TECHNICAL SERVICE MANUAL COMPOSITION

At present, June 2001, the **Marea-Marea Weekend 4th volume** manual is composed of the following sections

Print N°	Sections	Page Nos.	Notes
506.763/24 (XII/2000)	55	Index 11 - 14 27 - 28 47 - 48 83 - 88 99 - 100 103 - 104	2000 range wiring diagrams update
506.763/25 VI/2001)	00	1 - 2	Marea Weekend 1910 JTD – 100 CV Introduction – Technical data
	10	5 - 6 25 - 26 29 - 37	1910 JTD 2000 range fuel system update

TECHNICAL SERVICE MANUAL COMPOSITION

As of December 2000, the **Marea-Marea Weekend 4th volume** manual is composed of the sections listed below

Print N°	Sections	Page Nos.	Notes
506.763/18 (XI/1999)	**00**	1 - 12	Marea bipower technical data (99 range)
	10	1 - **59**	Marea bipower fuel system (99 range)
	55	1 - 2	Marea bipower wiring diagram (99 range)
506.763/20 (IV/2000)	**00**	1 - **15**	Marea GPL technical data
	10	1 - **26**	Marea GPL fuel system
	55	1 - 9	Marea GPL wiring diagram
506.763/21 (IX/2000)	**10**	1 - **38**	Marea bipower fault diagnosis (99 range)
		60 - 61	Marea bipower fuel system (99 range) Replacing solenoid on methane canister
506.763/23 (IX/2000)	**00**	1 - **50**	2000 range technical data
	10	1 - 7	2000 range 1596 ***16v*** fuel system
		1 - 7	2000 range 1998 ***20v*** fuel system
	50	1 - 4	2000 range climate control system
	55	1 - 18	2000 range electrical equipment
		1 - 141	2000 range wiring diagrams

TECHNICAL SERVICE MANUAL COMPOSITION

At present, September 2000, the Marea-Marea Weekend 4th volume manual is composed of the following booklets

Print N°	Sections	Page Nos.	Notes
506.763/18 (XI/1999)	00	1 - 12	Technical data on Marea bipower (99 range)
	10	1 - 59	Marea bipower fuel system (99 range)
	55	1 - 2	Marea bipower electrical equipment wiring diagrams (99 range)
506.763/20 (IV/2000)	00	1 - 15	Marea GPL technical data
	10	1 - 26	Marea GPL fuel system
	55	1 - 9	Marea GPL electrical equipment wiring diagram
506.763/21 (IX/2000)	10	1 - 38	Marea bipower fault diagnosis (99 range)
		60 - 61	Marea bipower fuel system (99 range) Replacing solenoid valve on methane canister
506.763/23 (IX/2000)	00	1 - 50	Technical data 2000 range
	10	1 - 7	Fuel system 1596 16v 2000 range
		1 - 7	Fuel system 1998 20v 2000 range
	50	1 - 4	Climate control system 2000 range
	55	1 - 18	Electrical equipment 2000 range
		1 - 141	Electrical equipment wiring diagrams 2000 range

page

	CHASSIS	ENGINE	VERSION	MAREA	MAREA WEEKEND	GEARBOX	
1596 16v	ZFA 185 000	182B6.000	185AXR1A 25	•		•	
			185BXR1A 26		•		
			185AXR11 27	•			•
			185BXR11 28		•		
1998 20v		185A8.000	185AXS1A 29	•		•	
			185BXS1A 30		•		
1910 JTD		186A6.000	185AXT1A 31	•		•	
			185BXT1A 32		•		

NOTE

This section deals with the EEC F3 2000 range engine types.
For the subjects not dealt with, refer to the Marea-Marea Weekend manual print n° 506.763 and subsequent updates.

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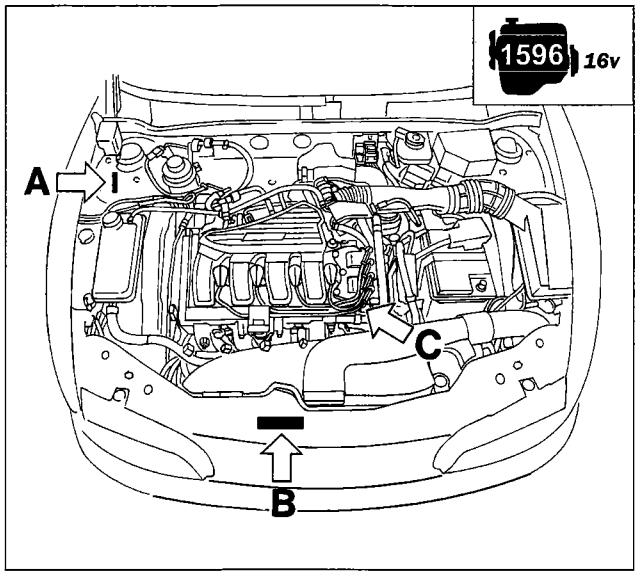

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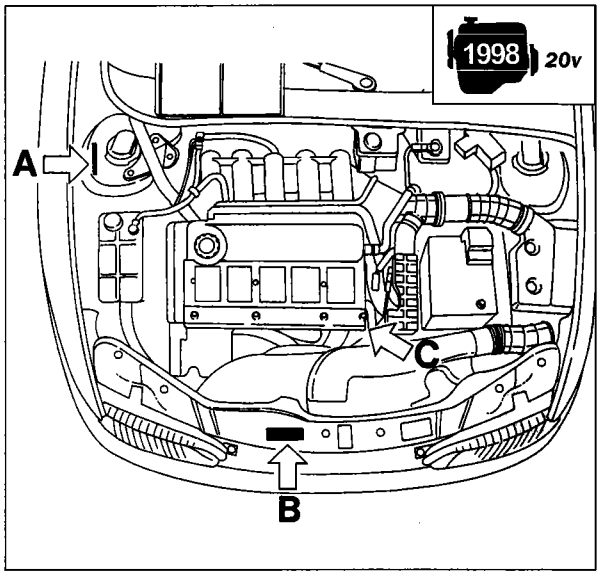

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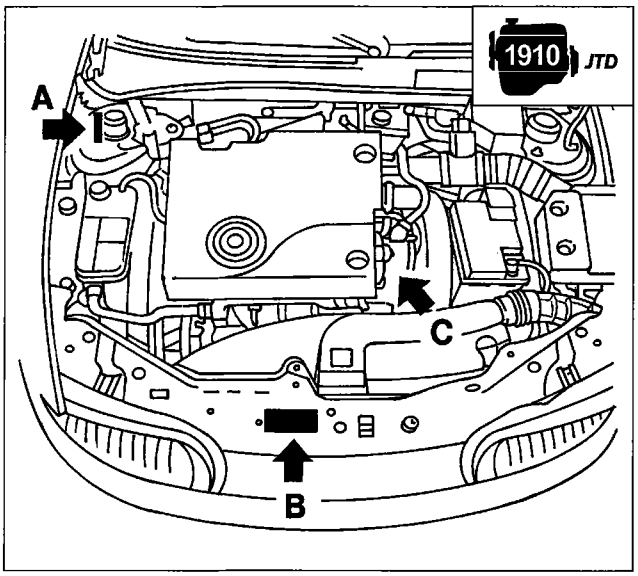
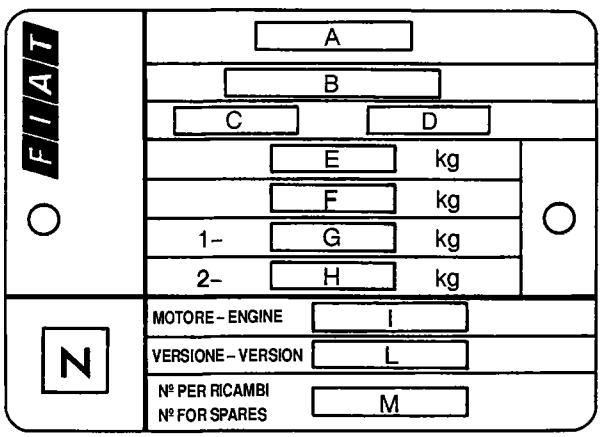


4A02HA02

A. Vehicle type identification code and chassis number
B. V.I.N. Plate (EEC regulations)
C. Engine type and number.



P3F003A01

A. Manufacturer's name
B. Homologation number
C. Vehicle type identification code
D. Chassis manufacture number
E. Maximum authorised vehicle weight when fully laden
F. Maximum authorised weight of fully laden vehicle plus trailer
G. Maximum authorised weight on first axle (front)
H. Maximum authorised weight on second axle (rear)
I. Engine type
L. Body version code
M. Spares number
N. Correct value of smoke absorption coefficient (for Diesel engines only)

ENGINE TYPE			1596 16v	1998 20v	1910 JTD
		***Marea***	1140 1165 (▼)	1255	1215
		Marea Weekend	1200 1225 (▼)	1315	1275
	+590= (575)*	***Marea***  240 / 225 *	1730 1755 (▼)	1830	1805
	+595= (580)*	***Marea Weekend***  245 / 230 *	1795 1820 (▼)	1895	1870
Permissible loads on the axles ■			1000	1000	1000
			1000	1000	1000
Maximum permitted load on roof			80	80	80
Load on tow hook ball (trailer with braking system)			70	70	70
		Without braking system	400	400	400
		With braking system	1200	1300 (1400)●	1300

■ Loads that should never be exceeded
(*) Specific figures for 1998 20v version
(●) Specific figures for the Marea Weekend
(▼) Specific figures for the 1596 16v automatic transmission version

NOTE FOR VERSIONS WITH ACCESSORIES: In the presence of special equipment (non standard air conditioning, sun roof, trailer towing device, etc.), the empty weight increases and therefore the carrying capacity may decrease in relation to the maximum permissible loads.

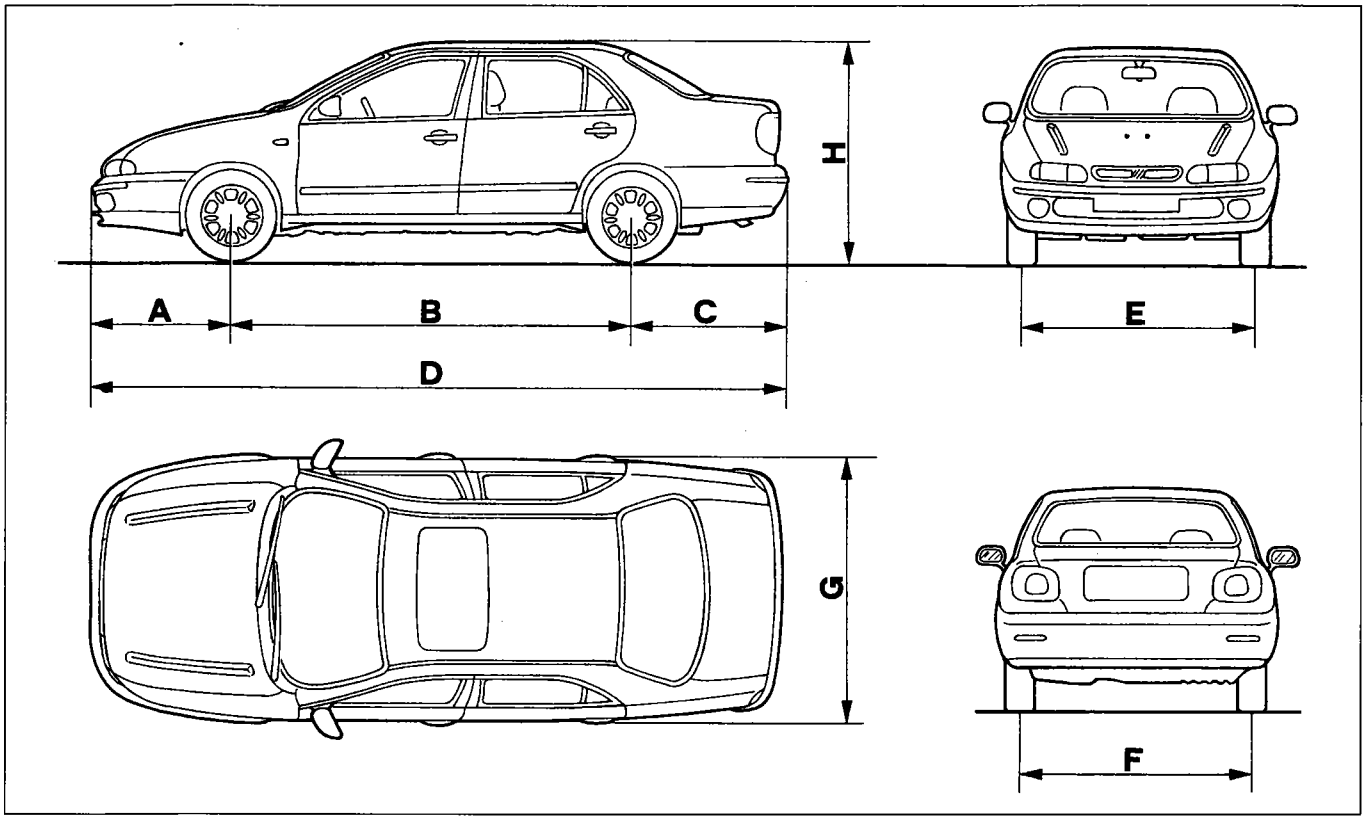
		ENGINE TYPE	1596 16v	1596 16v C.A.	1998 20v	1910 JTD
Speed km/h (half laden)  (*) For Marea Weekend		1	46	MAX 187 (185)*	59	36
		2	80		94	52
		3	124		139	97
		4	173		182	136
		5	187 (185)*		208 (206)*	188 (186)*
		R	46		54	36
	Max. climable gradient fully laden	***Marea***	36	32	39	40
		Marea Weekend	33	30	36	37
 Fuel consumption in accordance with directive 1999/100/CE (litres/100 km)	Urban	***Marea***	11.2	12.2	13.7	7.0
		Marea Weekend	11.3	12.4	13.8	7.2
	Out-of-town	***Marea***	6.3	6.7	7.6	4.5
		Marea Weekend	6.5	6.7	7.7	4.5
	Combined	***Marea***	8.1	8.7	9.8	5.4
		Marea Weekend	8.2	8.8	9.9	5.5
CO_2 exhaust emissions (g/km)		***Marea***	192	207	234	144
		Marea Weekend	195	210	237	146

The fuel consumption figures in accordance with directive 1999/100/CE have been defined during the course of homologation tests which include:

- An urban cycle which includes a cold start followed by a simulated varied urban cycle.
- A non-urban cycle which includes frequent acceleration in all gears simulating normal out-of-town use of the vehicle. The speed varies between 0 and 120 km/h.
- The average combined consumption includes 37% urban cycle and 63% non-urban cycle.

