INTRODUCTION

"This document provides data, characteristics, instructions and methods to perform repair interventions on the vehicle and its components. Anyhow, this document is addressed to qualified and specialised personnel. Iveco commercial and assistance network personnel as well as all Iveco authorised points of assistance are specifically qualified and equipped to perform the repair interventions that are indicated in this document. Before performing any intervention, check to have available the document relating to the vehicle model on which the intervention is being performed and also make sure that all accident prevention devices, such as, a rough guide, goggles, helmet, gloves, shoes, as well as work equipment, lifting and transport equipment, etc., are available and efficient, and further make sure that the vehicle is in safety conditions for intervention. Making interventions strictly observing the indications given here, as well as using specific equipment indicated, assures a correct repair intervention, execution timing observance and operators' safety. Each repair intervention must be finalised to the recovery of functionality, efficiency and safety conditions that are provided by Iveco. Each intervention on the vehicle that is finalised to a modification, alteration or anything else which has not been authorised by Iveco, involves the exclusion of any liability by Iveco, and, in particular, where the vehicle is covered by a warranty, each intervention involves an immediate waiver of the warranty. Iveco declines any liability for repair work. Iveco is available to provide any information necessary for the implementation of the interventions and to provide instructions for any cases and situations not covered in this publication.

Data and information contained in this publication may be outdated as a result of changes adopted by Iveco, at any time, for technical or commercial reasons or due to the need to adapt the vehicle to the legal requirements of different countries. In the event of discordance between the information in this manual and the actual vehicle, please contact the Iveco network before performing any interventions.

Manuals for repairs are split into Sections, each one of which is marked by a numeral; the contents of these sections are indicated in the general table of contents.

Each section is generally dedicated to a main Unit (e.g.: engine, Transmission, electric system, etc.).

Sections with mechanical contents include technical data, tightening torque collections, tool lists, connections - disconnections of units to/from the vehicle, overhauls at the bench and relative troubleshooting.

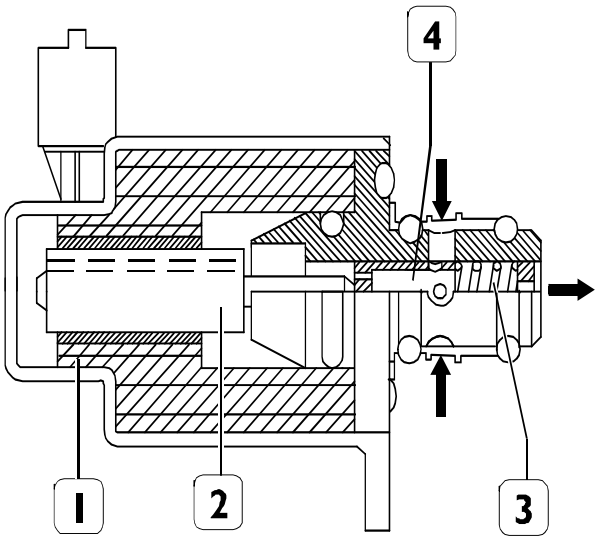
On the electric/electronic system section there are the descriptions of the electric network and vehicle electronic systems, wiring diagrams, electric characteristics of components, component codes and troubleshooting relative to the control units specific to the electric system.

The manual uses proper symbols in its descriptions; the purpose of these symbols is to classify information. In particular, a set of symbols has been defined to classify warnings, while another set has been specified for service operations.

SYMBOLS - WARNINGS

	**Danger for persons** Failure to comply with these prescriptions can result in the risk of serious injury.
	**Risk of serious damage to the vehicle** Partial or complete non observance of these prescriptions can lead to serious damages to the vehicle and can sometimes result in the guarantee being voided.
	**General danger** Includes the dangers of both above described signals.
	**Environmental protection** Indicates correct behaviour in order that vehicle use is as environmentally friendly as possible.
NOTE	Indicates an additional explanation for a piece of information.

When the solenoid **(1)** is not energized the magnetic core is pushed into the rest position by the pre-load spring **(3)**. In this position the shutter cylinder (4) allows the greatest section of passage for the fuel flow.



190608 Figure 461

1 Solenoid
2 Magnetic core
3 Pre-load spring
4 Shutter cylinder

774510 Rail description

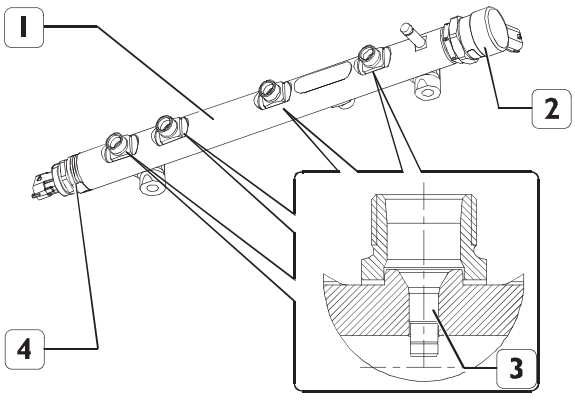
The hydraulic accumulator is located on the inlet side of the cylinder head.

By its volume, it damps fuel pressure oscillations owing to:

- high-pressure pump operation;
- electro-injector opening.

The hydraulic accumulator **(1)** is equipped with:

- a fuel pressure sensor **(4)** which measures the fuel pressure inside the rail. The fuel pressure sensor may affect the accuracy of the injector minimum flow rate correction, since the minimum flow rate depends both on the injection time and the actual pressure of the hydraulic accumulator.
- a DRV pressure regulator valve **(2)** which controls the operating pressure.



126024 Figure 462

The throttle valves or control bushes **(3)**, with ⌀ 0.85 mm, have been fitted to the fuel delivery couplings, which control the fuel pressure waves generated by the high-pressure pump.

