
E9	2,0	B	+ BATTERY
S9	2,0	BP54	+ PROTECTED BATTERY > FOG HEADLIGHTS RELAY




ENGINE RELAYS AND SAFETY FUSE BOX (EURO 2000)




Connectors and connections wires functions

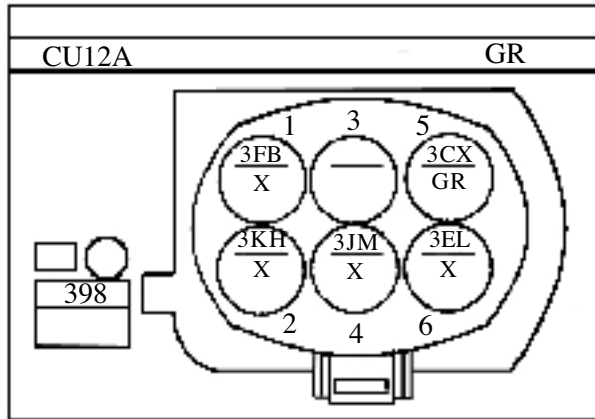
	ENGINE WIRING	U75 02
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Position	Section		Destination
B1	0,35	AP29	ENGINE SECURITY FUNCTION + D.C. PROTECTED
B2	0,35	M	MASS
B3	1,4	BP7	+ PROTECTED BATTERY > FUSE OUTLET F07
B5	1,4	139A	CONTROL + DIESEL OIL HEATING
D1	1	BP7	+ PROTECTED BATTERY > SHUNT
D2	0,35	3JP	CONTROL - BLOWER RELAY
D3	5,0	BP7	+ PROTECTED BATTERY > FUSE OUTLET F07
D3	1,0	BP7	+ PROTECTED BATTERY > SHUNT
D5	5,0	49B	CONTROL + BLOWER RELAY
A1	0,6	3EC	INJECTION RELAY CONTROL > CHOKE SENSOR
A2	0,35	3AA	INJECTION RELAY CONTROL
A3	1,4	BP44	+ PROTECTED BATTERY > CHOKE SENSOR
A3	0,6	BP44	+ PROTECTED BATTERY > CHOKE SENSOR
A5	1,4	3FB	+ INJECTION
G1	0,35	BP54	+ PROTECTED BATTERY > ENGINE FUSE OUTLET F09
G2	0,35	8DP	CONTROL + PROTECTED FOG HEADLIGHTS
G3	2,0	M	MASS
G5	2,0	8L	CONTROL + FOG HEADLIGHTS RELAY
<hr/>			
E1	1,4	C	+ LOW BEAM LIGHTS
E1	1,4	C	+ LOW BEAM LIGHTS > FUSE INLET F02
S1	1,0	CPD	+ PROTECTED RIGHT LOW BEAM LIGHTS
E2	1,4	C	+ LOW BEAM LIGHTS
S2	1,0	CPG	+ PROTECTED LEFT LOW BEAM LIGHTS
E3	1,4	R	+ HIGH BEAM LIGHTS
E3	1,4	R	+ HIGH BEAM LIGHTS > FUSE INLET F04
S3	1,0	RPD	+ PROTECTED RIGHT HIGH BEAM LIGHTS
E4	1,4	R	+ HIGH BEAM LIGHTS
S4	1,0	RIG	+ PROTECTED LEFT HIGH BEAM LIGHTS
E5	2,0	A	+ AFTER CONTACT
S5	1,0	AP29	+ ENGINE SECURITY FUNCTION PROTECTED D.C.
E6	7,0	B	+ BATTERY
S6	7,0	BP17	+ PROTECTED BATTERY > PRE-HEATING RELAY
E7	7,0	B	+ BATTERY
S7	5	BP7	+ PROTECTED BATTERY > CLIMATE CONTROL BLOWER RELAY
S7	1,4	BP7	+ PROTECTED BATTERY > DIESEL OIL PRE-HEATING RELAY
E8	1,4	B	+ BATTERY
S8	1,4	BP44	+ PROTECTED BATTERY > BLOWER RELAY
E9	2,0	B	+ BATTERY
S9	2,0	BP54	+ PROTECTED BATTERY > FOG HEADLIGHTS RELAY


	ENGINE WIRING	U75 02
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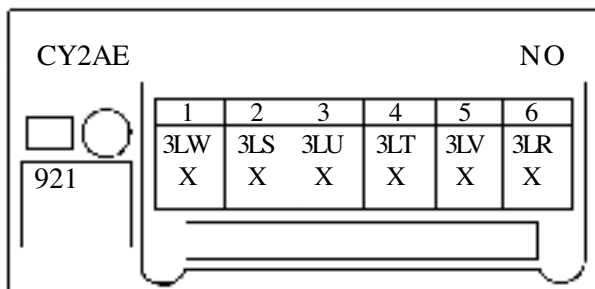
GAZES RE-CIRCULATIONELECTRIC VALVE

Position	Sectioning		Destination
1	1,0	3FB	+ INJECTION >INJECTION RELAY
2	0,35	3KH	+POTENTIOMETEREGR
4	0,35	3JM	-POTENTIOMETEREGR
5	1,0	3CX	CONTROL-EGR
6	0,35	3EL	SIGNAL+POTENTIOMETEREGR



ACCELERATION POTENTIOMETER

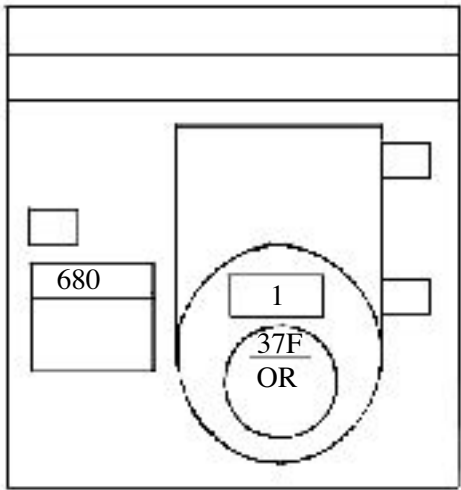
Position	Sectioning		Destination
1	0,35	3LW	SIGNAL+ACCELERATION POTENTIOMETER 2
2	0,35	3LS	SIGNAL+ACCELERATION POTENTIOMETER 1
3	0,35	3LU	+ACCELERATION POTENTIOMETER2
4	0,35	3LT	-ACCELERATION POTENTIOMETER 1
5	0,35	3LV	-ACCELERATION POTENTIOMETER 2
6	0,35	3LR	+ACCELERATION POTENTIOMETER1




	<p>ENGINE WIRING</p>	<p>U75 02</p>
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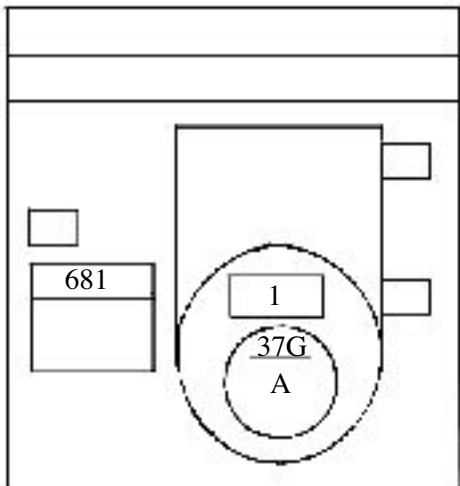
PRE-HEATING SPARK PLUG 1

Position	Sectioning		Destination
1	3,0	37F	CONTROL+ SPARK PLUGS 43



PRE-HEATING SPARK PLUG 2

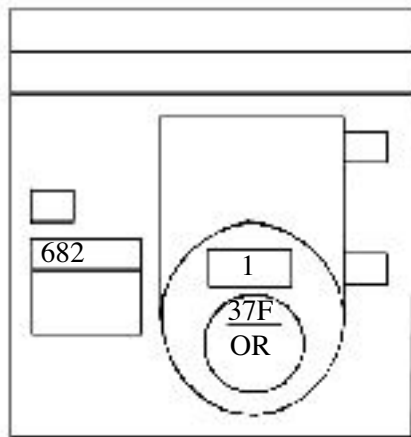
Position	Sectioning		Destination
1	3,0	37G	CONTROL+ SPARK PLUGS 24




	ENGINEWIRING	U75 02
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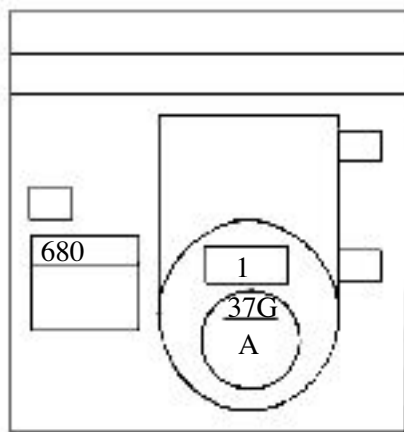
PRE-HEATING SPARK PLUG 3

Position	Sectioning		Destination
1	3,0	37F	CONTROL + SPARK PLUGS 1-3




PRE-HEATING SPARK PLUG 4

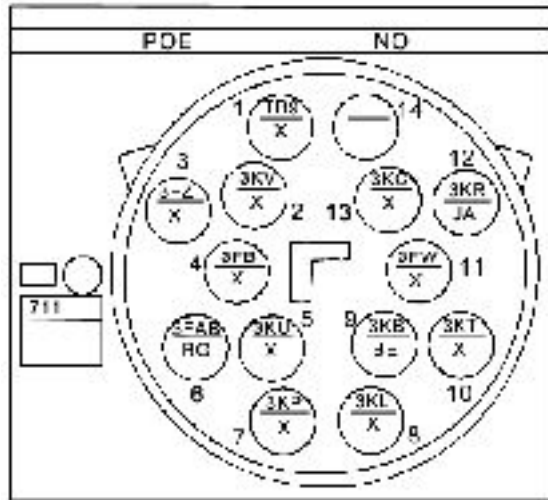
Position	Sectioning		Destination
1	3,0	37G	CONTROL+ SPARK PLUGS 24



	<p>ENGINE WIRING</p>	<p>U75 02</p>
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INJECTION PUMP

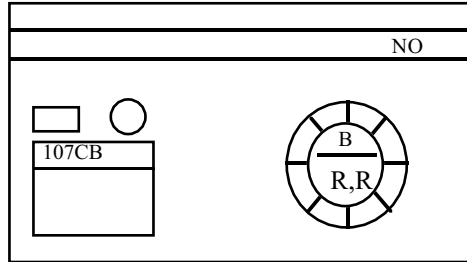
Position	Sectioning		Destination
1	0,35	TB9	SCREENING>INJECTION U.C.E
2	0,6	3KV	LOW FLOW ELECTRIC VALVE CONTROL
3	0,6	3FZ	- ADVANCE ELECTRIC VALVE CONTROL
4	1,0	3FB	+ INJECTION > INJECTION RELAY
5	0,6	3KU	INCREASED FLOW ELECTRIC VALVE CONTROL
6	0,35	3FAB	SIGNAL + FUEL TEMPERATURE
7	0,6	3KP	FUEL TEMPERATURE > INJECTION PUMP MEMORY
8	0,35	3KL	INJECTION PUMP MEMORY SIGNAL
9	0,35	3KB	ROTOR COMPENSATION SIGNAL > INJECTION U.C.E
10	0,35	3KT	ROTOR SENSOR SIGNAL > INJECTION U.C.E.
11	0,6	3FW	CONTROL-STOP ELECTRIC VALVE
12	0,35	3KR	INDUCTIVE SENSOR SIGNAL > INJECTION U.C.E.
13	0,35	3KC	CAM POSITION SENSOR SIGNAL






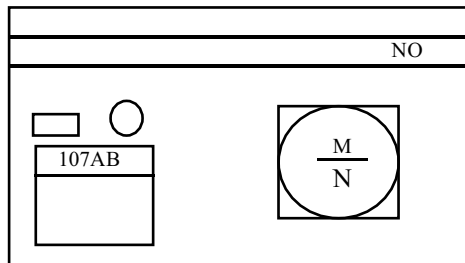
BATTERY TERMINAL+ (PLUS)

Position	Sectioning		Destination
1	16	B	+ BATERIE >ALTERNATOR
2	25	B	+ BATERIE > DEMAROR




BATTERY TERMINAL - (MINUS)

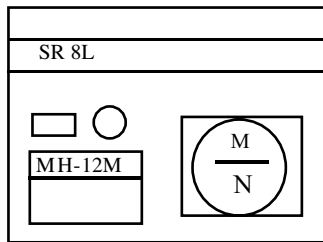
Position	Sectioning		Destination
1	16	M	BATTERY ELECTRIC MASS