The type of route, traffic conditions, driving style, weather conditions, trim level/equipment/accessories, presence of special equipment and the state of the vehicle in general can lead to different fuel consumption figures from those established using the above mentioned procedures.

The CO_2 exhaust emissions (in g/km) are measured during the average combined cycle.



P4F008A01

Luggage compartment capacity (VDA regulations): 430 dm^3
The height refers to an unladen vehicle

Engine types	Wheel rim	A	B	C	D	E	F	G	H
1596 16v	5½Jx14-43 6Jx15-43	884	2540	969	4393	1470 1470	1440 1440	1741	1425
1596 16v C.A.	5½Jx14-43 6Jx15-43	884	2540	969	4393	1470 1470	1440 1440	1741	1425
1998 20v	6Jx15-49	884	2540	969	4393	1475	1430	1741	1428
1910 JTD	5½Jx14-43 6Jx15-43	884	2540	969	4393	1470 1470	1440 1440	1741	1425

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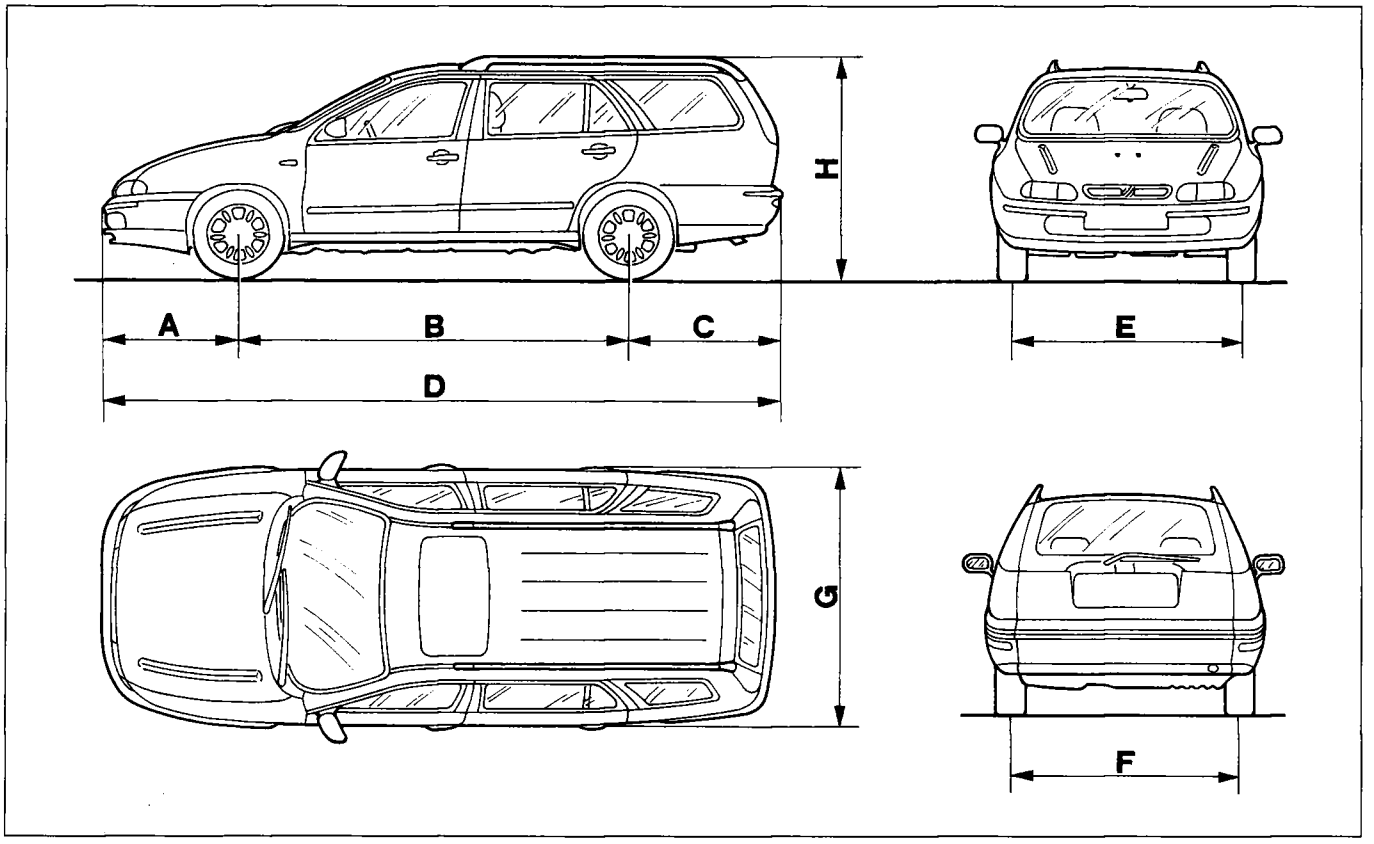

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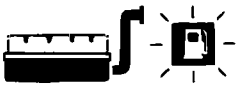
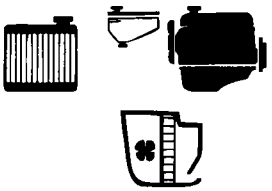
Luggage compartment capacity with vehicle unladen (V.D.A. standards): 500 dm^3 (1540 dm^3 with seats folded)

Engine types	Wheel rim	A	B	C	D	E	F	G	H
1596 16v	5½Jx14-43 6Jx15-43	884	2540	1066	4490	1470 1470	1440 1440	1741	1510
1596 16v C.A.	5½Jx14-43 6Jx15-43	884	2540	1066	4490	1470 1470	1440 1440	1741	1510
1998 20v	6Jx15-49	884	2540	1066	4490	1475	1435	1741	1510
1910 JTD	5½Jx14-43 6Jx15-43	884	2540	1066	4490	1470 1470	1440 1440	1741	1510

Product	Parts to be filled	dm³ (l)	Kg	1596 16v	1998 20v	1910 JTD
Petrol ⩾ O.R. 95 Unleaded		•		63	63	-
diesel				-	-	63
50% + (▲) Paraflu 11	 Total capacity of cooling system	•		7 (6.7 ■)	7.6 (7.4 ■)	6 (5.6 ■)
Petrol engines SELENIA 20K (SAE 10W/40) (●)	 Total capacity	•		4.5	5.5	4.8
			•	4	4.7	4.25
Diesel Engines: SELENIA TURBO DIESEL (SAE 10W/40) (●●)	 Partial capacity (scheduled changes)	•		3.8 (3.5*)	5 (4.5*)	4.3 (4*)
			•	3.4 (3.1*)	4.45 (4*)	3.75 (3.55*)
TUTELA CAR ZC 75 Synth		•		1.98	1.98	1.65
			•	1.8	1.8	1.5
TUTELA GI/2		•		4.3	-	-
			•	3.9	-	-

(▲) Distilled water
(●) For versions with air conditioning
(*) Engine sump only
(●) For temperatures below -20°C the use of SELENIA PERFORMER SAE 5W-30 is recommended
(●●) For temperatures below -15°C the use of SELENIA WR DIESEL 5W-40 is recommended

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Product		Parts to be filled			Quantity dm³ (l)	Quantity Kg
	TUTELA GI/A				-	0.8
	TUTELA MRM2				-	0.003
	TUTELA TOP4	Total capacity		without ABS	0.40	-
				with ABS	0.45	-
+		☼	30%		5	-
		❄ - 10°C	50%			
		❄ - 20°C	100%		6.8	-

Name of product	Description International designation	Application
SELENIA 20K	Synthetic SAE 10W40 multigrade engine oil. Exceeds specifications ACEA A3-96/CCMC G5 and API SJ	
SELENIA PERFORMER	Synthetic SAE 5W-30 multigrade engine oil. Exceeds specifications ACEA A1 and API SJ	Temperatures below - 20°C
SELENIA Turbo Diesel	Synthetic SAE 10W40 multigrade engine oil Exceeds specifications ACEA B3 and API CD	
SELENIA WR DIESEL	Synthetic SAE 5W-40 multigrade engine oil. Exceeds specifications ACEA B3 and API CF	Temperatures below - 15°C
TUTELA CAR ZC 75 SYNTH	SAE 75W-80 EP oil. Satisfies standards MIL-L-2105 D LEV and API GL 5	Manual gearboxes and differentials
TUTELA GI/A	«ATF DEXRON II D LEV» SAE 10W type oil for hydraulic power assisted steering	Hydraulic power assisted steering
TUTELA GI/2	« ATF DEXRON II D LEV» SAE 10W type oil for automatic transmissions	Automatic gearboxes
TUTELA MRM2	Water repellant, lithium soap based grease containing molybdenum disulphide, consistency NLGI = 2	Constant velocity joints
TUTELA TOP 4	Synthetic fluid NHTSA n° 116 DOT4, ISO 4925, SAE J-1703 and CUNA NC 956-01	Hydraulic brakes and hydraulically operated clutches
DP1	Mixture of alcohol, water and surface active agents CUNA NC 956-11	To be used undiluted or diluted in windscreen washer systems
Paraflu[11]	Anti-freeze for cooling systems with mono-ethylene glycol base CUNA NC 956-16	Cooling circuits Percentage to be used 50% up to –35°C
Diesel Mix	Additive for diesel fuel with protective action for Diesel engines	To be mixed with diesel fuel (25 cc per 10 litres)

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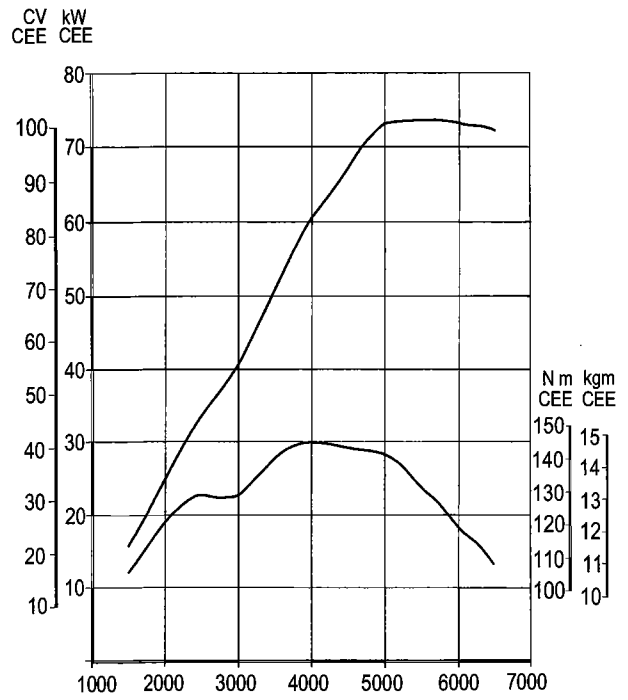
SPECIFICATIONS

			1596 16v	1998 20v
	Cycle		OTTO 4 stroke	
	Timing gear		TOHC	
	Fuel system type		Integrated electronic injection - ignition	
	Number of cylinders		4	5
	Cylinder liner (bore)	mm	80.5	82
	Stroke	mm	78.4	75.65
	Displace-ment	Cm^3	1596	1998
	Compression ratio		10.50 ± 0.15	10.5 ± 0.15
	Maximum power CEE	kW (bhp)	76 (103)	110 (150)
		rpm	5750	6500
	Maximum torque CEE	daNm (kgm)	14.5 (14.8)	18.1 (18.5)
		rpm	4000	3750