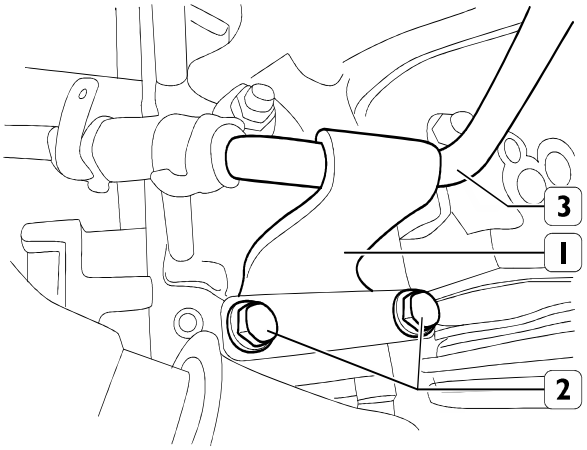
Their function is to protect the electric injectors by reducing their wear in time.

The fuel pressure sensor **(4)** may affect the accuracy of the injector minimum flow rate correction, since the minimum flow rate depends both on the injection time and the actual pressure of the hydraulic accumulator.

In case of replacement, the EDC 17 control unit correction coefficients (ZFC) must be set to zero.

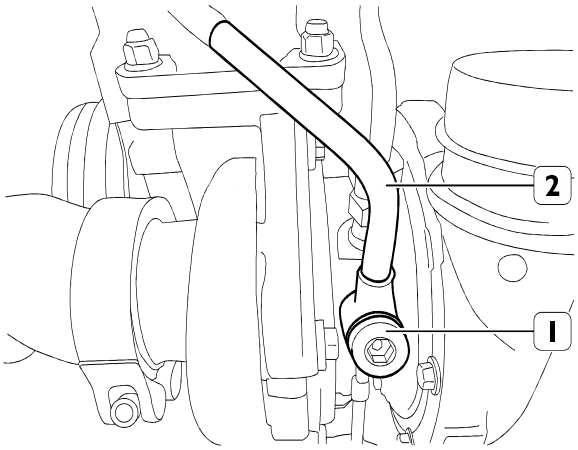
UAB A h :BSVR=eFMG$

22. Remove the bracket **(1)** securing the rigid pipe **(3)** located behind the turbine by acting on the two retainers **(2)**.



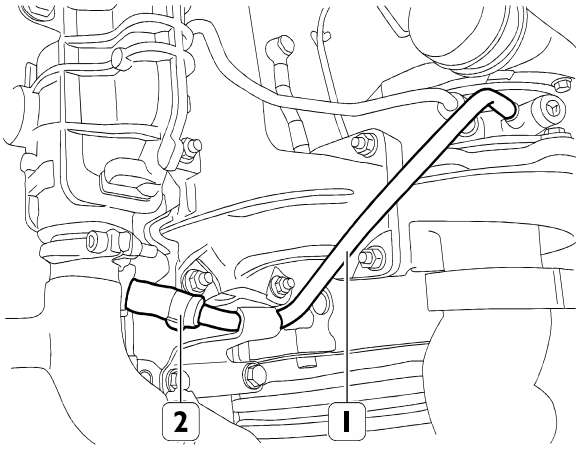
200490 Figure 811

23. Remove the rigid pipe**(2)** retainer **(1)** located behind the turbine.



200491 Figure 812

24. Remove the rigid pipe **(1)** from the vehicle by acting on the metal retaining clip**(2)** .



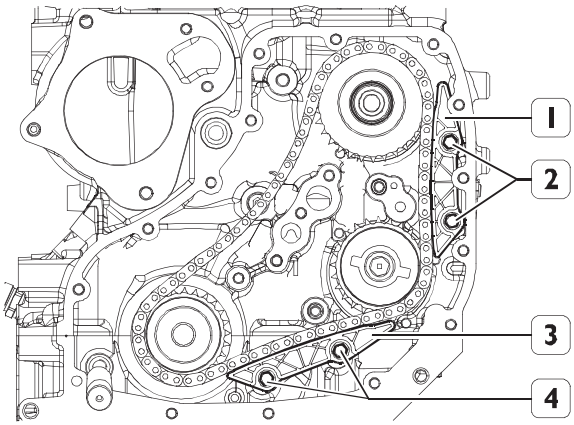
200492 Figure 813

90. Check the wear of the fixed pads **(1)** and **(3)** and replace if worn.
91. Fit the pad **(1)** and tighten the fixing screws **(2)** to the specified torque.

Tightening torque	
M8x1.25x35 flanged hex-head screw securing fixed pads on crankshaft gear	25 ±2.5 N·m

92. Fit the pad **(3)**, and tighten the screws **(4)** to the specified torque.

Tightening torque	
M8x1.25x35 flanged hex-head screw securing fixed pads on crankshaft gear	25 ±2.5 N·m

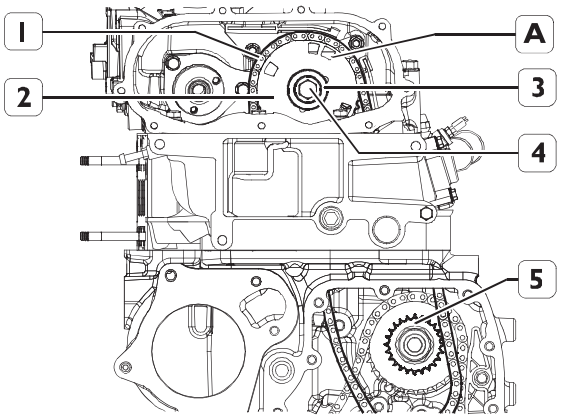


88352 Figure 1414

93. Position the chain **(1)** on the gears **(5)** and **(2)**.
94. Fit the gear inserting it onto the two centring dowels of the timing gear shaft on the intake side and check that the slot **(A)** is positioned as in the figure.