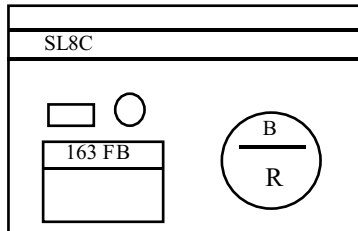
ENGINEELECTRIC MASS

Position	Sectioning		Destination
1	10	M	Mass




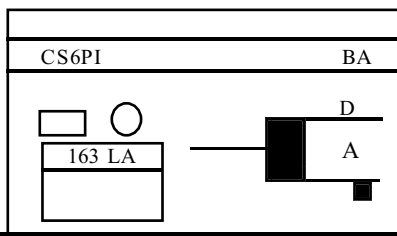
STARTER

Position	Sectioning		Destination
1	25	B	+ Battery




STARTER EXCITATION

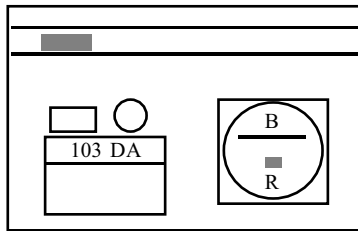
Position	Sectioning		Destination
1	3,0	D	CONTROL + STARTER



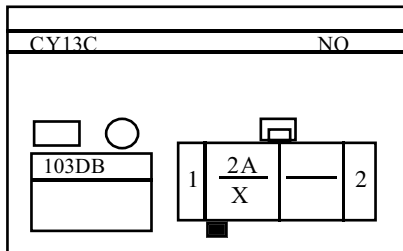
	ENGINE WIRING	U75 02
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ALTERNATOR

Position	Sectioning		Destination
1	16	B	+ BATERIE
1	10	B	+ BATERIE >INTRARE SIGURANȚI F06, F07, F08



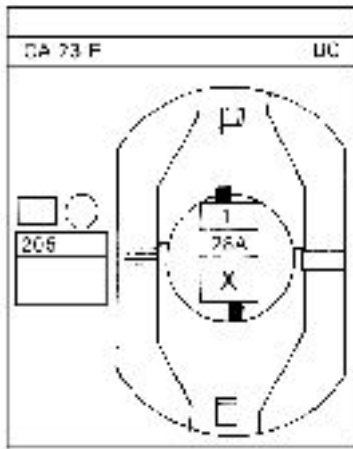
Position	Sectioning		Destination
1	0,35	2A	CONTROL - BATERY LOADING INDICATOR




	<p>ENGINE WIRING</p>	<p>U75 02</p>
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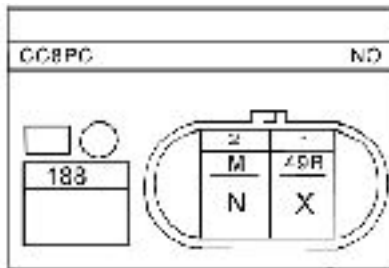
MANUAL CONTACT

Position	Sectioning		Destination
1	0,35	28A	CONTROL+ OILPRESSURE INDICATOR




COOLING BLOWER

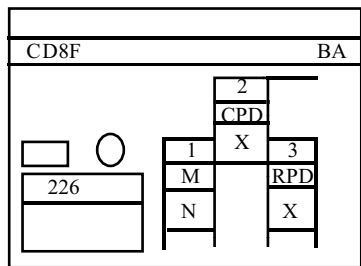
Position	Sectioning		Destination
1	5,0	49B	CONTROL+ BLOWER COOLING
2	5,0	M	MASS






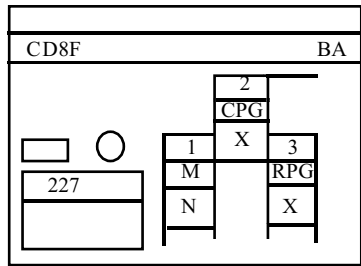
RIGHTHEADLIGHT

Position	Sectioning		Destination
1	1,00	M	Mass
2	1,00	CPD	+ Protected right low beam lights
3	1,00	RPD	+ Protected right high beam lights




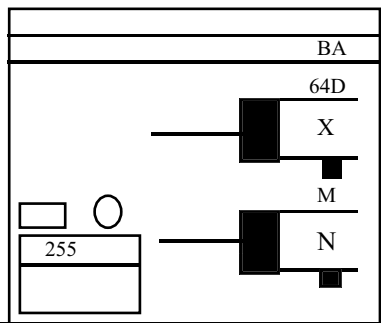
LEFTHEADLIGHT

Position	Sectioning		Destination
1	1,00	M	MASS
2	1,00	CFG	+ PROTECTED LET LOWBEAM LIGHTS
3	1,00	RFG	+ PROTECTELEFTHIGHBEAM LIGHTS




RIGHTFRONT SIDETURNINGLIGHT

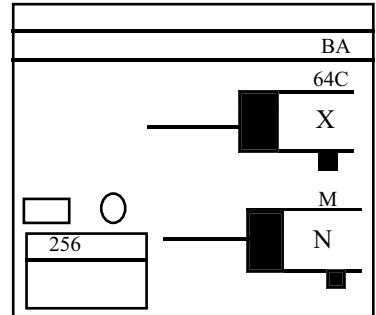
Position	Sectioning		Destination
1	0,60	64D	RIGHTTURNNGLIGHTSCONTROL
2	0,60	M	MASS






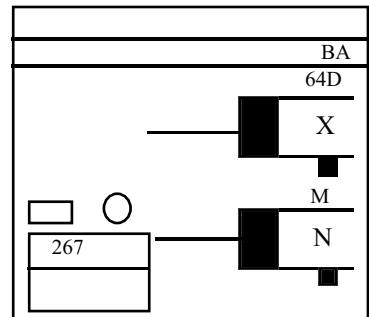
LEFT FRONT TURNING LIGHT

Position	Sectioning		Destination
1	0,6	64C	LEFT TURNING LIGHTS CONTROL
2	0,6	M	MASS




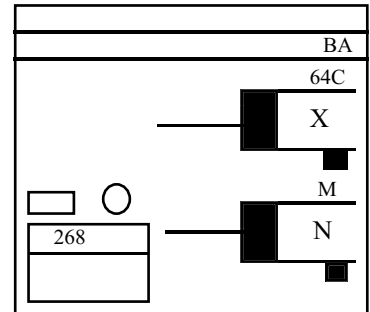
RIGHT SIDE FRONT TURNING LIGHTS

Position	Sectioning		Destination
1	0,60	64D	RIGHT TURNING LIGHTS CONTROL
2	0,60	M	MASS



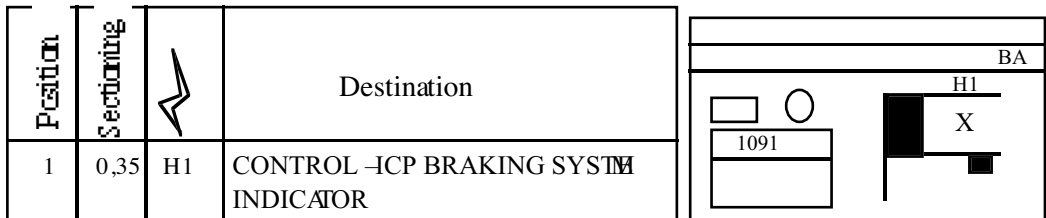
LEFT SIDE FRONT TURNING LIGHTS

Position	Sectioning		Destination
1	0,60	64C	LEFT TURNING LIGHTS CONTROL
2	0,60	M	MASS

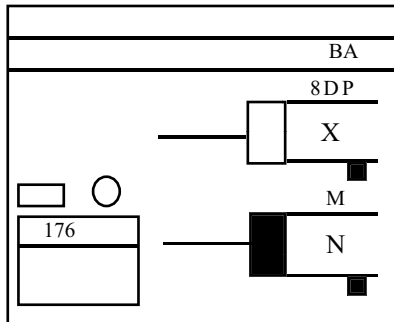




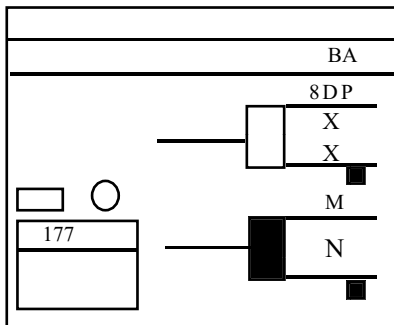
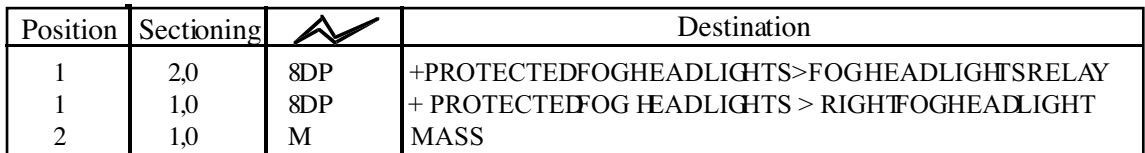
I.C.P. BRAKING SYSTEM



RIGHTFRONT FOG HEADLIGHT




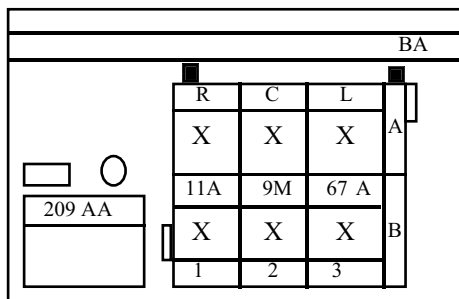
FOGLEFTH HEADLIGHT




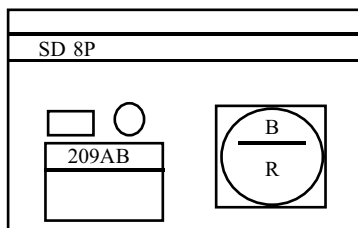


HORN AND LIGHT SWITCH

Position	Sectioning		Destination
A1	1,40	R	+ HIGHBEAMLIGHTS
A2	1,40	C	+ LOW BEAMLIGHTS
A3	1,00	L	+ PARKING LIGHTS
B1	0,35	11A	CONTROL + HIGHBEAMLIGHTS
B2	0,35	9M	SHUNT > FOG LAMP SWITCH
B3	1,00	67A	CONTROL + ACOUSTIC WARNING



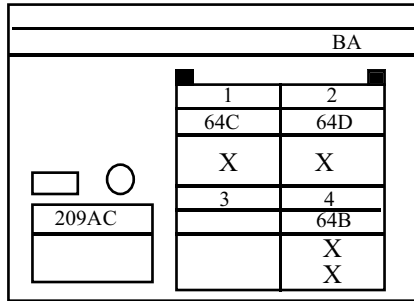
Position	Sectioning		Destination
1	3,0	B	+ BATTERY





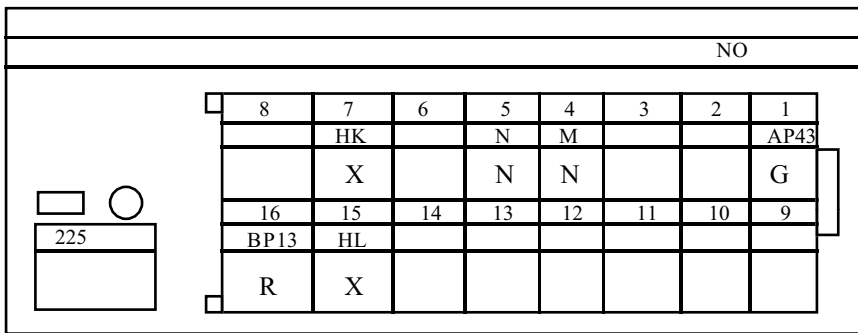
TURNING SIGNALISING SWITCH

Position	Sectioning		Destination
1	1,0	64C	FRONTLEFTTURNINGLIGHTSCONTROL
2	1,0	64D	FRONTRIGHTTURNINGLIGHTSCONTROL
4	1,0	64B	CONTROL+SIGNALISING
4	1,0	64B	CONTROL + SIGNALISING > HAZARD SWITCH