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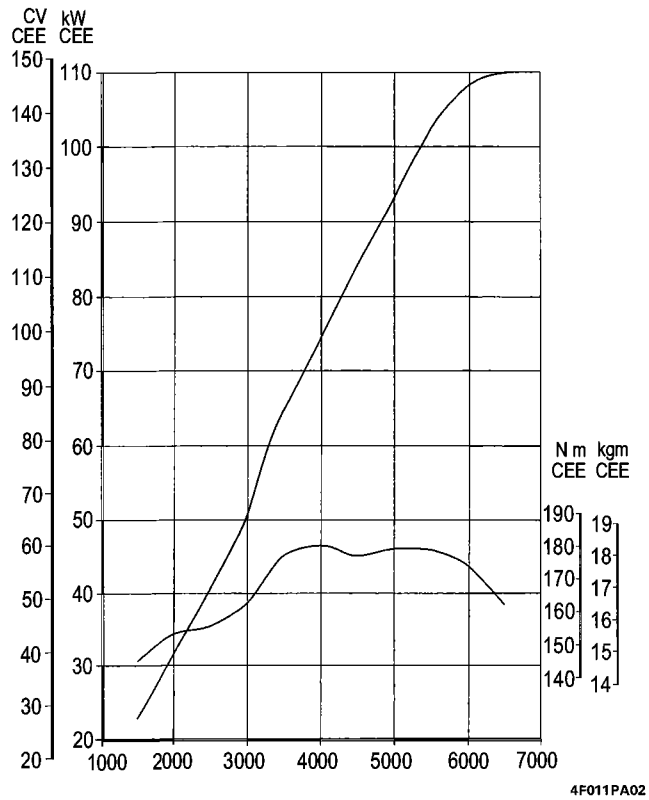
1595 16v



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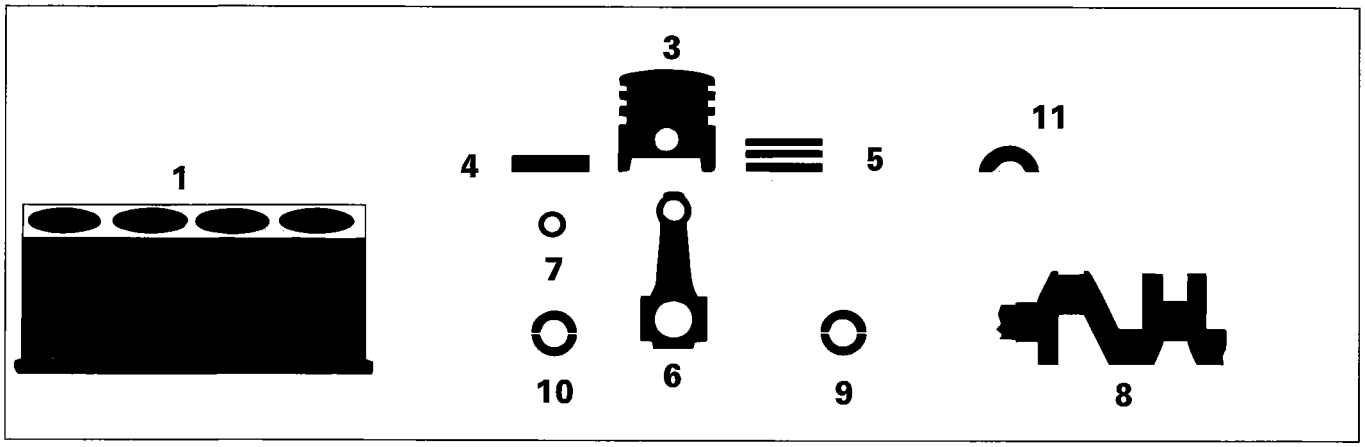
1998 20v

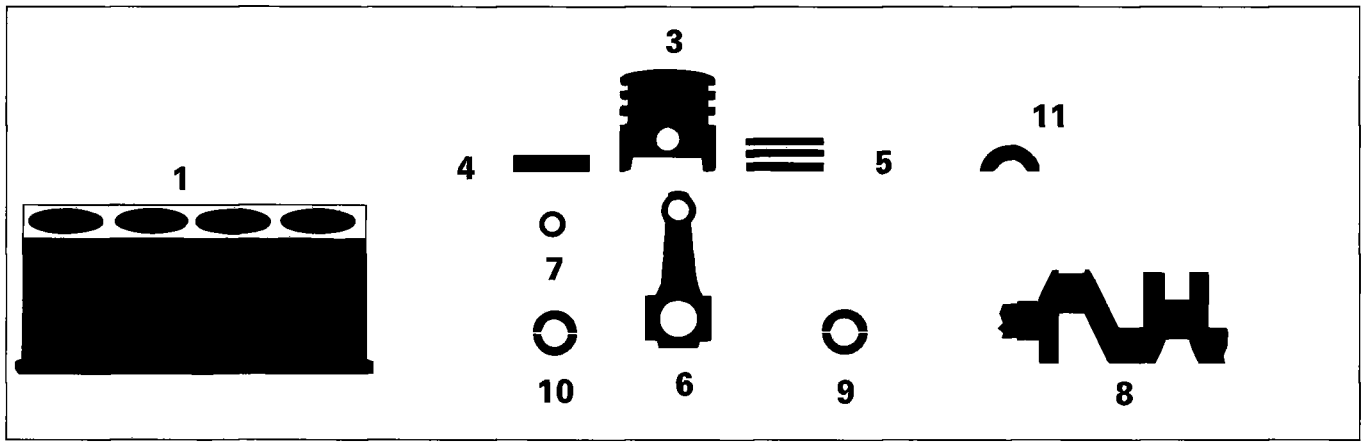
Typical engine curves obtained using the EC method

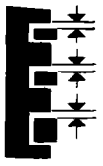
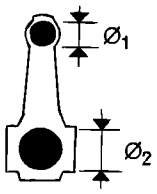
The power curves illustrated are those obtained using overhauled engines which have been run in, without a fan and with an exhaust silencer and air filter fitted, at sea level.

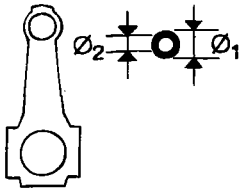
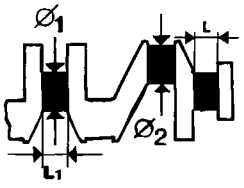
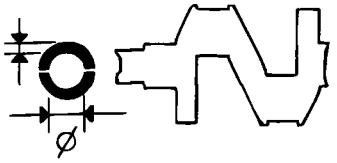


DESCRIPTION			1596 16v	1998 20v
			Values in mm	
1	Main journals	L	–	21.72-21.80
		L_1	22.14-22.20	–
		Ø	54.507-54.520	63.705-63.718
	Auxiliary shaft bush housings	$Ø_1$	38.700-38.730	–
		$Ø_2$	35.036-35.066	–
	Cylinder liner Ø	A	80.500-80.510	82.000-82.010
		B	80.510-80.520	82.010-82.020
		C	80.520-80.530	82.020-82.030
3	Piston	X	9.7	12.5
	Ø	A	80.452-80.462	81.952-81.962
		B	80.459-80.471	81.959-81.971
		C	80.468-80.478	81.968-81.978
	Ø FIAT >		0.4	

DESCRIPTION		1596 16v	1998 20v
		Values in mm	
3 Difference in weight between pistons		± 5 g	
3-1 Piston Cylinder liner/bon Ø	A	0.038-0.058	
	B	0.039-0.061	
	C	0.042-0.062	
3 Gudgeon pin housing	Ø	20.997-21.001	20.002-20.007
4	Ø	20.990-20.995	19.996-20.000
Gudgeon pin	Ø FIAT >	0.2	
4-3 Gudgeon pin - Housing		0.002-0.011	
3 Piston ring grooves	1	1.225-1.245	1.220-1.240
	2	1.210-1.230	1.210-1.230
	3	2.010-2.030	2.010-2.030
5 Piston rings	L 1	1.175-1.190	1.180-1.160
	L 2	1.175-1.190	1.190-1.170
	L 3	1.975-1.990	1.990-1.970
	Ø FIAT >	0.,4	



DESCRIPTION			1596 16v	1998 20v
			Values in mm	
5-3 Piston rings Piston ring grooves		1	0.035-0.070	0.040-0.080
		2	0.020-0.055	0.020-0.050
		3	0.020-0.055	0.020-0.060
5-1 Piston ring gap in cylinder liner		1	0.150-0.350	0.200-0.350
		2	0.200-0.400	0.250-0.500
		3	0.200-0.450	0.250-0.500
6  $Ø_1$ Small end bush or pin housing		$Ø_1$	23.939-23.972	22.939-22.972
$Ø_2$ Big end bearing housing		$Ø_2$	48.630-48.642	51.354-51.366

MEASUREMENTS AND FITTINGS			1596 16v	1998 20v
			Values in mm	
7  Small end bush		$\varnothing_1$	24.016-24.041	23.007-23.027
		$\varnothing_2$	21.004-21.009	20.006-20.012
4-7	Gudgeon pin Small end bush		0.009-0.019	0.006-0.020
7-6	Small end bush Bush housing		0.044-0.102	0.035-0.088
8 	Crank journals	$\varnothing_1$ 1	50.794-50.800	59.994-60.000
		2	50.787-50.793	59.988-59.990
		3	50.780-50.786	59.982-59.980
	Crank pins	$\varnothing_2$ A	45.518-45.523	48.238-48.240
		B	45.510-45.517	48.232-48.230
		C	45.503-45.509	48.226-48.230
		L	26.975 - 27.025	–
		L_1	–	26.575-26.625
9 Crankshaft bearings 		L 1	1.840-1.844	1.836-1.840
		2	1.844-1.848	1.839-1.843
		3	1.850-1.854	1.842-1.846
		$\varnothing$ FIAT	0.127	
9-8	Main bearings - Journals		0.019-0.046	0.025-0.052

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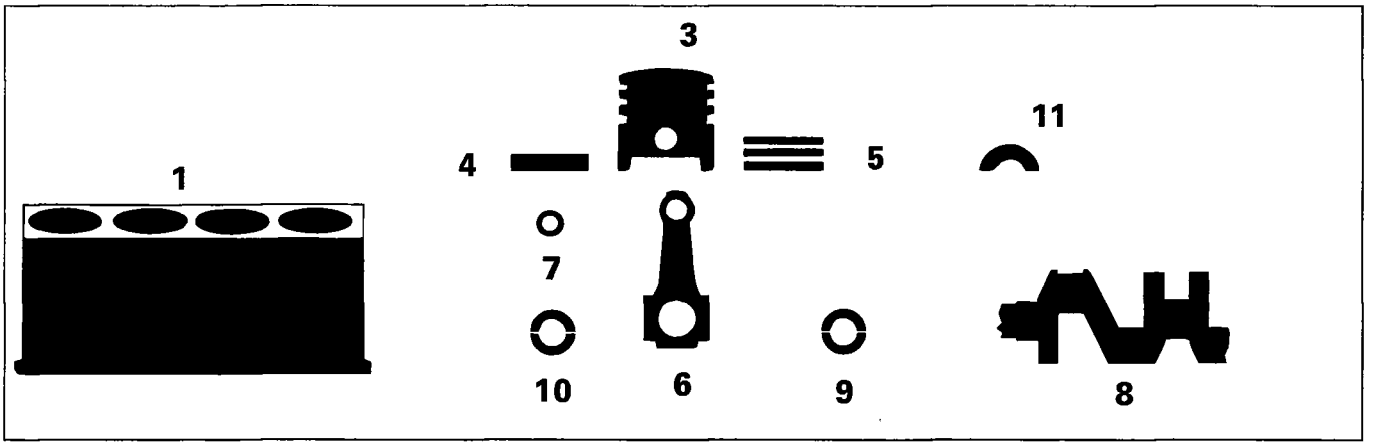
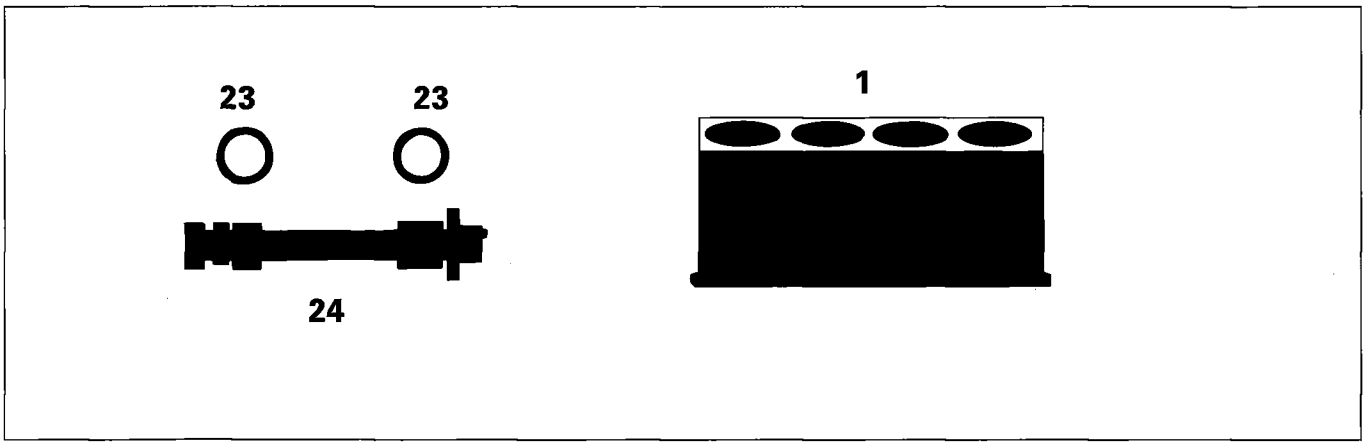
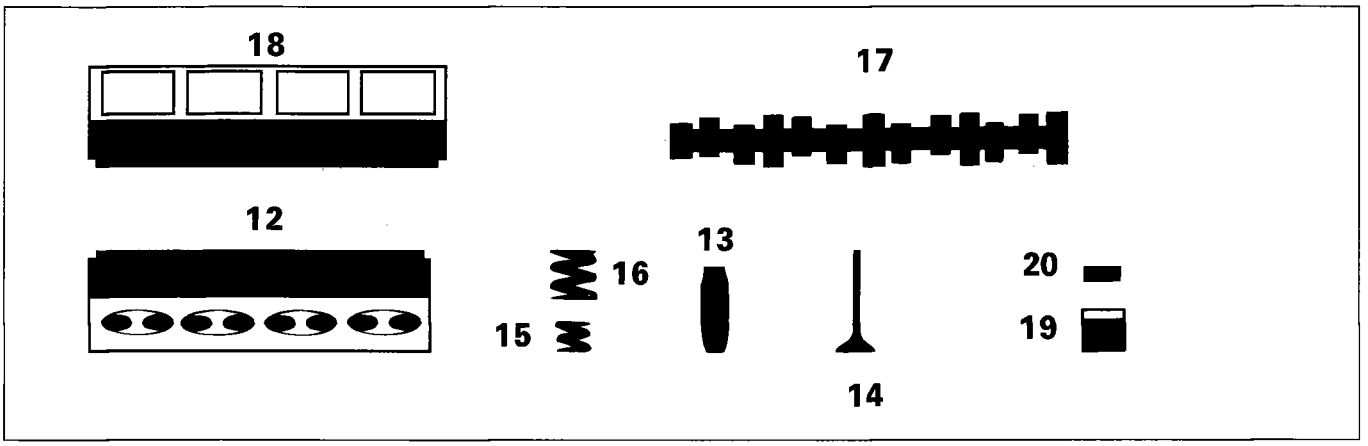


