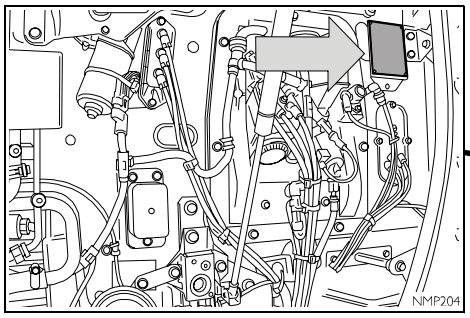
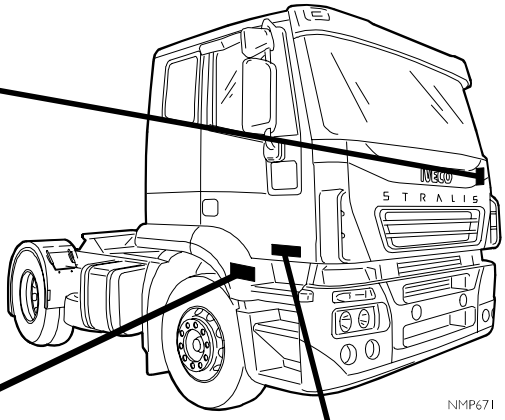
VEHICLE IDENTIFICATION DATA

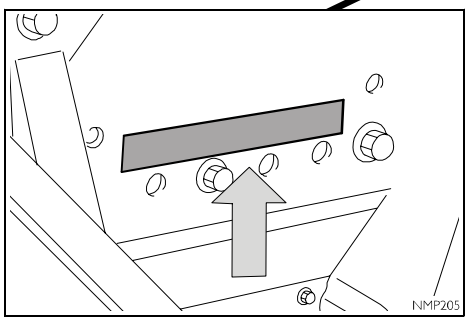
The type and number of engine, type and number of chassis and manufacturer's plate comprise the vehicle identification data.



Manufacturer's plate

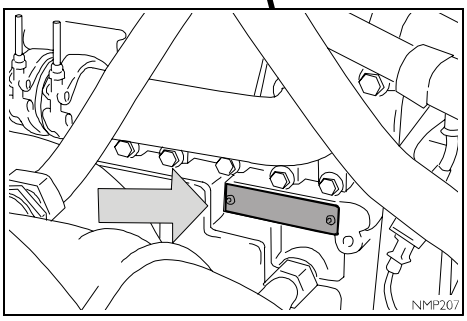
To identify the vehicle in accordance with the E.E.C. directive
(under the front radiator cowling).





Chassis frame

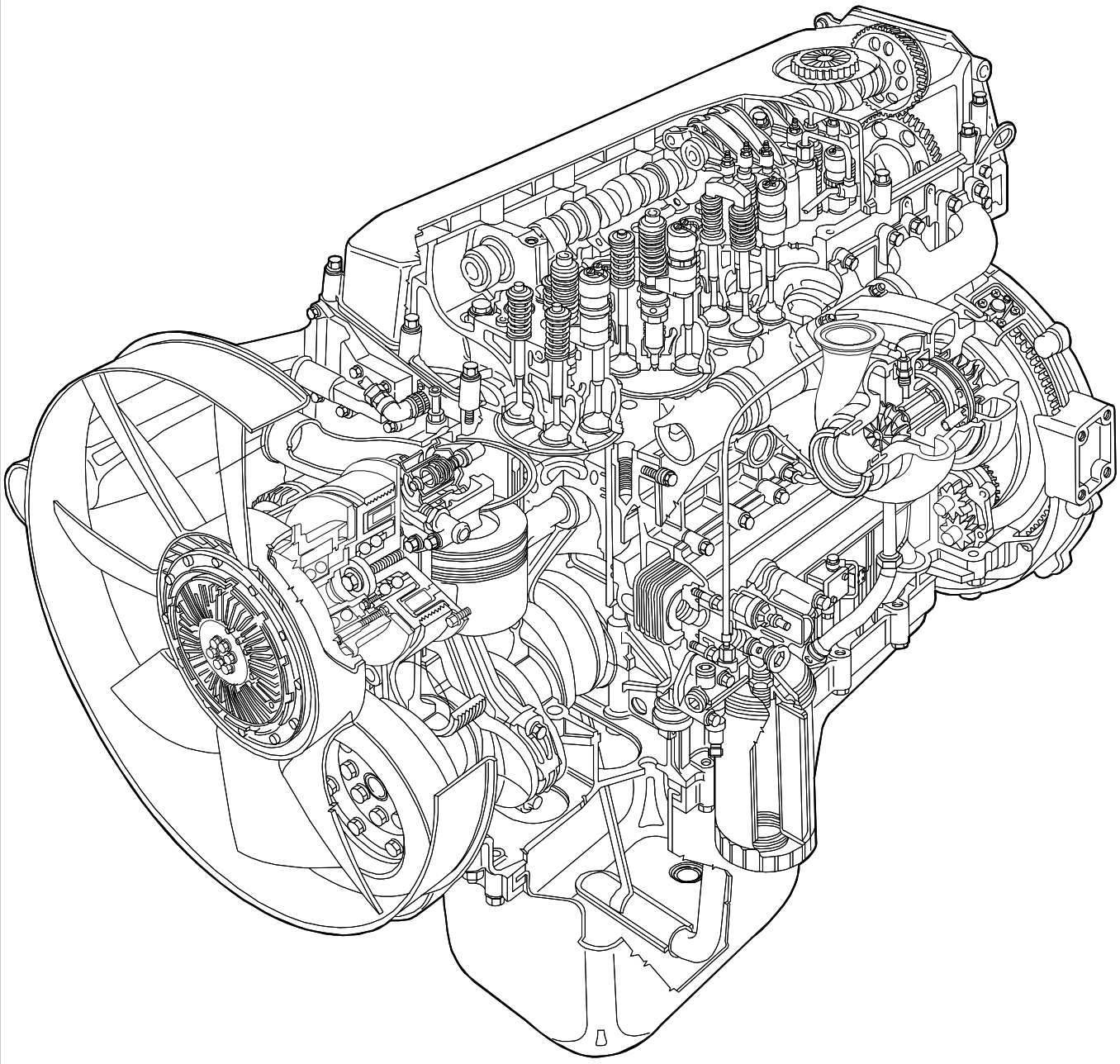
Punching (front on right side member of chassis frame).