DIAGNOSIS SOCKET

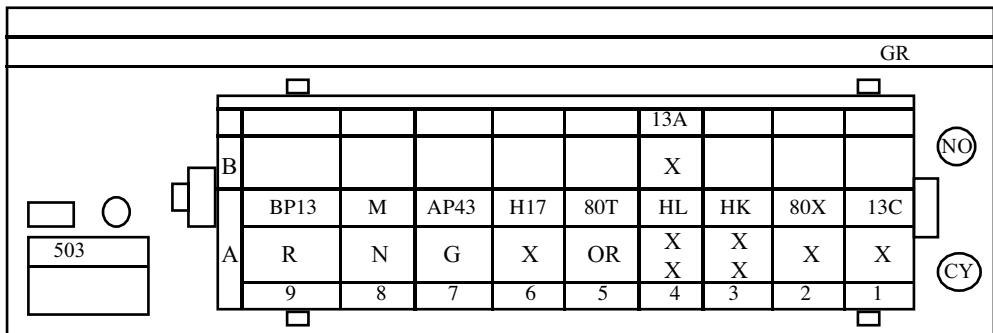
Position	Sectioning		Destination
1	0,35	AP43	+ PROTECTED D.C. > COCKPIT FUSE LEFTF09
4	0,35	M	MASS
5	0,35	N	ELECTRONCMASS
7	0,35	HK	DIAGNOSIS SIGNALLINEK
15	0,35	HL	DIAGNOSIS SIGNAL -LINEL
16	0,35	BP13	PROTECTED BATTERY > COCKPIT FUSE OULETF08






U.C.E. DECODER

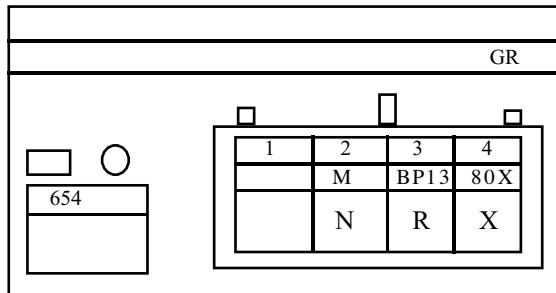
Position	Sectioning		Destination
A1	0,6	13C	CEILING CONTROL
A2	0,35	80X	ANTI-STARTING BUSHING SIGNAL TRACK (TR)
A3	0,35	HK	DIAGNOSIS SIGNAL LINE K > INJECTION U.C.E
A3	0,35	HK	DIAGNOSIS SIGNAL -LINE K > DECODER U.C.E.
A4	0,35	HL	DIAGNOSIS SIGNAL LINE L > INJECTION U.C.E.
A4	0,35	HL	DIAGNOSIS SIGNAL - LINE L > DECODER U.C.E.
A5	0,35	80T	ANTI-STARTING CONTROL-INDICATOR
A6	0,35	H17	INJECTION CODED SIGNAL > ANTI-STARTING
A7	0,6	AP43	+ PROTECTED DC COCKPIT FUSE OUTLET F09
A8	0,35	M	MASS
A9	0,6	BP13	+ PROTECTED BATTERY > COCKPIT FUSE OUTLET F08
B4	0,35	13A	CONTROL- CEILING LIGHTING > DOOR CONTACT






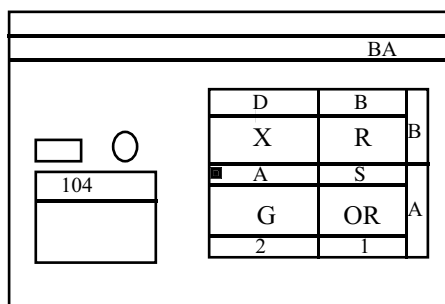
ANTI-STARTING BUSHING

Position	Sectioning		Destination
2	0,35	M	MASS
3	0,35	BP13	+PROTECTED BATTERY
4	0,35	80X	ANTI-STARTING BUSHING SIGNAL TRACK (TR)




ANTI-THEFT MECHANISM

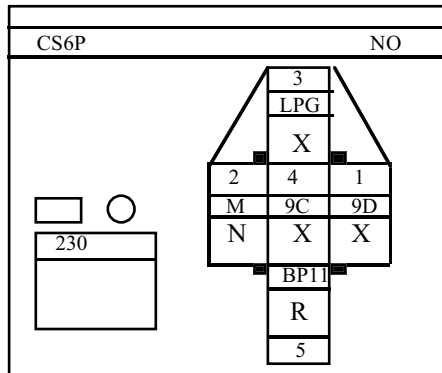
Position	Sectioning		Destination
A1	2,0	S	SUPPLY+ACCESSORIES
A2	5,0	A	SUPPLY+AFTER CONTACT
B1	5,0	B	+BATTERY
B2	3,0	D	CONTROL+ STARTER




	FRONTWIRING	U75 02
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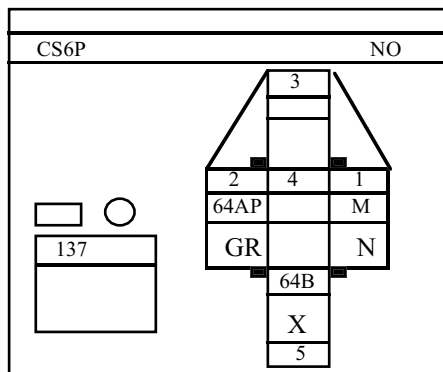
FOGHEADLIGHTS CONTROL RELAY

Position	Sectioning		Destination
1	0,6	9D	CONTROL+REAR FOGLIGHTS
2	0,35	M	MASS
3	1,0	LPG	+PARKINGLIGHT
4	1,0	9C	CONTROL+PROTECTEDREARFOGLIGHTS
5	1,0	BP11	PROTECTEDBATTERY




TURNING RELAY

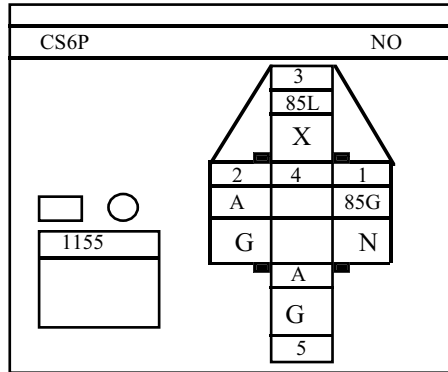
Position	Sectioning		Destination
1	0,6	M	MASS
2	1,0	64AP	+PROTECTEDTURNINGLIGHTS
5	1,0	64B	CONTROL+TURNINGLIGHTS




	FRONTWIRING	U75 02
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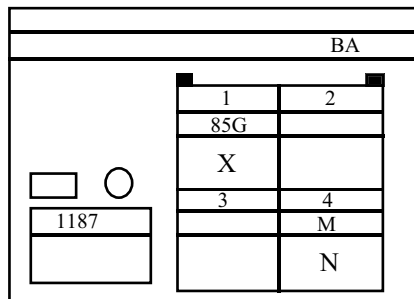
4x4 INDICATOR CONTROL RELAY

Position	Sectioning		Destination
1	0,35	85G	4X4CONNECTIONRELAYCONTROL
2	0,35	A	SUPPLY+AFTER CONTACT
3	0,35	85L	4X4CONNECTIONINDICATORCONTROL
5	0,35	A	SUPPLY+AFTER CONTACT



VACUUM CAPSULE CONTACT


Position	Sectioning		Destination
1	0,35	85G	4X4CONNECTIONRELAYCONTROL
4	0,6	M	MASS

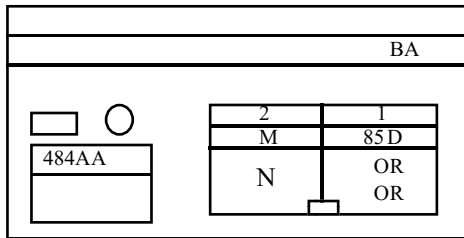



Connectors and connections wires functions

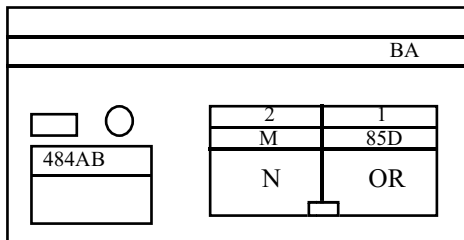


4x4 INDICATOR CONTROL RELAY

Position	Sectioning		Destination
1	0,6	85D	4X4CONNECTIONCONTROL
1	0,6	85D	4X4CONNECTIONCONTROL> ELECTRICVALVE2
2	0,6	M	MASS




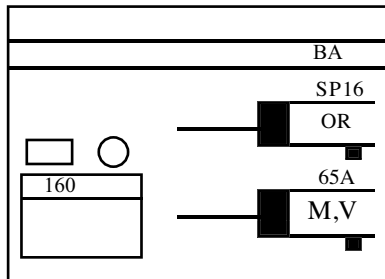
Position	Sectioning		Destination
1	0,6	85D	4X4CONNECTIONCONTROL
2	0,6	M	MASS






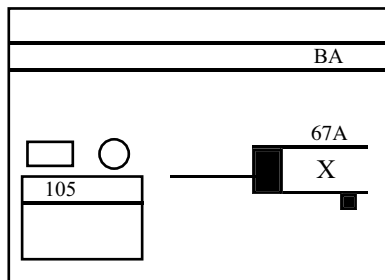
STOP CONTACT

Position	Sectioning		Destination
1	1,0	SP16	PROTECTED ACCESSORIES FUSE OUTLET F03
2	1,0	65A	CONTROL + STOP LIGHTS
2	0,35	65A	CONTROL + BRAKE INFO > ANTI-STARTING U.CE




ACOUSTIC WARNING

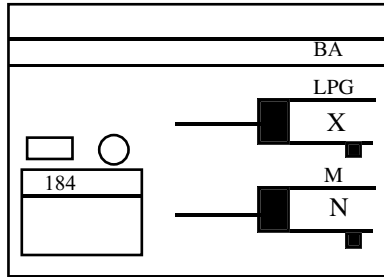
Position	Sectioning		Destination
1	1,0	67A	CONTROL + ACOUSTIC WARNING






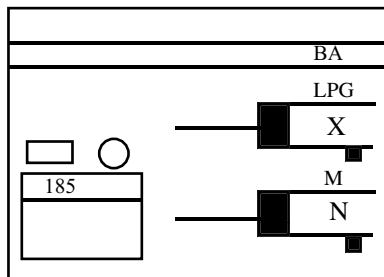
RIGHT FRONT PARKING LAMP

Position	Sectioning		Destination
1	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLET06
2	0,35	M	MASS




RIGHT FRONT PARKING LAMP

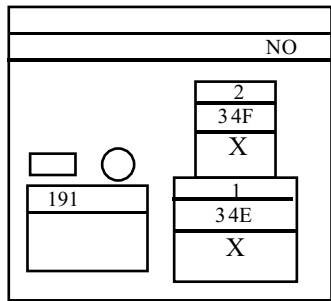
Position	Sectioning		Destination
1	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLET06
2	0,35	M	MASS






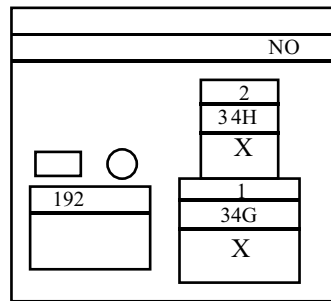
RIGHTFRONT DOOR SPEAKER

Position	Sectioning		Destination
1	0,35	34E	SIGNAL + RIGHTFRONT SPEAKR (RADIO)
2	0,35	34F	SIGNAL + RIGHTFRONT SPEAKR (RADIO)



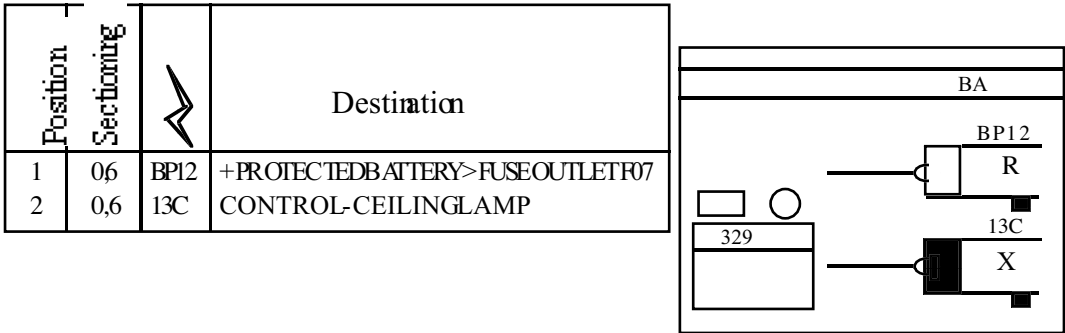
LEFT FRONT DOOR SPEAKER

Position	Sectioning		Destination
1	0.35	34G	SIGNAL + IEFT FRONTSPEAKER (RADIO)
2	0.35	34H	SIGNAL + IEFT FRONTSPEAKER (RADIO)




