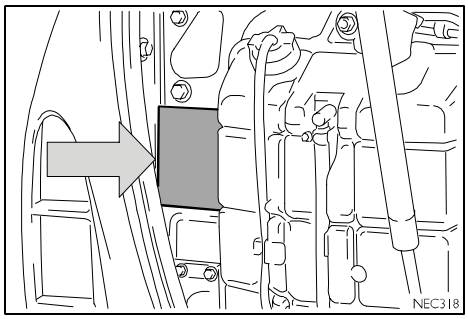
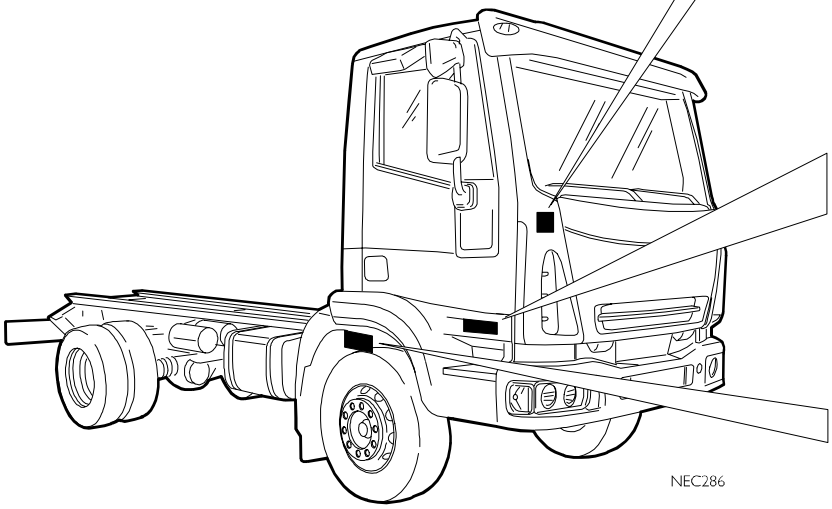
INDEX OF SECTIONS

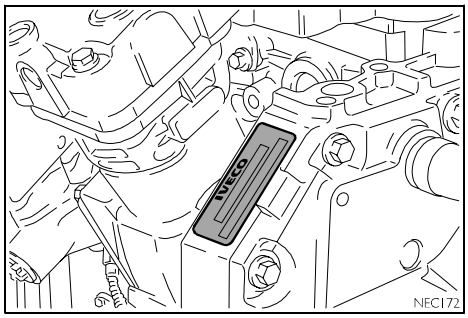
IDENTIFICATION DATA AND LOCATION ON VEHICLE

Manufacturer's plate

For vehicle identification to comply with EC directions (under front radiator grille)





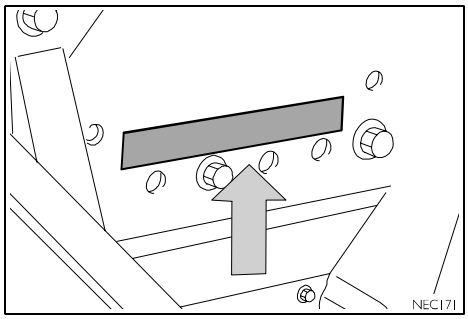


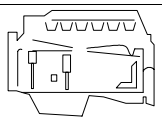
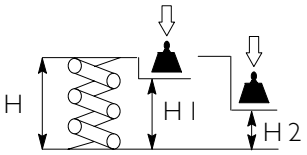
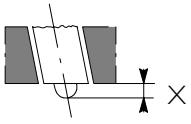
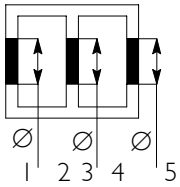
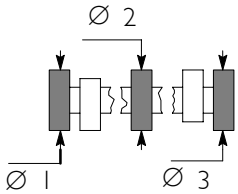
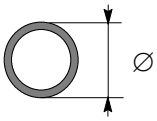
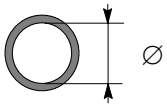
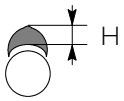
Engine

Flywheel cover plate on the box (left side)

Chassis

Marking (on right side member front end)

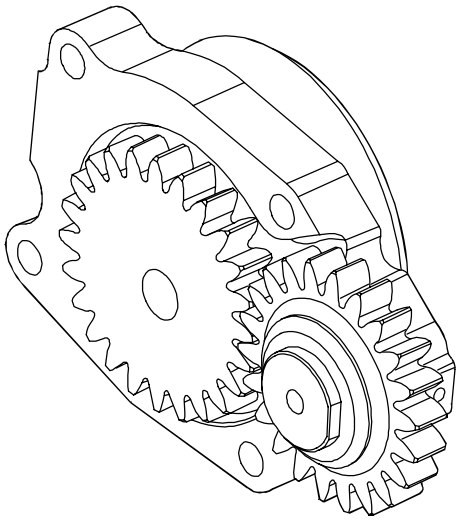


	Type	F4AE0481D (.13)	F4AE0481C (.15)	F4AE0481A (.17)
CYLINDER HEAD – TIMING SYSTEM		mm		
	Valve spring height: free spring H under a load equal to: 339.8 ± 19 N H1 741 ± 39 N H2	 47.75 35.33 25.2		
	Injector protrusion X	Not adjustable		
	Camshaft bush housings No. 1-5 Camshaft housings No. 2-3-4	59.222 to 59.248 59.222 to 59.248		
	Camshaft journals: 1 ⇒ 5 Ø 1 - 2 - 3	53.995 to 54.045		
	Camshaft bush outside diameter: with 3.3 kN load Ø	59.222 to 59,248		
	Bush inside diameter after driving Ø	54.083 to 54.147		
	Bushes and housings on block	0.113 to 0.165		
	Bushes and journals	0.038 to 0.152		
	Cam lift:  H  H	 6.045 7.582		

543010 OIL PUMP

NOTE Since the oil pump cannot be overhauled, it shall be replaced when damaged.