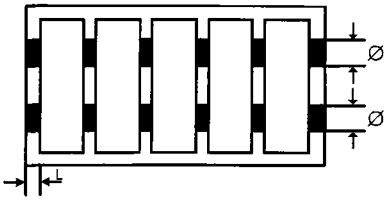
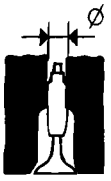
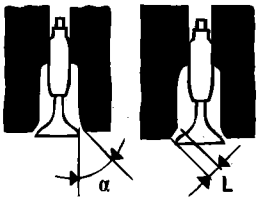
MEASUREMENTS AND FITTINGS			1596 16v	1998 20v
			Values in mm	
10 Big end pins	L	A	1.537-1.541	1.536-1.540
		B	1.540-1.544	1.539-1.543
		C	1.544-1.548	1.542-1.546
	∅ FIAT <		0.127	
10-8 Crankshaft bearings - Main journals			0.025-0.050	0.030-0.056
11 Thust washers		S	2.310-2.360	2.342-2.358
	S FIAT >		0.127	
11-8 Crankshaft endfloat			0.055-0.265	0.059-0.161



DESCRIPTION		Values in mm
	1596 16v	
23 Bushes for auxiliary drive shaft	$\varnothing_1$	35.664-35.684
	$\varnothing_2$	32.000-32.020
24 Auxiliary drive shaft bearings	$\varnothing_1$	35.593-35.618
	$\varnothing_2$	31.940-31.960
23-1 Shaft bushes Crankcase seats		should always be interference
24-23 Shaft bearings Bushes	$\varnothing_1$	0.046-0.091
	$\varnothing_2$	0.040-0.080

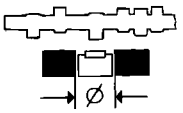
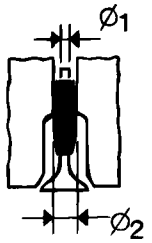
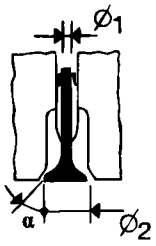
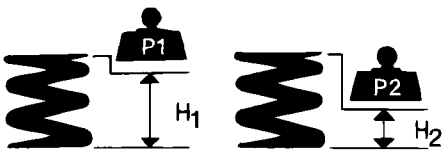
00.10



DESCRIPTION		1596 16v	1998 20v
		Values in mm	
Camshaft supports in cylinder head	Ø	–	26.045-26.070
	L (*)	–	19.100-19.150
 Valve guide bore In cylinder head	Ø	12.950-12.977	
12  Valve seat	α	45°±5′	
	α	45°±5′	
	L	approximately 2	
 Volume of combustion chamber in cylinder head	cm^3	33.3 (•)	38.2

(*) Cap measurement

(•) Indicative value

DESCRIPTION		1596 1ev	1998 20v
		Values in mm	
12  Tappet housing in cylinder head	Ø	–	33.000 - 33.025
13  Valve guide	$Ø_1$	7.022-7.040	
	$Ø_2$	13.010-13.030	
	$Ø_2$ FIAT	0.05-0.10-0.25	
13-12  Valve guide Bore in cylinder head		0.038-0.080	
14  Valve	$Ø_1$	6.982-7.000	6.975-6.990
	$Ø_2$	30.200-30.500	29.900-30.200
	α	45° 30'±5'	
	$Ø_1$	6.974-6.992	6.960-6.975
	$Ø_2$	29.750-30.050	25.900-26.200
	α	45° 30'±5'	
14-13  Valve Valve guide		0.022-0.058	0.032-0.065
		0.030-0.066	0.047-0.080
15  Inner valve spring	P_1	–	11.08-12.07daN
	H_1	–	29.5
	P_2	–	21.58-23.54 daN
	H_2	–	20
16  Outer valve spring	P_1	25.00-28.00 daN	27.07-29.43 daN
	H_1	34.6	34
	P_2	59.2-65.0 daN	48.46-52.38 daN
	H_2	26	24.5

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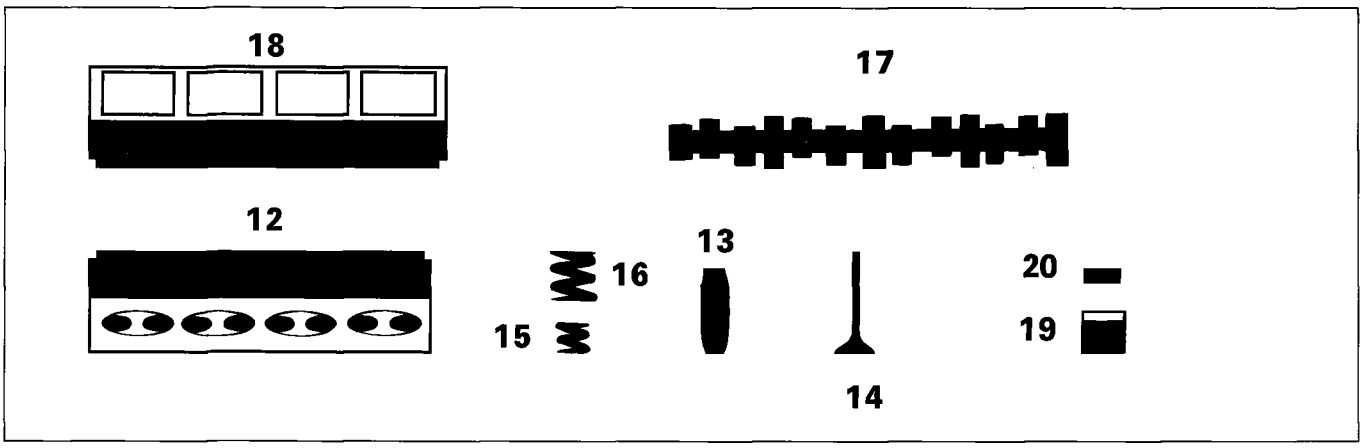
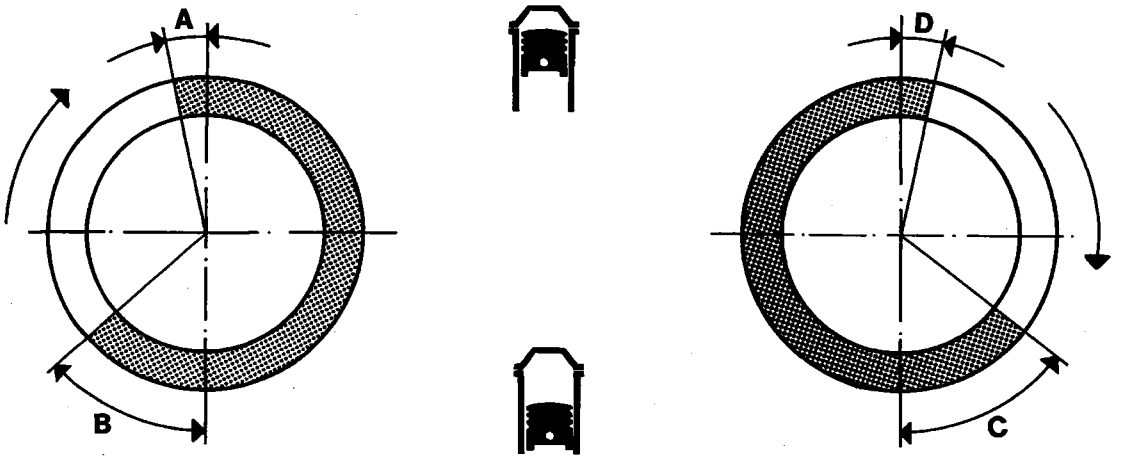


DESCRIPTION		1596 16v	1998 20v
		Values in mm	
Camshaft bearings 1596 16v 17a	$\varnothing_1$	29.944-29.960	–
	$\varnothing_2$	52.400-52.415	–
	$\varnothing_3$	52.800-52.815	–
	$\varnothing_4$	53.200-53.215	–
	$\varnothing_5$	53.600-53.615	–
1998 20v 17c	$\varnothing$	–	26.000-26.015
	L	–	19.250-19.330
17a Cam lift	intake	8.5	9
	exhaust	8	9
12b-c Camshaft bearings 17b-c Cylinder head supports	radial	–	0.030-0.070
	axial	–	0.100-0.230

DESCRIPTION		1596 16v	1998 20v
		Values in mm	
18 Camhaft supports in camhaft housing	$\varnothing_1$	29.989-30.014	–
	$\varnothing_2$	52.445-52.470	–
	$\varnothing_3$	52.845-52.870	–
	$\varnothing_4$	53.245-53.270	–
	$\varnothing_5$	53.645-53.670	–
Tappet housings	$\varnothing$	33.000-33.025	–
17-18 Camshaft bearings Camshaft housing supports		0.030-0.070	–
19 Tappet	$\varnothing$	32.959-32.975	
19-12 Tappet Bore in cylinder head		–	0.025-0.066
19-18 Tappet - Housing in camshaft housing		0.025-0.066	–
17-20 Clearance for timing check		0.45	
		0.45	
Operational clearance		Hydraulic tappets	

TIMING DIAGRAMS



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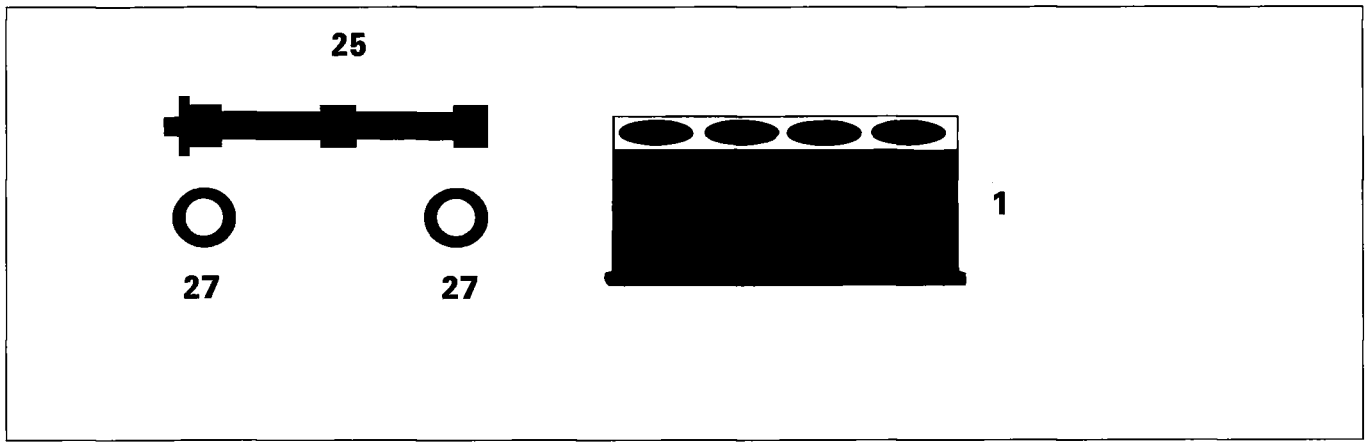
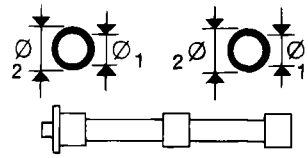
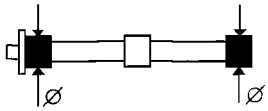
			1596 16v	1998 20v
A	Intake	opens before T.D.C.	0°	9° (*) after T.D.C.
B		closes after B.D.C.	34°	49°(*)
C	Exhaust	opens before B.D.C.	24°	40°
D		closes after T.D.C.	0°	0°