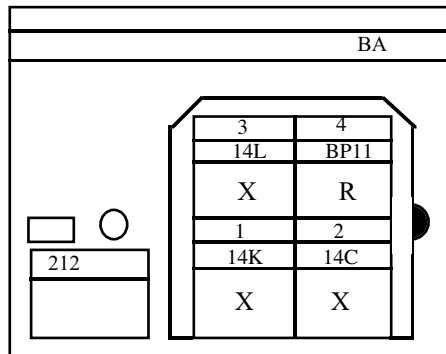


RIGHTFRONTCEILING LAMP




WINDSCREEN WIPER MOTOR

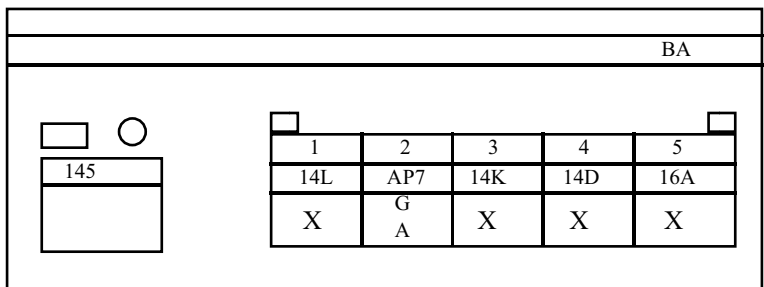
Position	Sectioning		Destination
1	1,0	14K	CONTROL + WINDSCREEN WIPER \emptyset W SPEED
2	1,0	14C	CONTROL + WINDSCREEN WIPER TIMER
3	1,0	14L	CONTROL + WINDSCREEN WIPER HIGH SPEED
4	1,0	BP11	+PROTECTED BATTERY > FUSE OUTLET F02






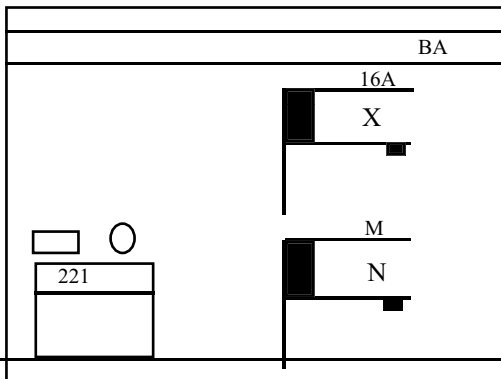
WINDSCREEN WIPER-WASHING SWITCH

Position	Sectioning		Destination
1	1,0	14L	CONTROL+WINDSCREEN WIPER HIGH SPEED
2	1,4	AP7	+AFTER PROTECTED CONTACT > FUSE OUTLET F01
2	1,0	AP7	+AFTER PROTECTED CONTACT TIMER
3	1,0	14K	CONTROL +WINDSCREEN WIPER LOW SPEED
4	1,0	14D	WINDSCREEN WIPER TIMER LOW SPEED CONTROL
5	0,6	16A	CONTROL +WINDSCREEN WASHING PUMP




WINDSCREEN WIPER PUMP

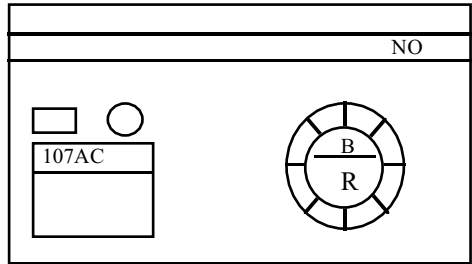
Position	Sectioning		Destination
1	1,0	16A	CONTROL +WINDSCREEN WASHING PUMP
2	0,6	M	MASS



	<p>FRONTWIRING</p>	<p>U75 02</p>
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BATTERY TERMINAL+ (PLUS)

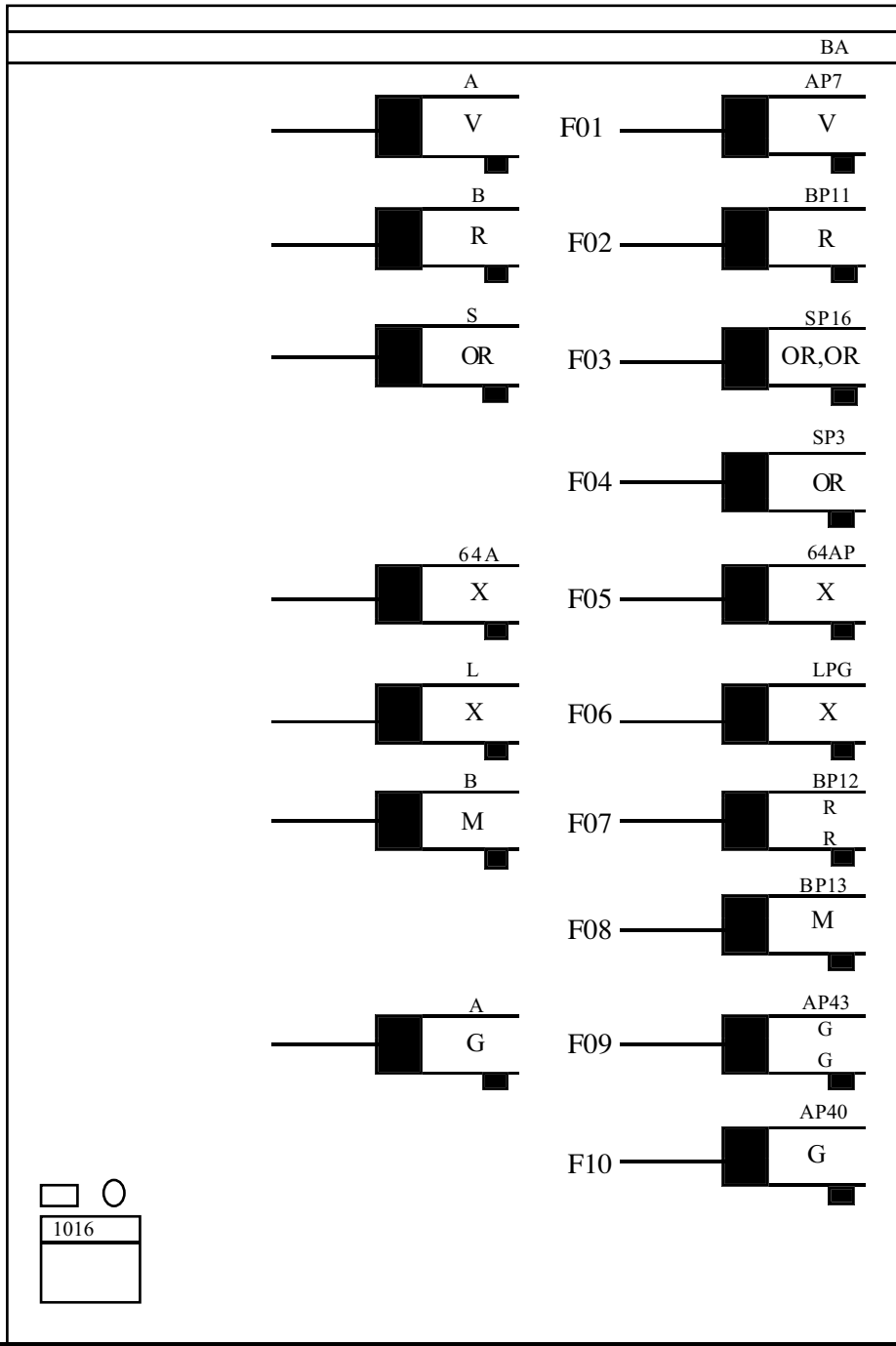
Position	Sectioning		Destination
1	5,0	B	+ Battery



	FRONT WIRING	U75 02
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COCKPIT FUSEBOX

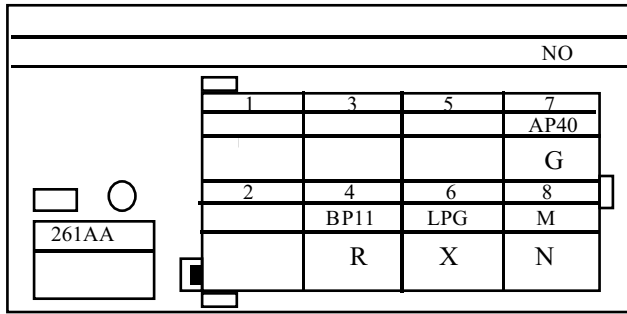
Position	Sectioning		Destination
F01	1,4	A	+ AFTER CONTACT
F01	1,4	AP7	+AFTER PROTECTED CONTACT
F02	1,40	B	+BATTERY
F02	1,4	BP11	+PROTECTED BATTERY
F03	2,0	S	+ACCESSORIES
F03	1,0	SP16	+ PROTECTED ACCESSORIES > STOP LIGHTS
F03	1,0	SP16	+ PROTECTED ACCESSORIES > CONTACT REVERSE DRIVING
F04	2,0	SP3	+ PROTECTED ACCESSORIES > CLIMATE CONTROL BLOWER
F05	1,0	64A	SUPPLY+ SIGNALISING
F05	1,0	64AP	+PROTECTED TURNING LIGHTS
F06	1,0	L	+PARKING LIGHTS
F06	1,0	LPG	+PROTECTED PARKING LIGHTS
F07	2,0	B	+BATTERY
F07	1,4	BP12	+PROTECTED BATTERY > ELECTRIC LIGHTER
F07	0,6	BP12	+ PROTECTED BATTERY > CEILING LAMP
F08	1,0	BP13	+PROTECTED BATTERY
F09	1,0	A	+ AFTER CONTACT
F09	0,6	AP43	+AFTER PROTECTED CONTACT > ANTI-STARTING U.C.E.
F09	1,0	AP43	+AFTER PROTECTED CONTACT > DIAGNOSIS SOCKET
F10	1	AP40	+ACCESSORIES AFTER PROTECTED CONTACT



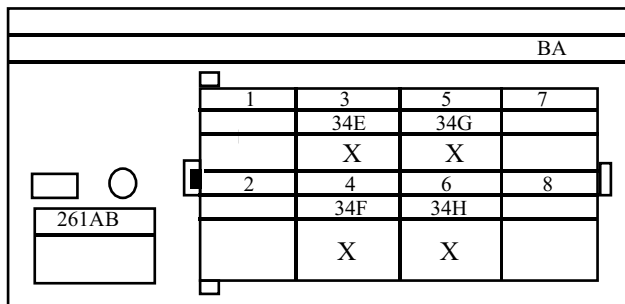


RADIO

Position	Sectioning		Destination
4	0,6	BP11	+ PROTECTED BATTERY > FUSE OUTLET F02
6	0,6	LPG	+ PARKING LIGHTS > FUSE OUTLET F06
7	1,4	AP40	+ AFTER PROTECTED CONTACT > FUSE OUTLET F10
8	0,5	M	MASS




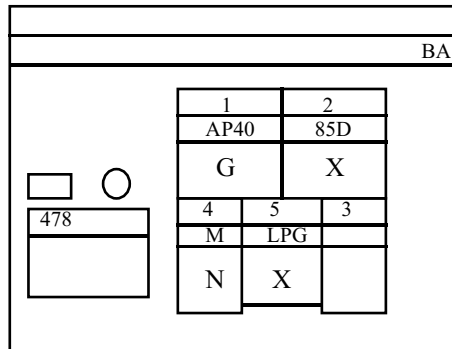
Position	Sectioning		Destination
3	0,35	34E	SIGNAL+ RIGHT FRONT SPEAKER
4	0,35	34F	SIGNAL -RIGHTFRONT SPEAKER
5	0,35	34G	SIGNAL +LEFTFRONT SPEAKER
6	0,35	34H	SIGNAL -LEFTFRONT SPEAKER