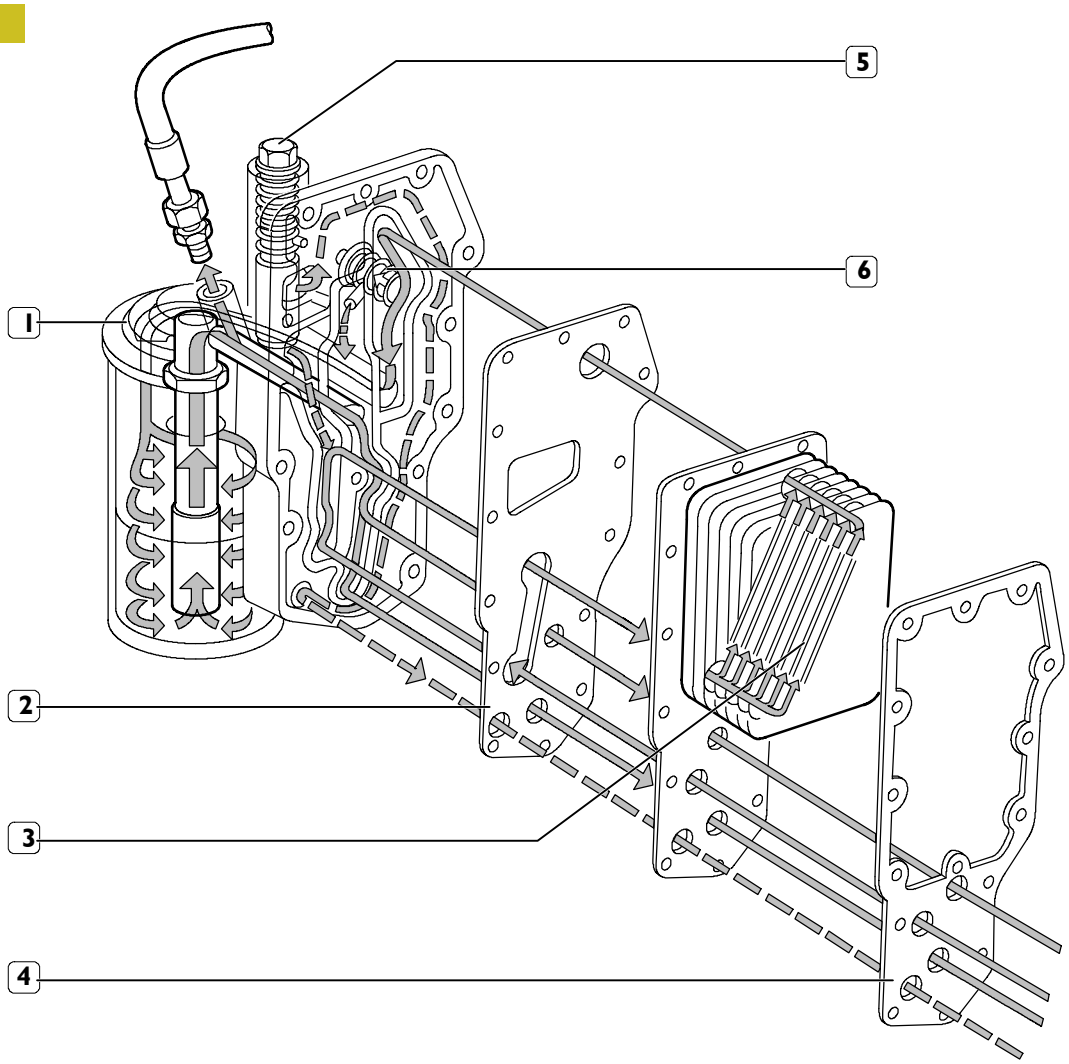
Figure 188



70576

543110 HEAT EXCHANGER

Figure 189



70480

1. Heat exchanger body with filter support - 2. Internal gasket - 3. Water-oil heat exchanger - 4. Gasket between heat exchanger unit and engine block - 5. Oil pressure relief valve - 6. By-pass valve to cut out clogged oil filter.

Clean accurately the heat exchanger components

Always replace the sealing gaskets.

3 THE CLUTCH JERKS

Oil or grease on engine flywheel, or on driven plate gaskets. – YES → Remove the inconvenience generating the fouling; accurately clean the flywheel, then replace the driven plate.

NO

Buckled plate–pushing ring. – YES → Replace the clutch.

NO

Irregularly consumed friction gaskets due to driven plate mismatching. – YES → Replace the driven plate.

NO

Weak clutch baffle spring or baffle spring with broken blades. – YES → Replace the clutch.

4 THE CLUTCH DOES NOT DISENGAGE ITSELF

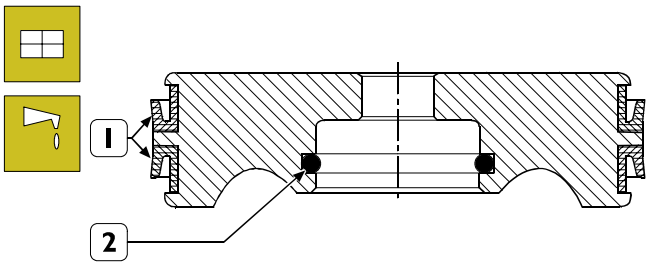
Oil or grease on driven plate gaskets. – YES → Remove the inconvenience generating the fouling; accurately clean the flywheel, then replace the driven plate.