Engine

Plate on the left rear side of the crankcase

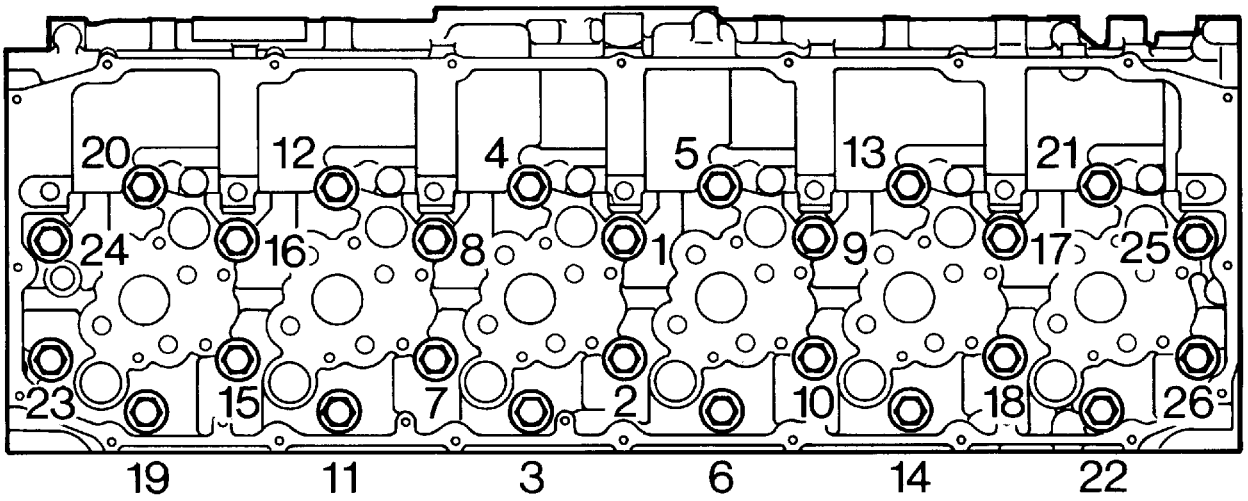
Figure 1



78840

F2B ENGINE

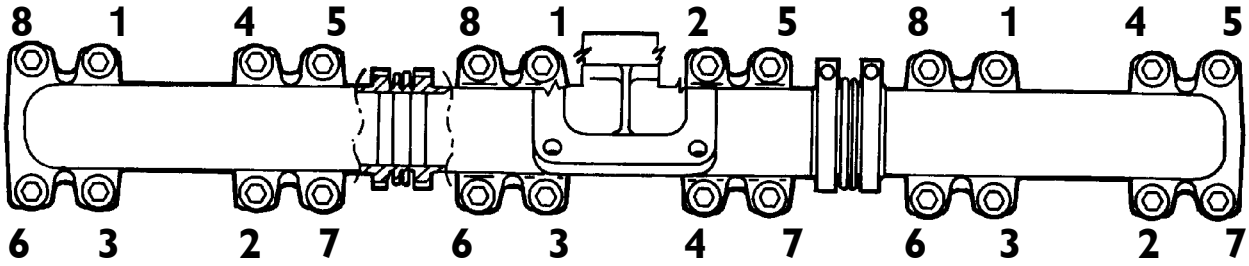
Figure 7



44900

DIAGRAM OF CYLINDER HEAD FIXING SCREWS TIGHTENING SEQUENCE

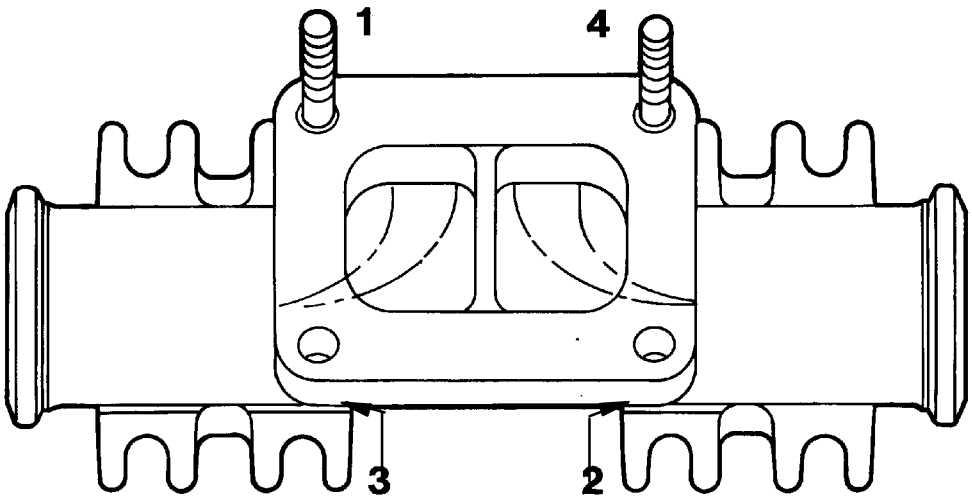
Figure 8



45359

DIAGRAM OF EXHAUST MANIFOLD FIXING SCREWS TIGHTENING SEQUENCE

Figure 9

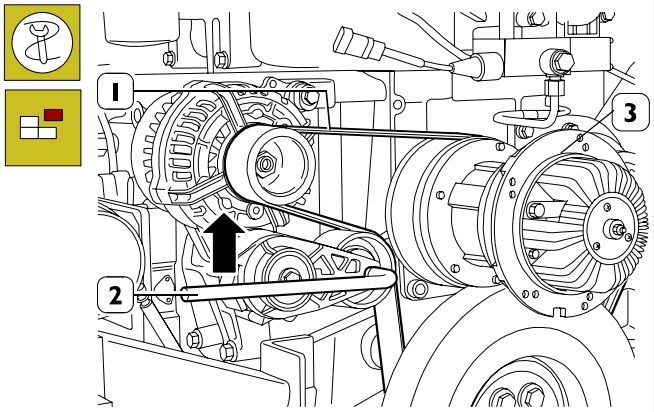


45360

DIAGRAM OF TURBOCHARGER FIXING SCREWS AND NUTS TIGHTENING SEQUENCE

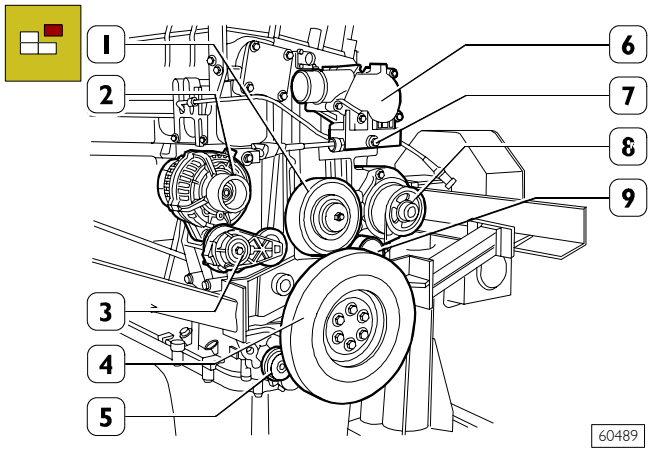
SEQUENCE:	Preliminary tightening	4 - 3 - 1 - 2
	Tightening	1 - 4 - 2 - 3

Figure 18



Using an appropriate tool (2), operate in the direction of the arrow, and remove the belt (1) driving the water pump, alternator and fan.
Take out the screws and remove the electromagnetic coupling (3).

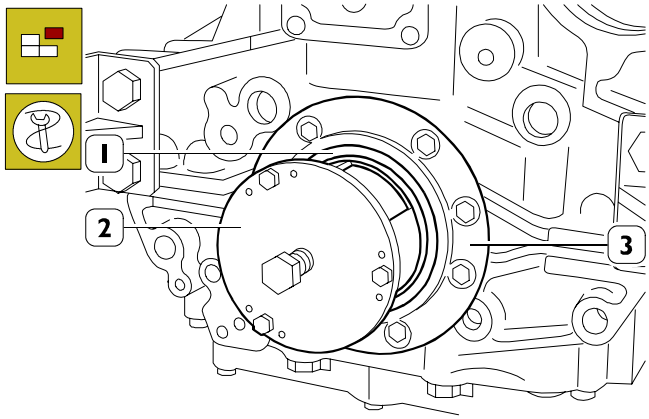
Figure 19



Remove the following components:

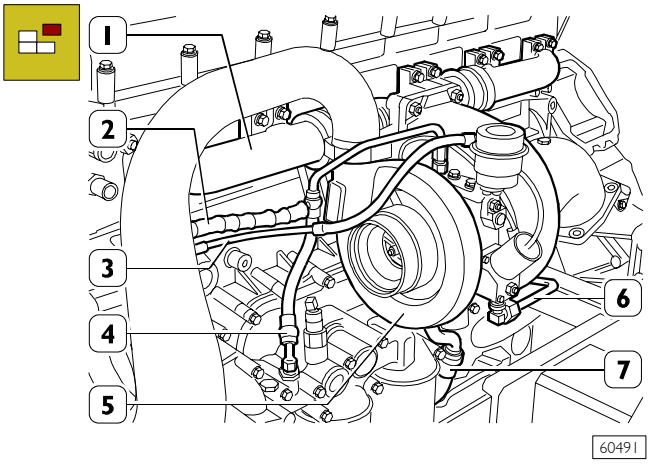
- thermostat unit (6) fitted with turbine actuator pressure sensor (7);
- alternator (2);
- pulley support (1);
- water pump (8) and piping;
- automatic belt tightener support (3);
- fixed belt tightener (9);
- damping flywheel (4) and pulley underneath it;
- automatic belt tightener (5);
- disconnect all the electric connections and the sensors.

Figure 20



Fit the extractor 99340053 (2) and remove the engine crankshaft seal gasket (1), remove the cover (3).