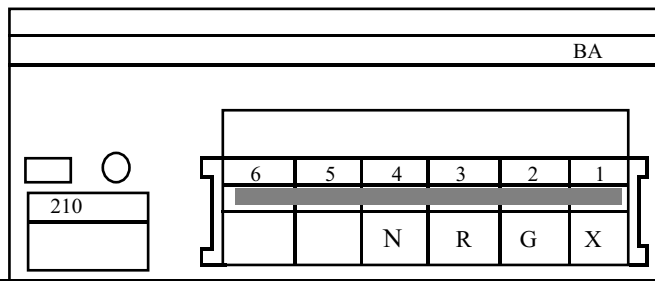
4x4 SWITCH

Position	Sectioning		Destination
1	0,6	AP40	+AFTER PROTECTED CONTACT > FUSE OUTLET F10
2	0,6	85D	4X4 CONNECTION CONTROL
4	0,35	M	MASS
5	0,35	LPG	+PARKING LIGHTS > FUSE OUTLET F06



ELECTRONIC CLOCK

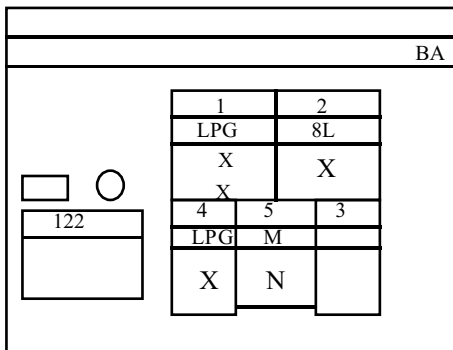
Position	Sectioning		Destination
1	0,35	LPG	+PARKING LIGHTS > FUSE OUTLET F06
2	0,35	AP40	+AFTER PROTECTED CONTACT > FUSE OUTLET F10
3	0,35	BP11	+ PROTECTED BATTERY > FUSE OUTLET F02
4	0,35	M	MASS





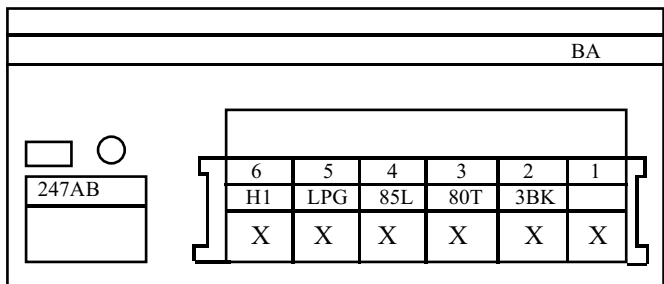
FOGLIGHTSWITCH

Position	Sectioning	⚡	Destination
1	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLETF06
1	0,35	LPG	+ PARKING LIGHTS > SHUNT
2	0,35	8L	CONTROL+ FOGHEADLIGHTSRELAY
4	0,35	LPG	-PARKINGLIGHTS
5	0,35	M	MASS




INSTRUMENT PANEL

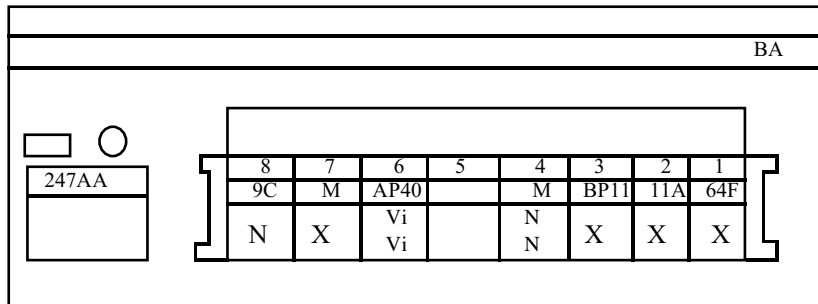
Position	Sectioning	⚡	Destination
1	0,35	25A	CONTROL - WEARING O.B.D.
2	0,35	3BK	CONTROL-SLEEVESPRE-HEATINGINDICATOR
3	0,35	80T	CONTROL ANTI-STARTING INDICATOR LED
4	0,35	85L	4X4CONTROL - INDICATOR
5	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLETF06
6	0,35	H1	CONTROL-BRAKESYSTEMINDICATOR>I.C.PHANDBRAKE






INSTRUMENT PANEL

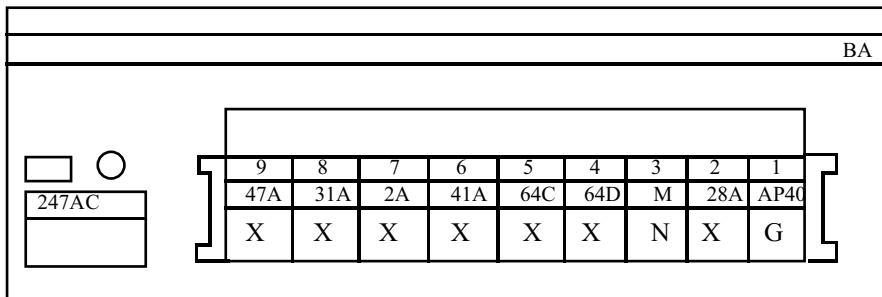
Position	Sectioning		Destination
1	0,35	64F	CONTROL + HAZARD SWITCH
2	0,35	11A	CONTROL+PARKINGLIGHTS
3	0,35	BP11	+ PROTECTED BATTERY > FUSE OUTLET F02
4	0,35	M	MASS
4	0,35	M	MASS > SHUNT
6	0,35	AP40	+AFTER PROTECTED CONTACT > FUSE OUTLET F10
6	0,35	AP40	+ PROTECTED D.C., FUSE OUTLET F10> SHUNT
7	0,35	M	MASS > SHUNT
8	0,35	9C	CONTROL+ FOGLIGHTSINDICATOR






INSTRUMENT PANEL

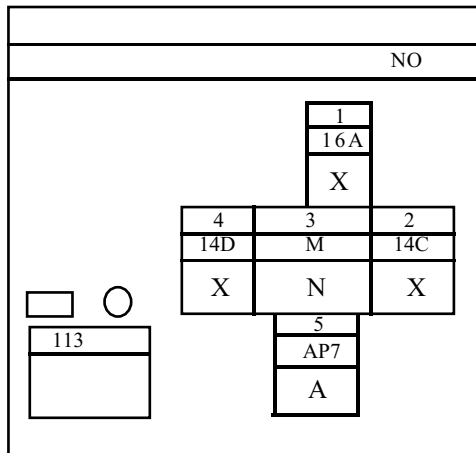
Position	Sectioning		Destination
1	0,6	AP40	+AFTER PROTECTED CONTACT Fuse outlet F10
2	0,35	28A	OIL PRESSURE INDICATOR - CONTROL
3	0,6	M	MASS
4	0,35	64D	CONTROL+ TURNING INDICATOR
5	0,35	64C	CONTROL+ TURNING INDICATOR
6	0,35	41A	SIGNAL+ FUEL LEVEL TRANSMITTER
7	0,35	2A	BATTERY LOADING INDICATOR - CONTROL
8	0,35	31A	WATER TEMPERATURE INDICATOR - CONTROL
9	0,35	47A	- FUEL MINIMAL LEVEL WARNING






WINDSCREEN WIPER TIMER

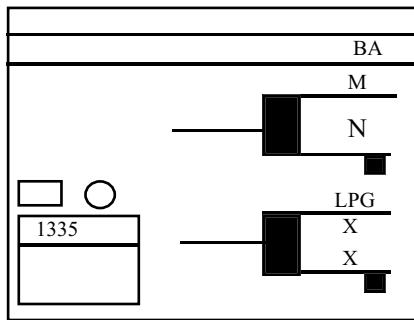
Position	Sectioning		Destination
1	0,6	16A	CONTROL + WINDSCREEN WASHING PUMP
2	1,0	14C	CONTROL + WINDSCREEN WIPER TIMER
3	0,35	M	MASS
4	1,0	14D	WINDSCREEN WIPER TIMER LOW SPEED CONTROL
5	0,6	AP7	AFTER PROTECTED CONTACT > FUSE OUTLET F01






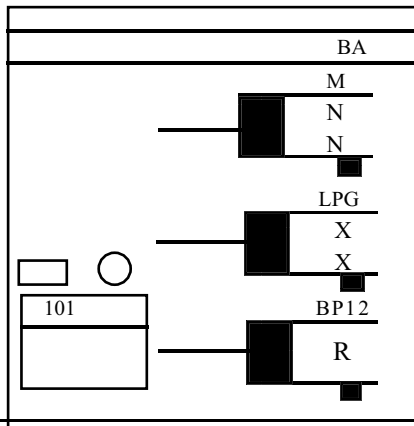
FRONT ASHTRAY LIGHTING

Position	Sectioning		Destination
1	0,35	M	MASS
2	0,35	LPG	+ PARKING LIGHTS > FUSE OUTLET F06
2	0,35	LPG	+ PARKING LIGHTS > 4X4 CONTACT




BRICHETĂ ELECTRICĂ

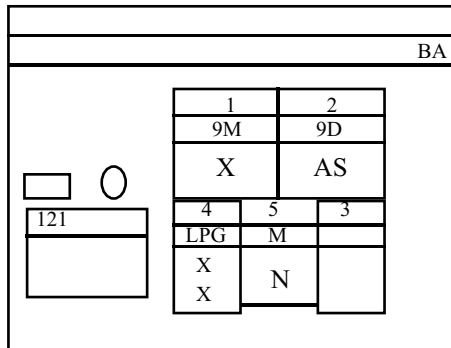
Position	Sectioning		Destination
1	1,4	M	MASS
1	0,35	M	MASS > ASHTRAY MASS
2	0,35	LPG	+ PARKING LIGHTS > FUSE OUTLET F06
2	0,35	LPG	+ PARKING LIGHTS > ASHTRAY LIGHTING
3	1,4	BP12	+ PROTECTED BATTERY > FUSE OUTLET F07




	DASHBOARD WIRING	U75 02
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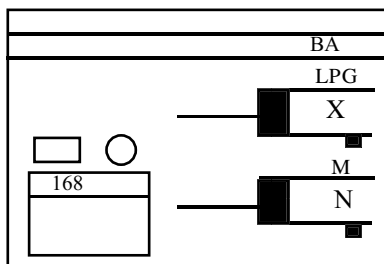
FOGLIGHTSSWITCH

Position	Sectioning		Destination
1	0,5	9M	SHUNT
2	0,5	9D	CONTROL+ REARFOGLIGHTS>RELAY
4	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLETF06
4	0,35	LPG	+ PARKING LIGHTS > HAZARD COMCT
5	0,35	M	MASS




DOCUMENTSCOMPARTMENT LIGHTING

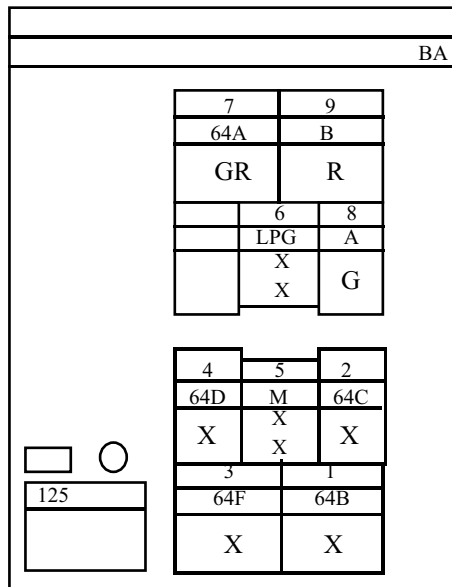
Position	Sectioning		Destination
1	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLETF06
2	0,35	M	MASS



	DASHBOARD WIRING	U75 02
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HAZARD SWITCH

Position	Sectioning		Destination
1	1,0	64B	CONTROL+SIGNALISING
2	0,6	64C	LEFTTURNINGLIGHTSCONTROL
3	0,35	64F	CONTROL + HAZARD INDICATOR
4	0,6	64D	RIGHTTURNINGLIGHTSCONTROL
5	0,35	M	MASS
5	0,35	M	MASS > CLOCK
6	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLET F06
6	0,35	LPG	+PARKINGLIGHTS>CLOCK
7	1,0	64A	SUPPLY+ SIGNALISING
8	1,0	A	+AFTER CONTACT
9	1,0	B	+BATTERY