NO

Worn gearbox entry shaft grooves so that the driven plate sliding is prevented. – YES → Replace the shaft and, if necessary, the driven plate too.

(continued)

Figure 130

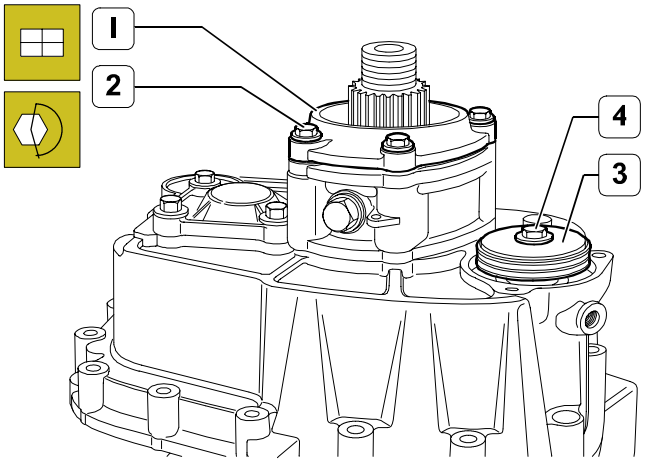


71958

Abundantly pre–lubricate gaskets (1 and 2) of oil piston equal to the one used for gearbox and assemble them into their respective seats, using suitable toolings in order to guarantee a correct assembly.

NOTE Pay attention to the correct assembly of sealing gaskets (1) placed on external piston diameter.

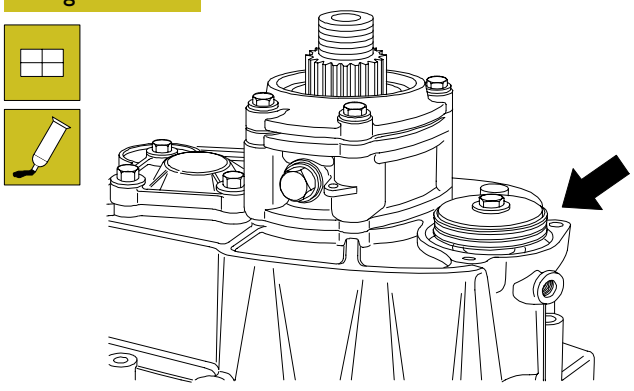
Figure 131



71942

Assemble cover (1) and screw screws (2) tightening them at the required torque.
Assemble piston (3) completed with sealing rings, screw the screw (4) by tightening it at the required torque.

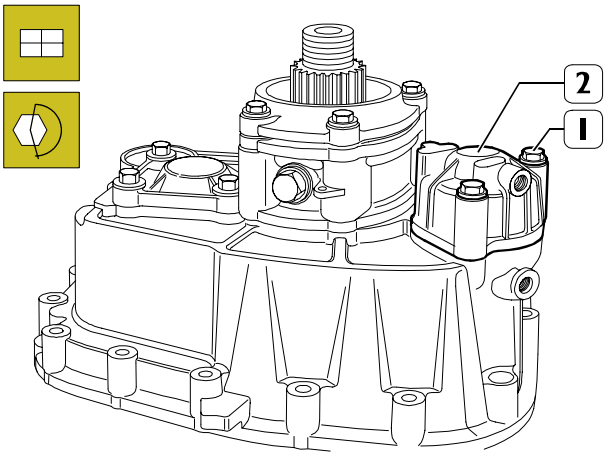
Figure 132



71943

Apply LOCTITE 510 sealant on contact surface (→) between case and cylinder.

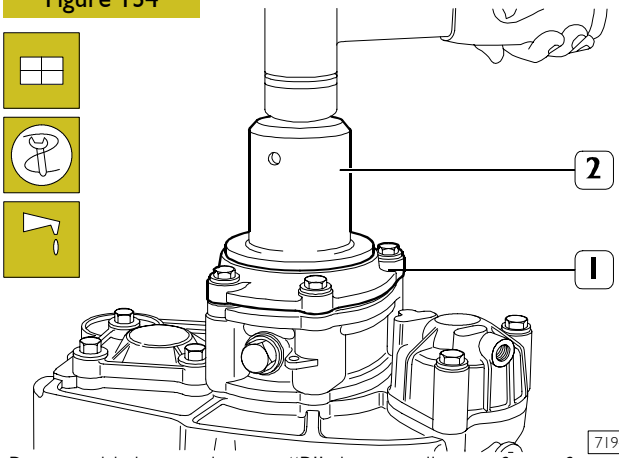
Figure 133



71944

Assemble cylinder (2) and screw screws (1) tightening them at the required torque.

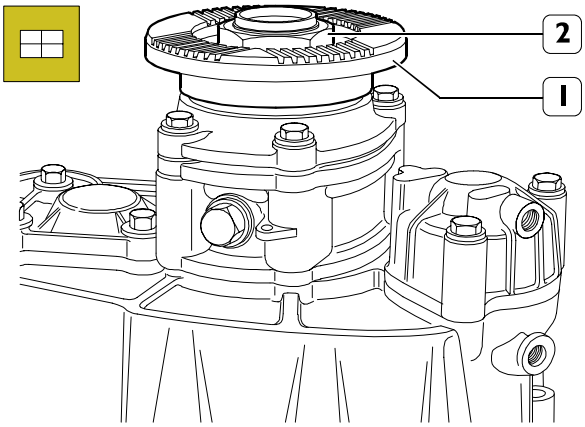
Figure 134



71945

Butter with hermetic type "B" the coupling surface of cover (1) with sealing gasket and with keyer 99574229 (2), assemble the sealing gasket itself.