Figure 21

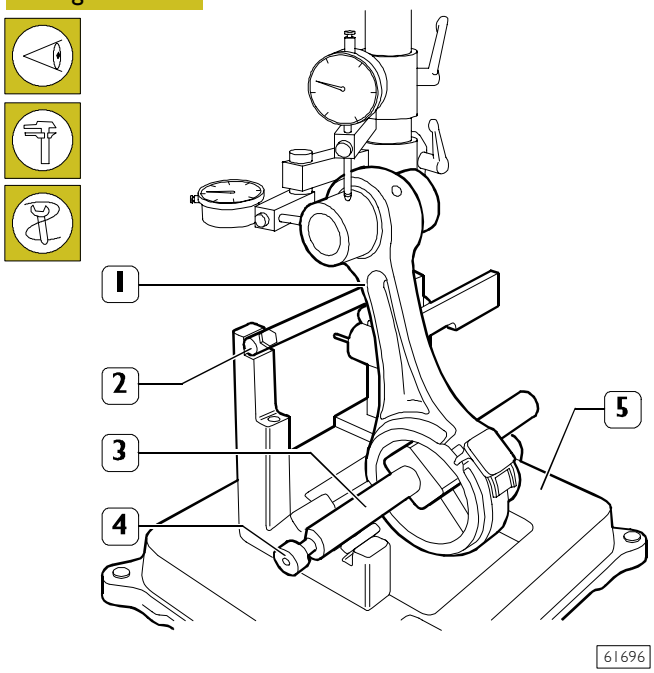


Remove the following components:

- water outlet line (2);
- oil delivery line (4);
- actuator air line (3);
- water delivery line (6);
- oil return line (7);
- turbocharger (5);
- exhaust manifold (1).

Checking connecting rod alignment

Figure 98



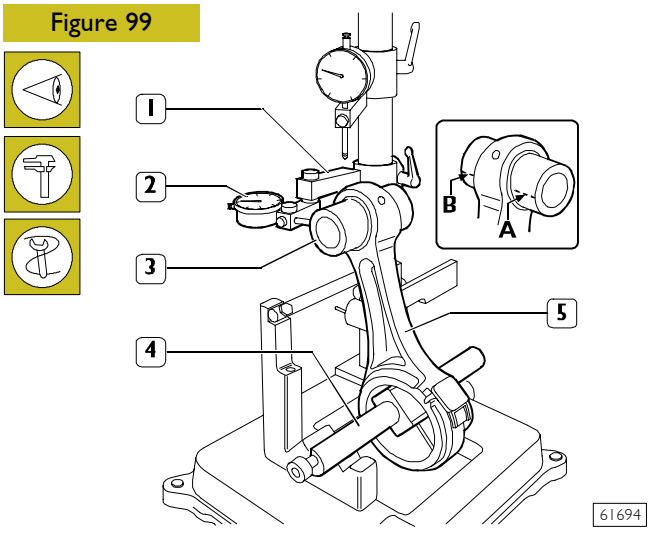
Checking axis alignment

Check the alignment of the axes of the connecting rods (1) with device 99395363 (5), proceeding as follows:

- ❑ Fit the connecting rod (1) on the spindle of the tool 99395363 (5) and lock it with the screw (4).
- ❑ Set the spindle (3) on the V-prisms, resting the connecting rod (1) on the stop bar (2).

Checking torsion

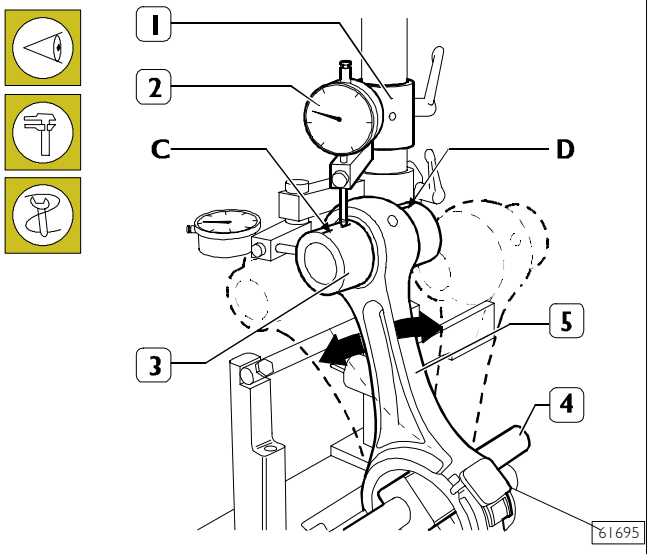
Figure 99



Check the torsion of the connecting rod (5) by comparing two points (**A** and **B**) of the pin (3) on the horizontal plane of the axis of the connecting rod.
Position the mount (1) of the dial gauge (2) so that this pre-loads by approx. 0.5 mm on the pin (3) at point **A** and zero the dial gauge (2). Shift the spindle (4) with the connecting rod (5) and compare any deviation on the opposite side **B** of the pin (3): the difference between **A** and **B** must be no greater than 0.08 mm.

Checking bending

Figure 100



Check the bending of the connecting rod (5) by comparing two points **C** and **D** of the pin (3) on the vertical plane of the axis of the connecting rod.
Position the vertical mount (1) of the dial gauge (2) so that this rests on the pin (3) at point **C**.
Swing the connecting rod backwards and forwards seeking the highest position of the pin and in this condition zero the dial gauge (2).
Shift the spindle (4) with the connecting rod (5) and repeat the check on the highest point on the opposite side **D** of the pin (3). The difference between point **C** and point **D** must be no greater than 0.08 mm.

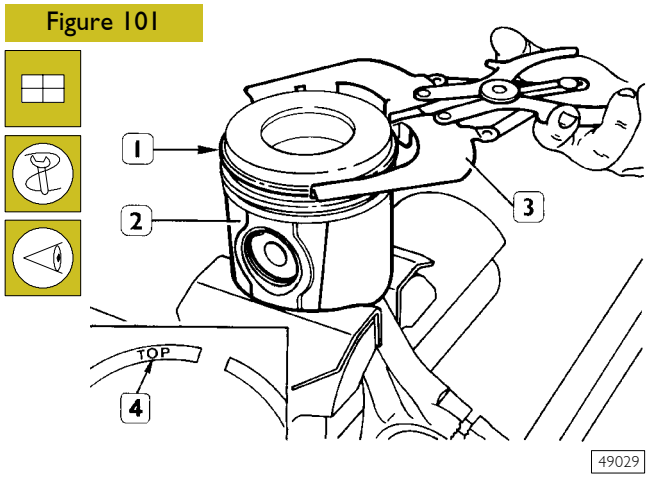
Mounting the connecting rod - piston assembly

Carry out the steps for removal described on page 61 in reverse order.

The connecting rod screws can be reused as long as the diameter of the thread is not less than 13.4 mm.