(*) With phase transformer on: **A** - opens before T.D.C.: = 9°
B - closes after B.D.C.: = 31°



DESCRIPTION		Values in mm
		1998 20v
25 Counter-balance shaft operation		through oil pump driven gear
27  Ball bearings for counter-balance shaft	$\varnothing_1$	19.900 - 20.000
	$\varnothing_2$	46.989 - 47.000
25  Counter-balance shaft bearings	$\varnothing$	19.980 - 19.993
1 Bearing seats in cylinder block/crankcase	$\varnothing$	46.975 - 47.000
27-1 Ball bearings / Crankcase seats		+0.011 - -0.025
25-27 Shaft bearings / Ball bearings		+0.020 - -0.003

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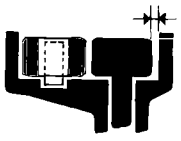
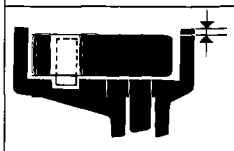
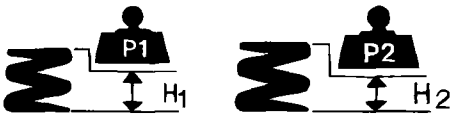
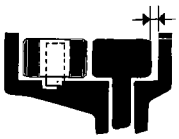
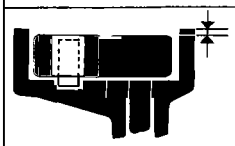
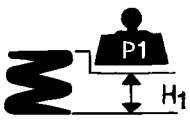
	1596 16v
LUBRICATION - DESCRIPTION	Values in mm
Engine lubrication circuit	forced circulation, via geared pump with cartridge oil filter in series
Oil pump: type	gears
Pump operated	through auxiliary shaft
Oil pressure relief valve	incorporated in the oil pump
Full flow filter	cartridge
Low oil pressure transmitter	electrical
 between the edge of the gears and the pump casing	0.110 – 0.180
 between the upper edge of the gears and the pump cover	0.040 – 0.106
Clearance between the bearing and the driven gear	0.015-0.048
Clearance between the drive gear shaft and the housing in the pump casing	0.016-0.048
 between drive gear and driven gear	0.30
 Operating pressure at a temperature of 100°C	when idling > 1 bar at 4000 rpm > 4.5 bar
 P_1	9.0-9.8 daN
H_1	31
P_2	6.92-7.21 daN
H_2	21

		1998 20v
LUBRICATION - DESCRIPTION		Values in mm
Engine lubrication circuit		forced circulation, via geared pump with cartridge oil filter in series
Oil pump: type		geared located in the crankshaft front cover
Pump operated		by chain driven by crankshaft
Oil pressure relief valve		incorported in crankshaft front cover
Full flow filter		cartridge
Low oil pressure transmitter		electrical
 between the edge of the gears and the pump casing		0.110 - 0.180
 between upper edge of gears and pump cover		0.016 - 0.086
 between drive gear and driven gear		0.30
   Operating pressure at a temperature of 100°C		when idling 1 bar at 4000 rpm > 4 bar
 Oil pressure relief valve spring	P_1	11.73-12.51
	H_1	35

COOLING			1596 16v	1998 20v
Cooling circuit			coolant circulation via centrifugal pump, radiator and two speed fan operated by engine control unit	
Water pump operated			via belt	
Engagement of fan Operated by control unit	⇄	stage 1	90°÷94°C	96°÷97°C
		stage 2	95°÷99°C (■)	101°÷102°C
	stop	stage 1	85°÷89°C	93°÷94°C
		stage 2	90°÷94°C (■)	98°÷99°C
Engine coolant thermostat	opening starts		81° - 85°C	
	max opening		99°÷103°C	101°C÷105°C
	valve travel		9.5 mm	
Fitting clearance between impeller vanes and pump casing			0.3÷1.1 mm	0.4 ÷ 0.95 mm
Pressure for checking system water tightness			0.98 bar	
Pressure for checking exhaust valve on expansion tank cap			0.98 bar	

(■) Versions with climate control

FUEL FEED SYSTEM	1596 16v	1998 20v
Make	Electronic integrated injection-ignition MPI – I.A.W. Weber-Marelli	Electronic integrated injection-ignition MPI – BOSCH Motronic
Pump	electric immersed in the tank	
Output	≥ 120 l/h	
Fuel pressure regulator setting	3 bar	

INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM COMPONENTS		1596 16v
Electronic control unit	Manual gearbox	I.A.W. 4EF. B3
	Automatic transmission	I.A.W. 4EF. L1
Air pressure sensor		M. Marelli TPRT 05
Fuel vapour solenoid valve		M. Marelli EC2
Throttle case		M. Marelli 46 SX F2
Idle adjustment actuator		M. Marelli IB 02
Injector		M. Marelli IWP 109
Fuel pressure regulator		MARWALL RPM 84
Coolant temperature sender unit		SYLEA 402.386.01
Top Dead Centre and rpm sensor		M. Marelli CVM 02
Throttle position sensor (potentiometer)		M. Marelli IPF 2C
Detonation sensor		NGK KNE 11
Electric fuel pump (*)		MARWALL ESS 291
Lambda sensor upstream of catalyzer		NTK OZA 534 A1
Lambda sensor downstream of catalyzer		NTK OZA 532 A1
Fuel filter		MARWALL FA 5325 IN
Timing sensor		SYLEA SFA 200
Ignition coil		Champion BAE 920A/ BERU 0.040.100.029

SPECIAL TOOLS

(*) Use tool 1870736000 for removing-refitting the fuel pump retaining ring nut

INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM COMPONENTS	1998 20v
Injection/ignition system electronic control unit	Bosch ME31F001
Motorized throttle body	Bosch 0.250.003.052
Injector	Bosch 0.280.155.770
Electric fuel pump (*)	Bosch 0.580.313.011
Air flow meter	Bosch 0.281.002.199
Engine coolant temperature sensor	ELTH 2690350 – SYLEA 402.183.01
Lambda sensor (one upstream and one downstream of the catalyzer)	Bosch LS F4 0.258.006.193
Fuel vapour solenoid valve	Bosch 0.280.142.340
Detonation sensor	Bosch 0.261.231.131
Hall effect injection timing sensor	Bosch 0.232.101.036
Top Dead Centre and rpm sensor	Bosch 0.261.210.160
Ignition coil	Bosch 0.221.504.014

SPECIAL TOOLS

(*) Use tool 1870736000 for removing-refitting the fuel pump retaining ring nut

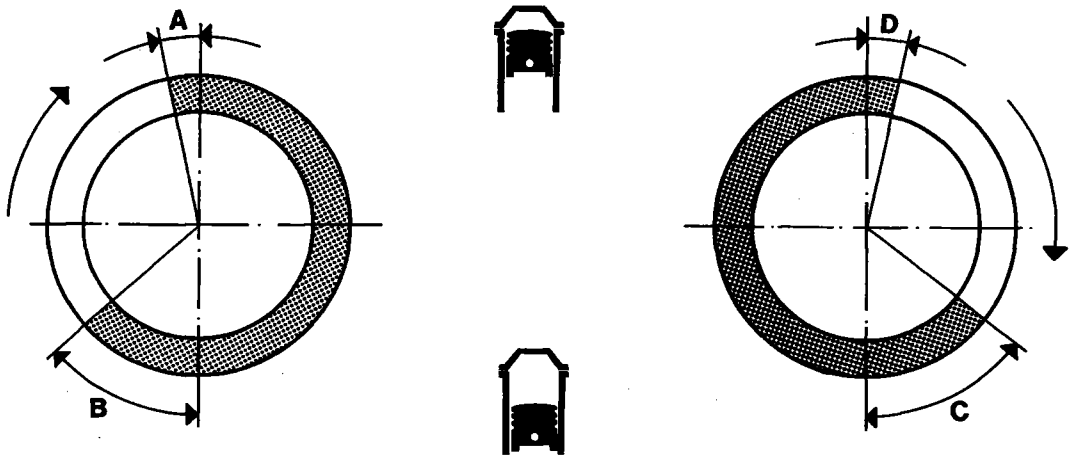
SPECIFICATIONS

			1910 JTD
	Cycle		Diesel 4 stroke
	Timing gear		single overhead camshaft
	Fuel system type		Direct injection Turbocharger + intercooler
	Number of cylinders		4 in line
	Cylinder liner (bore)	mm	82
	Stroke	mm	90.4
	Displacement	cm^3	1910
	Compression ratio		18.45 ± 0.5
	Max power CEE	kW (bhp)	81 (110)
		rpm	4000
	Max torque CEE	daNm (kgm)	20 (20.4)
		rpm	1500

CYLINDER HEAD GASKET ENGINE 1910 JTD

Average - maximum piston projection (mm)	Head gasket size (mm)	Head gasket no. of refs.
0.014 0.104	0.770-0.870	0
0.105-0.205	0.870-0.970	1
0.206-0.294	0.970-1.070	2

TIMING DIAGRAMS



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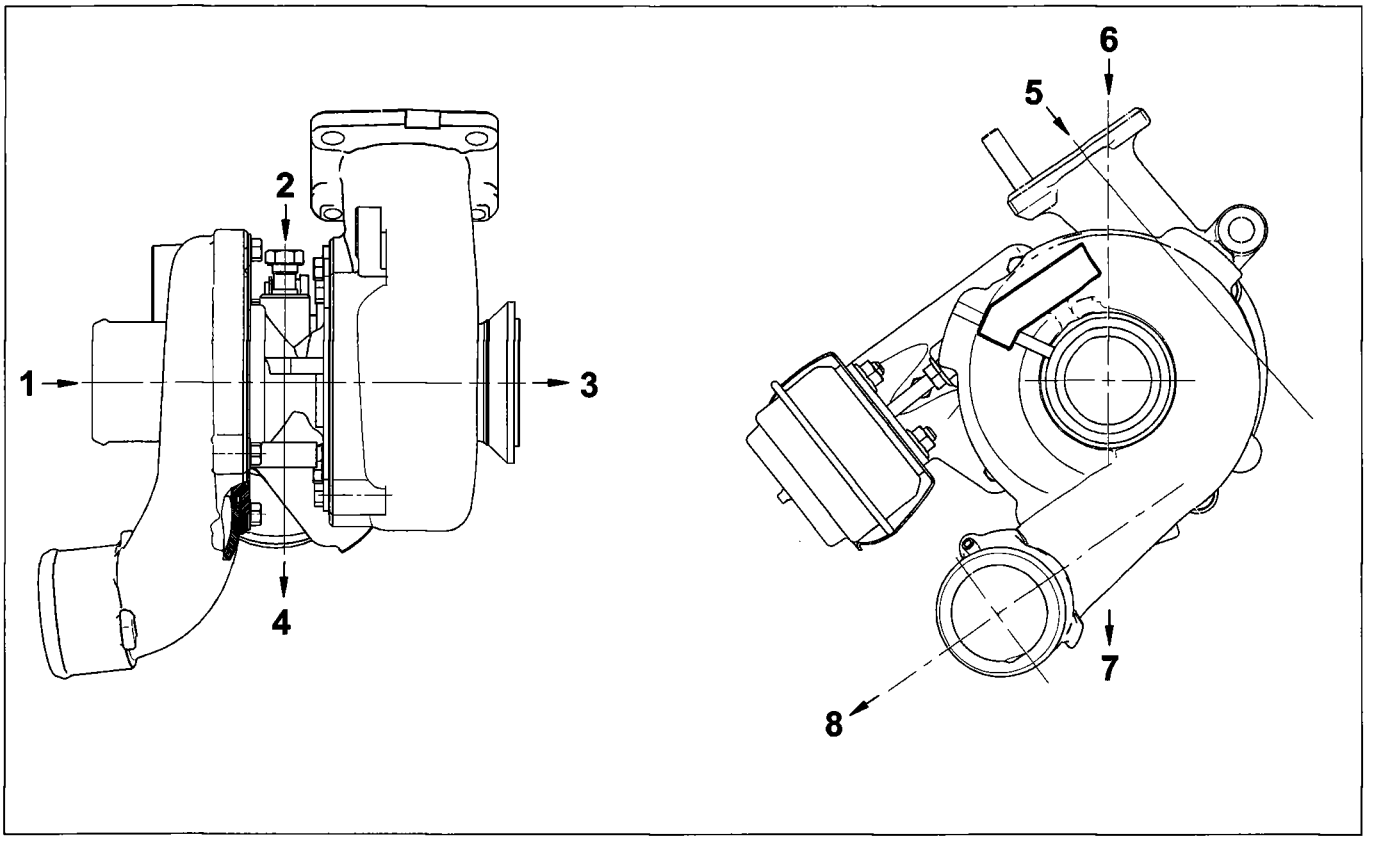
TIMING ANGLES