Note The stretch of chain **(1)** between the two gears must be tensioned.

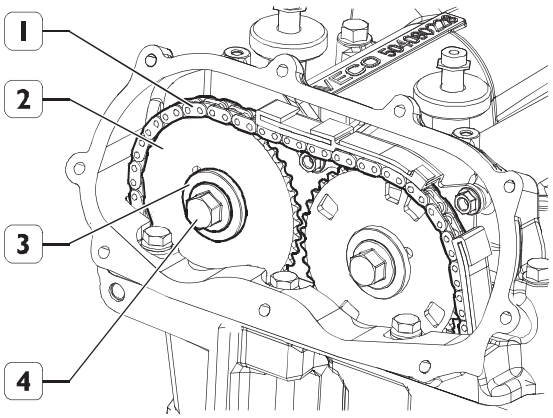
95. Fasten the fixing screw **(4)** with the washer **(3)**, but do not tighten it completely.



88358 Figure 1415

96. Position the chain **(1)** onto the gear **(2)** and fit the gear onto the camshaft on the exhaust side
97. The gear **(2)** must be mounted with the markings inwards.
98. In the gear **(2)** there is a larger hole for adjustment, which fits onto the dowel pin on the exhaust camshaft shank.
99. Fasten the fixing screw **(4)** with the washer **(3)**, but do not tighten it completely.

Note The stretch of chain **(1)** between the two gears must be tensioned.



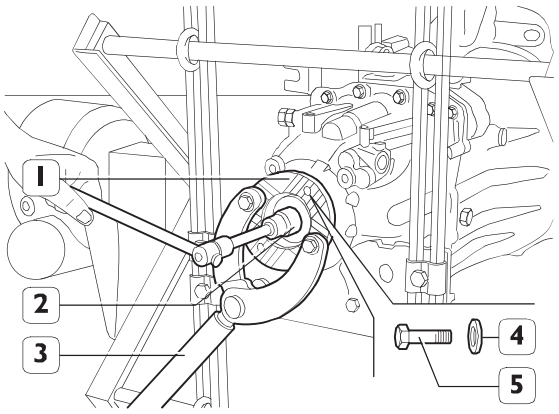
147365 Figure 1416

.531052. Removal of the drive output flange

9. Block rotation of the sleeve **(1)** by applying specific lever **(3)**.

Tool / Material	Product code
Reaction lever with flange retainer extension	99370317

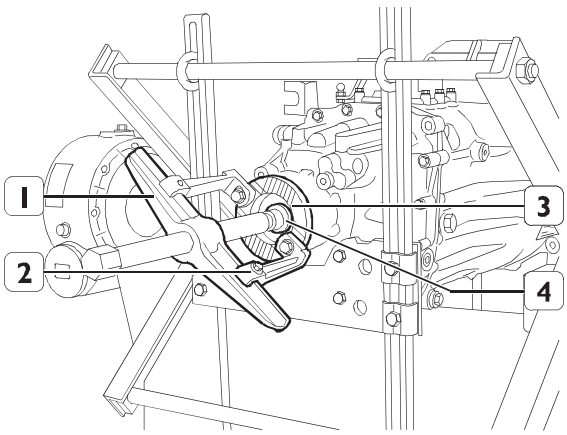
10. With the bushing **(2)** remove the screw **(5)** with the washer beneath **(4)**.
11. Remove the specific lever **(3)**.



170634 Figure 443

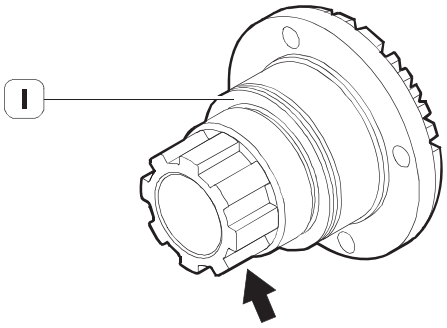
12. Extract the sleeve **(3)** from the main shaft.
13. If difficult, remove the sleeve **(3)** with puller made up of suitable bridge **(1)** and specific grips **(2)** and block **(4)**.

Tool / Material	Product code
Simple bridge	99341003
Pair of brackets with hole	99341017



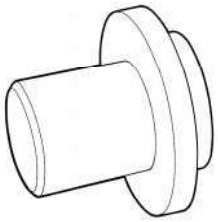
90250 Figure 444

14. When putting away the sleeve **(1)** take care not to damage the pulser ring **(→)** obtained by machining.

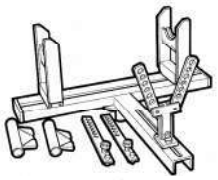


51928 Figure 445

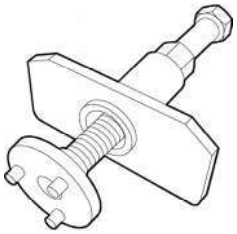
Tool for driving bearing and phonic wheel onto wheel hub (99370498)



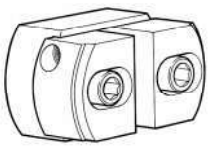
Universal mounting to support axles during removal and refitting (99370617)



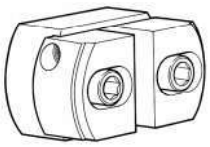
Tool for pushing back brake caliper piston (99372253)



Punch to fit bearing external races (55 -69 mm) (use with 99370007) (99374091)