Figure 135



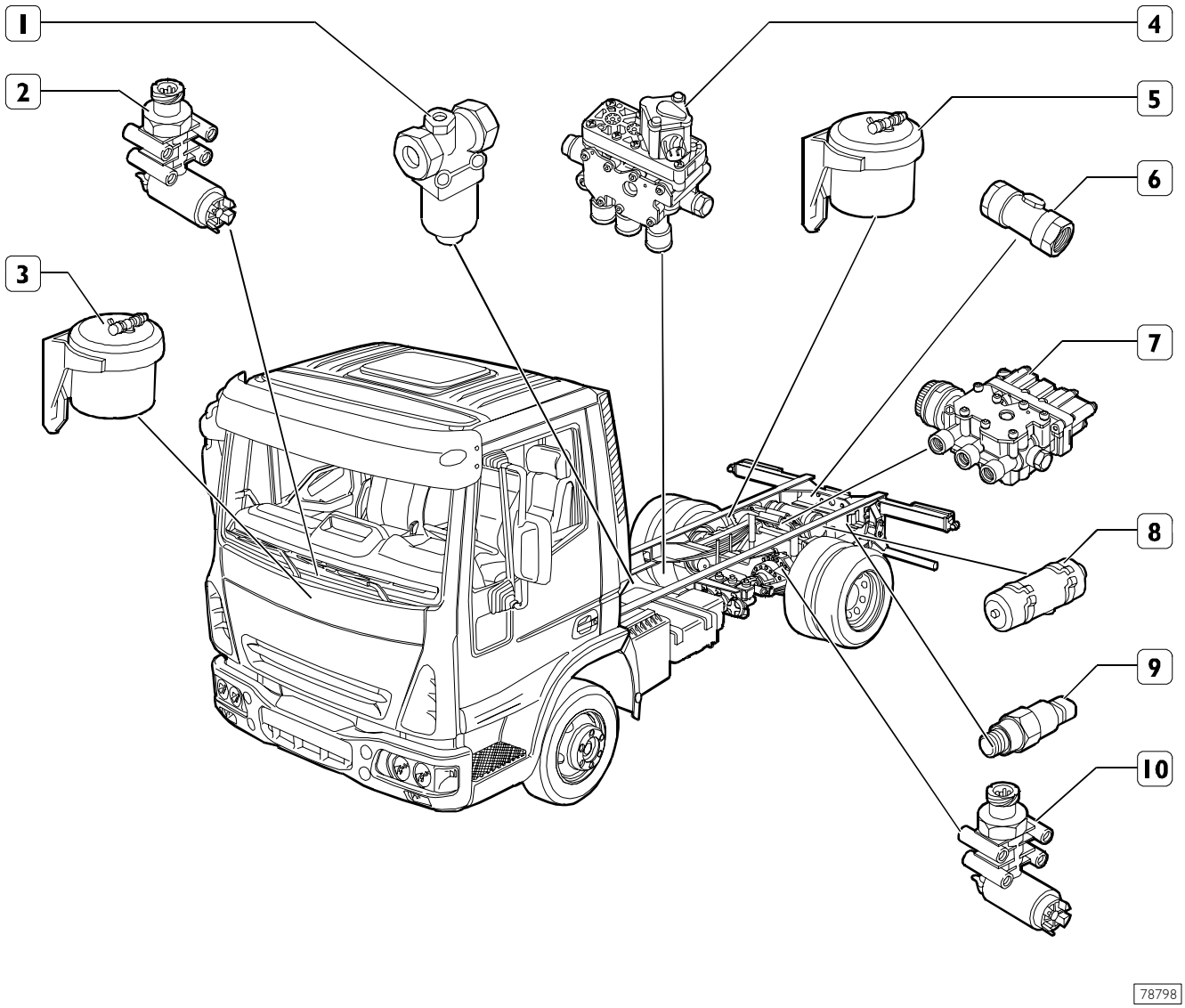
71946

Key–in flange (1) and screw nut (2) without blocking it.

NOTE Nut (2) must be blocked at the required torque after having assembled the reduction gear onto the gearbox.

MAIN COMPONENTS ARRANGEMENT ON VEHICLE

Figure 6



1. Controlled–pressure valve – 2. Front axle level sensor – 3. Front air spring – 4. Front axle electro–pneumatic distributor – 5. Rear air spring – 6. Check valve – 7. Rear electro–pneumatic distributor – 8. Tank – 9. Pressure control intake – 10. Rear axle level sensor

Front brakes are faulty	– YES →	Overhaul the front brakes

NO ↓

Rear brakes are faulty	– YES →	Overhaul the rear brakes

NO ↓

Triple control servo distributor is faulty	– YES →	Overhaul or replace the triple control servo distributor

10	**INSUFFICIENT RETARDER BRAKING ON TRAILER**

Pneumatic system pipes leaking or broken	– YES →	Tighten or replace loose or damaged fittings. Replace broken or damaged pipes.

NO ↓

A.P.U. is faulty	– YES →	Overhaul or replace the A.P.U.