		1910 JTD
A — Intake	opens before TDC	0°
B	ends after BDC	32°
C — Exhaust	opens before BDC	40°
D	ends after TDC	-2°

SUPERCHARGING Turbocharger operated by exhaust gases with waste-gate pressure valve and air/air heat exchanger (intercooler)

COOLING	1910 JTD
Turbocharger: type	Garret GT 17 variable geometry
Maximum supercharging pressure	1 bar



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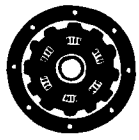
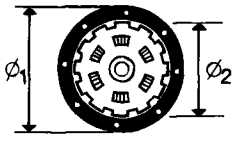
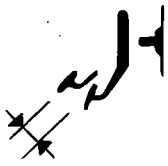
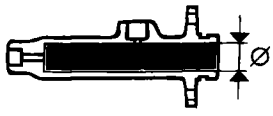
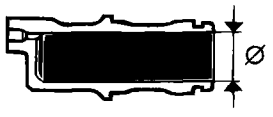
1. Compressor inlet
2. Oil inlet
3. Turbine outlet
4. Oil outlet
5. Turbine inlet
6. Oil inlet
7. Oil outlet
8. Compressor outlet

		1596 16v	1998 20v	1910 JTD
		Values in mm		
Make		  dry, single plate with bearing contact		
 Operating mechanism		 Spring		
Spring loading	daN	400	600	485
 Pressure plate	$Ø_1$	200	230	215
	$Ø_2$	137	155	147
	Distance between pedal in end of travel position and pedal in rest position	163	144.5	
Clutch operation		mechanical	Hydraulic	
	Clutch operating pump Ø	–	16.05 (3/4»)	
	Operating cylinder Ø	–	25.4 (1»)	

			1596 16v	1998 20v	1910 JTD
			1 3 5 / 2 4 R		
		Make	C.513.5.13	C.510.5.21	
GEARBOX					
Synchronizers	snap ring (Porsche type)		–		
	baulk ring		1 3 5 / 2 4		
Gears	straight teeth		1 3 5 / 2 4 / R		
	spur teeth		1 3 5 / 2 4		
Gear ratios		1	3.909	3.545	3.909
		2	2.238	2.238	2.238
		3	1.444	1.520	1.444
		4	1.029	1.156	1.029
		5	0.872	0.919	0.767
		R	3.909	3.909	3.909

DIFFERENTIAL		1596 20v	1998 20v	1910 JTD
Ratio crown wheel and pinion reduction		3.823 (17/65)	3.733 (15/56)	3.150 (20/63)
Ratio at the wheels	1st	14.944	13.233	12.313
	2nd	8.556	8.354	7.050
	3rd	5.520	5.674	4.549
	4th	3.934	4.315	3.241
	5th	3.334	3.431	2.416
	R	14.944	14.592	12.313
Differential internal housing bearing		conical roller bearings		
Adjustment of bearing pre-loading		with snap rings		
Spare snap ring thickness	mm 0.05	1.70 -2.60		
Recommended interference for exact bearing pre-loading	mm	bonrings not loaded = 0.12 bearings loaded (350 daN) = 0.08		
Clearance between planet/satellite gears	mm	≤ 0.10		
Adjustment of clearance between planet/satellite gears		by shims	no adjustment	
Spare snap ring thickness	(0.05) mm	0.80 - 1.25	–	

GEARBOX AUTOMATIC AISIN	ENGINE TYPE	1596 16v
Speeds		②②②②R
Gear ratios	②○○○○	2.807
	○②○○○	1.479
	○○②○○	1.000
	○○○②○	0.735
	○○○○R	2.769
Idler ratio		1.019 (54/53)
Torque converter	ø mm	216
X Drive torque ratio		2.150
Quantity of oil	Total, with gearbox converter, radiator and pipes empty	6 litres (5.4 kg)
	Replacement only	4.3 litres (3.9 kg)

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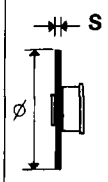
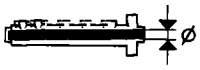
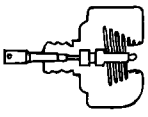
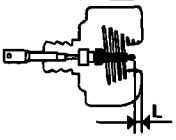
DIFFERENTIAL

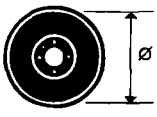
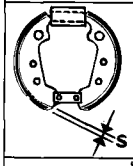
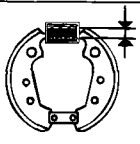
	Ratio crown wheel and pinion reduction	3.505 (82/23)
	Final drive ratio	3.633 (54/53x82/23)
Ratio at the wheels	②○○○○	10.198
	○②○○○	5.373
	○○②○○	3.633
	○○○②○	2.670
	○○○○R	10.060

FRONT BRAKES

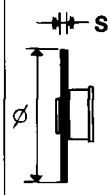
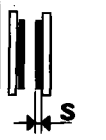
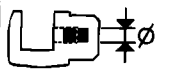
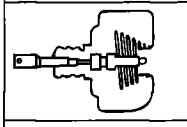
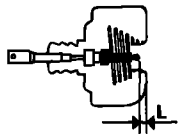
			1596 16v	1596 16v *	1910 JTD
			Values in mm		
 Disc	S	Ø	257		
			11.80-12.10	19.80-20.10	
			11.10	18.55	
		< permitted	10.20	18.20	
 Brake pads	S < permitted		1.5		
 Shoe	Ø		54		
 Master cylinder (pump)	Ø		22.225 (7/8")		
 Brake servo			Iso-Vac 8" pneumatic vacuum acting on all four wheels		
 Distance of hydraulic piston control rod from master cylinder support plate	L		22,45 ÷ 22,65		

(*) For version with automatic transmission

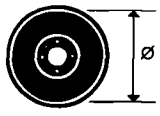
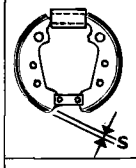
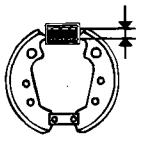
REAR BRAKES

 Drum	Ø		203.10 - 203.40	
			204.10	
		> permitted	204.70	
 Shoes	S	< permitted	1.5	
 Cylinders		Ø	22.00	
 Reduction ratio		Pressure regulators (•)	0.36	–
		Load proportioing valves (•)	–	0.36

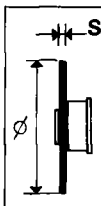
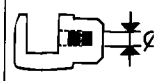
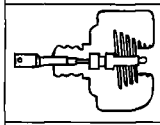
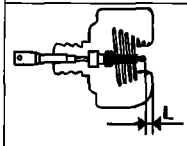
(•) Not fitted on versions with ABS

			1596 16v	1910 JTD
FRONT BRAKES			Values in mm	
	Disc	Ø	257	
		S	19.80-20.10	
		S (worn)	18.55	
		S < permitted	18.20	
	Brake pads	S < allowed	1.5	
	Caliper	Ø	54	
	Master cylinder (pump)	Ø	22.225 (7/8")	
	Brake servo		Iso-Vac 8" pneumatic vacuum acting on all four wheels	
	Distance of hydraulic piston push rod from master cylinder support plate	L	22.45 - 22.65	

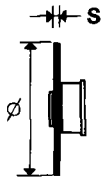
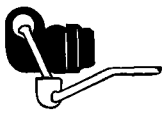
REAR BRAKES

	Drum	Ø	228.30-228.60	
		Ø (worn)	229.30	
		Ø > permitted	230.00	
	Shoes	S < permitted	1.5	
	Cylinders	Ø	22.00	
	Load proportioning valve (●)		acting on rear wheels	
	Ratio (reduction)		0.36	

(●) Not fitted on versions with ABS

	1998 16v
FRONT BRAKES	Values in mm
 Disc — Ø	283.800 - 284.200
Disc — S	21.800 - 22.100
Disc — S (new)	20.55
Disc — S < permitted	20.20
 Brake pads — S < allowed	1.5
 Caliper — Ø	54
 Master cylinder (pump) — Ø	23.81 (15/16")
 Brake servo	Iso-Vac 8" + 7" pneumatic vacuum acting on all four wheels
 Distance of hydraulic piston push rod from master cylinder support plate — L	22.45 - 22.65

REAR BRAKES

 Disc — Ø	240
Disc — S	10.80 ÷ 11.10
Disc — S (new)	10.10
Disc — S < allowed	9.20
 Brake pads — S < allowed	1.5
 Shoe — Ø	34
 Load proportioning valve (•)	acting on rear wheels
Ratio (reduction)	0.36

(•) Not fitted on versions with ABS

	ENGINE TYPE	1596 16v 1910 JTD	1998 20v
Make		Rack and pinion power assisted	
Wheel	steering wheel	3	2.9
	rack and pinion travel	142±1.5 mm	137±1.5 mm
Minimum turning circle m		10.7	11
Steering angle	outer wheel α1	31° ± 30′	
	inner wheel α2	38° ± 30′	
Steering column		with two universal joints	

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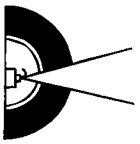
ENGINE TYPE	Wheel rim		Tyre Tubeless radial, type	Tyre pressure in bar			
				Front		Rear	
	pressed steel	light alloy		average load	heavy load	average load	heavy load
1596 16v	5½J×14H-43	6J×15" H2-43	185/65 R14 86H 195/55 R15 84V(**) 185/65 R14 86Q (●) 195/55 R15 88Q (●) (**)	2.1 bar	2.2 bar	2.3 bar	2.5 bar
1998 20V	–	6J×15" H2-49	195/60 R15 88V 195/60 R15 88Q (●)	2.1 bar	2.2 bar	2.3 bar	2.5 bar
1910 JTD	5½J×14H-43	6J×15" H2-43	185/65 R14 86H 195/55 R15 84V (**) 185/65 R14 86Q (●) 195/55 R15 88Q (●) (**)	2.1 bar	2.2 bar	2.3 bar	2.5 bar
SPARE WHEEL (*)	5½×14"-43 (▲) 4.00B×15»M-35	–	185/65 R14 86H (▲) 125/80 R15 95M	4.2 bar			

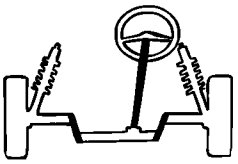
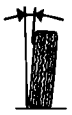
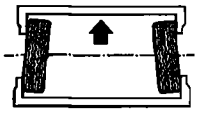
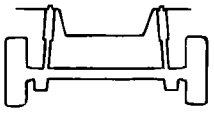
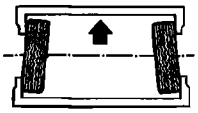
With the tyres warm, the inflation pressure should be increased by +0.3 bar in relation to the recommended figure.
With **winter tyres** the inflation pressure shold be + 0.2 higher than the recommended figure for the standard tyres.

(*) Speed limit: 80 km/h
(**) Optional
(●) Winter tyres
(▲) For the TAXI version

WHEEL ALIGNMENT



unladen vehicle (■)

 front suspension	camber (**) 	- 36' 24» ± 30'
	caster (**) 	1° 57' ± 30'
	toe-in 	-1 - 1 mm
	offset front wheels ▲	0°
 rear suspension	camber (**) 	-0° 45' ± 30'
	toe-in (**) 	2 ± 2 mm
	thrust angle rear wheels ▲	0°

(**) Angles not adjustable
(●) With the tyres inflated to the correct pressure and the vehicle in running order with 5 litres of fuel
(▲) Angular values, which cannot be adjusted, used for the correct alignment of the vehicle

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Front suspension independent, Mac Pherson type with transverse lower track control arms secured to an auxiliary crossmember. Offset coil springs and double acting, telescopic, hydraulic shock absorbers. Anti-roll bar connected to the telescopic damper.

CLASSIFICATION OF SPRINGS ACCORDING TO VARIOUS VERSIONS AND ENGINE TYPES

VERSIONS	ENGINE TYPES		
	1596 16v	1998 20v	1910 JTD
Standard	E		C
Standard with ABS	E		C
With air conditioning	D		B
With air conditioning, ABS and all options	D		B
With air conditioning and ABS	D		B
Standard with automatic transmission	D		
Standard with automatic transmission and ABS	D		
With air conditioning and automatic transmission	C		
With air conditioning, ABS and all options	C		
With ABS (fitted as standard)		B	
With ABS (fitted as standard) and air conditioning		A	
With ABS (fitted as standard), air conditioning and all options		A	

SPECIFICATIONS OF VARIOUS SPRINGS

Coil springs		A	B	C	D	E
Wire diameter	mm	13.6±0.05	13.5±0.05		13.2±0.05	13.2±0.05
Number of effective coils		3.75				
Coil direction		Clockwise				
Released spring height	mm	449	448	434	425	413
Load under which spring height is 173 mm	daN	432±17	417±17	397±16	353-383	336-364
The springs have been divided into two categories identifiable by a mark yellow (*) for those with a height of >173 mm under a load of: green (*) for those with a height of ≤173 mm under a load of:		432 daN	417 daN	397 daN	368 daN	350 daN

(*) Springs of the same type must be fitted

ENGINE TYPE	1596 16v / 1998 20v	1910 JTD

Dampers

Make		Double acting, telescopic, hydraulic	
Open (start of buffering)	mm	508 ± 2.5	501 ± 2.5
Closed (iron against iron)	mm	361 ± 2.5	354 ± 2.5
Stroke	mm	147	

Anti-roll bar

Anti-roll bar diameter	mm	18

00.44

Rear suspension independent with track control arms anchored to an auxiliary crossmember. Variable flexibility coil springs and anti-roll bar. Gas shock absorbers with low friction coefficient lower bushes.