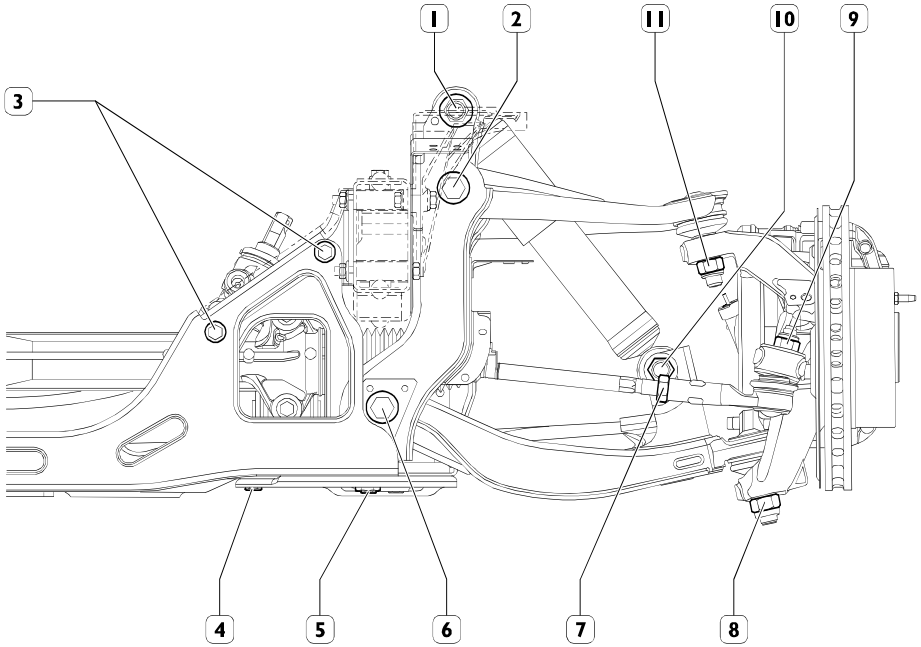


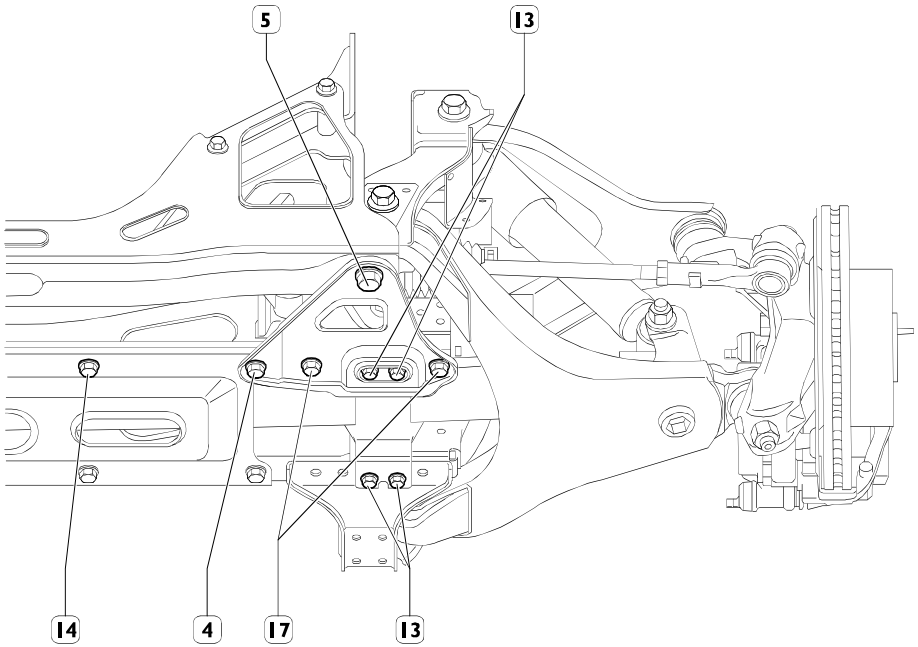
Drift for fitting bearing external races (69-91 mm) (use with 99370007) (99374092)