Mounting the piston rings

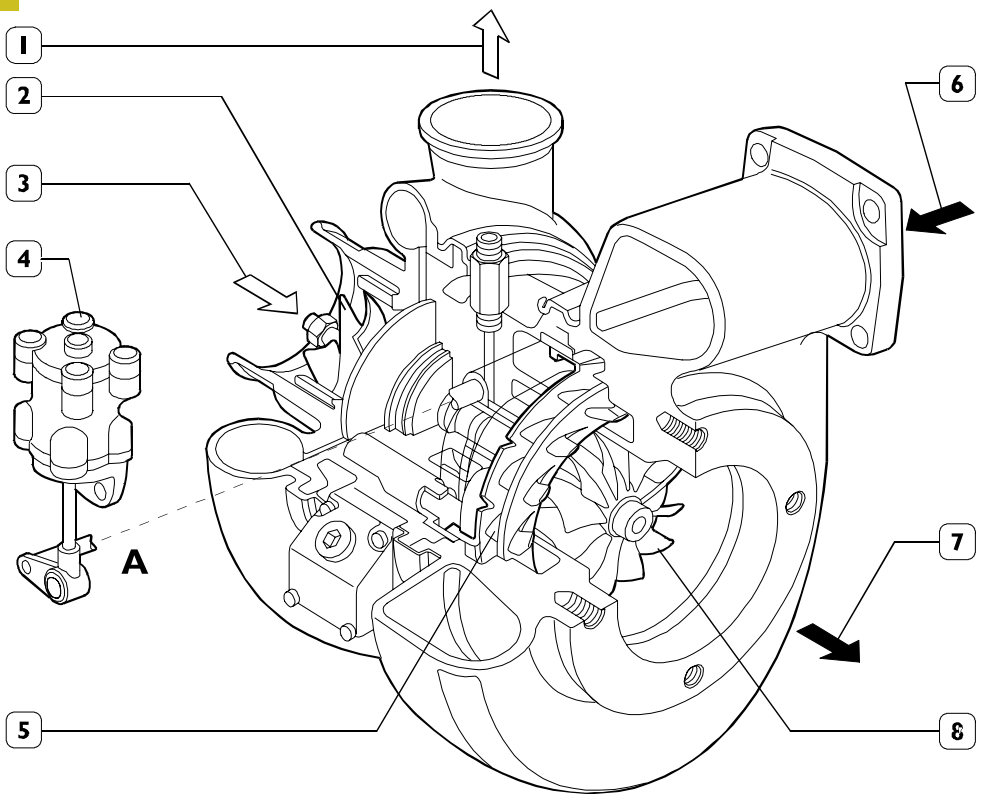
Figure 101



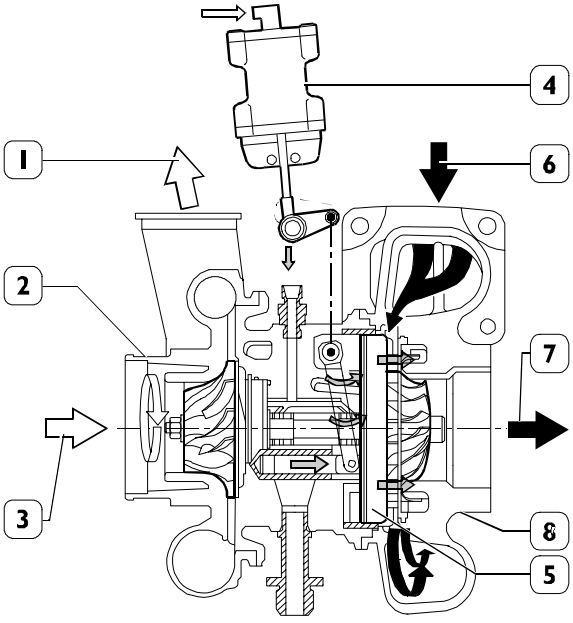
To fit the piston rings (1) on the piston (2) use the pliers 99360184 (3).
The rings need to be mounted with the word "TOP" (4) facing upwards. Direct the ring openings so they are staggered 120° apart.

TURBO COMPRESSOR HOLSET HX 40V

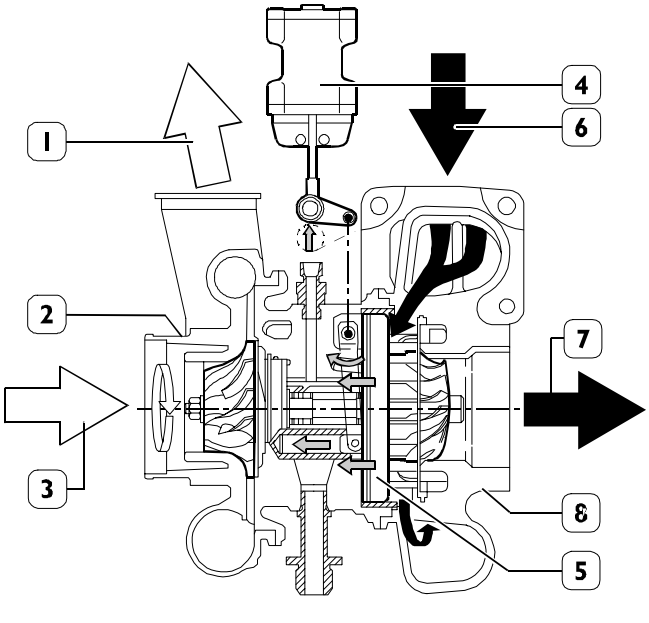
Figure 208



1. Air delivery to the intake manifold - 2. Compressor - 3. Air inlet - 4. Actuator - 5. Exhaust gas speed governor - 6. Exhaust gas inlet - 7. Exhaust gas outlet - 8. Turbine



CROSS-SECTION OF MINIMUM FLOW



CROSS-SECTION OF MAXIMUM FLOW

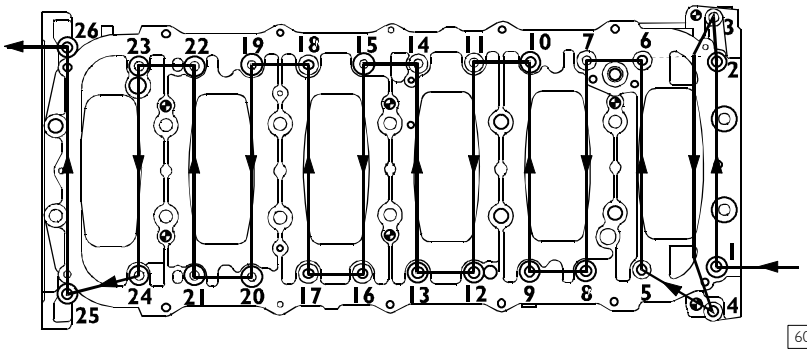
CROSS-SECTION OF TURBOCHARGER

1. Air delivery to the intake manifold - 2. Compressor - 3. Air inlet - 4. Actuator - 5. Exhaust gas flow-rate adjustment ring - 6. Exhaust gas inlet - 7. Exhaust gas outlet - 8. Turbine - 9. Exhaust gas flow-rate control fork

DIAGRAMS OF TIGHTENING SEQUENCE FOR MAIN PARTS OF ENGINE

Figure 9

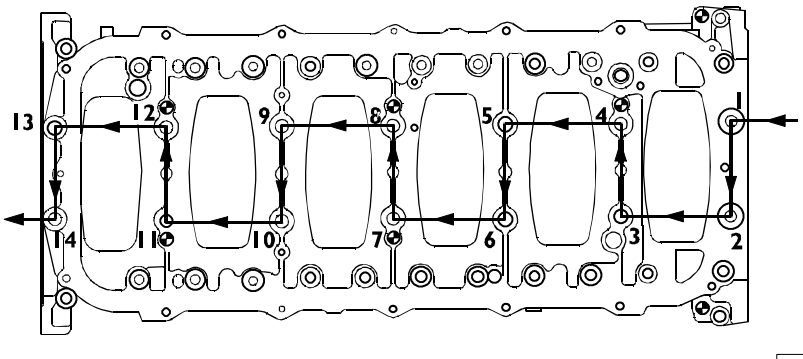
FRONT SIDE



stage 1: pretightening, outer screws

(30 Nm)

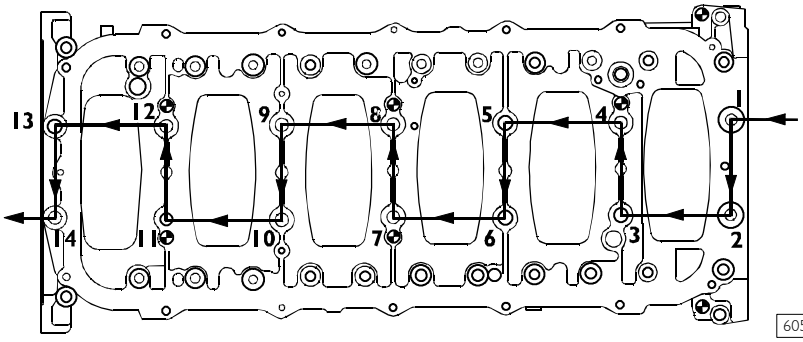
FRONT SIDE



stage 2: pretightenig, inner screws

(120 Nm)