ENGINE TYPE	1596 1ev	1998 20v	1910 JTD

Coil springs

Wire diameter	mm	12.3 ± 0.1
Number of effective coils		5.93
Coil direction		clockwise
Released spring height	mm	316
Height of spring under a load of: 347-373 daN	mm	184
Spring are divided into two categories, identified by markings yellow (1) for those: 360 daN height of mm under a load of		> 184
green (1) for those: 360 daN height of mm under a load of:		≤ 184

(1) Springs of the same type must be fitted.

Dampers

Make		double acting, telesopic, gas
Open (start of damping action)	mm	321 ± 2
Closed (iron against iron)	mm	224 ± 2
Stroke	mm	97

Anti-roll bar

Anti-roll bar diameter	mm	17

Rear suspension independent with track control arms anchored to an auxiliary crossmember. Variable flexibility coil springs and anti-roll bar. Gas shock absorbers with low friction coefficient lower bushes.

ENGINE TYPE	1596 16v 1998 20v	1910 JTD

Coil springs

Wire diameter		mm	12.3±0.1	12.8±0.1
Number of effective coils			5.93	5.93
Coil direction			clockwise	
Released spring height		mm	320	322
Spring height under a load of:	419-445 daN	mm	184	–
	432 daN	mm	–	184
Spring are divided into two categories, identified by markings				
yellow (1) for those: under a load of	412 daN	a height of mm	>184	–
	432 daN	a height of mm	–	>184
green (1) for those under a load of:	412 daN	a height of mm	≤184	–
	432 daN	a height of mm	–	≤184

(1) Springs of the same type must be fitted.

Dampers

Make		double acting, telesopic, gas
Open (start of damping action)	mm	321 ± 2
Closed (iron against iron)	mm	224 ± 2
Stroke	mm	97

Anti-roll bar

Anti-roll bar diameter	mm	17

	1596 16v	1998 20v	1910 JTD
STARTER MOTOR	Bosch DW -12V –1.1 kW Valeo DGRA -12V-1,3 kW (■)	Bosch ø 74.5-1.1/12V	Bosch ø 78.5-2 kW/12V
ALTERNATOR	Bosch KCB1-14V-45/80A Bosch KCB2-14V-50/90A (●) (*)	M. Marelli A127IR-14V-55/100A	M. Marelli A115IM-14V-55/105A M. Marelli A115IR-14V-70/120A (●)
VOLTAGE REGULATOR	BUILT IN ELECTRONIC		
BATTERY	12V-50Ah-250A 12V-60Ah-380A (▲) (*)	12V-50Ah-250A	12V-60Ah-380A 12V-70Ah-450A (▲)
IGNITION SYSTEM	Integrated electronic injection-ignition MPI I.A.W. Weber-Marelli	Injection-ignition Bosch Motronic MPI integrated electronic	–
IGNITION COIL	M. Marelli BAE 920 A	Bosch 0.221.504.014	–
SPARK PLUGS	NGK BKR5EZ Champion RC10YCC	Champion RC8BYC	–
CONTROL UNIT INJECTION ADVANCE ELECTRONIC	–	–	Bosch EDC 15 C7

(●) For vehicles with climate control system
(*) North European version
(▲) For the TAXI version
(■) Alternative

STARTER MOTOR		1596 16v	1998 20v	1910 JTD
Make		Bosch DW -12V -1,1 kW	Bosch ø 74.5-1.1/12	Bosch ø 78.5-2 KW/12
Voltage	V	12		
Nominal power	kW	1.1	1.1	2
Rotation, pinion side		clockwise		
No. of poles		6	4	6
Winding		windings in series		permanent magnets
Engagement		free wheel		
Operation		solenoid		
End float of armature shaft	mm	0.1-0.5	0.1-0.5	0.1-0.5
Data for bench test				
Operating test (*):				
current	A	–	360-380	500
speed	rpm	–	1150	1950
voltage	V	–	8.15	7.30
torque developed	daNm	–	1.30	1.30
Engagement test (*):				
current	A	–	680-700	1200
voltage	V	–	4.9	5.5
torque developed	daNm	–	3.11	3.0
Idle test (*):				
current	A	–	60-80	70-80
voltage	V	–	4.9	11.5
speed	rpm	–	4040	5450-5750
Relay	pull in Ω	–	0.33-0.37	0.4
Winding resistance (*)	hold in Ω	–	1.13-1.27	1.7
Lubrication Internal splines and shaft bushes		VS+ SAE 10W		
Enagement sleeve and intermediate disc		TUTELA MR3		

(*) Data obtained at an ambient temperature of 20°C.

NOTE *When overhauling it is not necessary to undercut the insulator between the commutator bars*

ALTERNATOR

		1581 1ev	1998 20v	1581 JTD
Make		Bosch KCB1-14V-45/80A	M. Marelli A127IR-14V-55/100A	M. Marelli A115IM-14V-55/105A
		Bosch KCB2-14V-50/90A (●) (*)		M. Marelli A127IR-14V-70/120A (●)
Nominal voltage of system	V	14	14	14
Maximum current	A	80 (90)(*)(●)	100	105 (120)(●)
Nominal current at 1800 rpm	rpm	45 (50)(*)(●)	55	55 (70)(●)
Nominal current at 6000 rpm	A	80 (90)(*)(●)	100	105 (120)(●)
Field winding resistance between the two slip rings (▲)	Ω	2.66-2.94 (2.47-2.73)(*)(●)	2.66-2.94	–
Direction of rotation (seen from control side)		Clockwise		
Diode power rectifiers		preconstituted bridge		

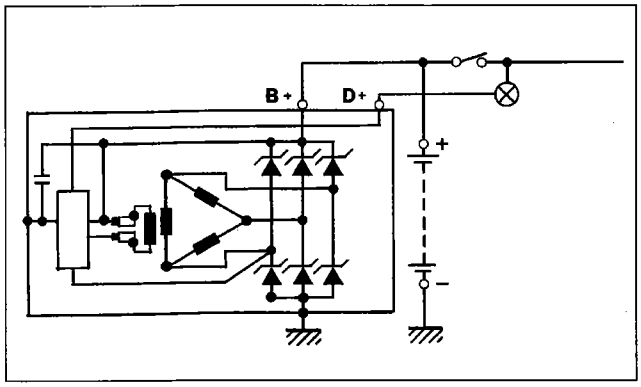
(▲) Data obtained at an ambient temperature of 20°C.
(●) For vehicles with climate control system
(*) For the TAXI version

VOLTAGE REGULATOR

		Electronic, built-in		
Make		BR1	RTM 151 B	RTM 151A
Alternator speed for test	rpm	7000		
Thermal stabilization corrector	A	–		
Test current	A	–		
Regulation voltage (▲)	V	14.3 - 14.6		

(▲) Data obtained at an ambient temperature of 23°C.

Alternator wiring diagram



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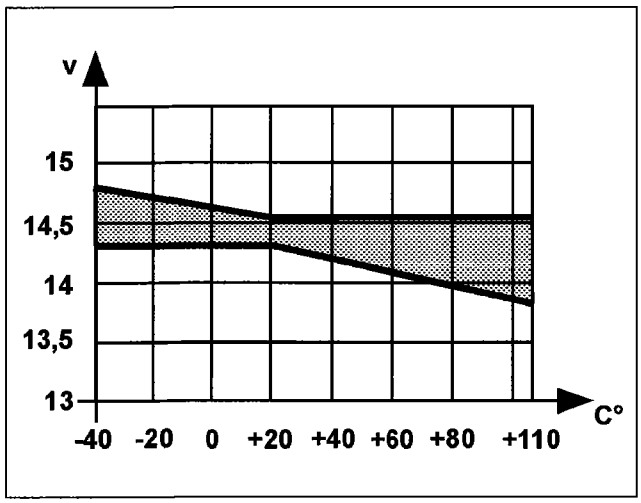
Bosch KCB1-14V-45/80A
Bosch KCB2-14V-50/90A
M. Marelli A127IR-14V-55/100A
M. Marelli A115IM-14V-55/105A

Typical voltage regulator curves



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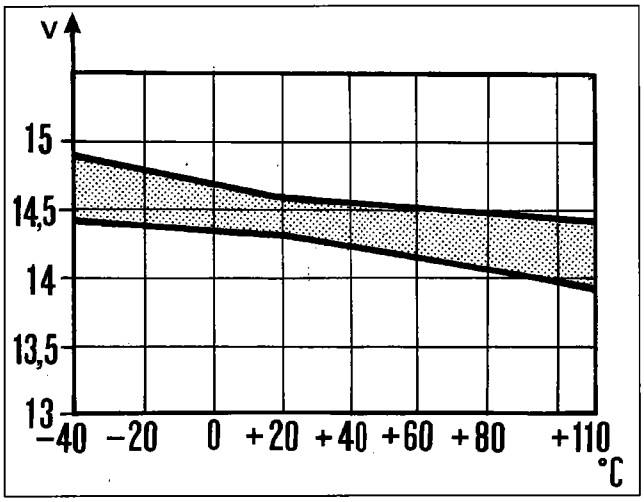
M. Marelli RTM 151 A



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M. Marelli RTM 151 B

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INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM	1596 1ev
Make	I.A.W. M.P.I. WEBER - MARELLI
Firing order	1 – 3 – 4 – 2

INJECTION/IGNITION CONTROL UNIT

Make and type	versions with manual gearbox	I.A.W. 4EF. B3
	versions with automatic transmission	I.A.W. 4EF. L1

IGNITION COIL WITH 4 HIGH TENSION INTAKES

Make		Champion
Type		BAE 920 A
Ohmic resistance of primary winding at 20°C	Ω	0.580
Ohmic resistance of secondary winding at 20°C	Ω	9100

SPARK PLUGS

Make and type		NGK BKR5EZ CHAMPION RC10YCC
Thread on engine		M14×1.25
Spark gap	mm	0.8

TOP DEAD CENTRE AND RPM SENSOR

Make		M. Marelli
Type		CVM 02
Sensor winding resistance at 20°C	Ω	575-750
Distance (gap) between sensor and crankshaft pulley tooth	mm	0.5 ÷ 1.5

ADVANCE ON ENGINE

With engine idling 700±50/min	4°

INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM	1998 20v
Make	Bosch ME31F001
Firing order	1 – 2 – 4 – 5 – 3

IGNITION COIL (1 PER SPARK PLUG)

Make		Bosch
Type		0.221.504.014
Ohmic resistance of primary winding at 20°C	Ω	0.,4
Ohmic resistance of secondary winding at 20°C	Ω	8500

TOP DEAD CENTRE AND RPM SENSOR

Make and type		Bosch 0.281.002.102
Sensor winding resistance at 20°C	Ω	774 ÷ 946
Distance (gap) between sensor and crankshaft pulley tooth	mm	0.8 ÷ 1.5

DETONATION SENSOR

Make	Bosch
Type	0.261.231.095

SPARK PLUGS

Make and type		CHAMPION RC8BYC
Thread on engine		M 14 x 1.25
Spark gap	mm	0.8

Introduction and technical data

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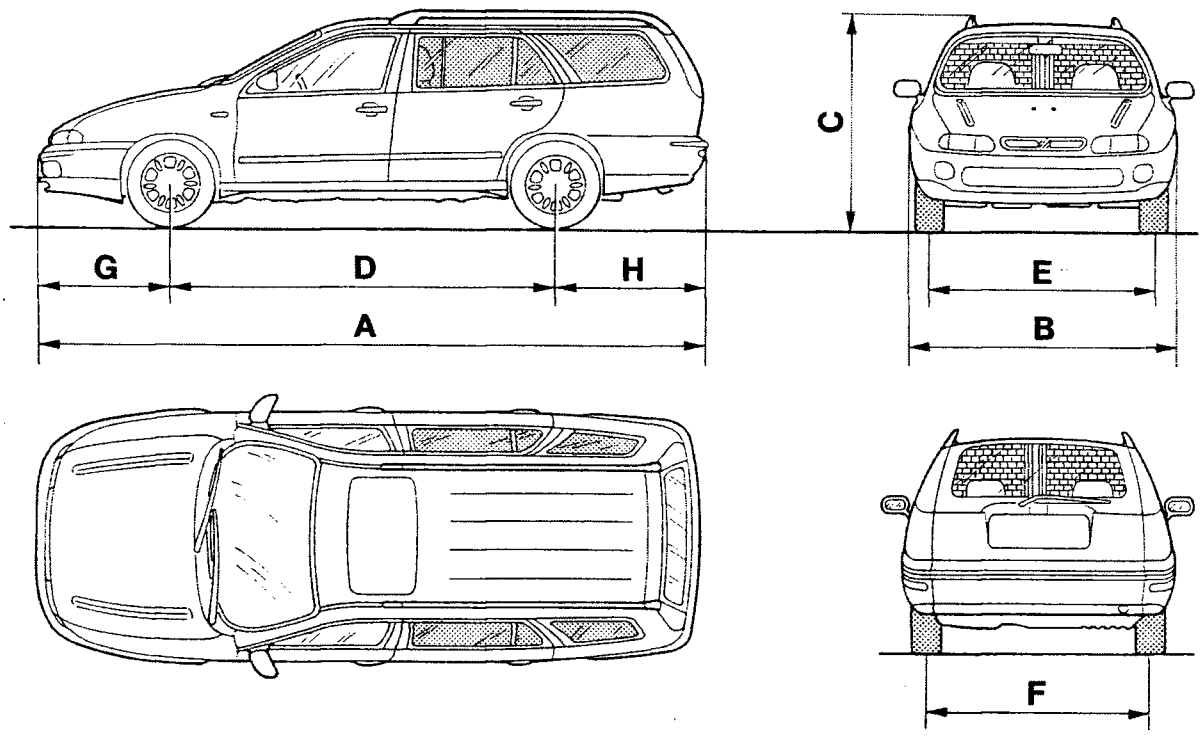
NOTE