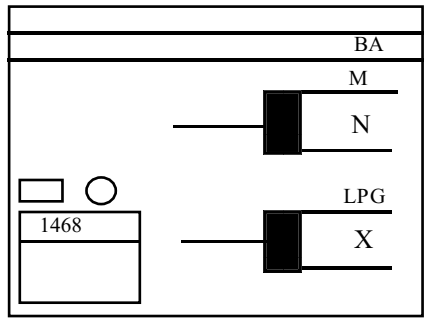


Connectors and connections wires functions

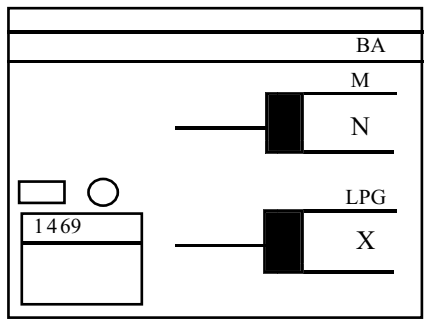


CLIMATE CONTROL LIGHTING

Position	Sectioning	⚡	Destination
1	0,35	M	MASS
2	0,35	LPG	+ PARKING LIGHTS > FUSE OUTLET F06




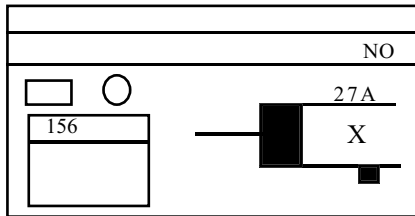
Position	Sectioning	⚡	Destination
1	0,35	M	MASS
2	0,35	LPG	+ PARKING LIGHTS > FUSE OUTLET F06





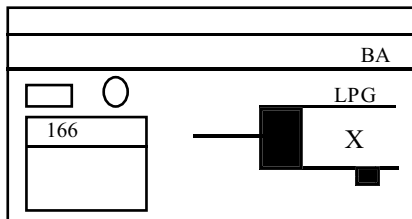
HANDBRAKECONTACT

Position	Sectioning		Destination
1	0,35	27A	HANDBRAKE INDICATOR - CONTROL




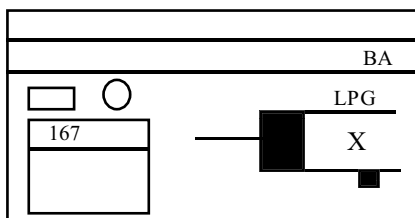
RIGHTLICENCE PLATE LIGHT (for U75, H75)

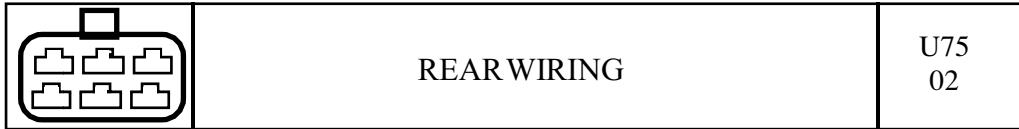
Position	Sectioning		Destination
1	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLET F06




LEFT LICENCE PLATE LIGHT (for U75, H75)

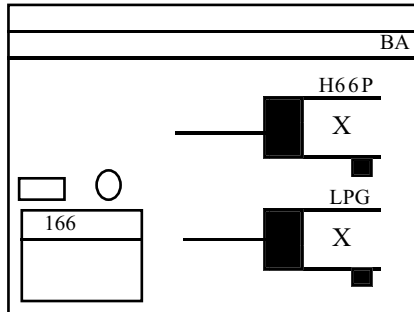
Position	Sectioning		Destination
1	0,35	LPG	+ PARKING LIGHTS > FUSEOUTLET F06






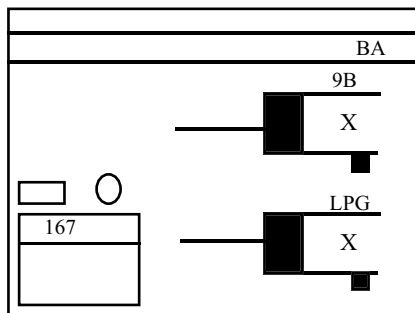
RIGHTREGISTRATIONPLATE LIGHT
(for E75)

Position	Sectioning		Destination
1	1,0	H66P	CONTROL+REVERSED RIVNGLIGHTS + PARKING LIGHTS > OUTLET FUSE F06
2	0,6	LPG	



LEFTREGISTRATION PLATE LIGHT
(for E75)

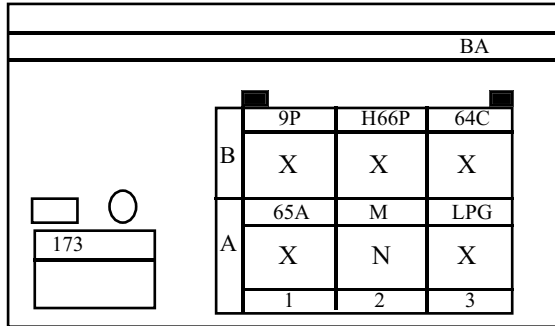
Position	Sectioning		Destination
1	1,0	9B	CONTROL+REAR FOGLIGHTS + PARKING LIGHTS > FUSEOUTLET F06
2	0,6	LPG	





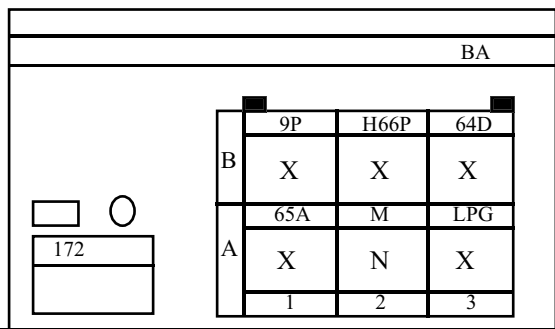
REAR LEFT LIGHT (for U75, H75)

Position	Sectioning		Destination
A1	0,6	65A	CONTROL +STOP LIGHTS
A2	0,6	M	MASS
A3	0,6	LPG	+PARKINGLIGHTS
B1	0,6	9P	CONTROL+REARPROTECTEDFOGLIGHTS
B2	0,6	H66P	CONTROL+REVERSEDRIVINGLIGHTS
B3	0,6	64C	LEFTTURNINGLIGHTSCONTROL




REAR RIGHT LIGHT (for U75, H75)

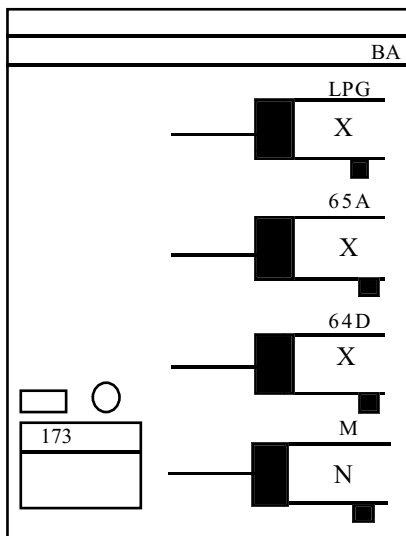
Position	Sectioning		Destination
A1	0,6	65A	CONTROL +STOP LIGHTS
A2	0,6	M	MASS
A3	0,6	LPG	+PARKINGLIGHTS
B1	0,6	9P	CONTROL+REARPROTECTEDFOGLIGHTS
B2	0,6	H66P	CONTROL+REVERSEDRIVINGLIGHTS
B3	0,6	64D	LEFTTURNINGLIGHTSCONTROL






REAR LEFT LIGHT
(for E75)

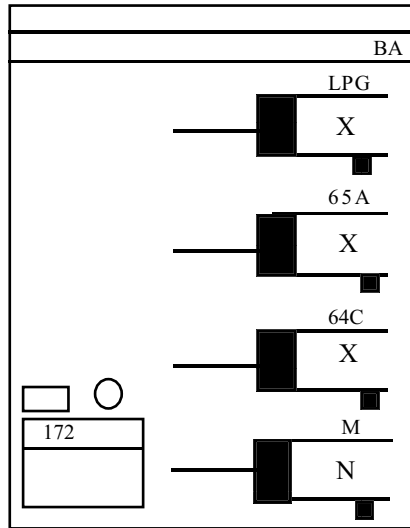
Position	Sectioning		Destination
1	0,6	LPG	+ PARKING LIGHTS > FUSE OUTLET F06
2	0,6	65A	CONTROL STOP LIGHTS
3	0,6	64D	RIGHT TURN LIGHTS CONTROL
4	0,6	M	MASS






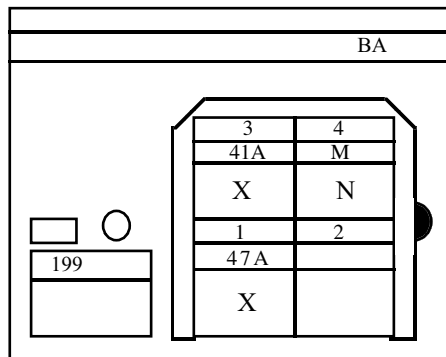
REARRIGHT LIGHT (FORE75)

Position	Sectioning		Destination
1	0,6		LPG + PARKING LIGHTS > FUSEOUTLETF06
2	0,6		65A CONTROL +STOP LIGHTS
3	0,6		64C LEFTTURNINGLIGHTSCONTROL
4	0,6		M MASS



FUELLEVEL TRANSMITTER


Position	Sectioning		Destination
1	0,35		47A - FUELMINIMALLEVEL WARNING
3	0,35		41A SIGNAL+FUELLEVELTRANSMITTER
4	0,6		M MASS

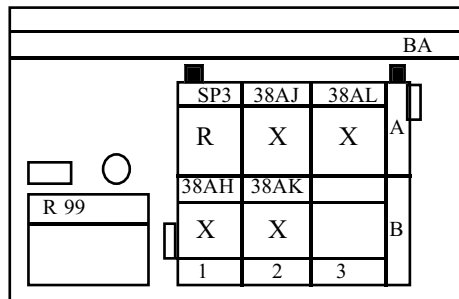


Connectors and connections wires functions


	<p>CONNECTIONS</p>	<p>U75 02</p>
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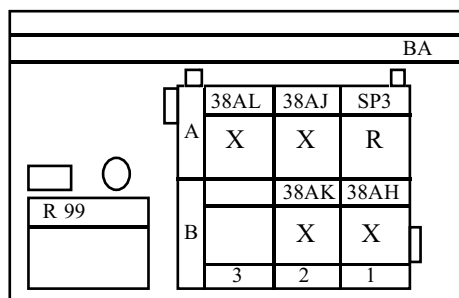
CLIMATE CONTROL SWITCH WIRING CONNECTION / CLIMATE CONTROL BLOWER
CLIMATE CONTROL SWITCH WIRING CONNECTION

Position	Sectioning		Destination
A1	1,5	SP3	PROTECTED ACCESSORIES > FUSE OUTLET F04
A2	1,0	38AJ	CONTROL + CLIMATE CONTROL BLOWER, SPEED
A3	1,5	38AL	CONTROL + CLIMATE CONTROL BLOWER, SPEED
B1	0,6	38AH	CONTROL + CLIMATE CONTROL BLOWER, SPEED
B2	1,0	38AK	CONTROL + CLIMATE CONTROL BLOWER, SPEED




BLOWER CLIMATE CONTROL WIRING CONNECTION

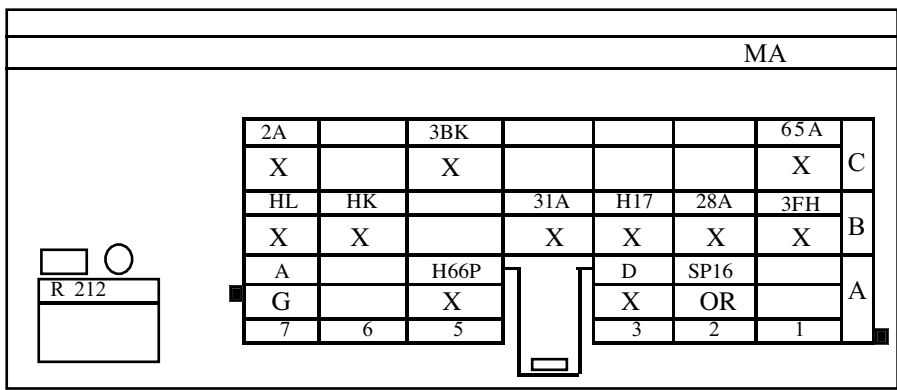
Position	Sectioning		Destination
A1	1,5	SP3	PROTECTED ACCESSORIES > CLIMATE CONTROL BLOWER
A2	1,0	38AJ	CONTROL + CLIMATE CONTROL BLOWER, SPEED
A3	1,5	38AL	CONTROL + CLIMATE CONTROL BLOWER, SPEED
B1	0,6	38AH	CONTROL + CLIMATE CONTROL BLOWER, SPEED
B2	1,0	38AK	CONTROL + CLIMATE CONTROL BLOWER, SPEED