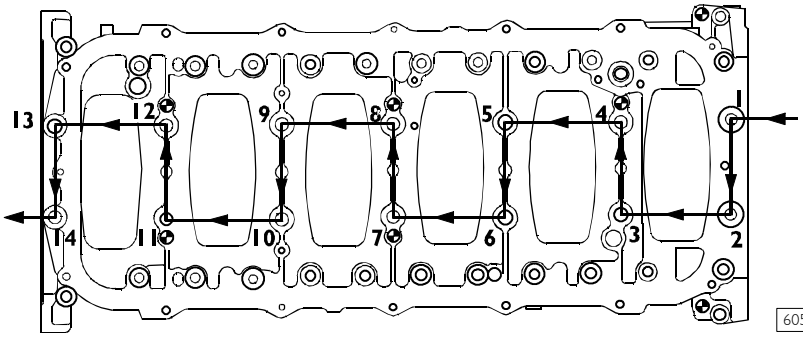
FRONT SIDE



stage 3: angle, inner screws

90°

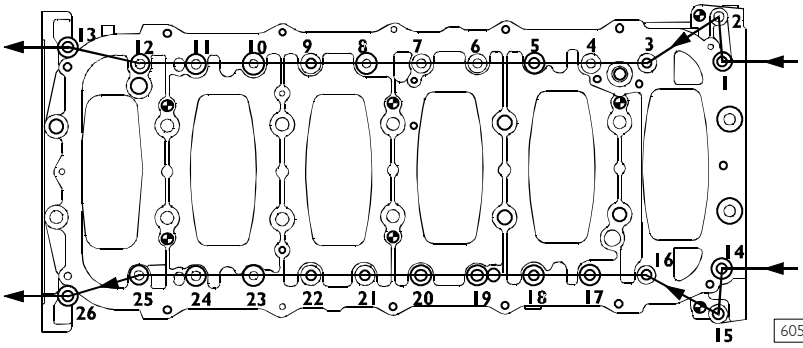
FRONT SIDE



stage 4: angle, inner screws

45°

FRONT SIDE

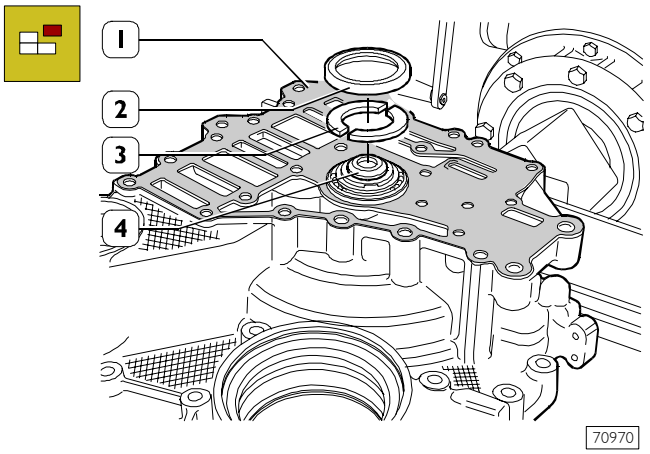


60°

stage 5: angle, outer screws

DIAGRAMS OF TIGHTENING SEQUENCE FOR SCREWS FIXING CRANKCASE BASE

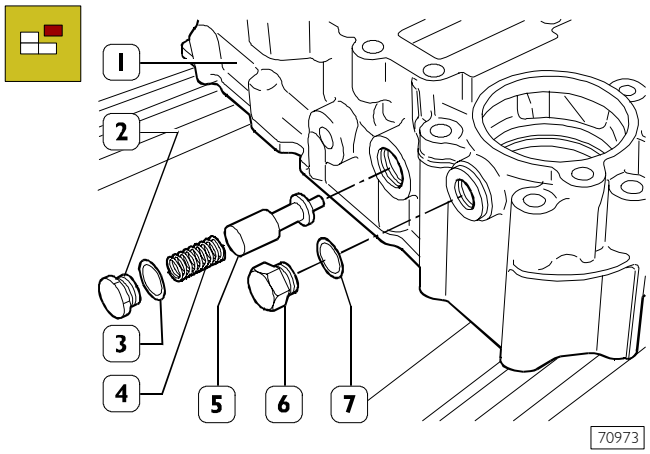
Figure 19



Take off the gasket (1).

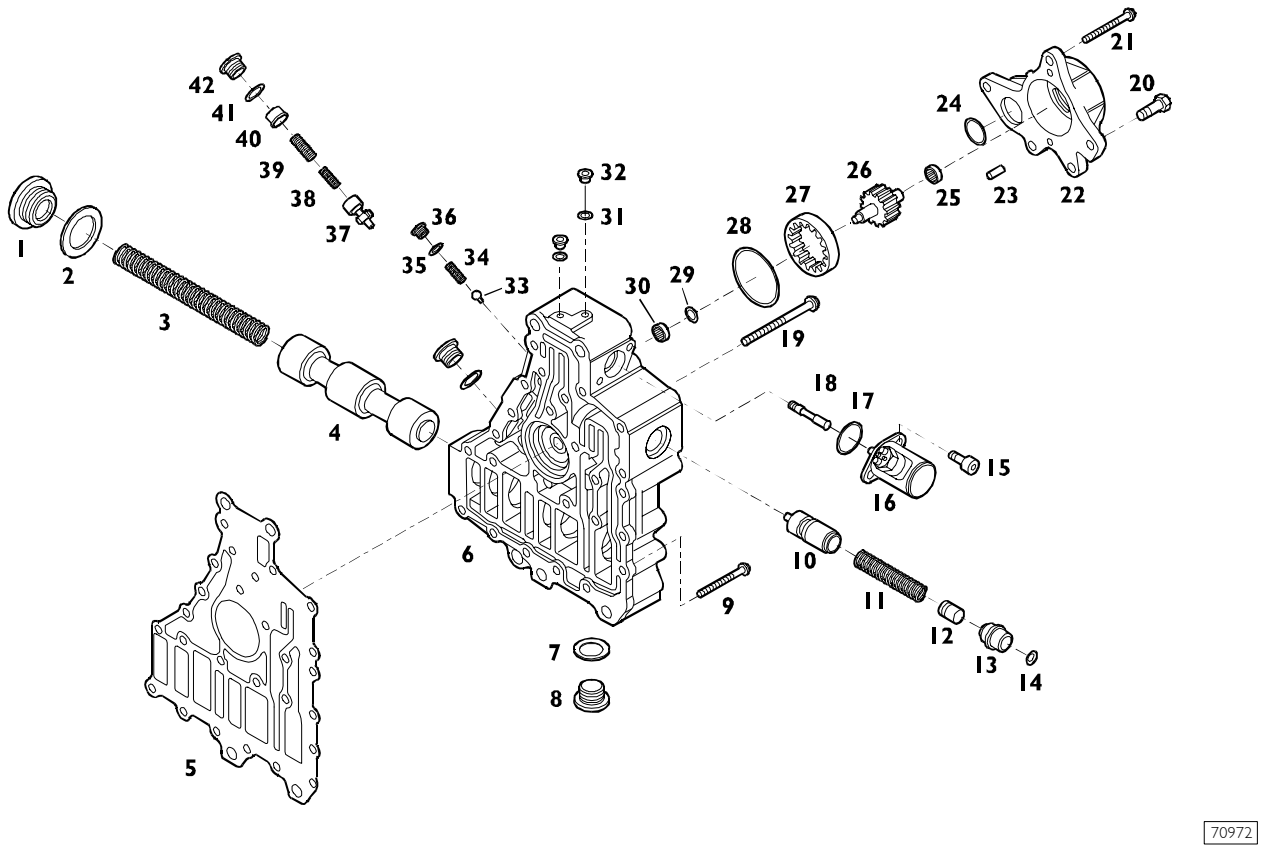
Lift the notches in the safety cover (2) and remove the half rings (3) from the shaft of the rotor (4).

Figure 20



Take the plug (2) with the washer (3) out of the front box (1); extract the spring (4) and the valve (5).
Take out the plug (6) with the washer (7).