NO ↓

Triple control servo distributor is faulty	– YES →	Overhaul or replace the triple control servo distributor

NO ↓

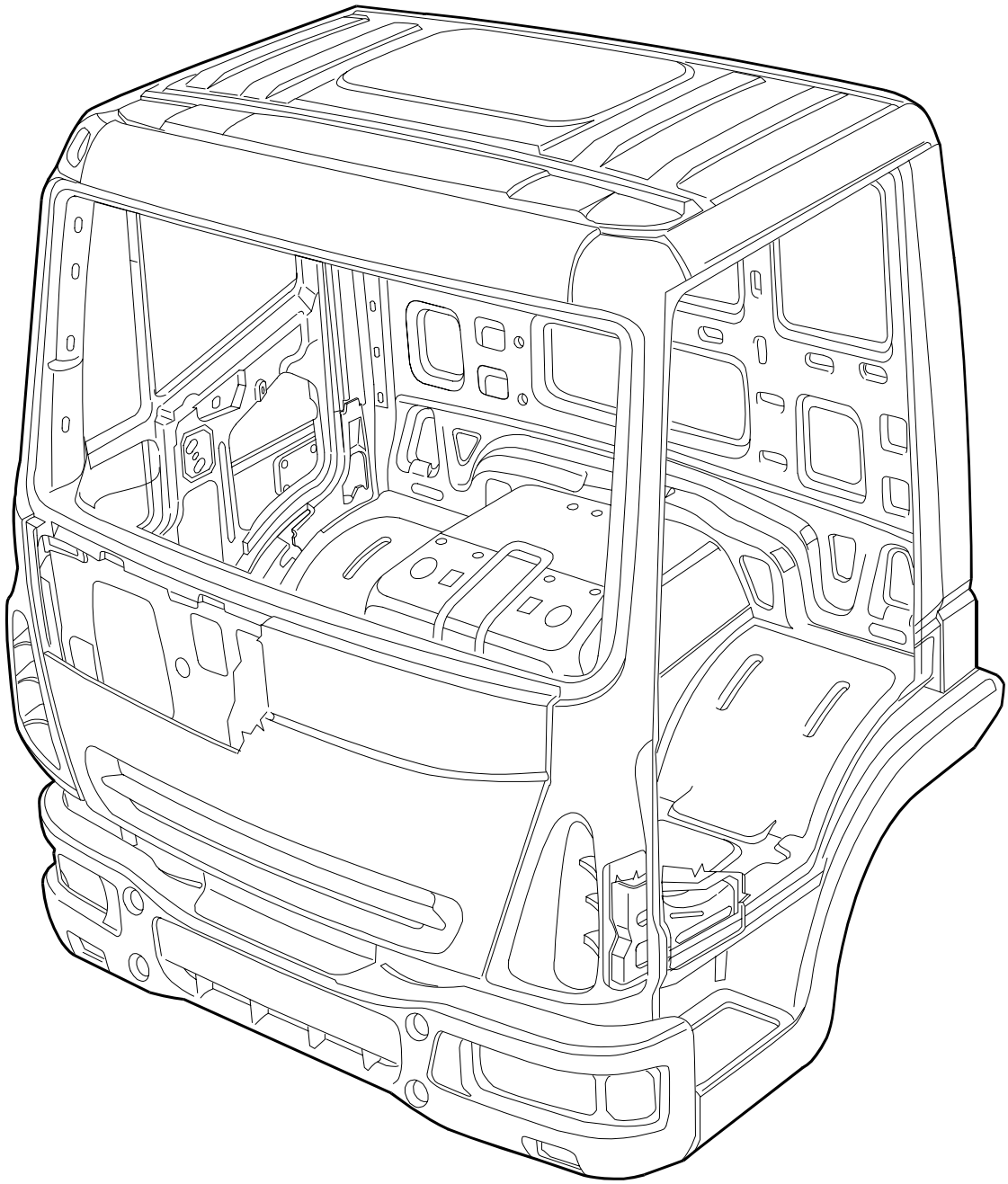
Parking brake hand lever is faulty	– YES →	Overhaul or replace the hand lever

5501 CAB

General information

The cab is an advanced one, it can be tipped up hydraulically with a mechanical control.
Tilting angle 57°.
Pressed and welded steel framework, parts made of electro–galvanized sheet steel.
Sound deadening on the underbody and anticorrosion protection in the boxed compartments.
The cab suspension is mechanical.

Figure 1



78688

PRODUCT CODE

Each title or subtitle concerning operations being performed is preceded by a six–figure number named PRODUCT CODE. This number represents the **PRODUCT CODE** referred to by the repair operation contained in both REPAIR TIMES and TROUBLE CODE document.
As a quick reference there are shown below the guide lines to read this code (see Repair Timing, too).

Product Code:

The first and second figures identify the PRODUCT within motor vehicle.

Example :

Product 50 = Vehicle chassis;
Product 52 = Axles;
Product 53 = Transmission;
Product 76 = Electric ssystem.

Unit Code:

The third and fourth figures identify the UNIT within the PRODUCT.

Example :

Product 50 = Vehicle chassis;
Unit 01 = Chassis;
Unit 02 = Bumpers;
Unit 03 = Alternator.

Sub–assembly Code:

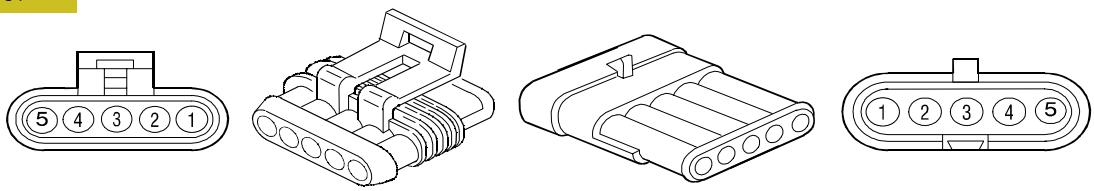
The fifth and sixth figures exactly identify the SUB–ASSEMBLY and Component of a Unit within a PRODUCT.