ENGINE / FRONT WIRING CONNECTION
FRONT WIRING CONNECTION


Position	Sectioning		Destination
A2	1,0	SP16	+PROTECTED ACCESSORIES
A3	3,0	D	CONTROL+ STARTER
A5	1,0	H66P	CONTROL+ REVERSE DRIVING LIGHTS
A7	2,0	A	+ AFTER CONTACT
B1	0,35	3FH	CONTROL- ANTI POLLUTION FAILURE > INDICATOR O.B.D.
B2	0,35	28A	OIL PRESSURE INDICATOR - CONTROL
B3	0,35	H17	INJECTION CODED SIGNAL > ANTI-STARTING U.C.E.J
B4	0,35	31A	WATER TEMPERATURE INDICATOR - CONTROL
B6	0,35	HK	DIAGNOSIS SIGNAL LINE K
B7	0,35	HL	DIAGNOSIS SIGNAL - LINE L
C1	0,35	65A	CONTROL - BRAKE INFO > STOP CONTACT
C5	0,35	3BK	PRE-HEATING INDICATOR - CONTROL
C7	0,35	2A	BATTERY LOADING INDICATOR - CONTROL

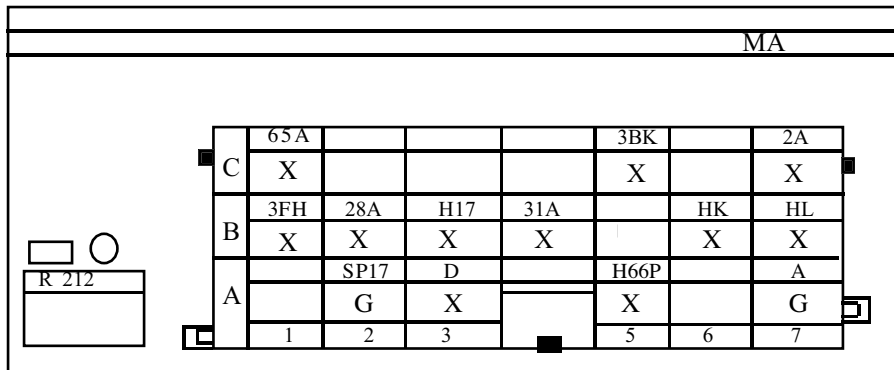


Connectors and connections wires functions

	CONNECTIONS	U75 02
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ENGINE WIRING CONNECTION

Position	Sectioning		Destination
A2	0,6	SP16	+PROTECTED ACCESSORIES
A3	3,0	D	CONTROL+ STARTER
A5	0,6	H66P	CONTROL+REVERSED RIMNGLIGHTS
A7	2,0	A	+ AFTER CONTACT
B1	0,35	3FH	CONTROL - ANTI POLLUTION FAILURE INDICATOR > ANTI-STARTING U.C.E
B2	0,35	28A	OIL PRESSURE INDICATOR - CONTROL
B3	0,35	H17	INJECTION CODED SIGNAL > ANTI-STARTING U.C.E
B4	0,35	31A	WATER TEMPERATURE INDICATOR - CONTROL
B6	0,35	HK	DIAGNOSIS SIGNAL LINE K
B7	0,35	HL	DIAGNOSIS SIGNAL - LINE L
C1	0,35	65A	CONTROL + BRAKE INFO > ANTI-STARTING U.C.E
C5	0,35	3BK	PRE-HEATING INDICATOR - CONTROL
C7	0,35	2A	BATTERY LOADING INDICATOR - CONTROL

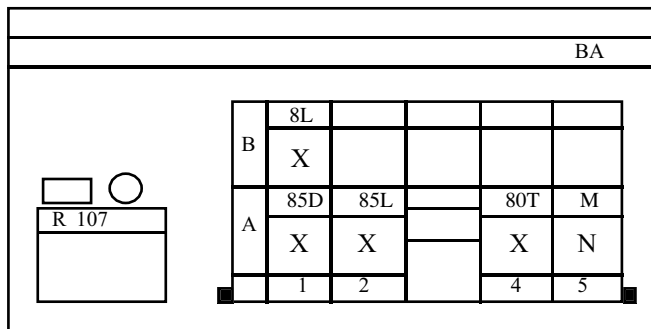




FRONT WIRING CONNECTIONS / DASHBOARD

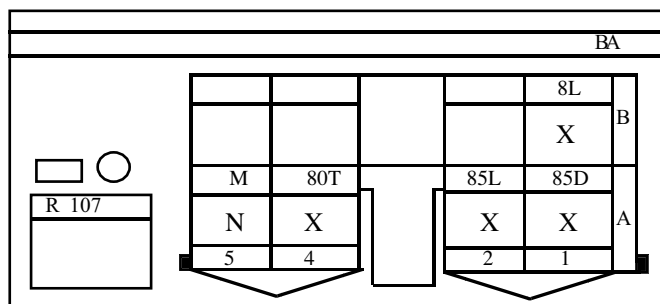
FRONT WIRING CONNECTION

Position	Sectioning		Destination
A1	0,6	85D	4X4 CONNECTION CONTROL > ELECTRIC VALVES
A2	0,35	85L	4X4 CONNECTION INDICATOR CONTROL
A4	0,35	80T	ANTI-STARTING INDICATOR - CONTROL
A5	3,0	M	MASS
B1	0,35	8L	FOG HEADLIGHTS RELAY + CONTROL



DASHBOARD WIRING CONNECTION


Position	Sectioning		Destination
A1	0,6	85D	4X4 CONNECTION CONTROL > 4X4 SWITCH
A2	0,35	85L	4X4 CONNECTION INDICATOR CONTROL
A4	0,35	80T	ANTI-STARTING INDICATOR - CONTROL
A5	3,0	M	MASS
B1	0,35	8L	FOG HEADLIGHTS RELAY + CONTROL



	CONNECTIONS	U75 02
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FRONT WIRING CONNECTIONS / DASHBOARD

FRONT WIRING CONNECTION

Position	Sectioning		Destination
A1	0,35	9M	HIGH BEAM+ LOW BEAMLIGHTS > LIGHTS SWITCH
A2	0,6	9D	HIGHBEAM+LOWBEAMLIGHTS>FOGLIGHTSRELAY
A3	1,0	LPG	+ PROTECTED PARKING LIGHTS
A5	1,0	A	+ AFTER CONTACT
A6	1,0	B	+ BATTERY
A7	1,0	64A	SUPPLY+ SIGNALISING
B1	1,0	64D	RIGHTTURNGLIGHTS CONTROL
B2	0,35	41A	SIGNAL+FUELLEVEL TRANSMITTER
B3	0,6	64C	LEFTTURNINGLIGHTS CONTROL
B4	0,35	11A	CONTROL+HIGHBEAMLIGHTS
B5	1,4	BP12	+ PROTECTED BATTERY > FUSE OUTLET F07
B6	0,35	47A	- FUEL MINIMAL LEVEL WARNING
B7	0,35	2A	BATTERY LOADING INDICATOR
C1	0,35	28A	OIL PRESSURE INDICATOR - CONTROL
C2	0,35	31A	WATER TEMPERATURE INDICATOR - CONTROL
C3	0,35	3FH	CONTROL - ANTI POLLUTION FAILURE INDICATOR > ANTI-STARTING U.C.E
C4	0,35	HI	BRAKING SYSTEM INDICATOR - CONTROL > I.C.P.
C4	0,35	HI	BRAKING SYSTEM INDICATOR - CONTROL > HANDBRAKE
C5	1,0	AP7	+ AFTER PROTECTED CONTACT > FUSE OUTLET F01
C6	1,0	14D	WINDSCREEN WIPER TIMER LOW SPEED CONTROL
C7	1,0	14C	WINDSCREEN WIPER TIMER CONTROL
D1	0,35	9C	REAR PROTECTED FOGLIGHTS + CONTROL
D2	0,35	3BK	PRE-HEATING INDICATOR - CONTROL
D3	1,4	AP40	+ AFTER PROTECTED CONTACT > FUSE OUTLET F10
D3	1,4	AP40	+ AFTER PROTECTED CONTACT > RADIO
D4	1,0	64B	+ PROTECTED TURNING LIGHTS
D5	0,6	BP11	+ PROTECTED BATTERY > FUSE OUTLET F02
D6	2,0	SP3	+ PROTECTED ACCESSORIES > FUSE OUTLET F04
D7	0,6	16A	WINDSCREEN WASHING PUMP + CONTROL SWITCH
D7	1,0	16A	WINDSCREEN WASHING PUMP + CONTROL

	<p>CONNECTIONS</p>	<p>U75 02</p>
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D	9C	3BK	AP40	64B	BP11	SP3	16A
	X	X	■	X	R	X	■
C	28A	31A	3FH	H1	AP7	14D	14C
	X	X	X	■	A	X	X
B	64D	41A	64C	11A	BP12	47A	2A
	X	X	X	X	R	X	X
A	9M	9D	LPG		A	B	64A
	X	X	X		G	R	X
	1	2	3		5	6	7




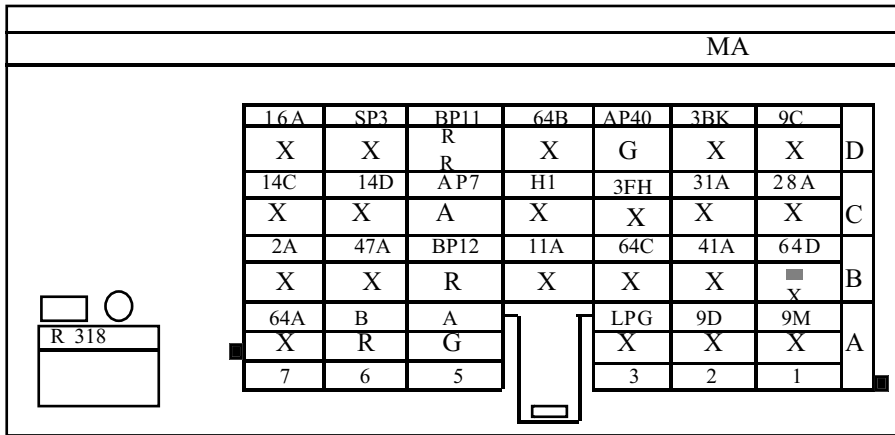
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Connectors and connections wires functions

	CONNECTIONS	U75 02
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DASHBOARD WIRING CONNECTIONS

Position	Sectioning		Destination
A1	0,35	9M	HIGH BEAM+ LOW BEAMLIGHTS > LIGHTS SWITCH
A2	0,6	9D	HIGH BEAM + DW BEAMLIGHTS> FOG LIGHTS RELAY
A3	1,0	LPG	+ PROTECTED PARKING LIGHTS
A5	1,0	A	+ AFTER CONTACT
A6	1,0	B	+ BATTERY
A7	1,0	64A	SUPPLY+ SIGNALISING
B1	0,6	64D	RIGHT TURNING LIGHTS CONTROL > HAZARD CONTACT
B1	0,35	64D	RIGHT TURNING LIGHTS CONTROL > INDICATOR
B2	0,35	41A	SIGNAL+ FUEL LEVEL TRANSMITTER
B3	0,6	64C	LEFT TURNING LIGHTS CONTROL > HAZARD CONTACT
B3	0,35	64C	LEFT TURNING LIGHTS CONTROL > INDICATOR
B4	0,35	11A	CONTROL + HIGH BEAM LIGHTS > INDICATOR
B5	1,4	BP12	+ PROTECTED BATTERY > LIGHTER
B6	0,35	47A	- FUEL MINIMAL LEVEL WARNING > INDICATOR
B7	0,35	2A	BATTERY LOADING INDICATOR - CONTROL > INDICATOR
C1	0,35	28A	OIL PRESSURE INDICATOR - CONTROL > INDICATOR
C2	0,35	31A	WATER TEMPERATURE INDICATOR - CONTROL > INDICATOR
C3	0,35	3FH	CONTROL - ANTI POLLUTION FAILURE INDICATOR > INDICATOR
C4	0,35	H1	BRAKING SYSTEM INDICATOR - CONTROL > INDICATOR
C5	0,6	AP7	+ AFTER PROTECTED CONTACT > WINDSCREEN WIPER TIMER
C6	1,0	14D	WINDSCREEN WIPER TIMER LOW SPEED CONTROL
C7	1,0	14C	WINDSCREEN WIPER TIMER CONTROL
D1	0,35	9C	REAR PROTECTED FOG LIGHTS + CONTROL > INDICATOR
D2	0,35	3BK	PRE-HEATING INDICATOR - CONTROL > INDICATOR
D3	1,0	AP40	+ AFTER PROTECTED CONTACT
D4	1,0	64AP	+ PROTECTED TURNING LIGHTS > HAZARD CONTACT
D5	0,35	BP11	+ PROTECTED BATTERY > CLOCK
D5	0,35	BP11	+ PROTECTED BATTERY > ANTI-STARTING IED
D6	2,0	SP3	+ PROTECTED ACCESSORIES > CLIMATE CONTROL BLOWER
D7	0,6	16A	WINDSCREEN WASHING PUMP+ CONTROL