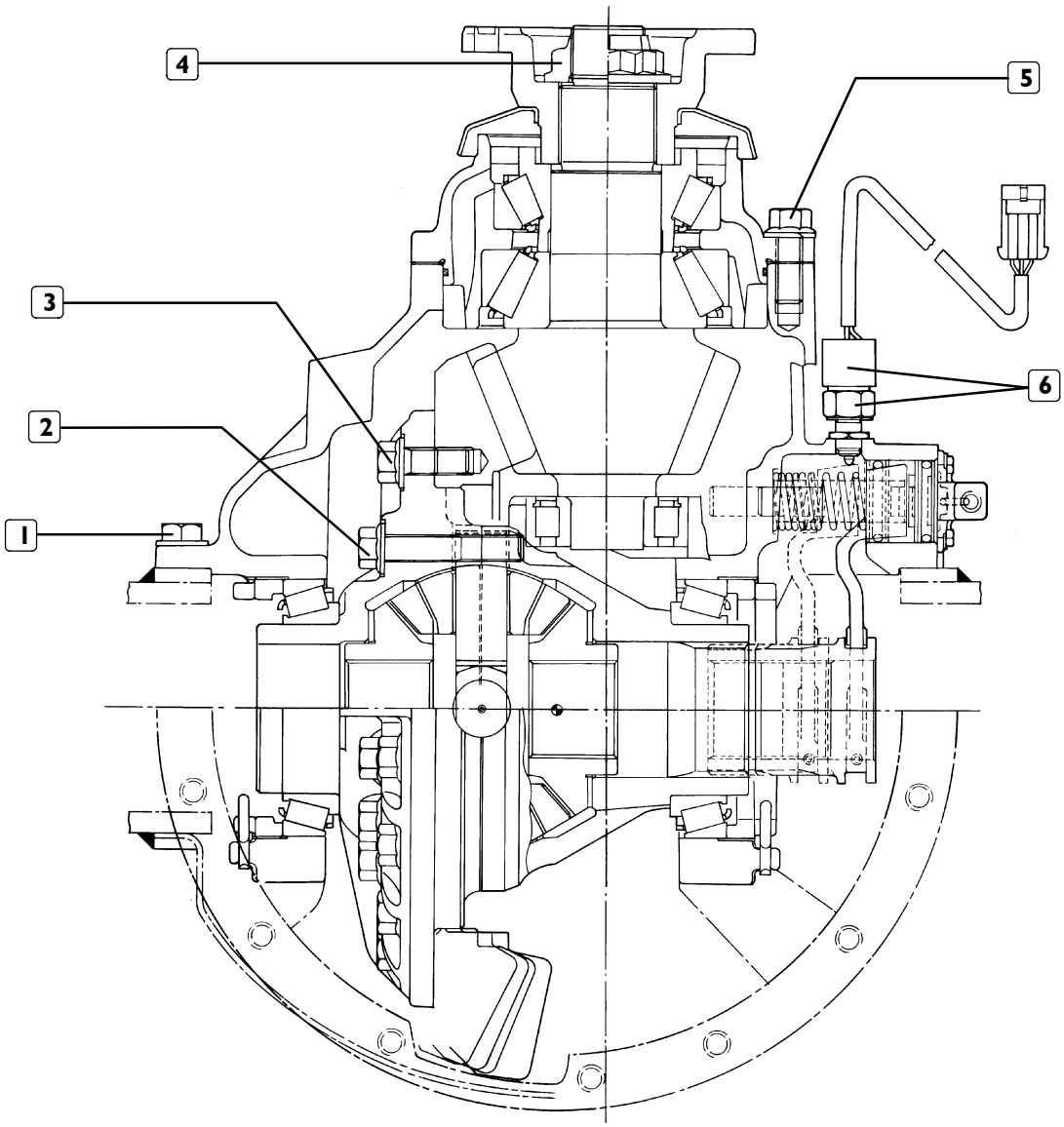
Figure 21



COMPONENT PARTS OF THE REAR BOX

1. Plug - 2. Washer - 3. Spring - 4. Switchover valve - 5. Gasket - 6. Rear half box - 7. Washer - 8. Plug - 9. Screw - 10. Pressure adjustment valve - 11. Spring - 12. Cup - 13. Adjustment device - 14. Cover - 15. Screw - 16. Proportional solenoid valve - 17. Seal - 18. Pressure control valve - 19. Screw - 20. Screw - 21. Screw - 22. Oil pump cover - 23. Grub screw - 24. Seal - 25. Roller bearing - 26. Rotor - 27. Ring gear - 28. Seal - 29. Split ring - 30. Roller bearing - 31. Washer - 32. Plug - 33. Safety ball valve - 34. Spring - 35. Washer - 36. Plug - 37. Pressure relief valve - 38. Spring - 39. Spring - 40. Cup - 41. Washer - 42. Plug

Figure 1



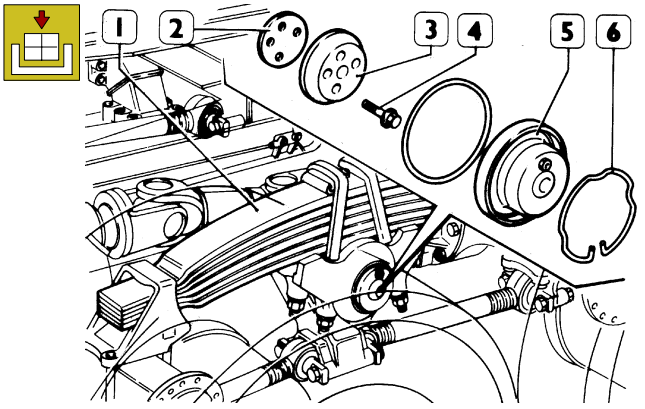
TIGHTENING TORQUES

	PART		TORQUE	
			Nm	kgm
1	Screw fixing differential case to axle housing	1st phase torque 2nd phase angle	100 ± 5 80° to 90°	10 ± 0.5
2	Screw fixing differential half boxes	1st phase torque 2nd phase angle	100 ± 5 110° to 120°	10 ± 0.5
3	Screw fixing bevel ring gear to half box	1st phase torque 2nd phase angle	100 ± 5 80° to 90°	10 ± 0.5
4	Nut locking bevel pinion		1350 to 1670	135 to 167
5	Screw fixing bevel pinion mount	1st phase torque 2nd phase angle	100 ± 5 60° to 70°	10 ± 0.5
6	Nut locking sensor		35 to 45	3.5 to 4.5
	Screw fixing caps to differential case		650 to 810	65 to 81
	Oil drain plug		47	4.7

500440 Removing-reassembling the central support
500442 Removing-reassembling the central support shaft
500443 Replacing the bearings
500449 Removing-reassembling the bracket

Removing the central support

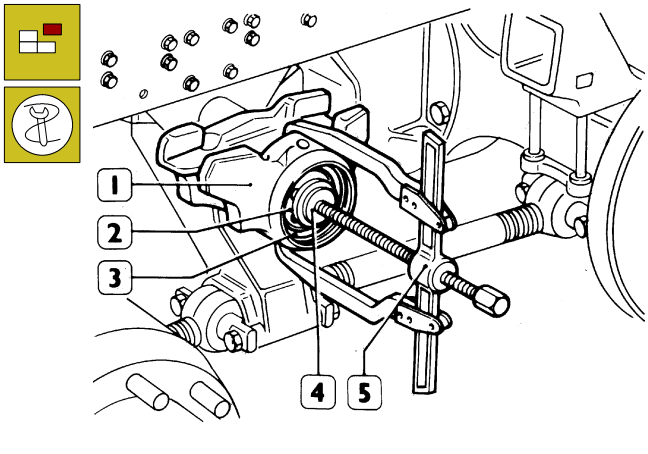
Figure 8



39073

Lift the rear of the vehicle and rest the chassis and axles on stands.
Remove the wheels.
Remove the leaf spring.
Remove the split ring (6) and cap (5).
Remove the screws (4), plate (3) and adjusting shims (2) underneath.

Figure 9

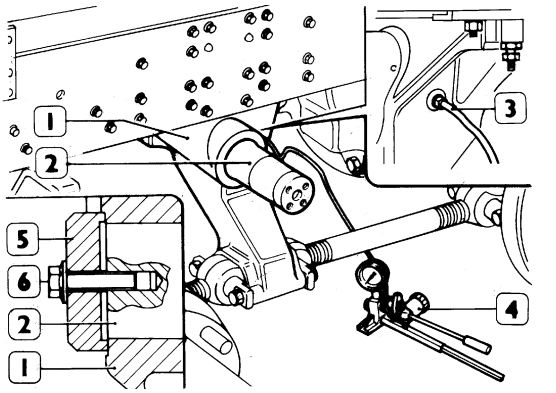


39074

Using puller 99348002 (5) and counter block 99345055 (4), pull out the central support (1) from the shaft (3), together with outer half bearing (2).

Removing the central support shaft

Figure 10



39075

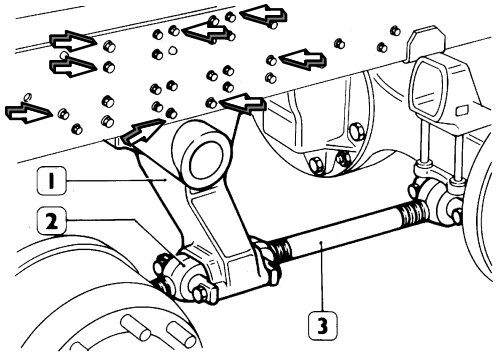
Loosen the screw (6) by approx. 1 turn.

Do not remove the screw (6) and plate (5), since in the next operation this prevents violent ejection of the shaft (2) from the bracket.

Fit the pipe (3) of hydraulic pump 99341035 (1) to the bracket hole (1); operate the pump until the shaft (2) is released from the bracket (1).
Remove the screw (6) and plate (5) and pull out the shaft (2) from the bracket (1).

Replacing the bracket

Figure 11

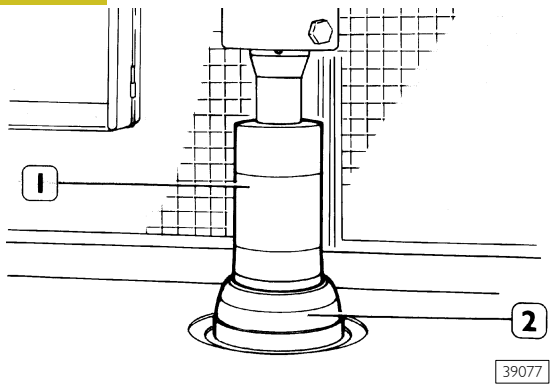


39076

Remove the drag links (2 and 3) and take down the bracket (1).
To replace the upper bracket (1, Figure 14), take out the screws (⇒) and remove the bracket from the side members.