Example :

Product 50 = Vehicle chassis;
Unit 01 = Chassis;
Sub–assembly 40 = Chassis cross members;
Sub–assembly 13 = Rotor.

Junction connector 61070 – STY20

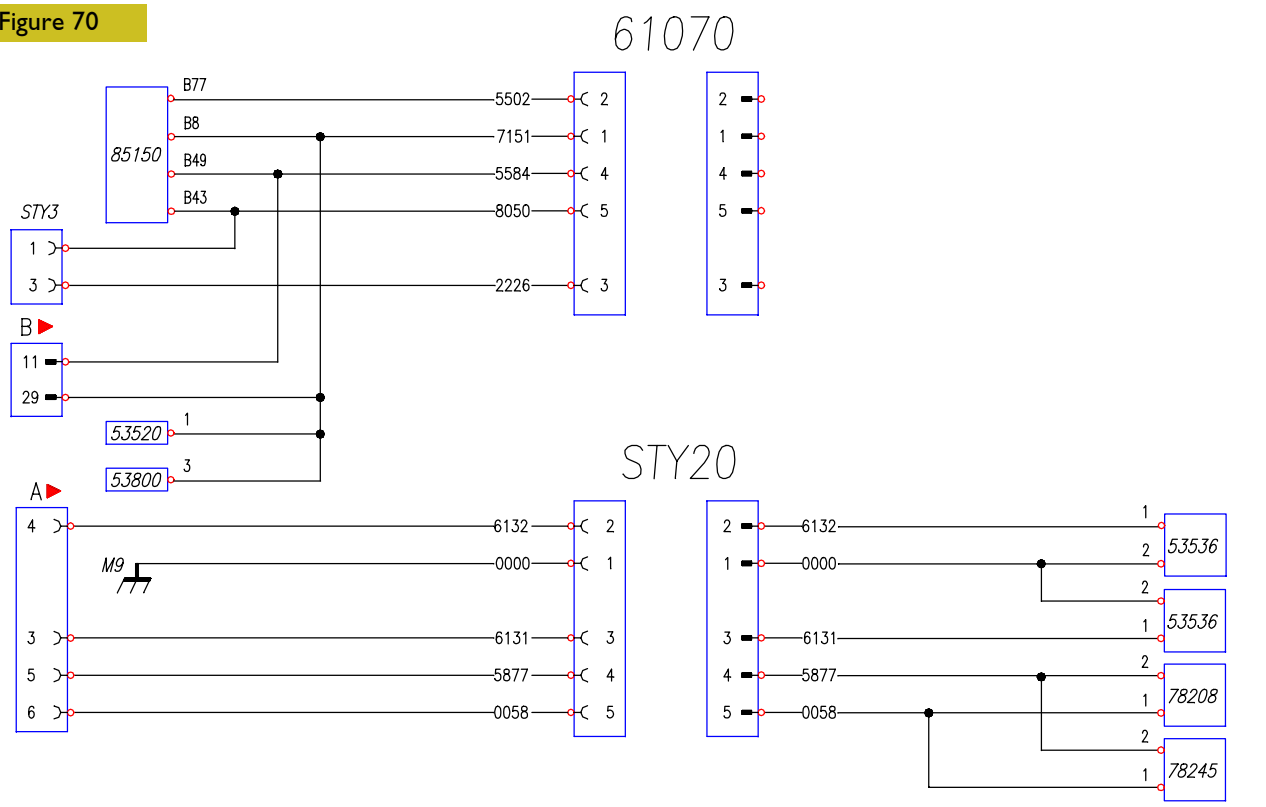
Figure 69



101542

CONNECTOR VIEW (CABLE SIDE)

Figure 70



101543

JUNCTION CONNECTOR ELECTRIC CONNECTIONS

61070 – 5–pole chassis connector for body builders (EDC signals)