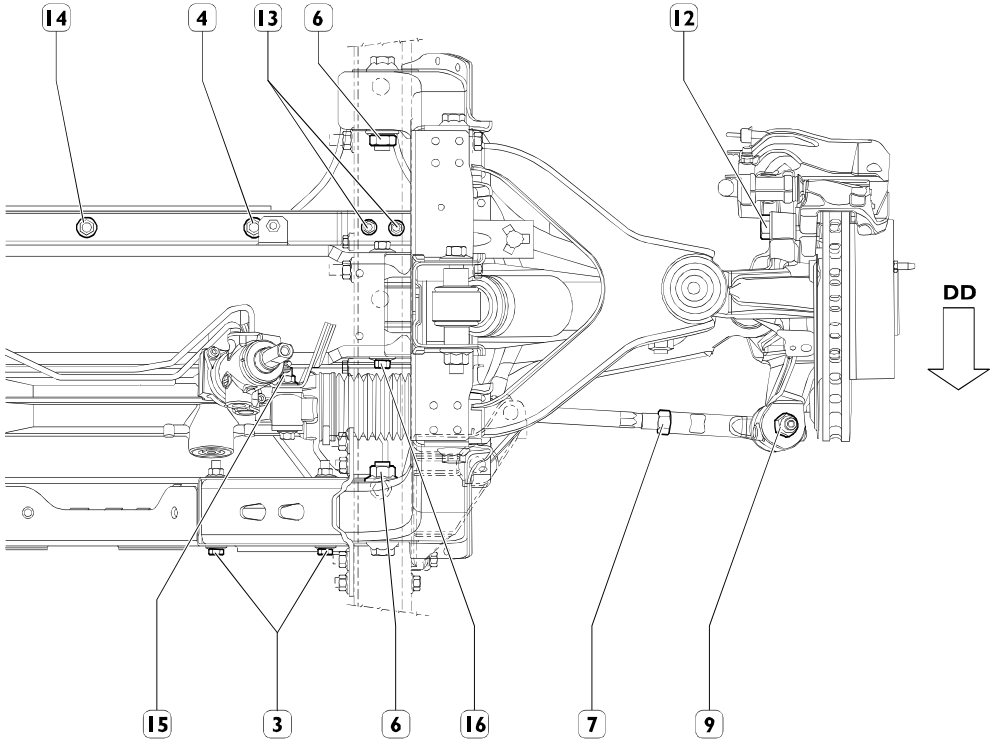


TORQUES

BAL 30S - 35S







DD

Torsional vibration of the steering wheel

No.	Possible cause	Check	Remedy
1	Unbalanced wheels.	Cause confirmed	► Balance in accordance with instructions given in the section "Wheels and tyres".
		Cause not confirmed	Check: 2
2	Incorrect front wheel geometry.	Cause confirmed	► Perform checks and adjustments in accordance with characteristic data found in the "Axles" section.
		Cause not confirmed	Check: 3
3	Air in the hydraulic system.	Cause confirmed	► Check the intake tube and pump shaft seal for leaks and top up the oil. Bleed the system.
		Cause not confirmed	► Contact the Service Network.

Excessive steering wheel clearance

No.	Possible cause	Check	Remedy
1	Backlash in ball joints and/or flexible mountings are slack.	Cause confirmed	► Secure the supports. Replace the ball joints.
		Cause not confirmed	Check: 2
2	Universal joint backlash.	Cause confirmed	► Replace the universal joint.
		Cause not confirmed	Check: 3
3	Internal power steering failure.	Cause confirmed	► Replace the power steering.
		Cause not confirmed	► Contact the Service Network.

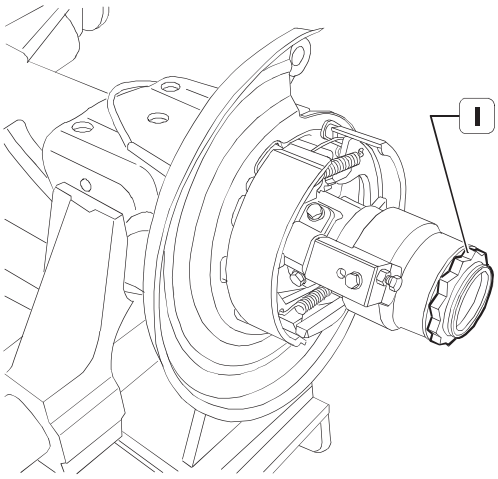
Oil leak

No.	Possible cause	Check	Remedy
1	Tank cover not secured.	Cause confirmed	► Secure the cover.
		Cause not confirmed	Check: 2
2	Worn sealing gaskets.	Cause confirmed	► Replace the power steering.
		Cause not confirmed	► In any case it is necessary to determine the place and the reason the oil is leaking, eliminate the cause and top up oil in the tank with the engine started up to the upper mark of the dipstick.

Insufficient pressure in the circuit

No.	Possible cause	Check	Remedy
1	Pump not operating correctly.	Cause confirmed	► Replace the hydraulic pump.
		Cause not confirmed	Check: 2
2	Fluid leaking from circuit connectors.	Cause confirmed	► Check the efficiency of the seals and of the couplings, replacing any which are worn.
		Cause not confirmed	Check: 3

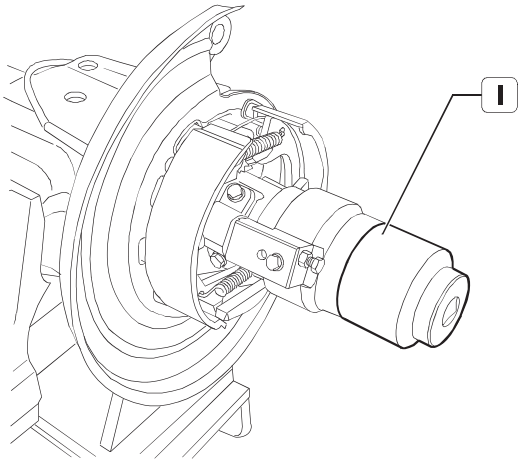
36. Manually screw in the ring nut **(1)** fastening the wheel hub bearings.



150539 Figure 107

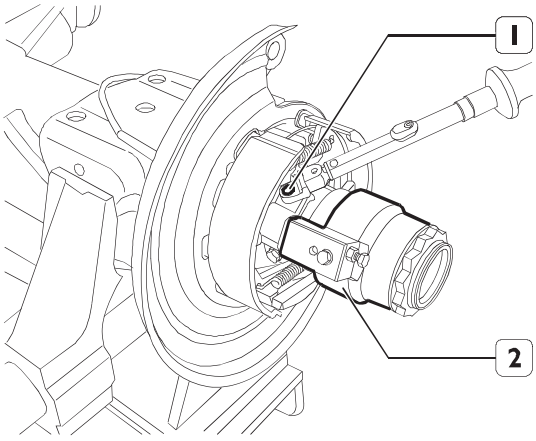
37. Tighten the ring nut with specific tool **(1)** (450511 rear axles) or specific tool **(1)** (450517/2 rear axles).
38. Check that there is no clearance between sensor mount and tool.