Replacing the half bearings

Figure 12

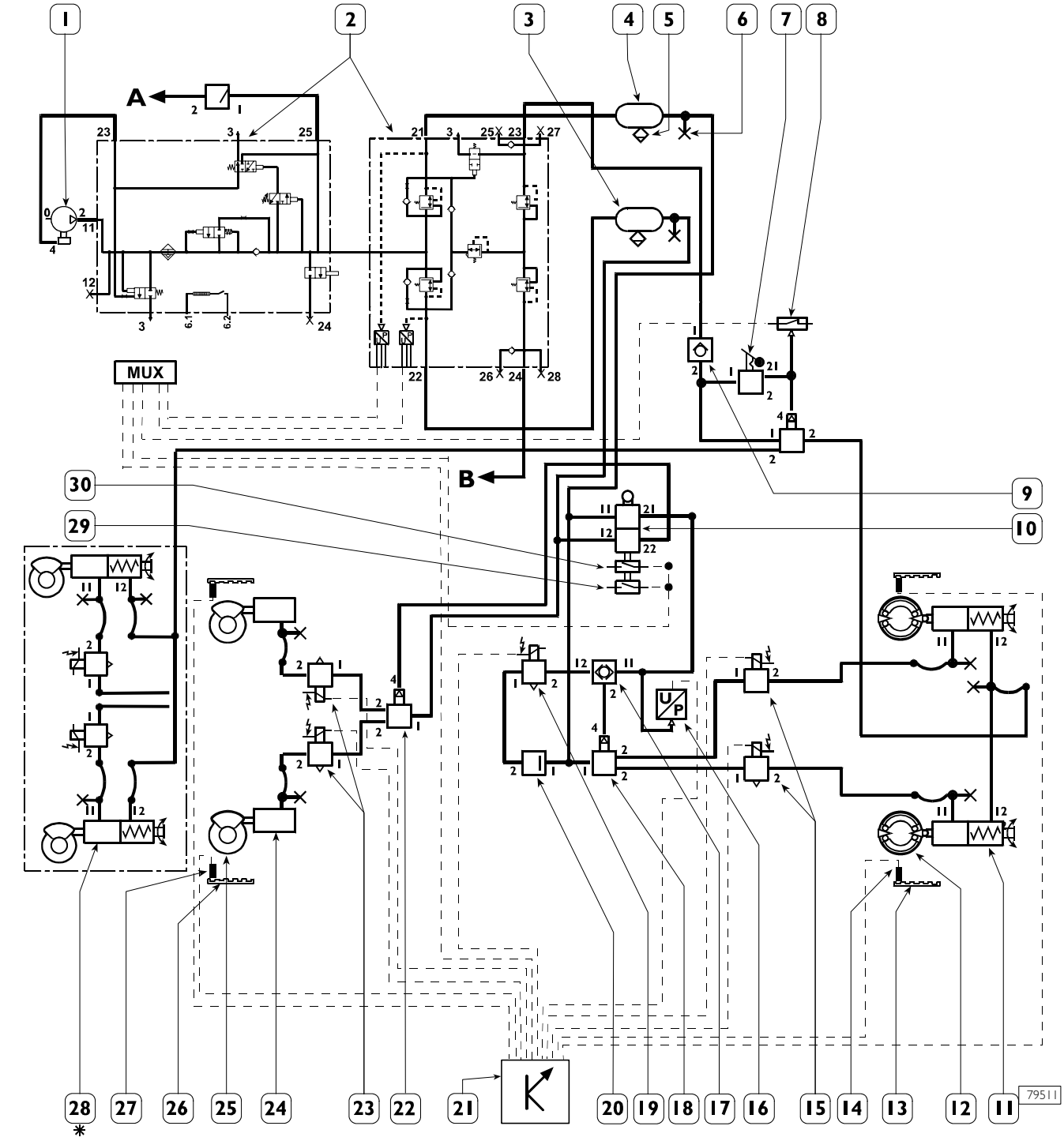


39077

Using a hydraulic press, remove the inner half bearing (2) from the shaft bearing (1).

ABS-EBL working diagram for stand alone 4x2 vehicles (trucks)

Figure 36



1. Compressor - 2. Air processing unit - 10.5 bars - 3. Air tank - 20 l. - 4. Air tank - 30 l. - 5. Manual discharge valve - 6. Air test point - 7. Parking manual control valve - 8. Handbrake low pressure switch turned on – 6.4 bars - 9. Parking system one-way valve - 10. Duplex control valve - 11. Rear axle combined cylinder - 12. Rear axle drum brake assembly - 13. Rear axle phonic wheel - 14. Rear axle speed sensor - 15. Rear axle ABS solenoid valves - 16. EBL pressure sensor - 17. Dual stop valve - 18. Rear axle brake control relay valve - 19. ASR control solenoid valve - 20. Controlled pressure valve with no return for ASR – 7.5 bars - 21. ABS electronic control unit - 22. Front axle brake control relay valve - 23. Front axle ABS solenoid valve - 24. Front axle diaphragm brake cylinder - 25. Front axle disc brake assembly - 26. Front axle phonic wheel - 27. Front axle speed sensor - 28. Front axle parking brake - 29. Brake light control microswitch - 30. Microswitch for EDC control unit - A. To the air suspension system - B. To the service system - * Optional extra.

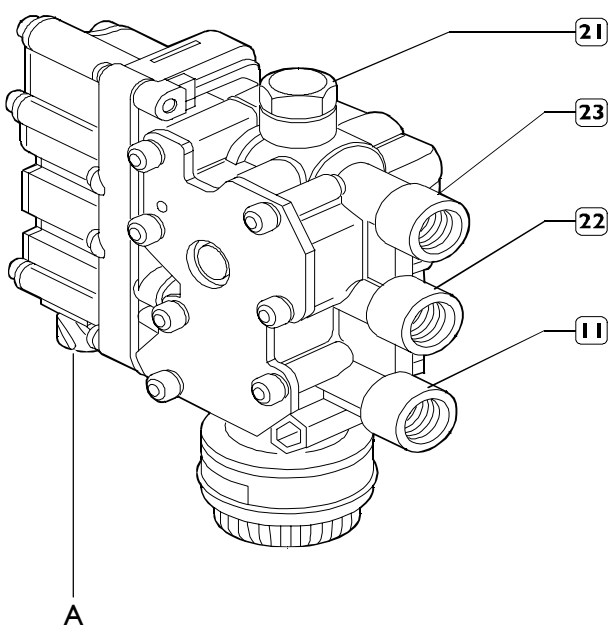
Electro-pneumatic axle for 4x2 P tractors

It consists of two control electro valves "A" and "B" and three compressed air distributors.

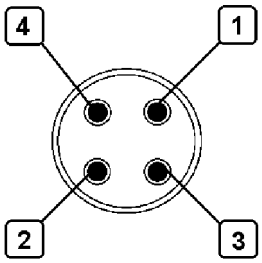
Electro valve "A" manages the input/output distributor.

Electro valve "B" manages the frame setting distributor.

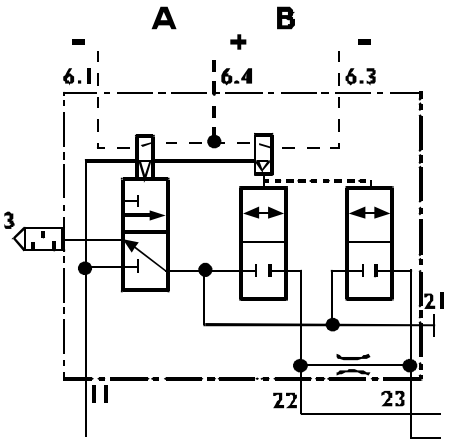
The electro-pneumatic distributor is connected to the system via a 4-pole connector.