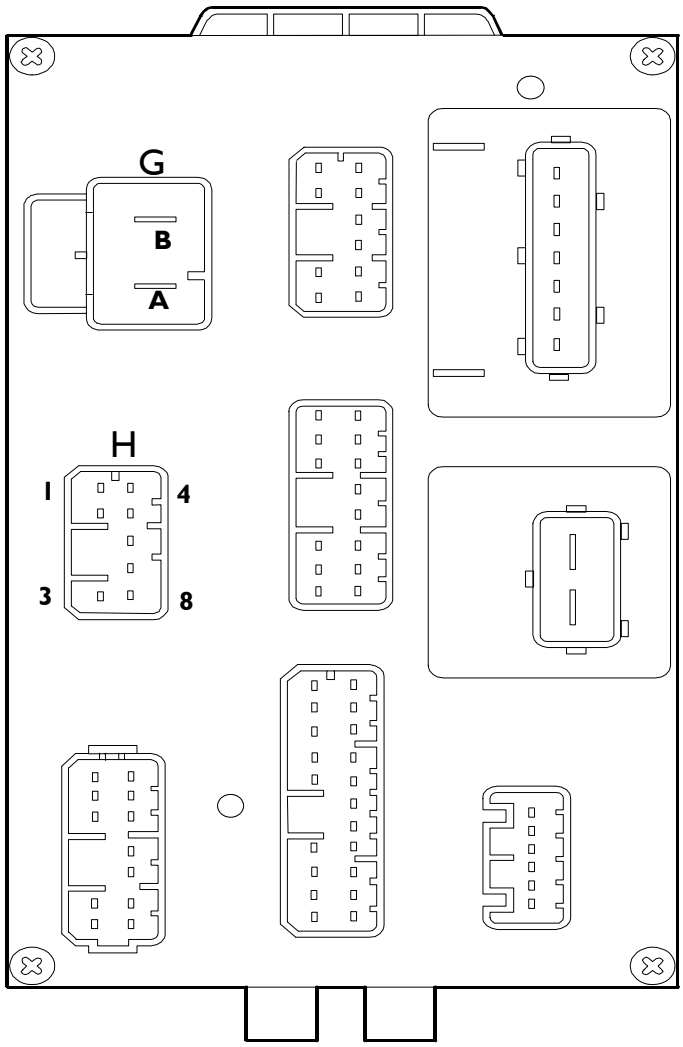
Pin	Function	Cable colour code
1	EDC system power supply after the fuse	7151
2	Speed limiter II signal	5502
3	Sensor I signal cable for engine revs diagnostic	5584
4	Gearbox idling signalling switch	8050
5	Reversing lamp power supply	2226

STY20 – power take–off

Pin	Function	Cable colour code
1	Ground	0000
2	Side power take–off signal ON	6132
3	Rear power take–off signal ON	6131
4	Electronic tachograph transmitter signal	5877
5	Electronic tachograph transmitter insulated negative	0058

Connector “G” – “H”

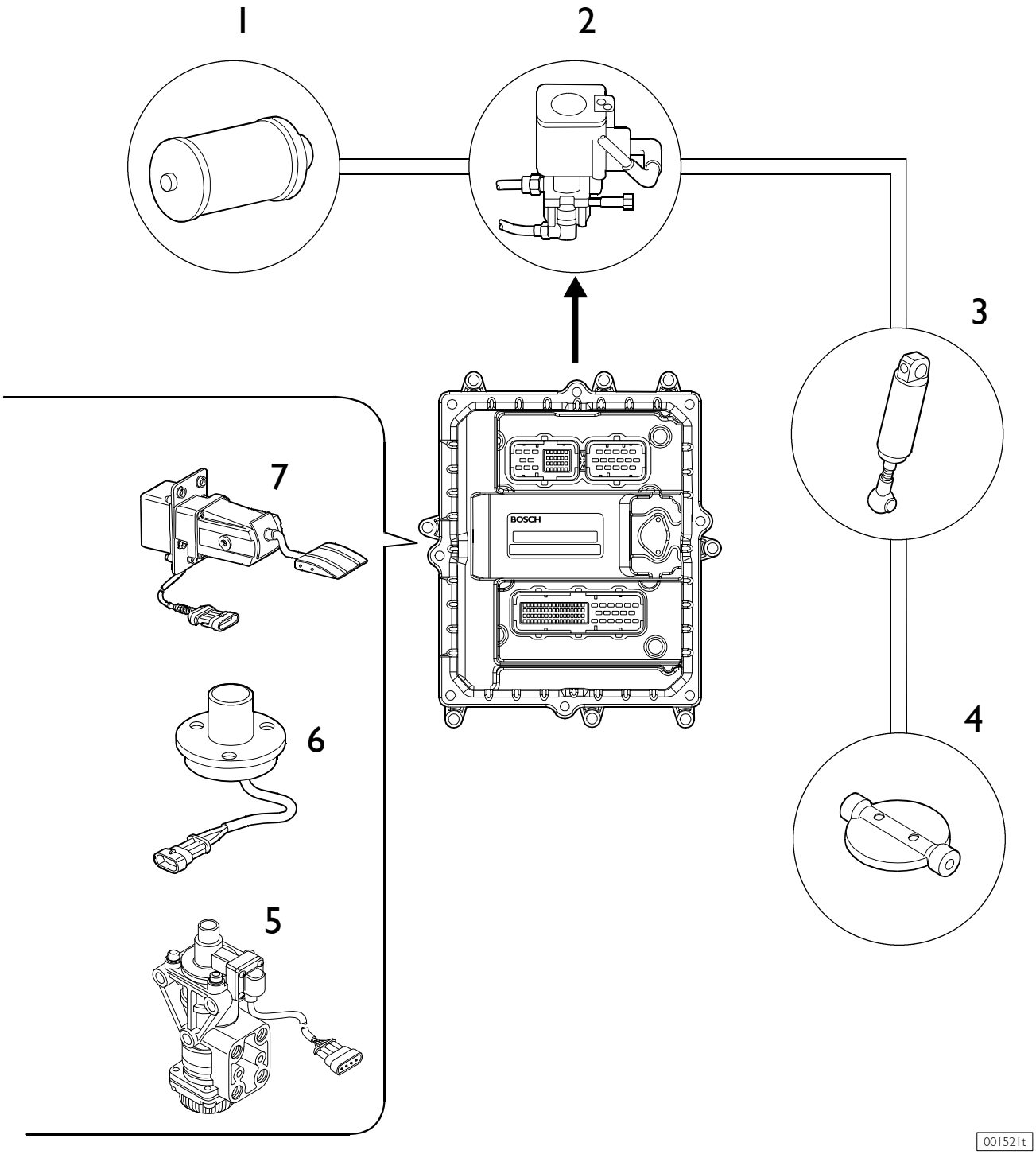
Figure 138



Ref.		Description	Cable colour code
G	A	Battery positive after TGC	7777
	B	Battery positive after TGC	7701
H	1	–	–
	2	–	–
	3	Connector IWT2 (3) / Body builders light remote–control switch (30) positive	8830/7777
	4	–	–
	5	–	–
	6	Positive for Body Controller (E4) / Roof panel cable junction / Cluster (A18) +15	8886/8879
	7	Connector IWT1 (7) +15	8840
	8	Connector IWT1 (6) +30	7772