Tool / Material	Product code
Wrench (65 mm) for wheel hub nut	99355087
Wrench (91.5 mm) for wheel hub bearing adjusting nut	99357080



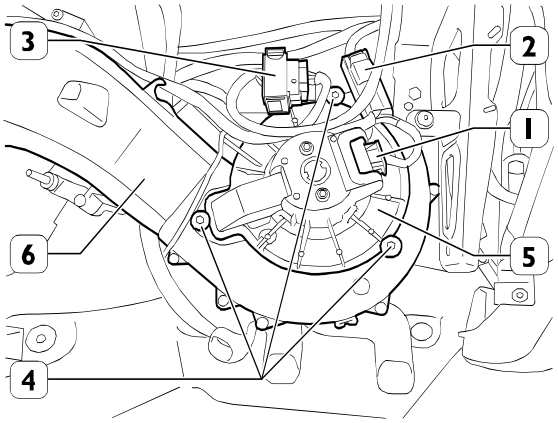
150541 Figure 108

39. Tighten the fastening screws **(1)** according to the specified torque (5÷7 Nm).
40. Remove tool **(2)** from the rear axle arm.



150542 Figure 109

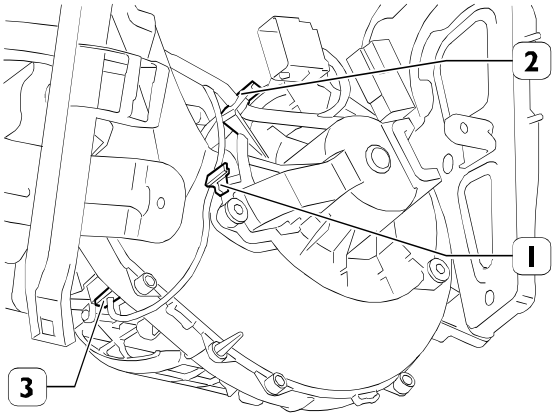
40. Disconnect the three connectors **(1-2-3)** being very careful not to damage the respective seats.
41. Unscrew the three screws **(4)** fastening the electrofan motor **(5)** to the manifold **(6)**.
42. Remove the electrofan motor **(5)**.



202590 Figure 186

.553212. Refitting

43. To refit, invert the removal operations, being particularly careful not to damage the wiring (the cables must pass in the seats **(1-2)**).
44. Make sure the connector **(3)** is connected correctly.

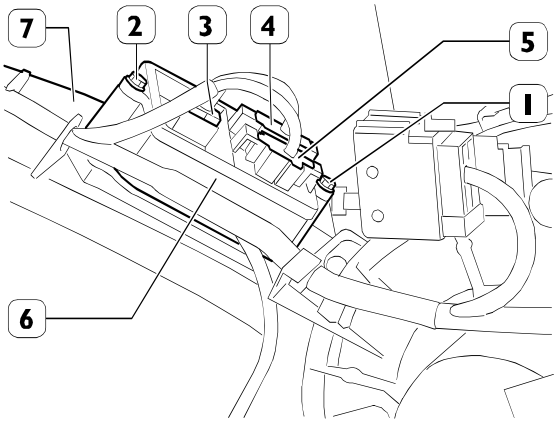


202591 Figure 187

.5532. Replacement of the resistance on the air conditioner manifold

.5532. Removal

45. Access the electrofan motor as indicated in procedure Electrofan motor replacement (➠ Page 100).
46. Free the area acting suitably on the pathways of the dashboard wiring.
47. Disconnect the electrical connections **(3-4-5)** from the resistance **(6)**.
48. Unscrew the screws **(1 - 2)** fastening the resistance **(6)** to the manifold **(7)**.
49. Remove the resistance **(6)**.