002103t



002035t

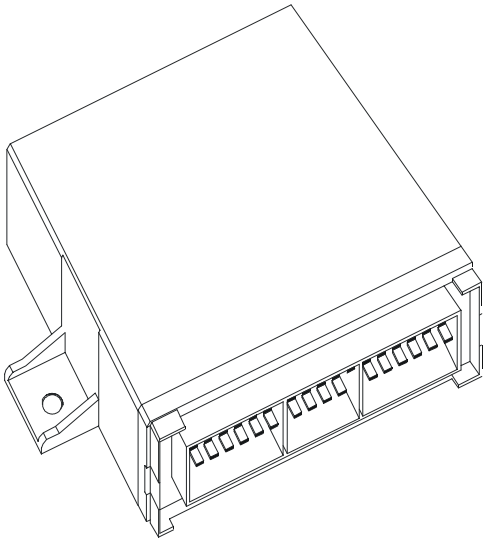


002042t

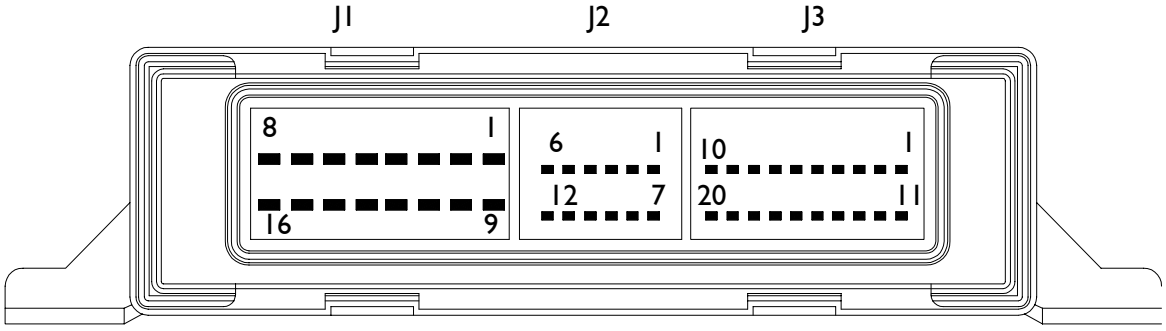
Ref.	Description
1	Electro valve "A" control negative
2	Common positive
3	Electro valve "B" control negative
4	---

D.D.M. / P.D.M. / Cab module (Opt)

The three centers are identical.
The D.D.M. is located inside the operator door; the P.D.M. inside the passenger door and the CABIN MODULE is in the center bay on the right under-instrument panel (together with the ABS and ECAS).



50239



49723

II CAB MODULE manages functions related to the operator cab.

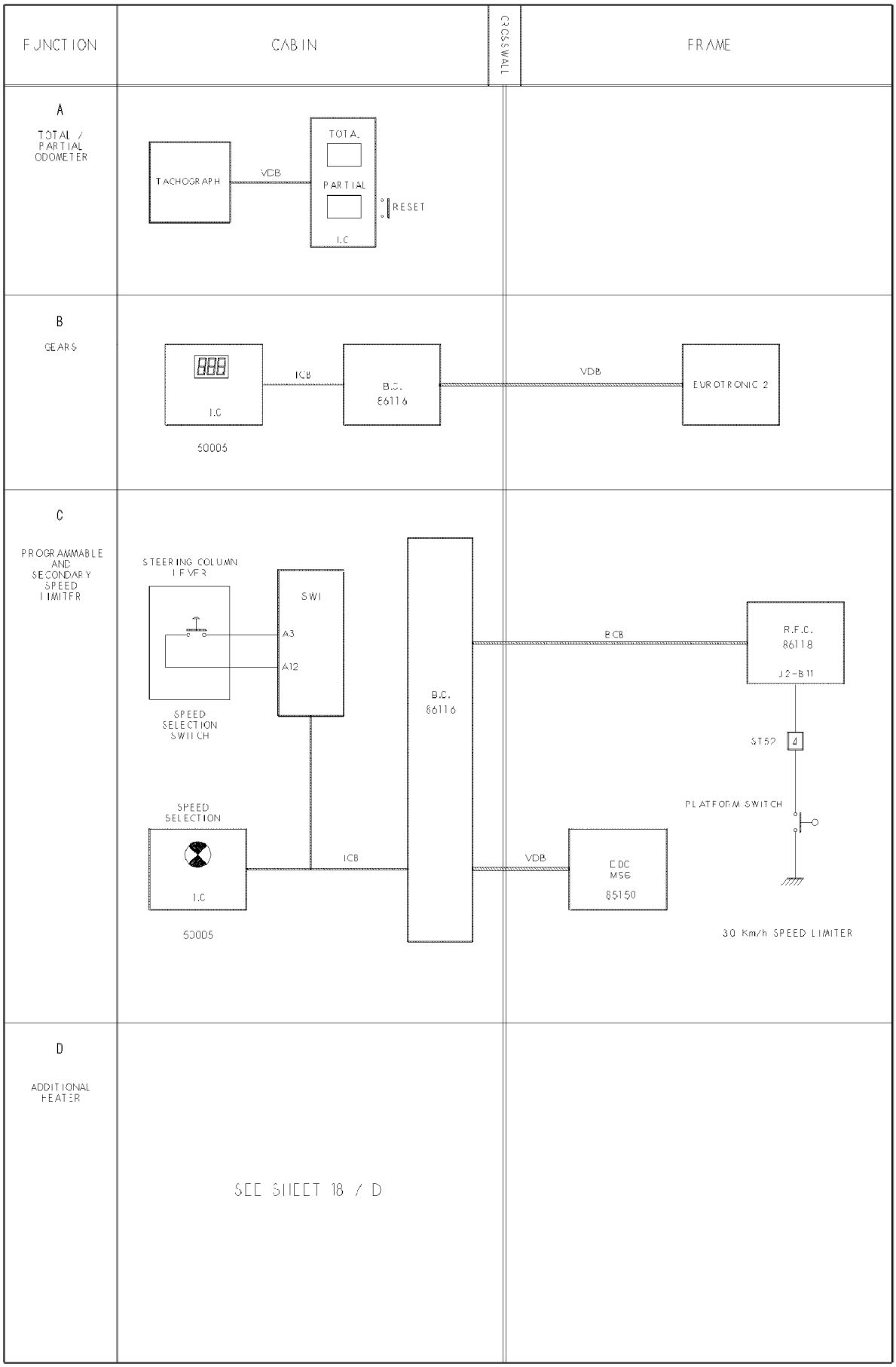
Inputs	Outputs
Rearview mirror heating	Rearview mirror heating
Rearview mirror adjustment	Rearview mirror adjustment
Window lifter	Window lifter
Centralized lock	Centralized lock

The only difference between D.D.M. and P.D.M. is that the P.D.M. J2/10 pin is connected to the J1/8 pin with a jumper to recognise the passenger module.

D.D.M.

CONNECTOR J1		
Pin	Cable	Function
1	-	Free
2	-	Free
3	8830	Free
4	9965	Centralized door lock motor control
5	9964	Centralized door lock motor control
6	8863	Window lifter motor control
7	8865	Window lifter motor control
8	0000	Mass
9	0064	Centralized door lock
10	0065	Centralized door lock
11	0000	Negative for Centralized door lock
12	0000	Negative for main rearview mirror heating
13	-	Free
14	0000	Free
15	2991	K line for diagnosis
16	7991	Positive for center power
CONNETOR J2		
Pin	Cable	Function
1	Ws/Bi	CAN H line (BCB)
2	-	Free
3	-	Free
4	-	Free
5	-	Free
6	8806	Main rearview mirror control (return)
7	Gv/Ve	CAN L line (BCB)
8	-	Free
9	-	Free
10	-	Free
11	8809	Main rearview mirror control (horizontal)
12	8808	Main rearview mirror control (vertical)
CONNECTOR J3		
Pin	Cable	Function
1	0962	Negative from passenger side window lifter push button
2	0966	Negative from passenger side window lower push button
3	0967	Negative from operator side window lifter push button
4	-	Free
5	-	Free
6	0953	Negative from right rearview mirror control push button (movement to the right)
7	0954	Negative from left rearview mirror control push button (movement to the left)
8	0951	Negative from right rearview mirror control push button (movement downwards)
9	0952	Negative from left rearview mirror control push button (movement upwards)
10	4442	Positive for passenger/operator side window push button lighting
11	0961	Negative from passenger side window lower push button
12	0960	Negative for passenger side window control push button + lighting
13	0951	Negative for operator side window control push button + lighting
14	-	Free
15	0950	Negative for rearview mirror control joystick push buttons
16	0600	Negative for rearview mirror control joystick push button lighting
17	-	Free
18	-	Free
19	4442	Positive for rearview mirror control joystick push button lighting
20	-	Free

Chart 25: Trip odometer / Total odometer - Speed limiter



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