System components

Figure 200

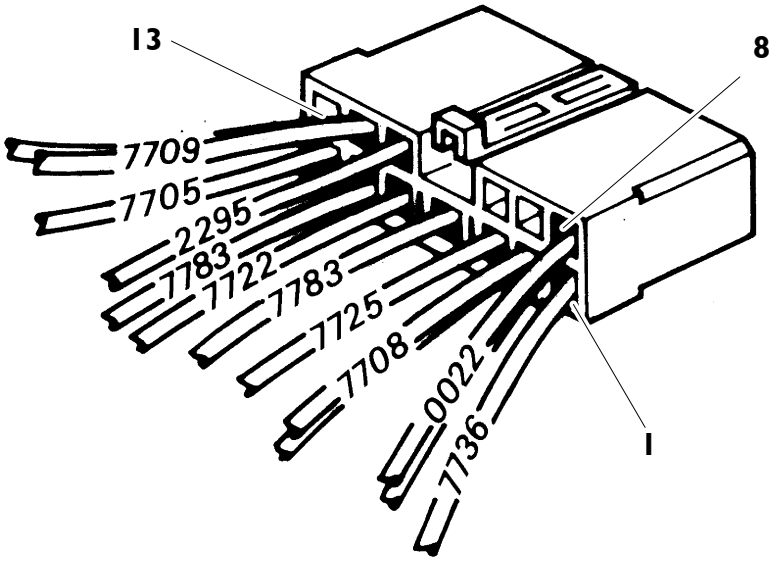


ENGINE BRAKE SYSTEM

1. Services air tank – 2. Solenoid valve – 3. Small cylinder – 4. Throttle valve on exhaust manifold – 5. Duplex distributor (primary / secondary brake switch) – 6. Engine brake switch – 7. Accelerator pedal with position sensor

ST X1 connection connector

Figure 223

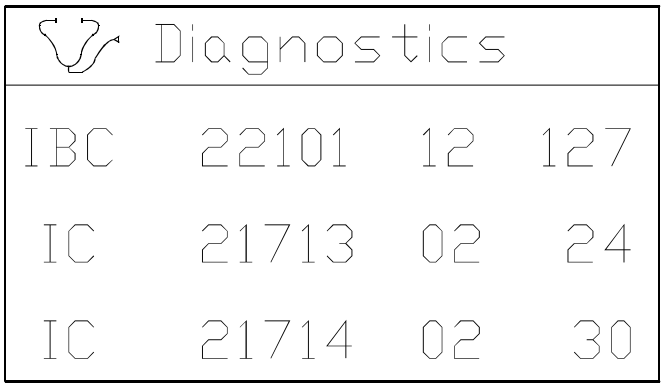


Ref.	Description	Cable colour
1	Air temperature adjustment thermostat supply	7736
2	Supplementary heater supply	7708
3	Timer supply	7725
4	Supplementary pump supply	7783
5	Supplementary heater blower engine supply	7722
6	Supplementary pump supply	7783
7	Supplementary heater turning–on spark plug supply	7705
8	Supplementary heater ground	0022
9	–	–
10	–	–
11	Diagnostic K Line	2295
12	Remote control switch supply (control) for TGC	–

DIAGNOSTIC screen (oly for Highline versions)

To display the DIAGNOSTIC screen, turn the key to MAR with the engine stopped, wait for the initialization screen to be displayed, then press button "OK" to actuate the display. Use buttons ∧ or ∨ to move along until the DIAGNOSTIC screen is found.

Figure 227



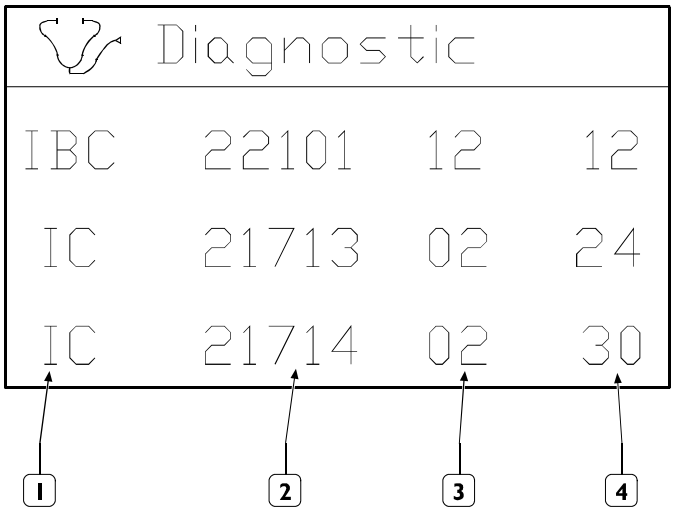
85158

These screens show the faults found in the various electronic systems (EDC, ABS, ECAS, etc.).

Meanings of anomaly codes

When a anomaly has occurred on the display, the DIAGNOSTIC menu shows the following data:

Figure 228



86159

1. Symbol of the system affected by the fault
2. Control unit data
3. Type of fault
4. Anomaly occurrences