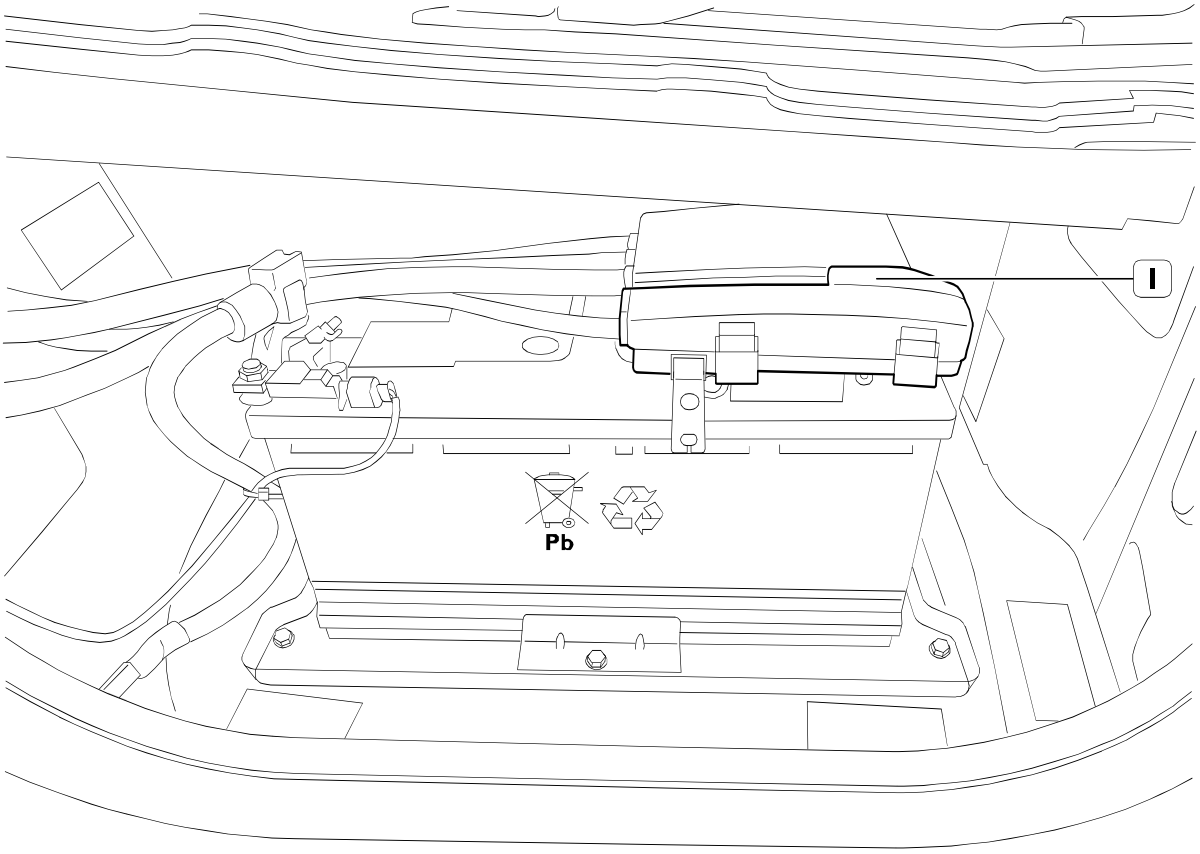
202592 Figure 188

.5532. Refitting

50. To refit, invert the removal operations, being particularly careful not to damage the wiring.
51. After refitting, check the correct operation of the electrical components previously removed.

Wheelbase	Check to be performed	Result of the check	Corrective action
5	Verify that the key moves freely from STOP to DRIVE in the fitted lock.	**a)** Rotation of the key is difficult. **b)** The rotation of the key is free.	**a)** Replace the lock / Reassemble the steering lock using a new bracket, positioning it correctly. **b)** Replace steering lock and retaining bracket, placing it correctly.

762024 BATTERY CONTROL UNIT (CBA1) [20005]



201914 Figure 17

1 Positive connection control unit (CBA1)

An interconnection control unit, the CBA1, is located on the positive terminal of the battery. This has the task of providing a positive power supply to the battery from the CBA2 control unit.

The battery supply, 12 V, is called "+30" while the key-controlled power supply is called "+15".

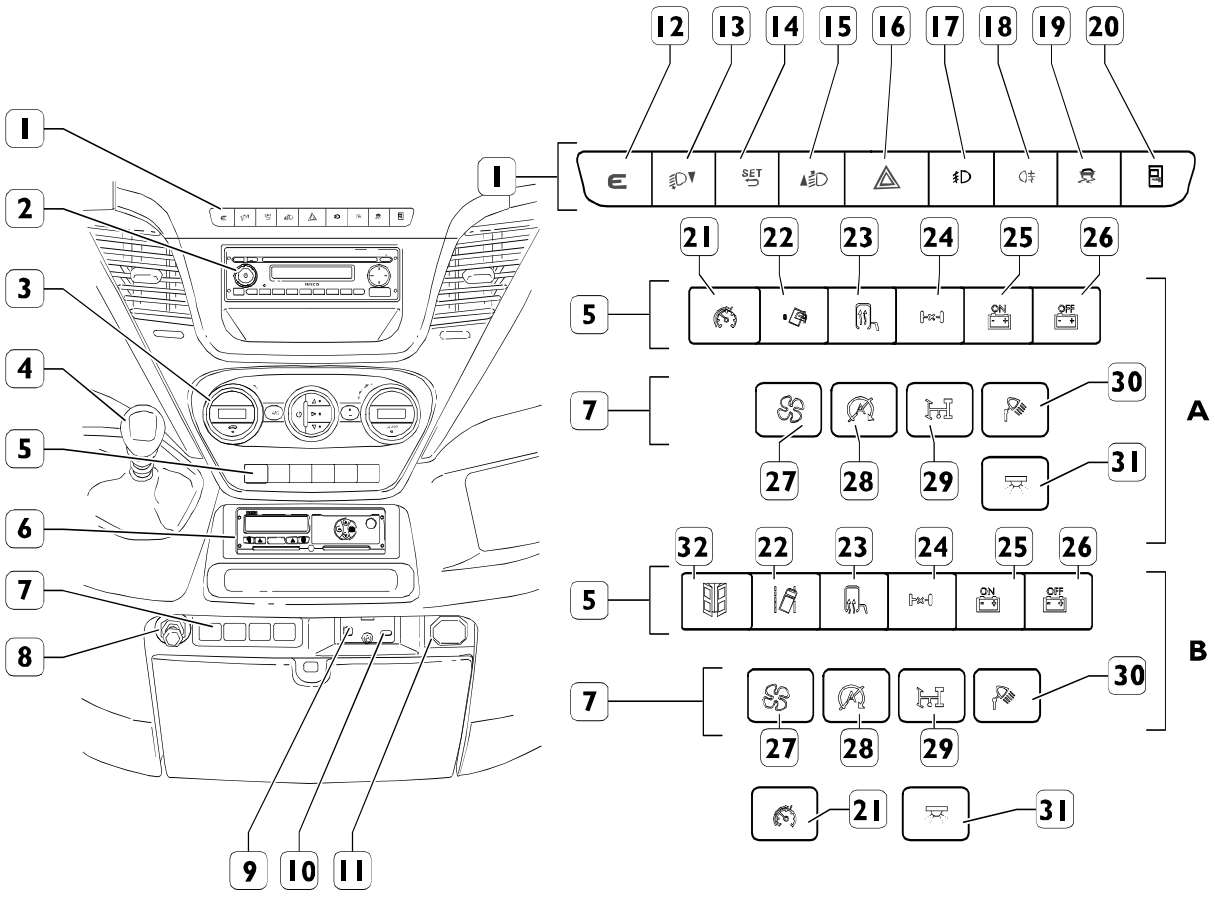
The battery control unit (CBA) has four fuses:

- 150 A
- 200 A
- 500 A
- 80 A

For fuse and contactor identification and rating, comply with the indications present in the vehicle, since their identification or rating may be subject to changes.