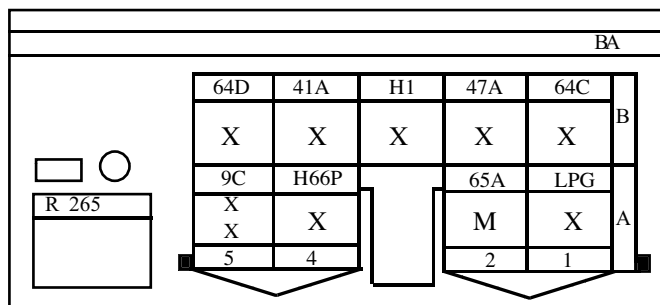
Connectors and connections wires functions



REAR / FRONT WIRING CONNECTION


FRONT WIRING CONNECTION

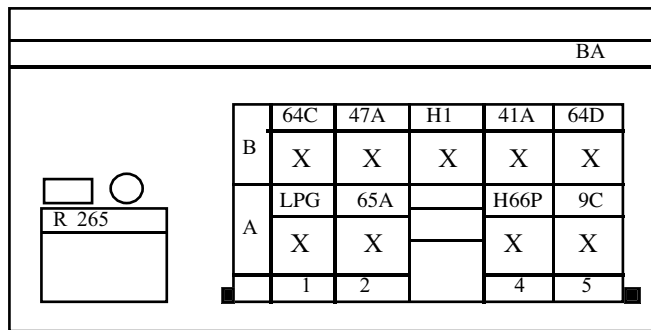
Position	Sectioning		Destination
A1	0,6	LPG	+PROTECTEDPARKINGLIGHTS
A2	1,0	65A	CONTROL + STOPLIGHTS
A4	1,0	H66P	CONTROL+REVERSEDIVINGLIGHTS
A5	1,0	9C	CONTROL+REAR FOGLIGHTS
A5	0,35	9C	CONTROL + REAR FOGLIGHTS >INDICATOR
B1	0,6	64C	LEFTTURNINGLIGHTSCONTROL
B2	0,35	47A	- FUELMINIMALLEVEL WARNING
B3	0,35	H1	HANDBRAKE INDICATOR - CONTROL
B4	0,35	41A	SIGNAL+FUELLEVEL TRANSMITV
B5	0,6	64D	RIGHTTURNINGCONTROL



	<p>CONNECTIONS</p>	<p>U75 02</p>
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REAR WIRING CONNECTION

Position	Sectioning		Destination
A1	1,0	LPG	+PROTECTEDPARKINGLIGHTS
A2	1,0	65A	CONTROL +STOP LIGHTS
A4	1,0	H66P	CONTROL+REVERSEDIVINGLIGHTS
A5	1,0	9C	CONTROL+REAR FOGLIGHTS
B1	0,6	64C	LEFTTURNINGLIGHTSCONTROL
B2	0,35	47A	- FUELMINIMALLEVEL WARNING
B3	0,35	H1	HANDBRAKE INDICATOR - CONTROL
B4	0,35	41A	SIGNAL+FUELLEVELTRANSMITTER
B5	0,6	64D	RIGHTTURNINGCONTROL



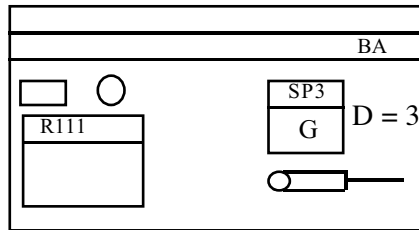
Connectors and connections wires functions




DASHBOARD / BLOWER CLIMATE CONTROL WIRING CONNECTION

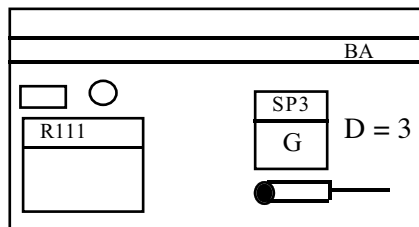
DASHBOARD WIRING CONNECTION

Position	Sectioning		Destination
1	2,0	SP3	+ PROTECTED ACCESSORIES > FUSE OUTF04



BLOWER CLIMATE CONTROL WIRING CONNECTION

Position	Sectioning		Destination
1	1,5	SP3	+ PROTECTED ACCESSORIES > CLIMATE CONTROL BLOWER



Connection Code	WIRE FUNCTION
A	+ AFTER CONTACT
AP7	+ PROTECTED AFTER CONTACT > COCKPIT FUSE OUTLET S1
AP29	+ ENGINE SECURITY FUNCTION AFTER PROTECTED CONTACT > ENGINE FUSE OUTLET F05
AP40	+ ACCESSORIES AFTER PROTECTED CONTACT > COCKPIT FUSE OUTLET F10
AP43	+ AFTER PROTECTED CONTACT > COCKPIT FUSE OUTLET F9
B	+ BATTERY
BG	+ BATTERY
BP11	+ PROTECTED BATTERY > COCKPIT FUSE OUTLET F02
BP12	+ PROTECTED BATTERY > COCKPIT FUSE OUTLET F10
BP13	+ PROTECTED BATTERY > COCKPIT FUSE OUTLET F08
BP17	+ PROTECTED BATTERY > ENGINE FUSE OUTLET F06
BP44	+ PROTECTED BATTERY > ENGINE FUSE OUTLET F08
BP54	+ PROTECTED BATTERY > ENGINE FUSE OUTLET F09
BP7	+ PROTECTED BATTERY > ENGINE FUSE OUTLET F07
C	+ LOW BEAM LIGHTS
CPD	+ PROTECTED RIGHT LOW BEAM LIGHTS
CPG	+ PROTECTED LEFT LOW BEAM LIGHTS
D	CONTROL + STARTER
H1	BRAKING SYSTEM ICP INDICATOR - CONTROL
H17	INJECTION CODED SIGNAL
H66P	CONTROL + REVERSE DRIVING LIGHTS
HK	DIAGNOSIS SIGNAL - LINE K
HL	DIAGNOSIS SIGNAL - LINE L
L	+ PARKING LIGHTS
LPG	+ PROTECTED PARKING LIGHTS
M	ELECTRIC MASS
MH	ENGINE MASS
N	ELECTRONIC MASS
R	+ HIGH BEAM LIGHTS
RPD	+ PROTECTED RIGHT HIGH BEAM LIGHTS
RPG	+ PROTECTED LEFT HIGH BEAM LIGHTS
S	+ ACCESSORIES
SP16	+ PROTECTED ACCESSORIES > COCKPIT FUSE OUTLET F03
SP3	+ PROTECTED ACCESSORIES > COCKPIT FUSE OUTLET F04
TB9	INJECTION PUMP SCREENING
2A	ALTERNATOR LOADING INDICATOR - CONTROL
3AA	CONTROL - INJECTION RELAY
3BG	ENGINE RPM SIGNAL
3BL	ENGINE RPM - SIGNAL
3BK	PRE-HEATING INDICATOR - CONTROL
3C	SIGNAL + WATER TEMPERATURE SENSOR
3CX	GAZES RE-CIRCULATION ELECTRIC VALVE - CONTROL
3EC	INJECTION RELAY CONTROL
3EL	SIGNAL + GAZES RE-CIRCULATION ELECTRIC VALVE POTENTIOMETER
3FAB	SIGNAL + FUEL TEMPERATURE
3FB	+ INJECTION
3FF	CONTROL - PRE-HEATING RELAY
3FH	CONTROL - ANTI POLLUTION FAILURE INDICATOR
3FW	CONTROL - STOP ELECTRIC VALVE
3FY	PRE-HEATING RELAY DIAGNOSIS SIGNAL
3FZ	CONTROL - ADVANCE ELECTRIC VALVE
3JK	- WATER TEMPERATURE SENSOR
3JM	GAZES RE-CIRCULATION ELECTRIC VALVE POTENTIOMETER
3JP	ENGINE COOLING BLOWER RELAY - CONTROL
3JQ	- AIR TEMPERATURE SENSOR
3KB	ROTOR COMPENSATION SIGNAL
3KC	CAM PARKING SENSOR SIGNAL
3KD	PLUG 1 DIAGNOSIS SIGNAL
3KH	+ GASES RE-CIRCULATION ELECTRIC VALVE POTENTIOMETER

Wire functions explanation

3KH	+ GAZES RE-CIRCULATION ELECTRIC VALVE POTENTIOMETER
3KL	INJECTION PUMP MEMORY SIGNAL
3KP	- FUEL TEMPERATURE > INJECTION PUMP MEMORY
3KQ	AIR TEMPERATURE SIGNAL
3KR	INJECTION PUMP INDUCTIVE SENSOR SIGNAL
3KT	INJECTION PUMP ROTOR SENSOR SIGNAL
3KU	INCREASED FLOW ELECTRIC VALVE CONTROL
3KV	DECREASED FLOW ELECTRIC VALVE CONTROL
3LR	+ ACCELERATION 1 POTENTIOMETER
3LS	SIGNAL + ACCELERATION 1 POTENTIOMETER
3LT	- ACCELERATION 1 POTENTIOMETER
3LU	+ ACCELERATION 2 POTENTIOMETER
3LV	- ACCELERATION 2 POTENTIOMETER
3LW	SIGNAL + ACCELERATION 2 POTENTIOMETER
8L	CONTROL + FOG HEADLIGHTS RELAY
8DP	CONTROL + PROTECTED FOG HEADLIGHTS
9C	FOG LIGHTS INDICATOR + CONTROL
9B	CONTROL + REAR FOG LIGHTS
9M	SHUNT
9P	CONTROL + PROTECTED REAR FOG LIGHTS
11A	CONTROL + HIGH BEAM LIGHTS
13A	CONTROL - CEILING LAMP LIGHTING
13C	CEILING LIGHTS CONTROL
14C	CONTROL + WINDSCREEN WIPER TIMER
14D	CONTROL + WINDSCREEN WIPER TIMER
14K	CONTROL + WINDSCREEN WIPER LOW SPEED
14L	CONTROL + WINDSCREEN WIPER HIGH SPEED
16A	CONTROL + WINDSCREEN WASHING PUMP
27A	FUEL PUMP HANDBRAKE INDICATOR CONTROL
28A	OIL PRESSURE INDICATOR - CONTROL
31A	WATER TEMPERATURE INDICATOR - CONTROL
34E	SIGNAL + RIGHT FRONT SPEAKER
34F	SIGNAL - RIGHT FRONT SPEAKER
34G	SIGNAL + LEFT FRONT SPEAKER
34H	SIGNAL - LEFT FRONT SPEAKER
37F	CONTROL + PLUG 1-3
37G	CONTROL + PLUG 2-4
38AH	CONTROL + CLIMATE CONTROL BLOWER SPEED 1
38AJ	CONTROL + CLIMATE CONTROL BLOWER SPEED 2
38AK	CONTROL + CLIMATE CONTROL BLOWER SPEED 3
38AL	CONTROL + CLIMATE CONTROL BLOWER SPEED 4
41A	SIGNAL + FUEL LEVEL TRANSMITTER
47A	- FUEL MINIMAL LEVEL WARNING
49B	CONTROL + BLOWER COOLING
64A	SUPPLY + SIGNALISING
64AP	+ PROTECTED TURNING LIGHTS
64B	CONTROL + TURNING LIGHTS
64C	LEFT TURNING LIGHTS CONTROL
64C	RIGHT TURNING LIGHTS CONTROL
64F	HAZARD INDICATOR + CONTROL
65A	STOP LIGHTS + CONTROL
67A	CONTROL + HORNS (ACOUSTIC WARNINGS)
80T	ANTI-STARTING INDICATOR CONTROL
80X	ANTI-STARTING RECEPTOR SIGNAL TRACK
85D	4X4 CONNECTION CONTROL
85G	4X4 RELAY CONTROL
85L	4X4 INDICATOR CONTROL
139A	CONTROL + DIESEL OIL FILTER HEATING