DASHBOARDS

7652 Central dashboard



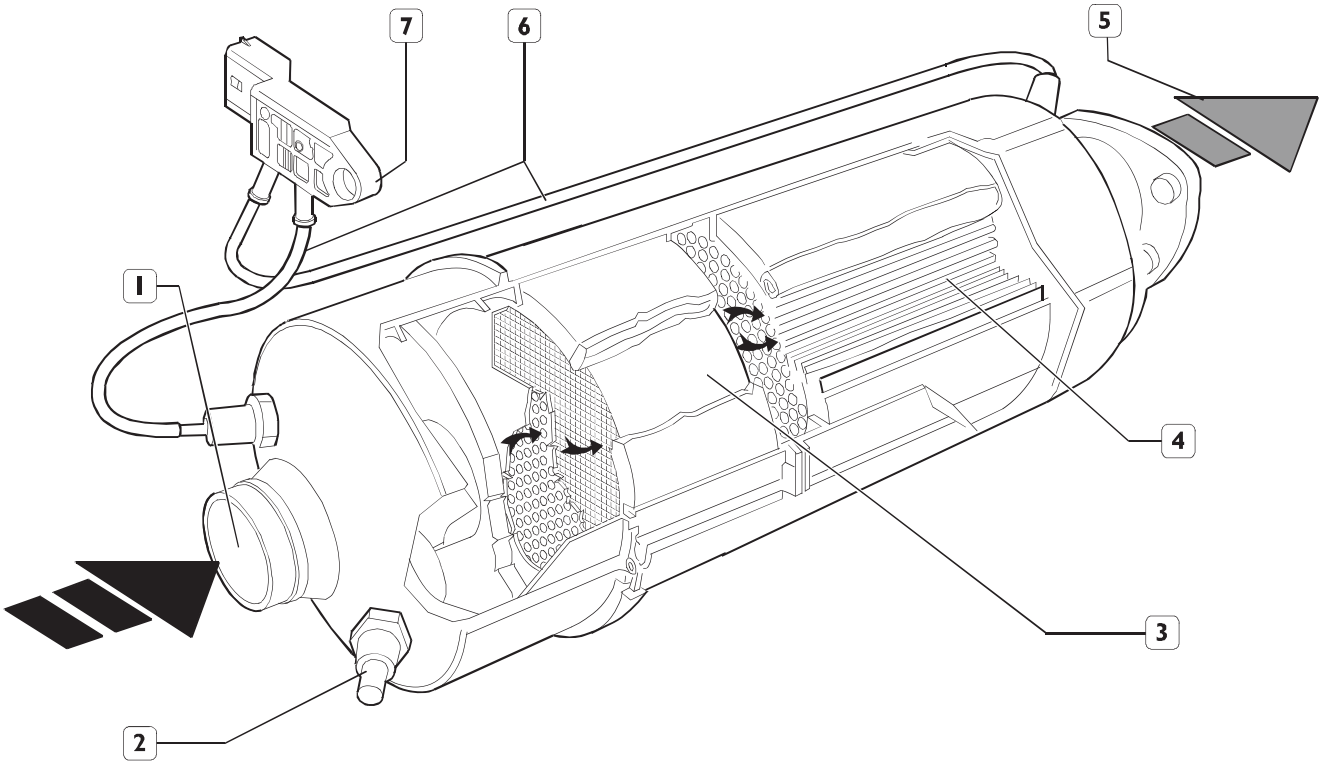
201935 Figure 69

Central dashboard

Ref.	Function	Component code
1	9 button module	53077
2	Radio (Iveconnect if fitted)	68000
3	Heater / climate control unit control assembly	82000
4	Gear lever	52059
5	6 button module	–
6	Tachograph	40011
7	4 button module	–

507160 D.P.F. (Diesel Particulate Filter) catalytic converter description

D.P.F. catalyst view



105064 Figure 188

1	Exhaust gas intake	5	Exhaust gas outlet
2	Exhausted gas temperature sensor mounting	6	Pipes connecting pressure sensor to catalytic converter
3	Catalytic module	7	Differential pressure sensor (Δp)
4	Particulate filter		

The D.P.F. catalytic converter comprises an oxidising catalytic converter and a particulate filter.

The oxidiser catalyst **(3)** is an exhaust gas post-treatment device.

The active substances contained in the catalytic converter oxidise, at 250°C ÷ 450°C , carbon oxide (CO) and hydrocarbons (HC), turning them into carbon dioxide (CO_2) and steam (H_2O).

The catalyst module is made up of a ceramic structure impregnated with platinum, as platinum is a catalysing substance in oxidation reactions. Exhaust gasses heat the catalytic converter, so triggering the conversion of pollutants into inert compounds.

The particulate filter **(4)**, connected to the catalytic converter, has a double task: retaining particulate particles (PM) depositing between the pores of the ceramic structure of which the filter is made up and working as a particulate particles combustion chamber when the filter is being clogged.

If the inside of the filter is maintained at a temperature higher than 530°C and the oxygen percentage is higher than 8% (oxygen being produced by the decomposition of nitrogen oxide NO_2), then some combustion reactions, boosted by the catalytic converter located before the filter, burn particulate particles (regeneration), so keeping the filter clean.

If this temperature is lower, the filter will become clogged, with negative effects on the back pressure to the exhaust gas generated.

In this case, to regenerate the filter, the temperature of exhaust gasses is artificially raised (to 630°C) by fuel post-injection.

A differential pressure sensor **(7)**, connected to the D.P.F. catalytic converter, as it detects a pressure difference between inlet and outlet, sends a (feed-back) signal to the control unit to warn of possible clogging of the particulate filter.