This section gives technical data for the Fiat Marengo 2000 range equipped with a 1910 JTD EC F3 engine. For further information, see the Fiat Marea - Fiat Marea Weekend manual publication no. 506.763 and subsequent updates

	CHASSIS	ENGINE	VERSION	GEARBOX
1910 JTD	ZFA 185.000	186A6000	185CXT1A 03	☞



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- Load carrying capacity 1590 dm^3

Engine type	DIMENSIONS (mm)							
	A	B	C	D	AND	F	G	H
1910 JTD	4490	1741	1510	2540	1470	1440	884	1066

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WEIGHTS (values expressed in kg)	ENGINE TYPE	1910 JTD
Permissible loads on the axles ■		1275
	+ 500 =	1845
		1060
		1060

Performance – Fuel consumption

Speed km/h (average load)	1	36
	2	52
	3	97
	4	136
	5	186
	R	36
Fuel consumption figures as per EC directive 1999/100 (litres/100 km)		5.0

Wheels:
Tubeless tyres with radial tread, type 185/65R14-86H
Pressed steel wheel rim, type 5½J x 14" - 43

Rear suspension independent with track control arms anchored to an auxiliary crossmember. Variable rate coil springs and antiroll bar. Gas shock absorbers with low friction coefficient lower bushes.

ENGINE TYPE	1910 JTD

Coil springs

Diameter of wire		mm	13.9 ± 0.1
Number of coils			5.93
Direction of coil			clockwise
Height of spring released		mm	323
Height under a load of:	424 ± 456 daN	mm	207
The springs are divided into two categories, identifiable by a mark:			
yellow (1) for those under a load of:	440 daN	having a height of mm	> 207
green (1) for those under a load of:	440 daN	having a height of mm	⩽ 207

(1) When fitting, match springs of the same type.

Shock absorbers

Make		double acting, telesopic, gas
Open (start of damping action)	mm	321 ± 2
Closed (metal against metal)	mm	224 ± 2
Travel	mm	97

Anti-roll bar

Anti-roll bar diameter	mm	19

FRONT SUSPENSION

Anti-roll bar

Anti-roll bar diameter	mm	18

page

	CHASSIS	ENGINE	VERSION	GEARBOX
1910 JTD 100 CV	ZFA 185.000	182B9.000	185BXU1A	1 3 5 / 2 2 2

		ENGINE TYPE: 1910 JTD 100 CV
Speed km/h (medium load)	1	36
	2	62
	3	97
	4	136
	5	184
	R	36
%	Maximum climable gradient fully laden	-
Fuel consumption according to directive 1999/100/CE (litres/100 km)	Urban	7.2
	Extra-urban	4.4
	Combi	5.5
CO_2 exhaust emissions (g/km)		145

The fuel consumption figures in accordance with 1999/100 EC standards were determined during the course of homologation tests which include:
- an urban cycle which includes a cold start followed by a simulated varied urban cycle.
- an extraurban cycle which includes frequent acceleration in all gears simulating normal out of town usage of the vehicle. The speed varies between 0 and 120 km/h.
- the average combined consumption figure includes 37% of the urban cycle and 63% of the non-urban cycle.

The type of route, traffic conditions, driving style, weather conditions, trim level/equipment/accessories, presence of special equipment and the state of the vehicle in general can lead to different fuel consumption figures from those established using the above mentioned procedures.
The CO_2 exhaust emissions (in g/km) are measured during the combined average cycle.

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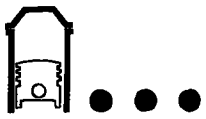
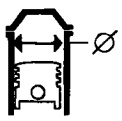
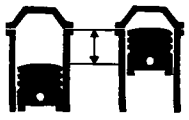
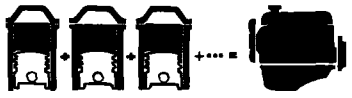
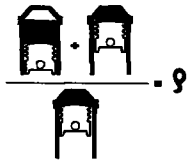
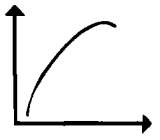
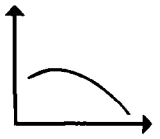
SPECIFICATIONS

			1910 JTD 100 CV
	Cycle		Diesel 4 stroke
	Timing		single overhead camshaft
	Type of fuel system		Direct injection Turbocharger + intercooler
	No. of cylinders		4 in line
	Cylinder liner (bore)	mm	82
	Stroke	mm	90.4
	Capacity	cm^3	1910
	Compression ratio		18.45 ± 0.5
 Max power CEE 		kW (bhp)	74 (100)
		rpm	4000
 Max torque CEE		daNm (kgm)	20 (20.4)
		rpm	1500

FUEL FEED SYSTEM

ENGINE MANAGEMENT SYSTEM

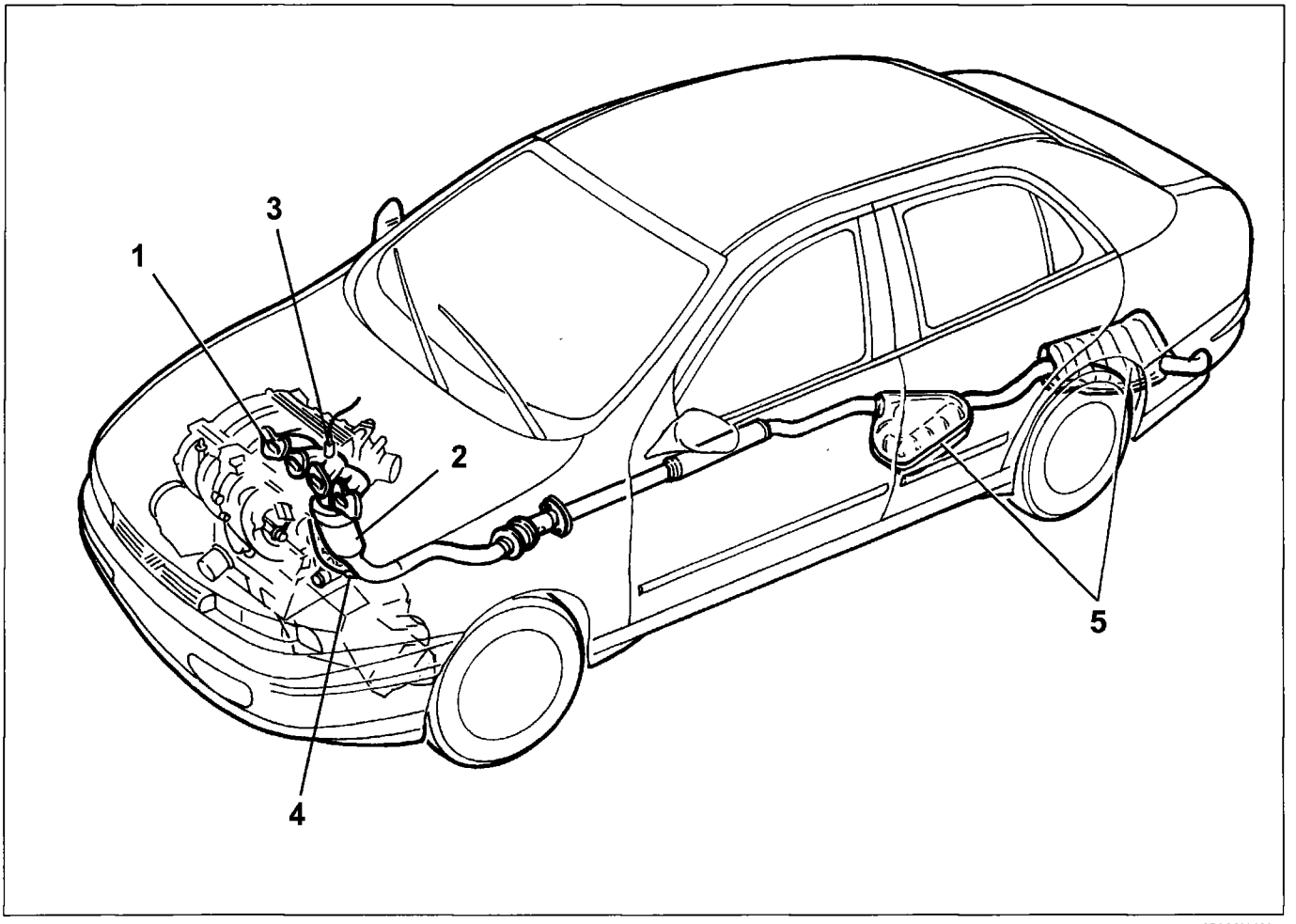
The Marea-Marea Weekend 1596 16v has a 4 cylinder in line engine, with 16 valves, 1596 cc, twin overhead camshaft and a Marelli IAW 4EF integrated electronic injection/ignition system.

The fuel system differs from the one described for the 1581 16v "99 range" version through the addition of several variants to make it compatible with the EEC Stage 3 EOBD regulations.

The main modifications to the system can be summarized as follows:

- Engine management control unit with IAW 4EF
- Catalytic converter near the exhaust manifold to take maximum advantage of the heat of the gases.
- Two Lambda senors, one upstream (front) and one downstream (rear) which check the quality of the exhaust gases and the operation of the catalyzer.
- Adoption of a timing sensor on the inlet side timing pulley.

DIAGRAM SHOWING ENGINE EXHAUST ASSEMBLY



4F001UJ01

Key

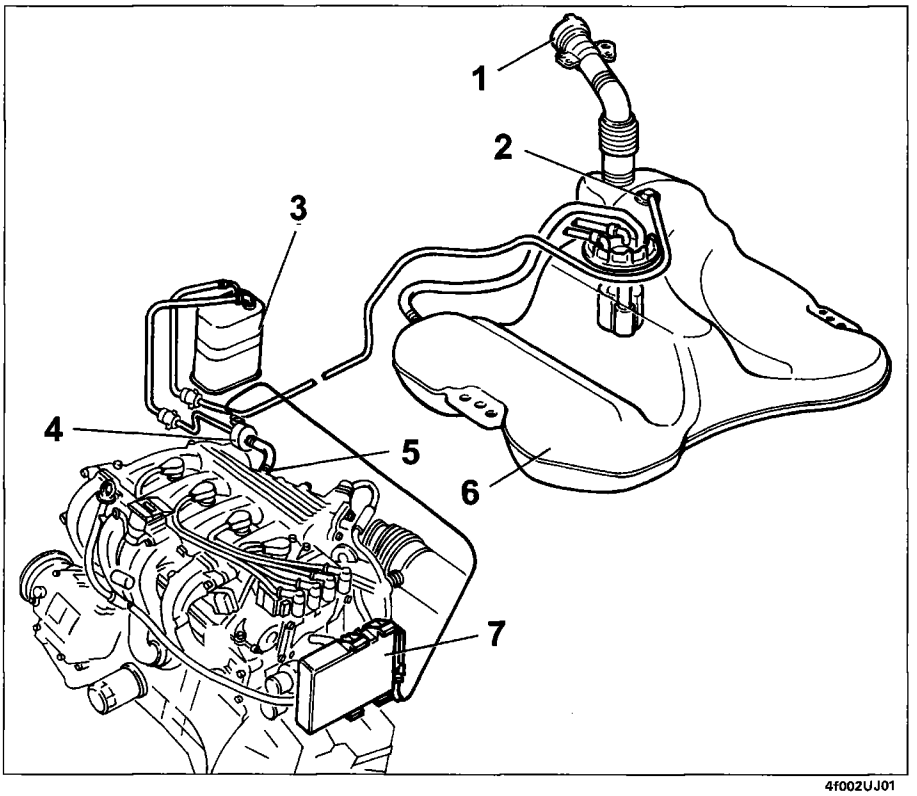
1. Exhaust manifold
2. Catalytic converter
3. Front Lambda sensor
4. Rear Lambda sensor
5. Silencers

10.

FUEL ANTI-EVAPORATION SYSTEM

The fuel anti-evaporation system has several improvements, compared with previous versions, aimed at sealing the fuel vapours on the outside.
In particular, the following measures have been adopted:
- multi-purpose valve on the tank to prevent leaks.
- New anti-evaporation solenoid valve and the adoption of rapid attachment connectors for the anti-evaporation system pipes.
- Plug on the fuel filler with attachment cable.

For further information on the fuel system, refer to publication: 507137.



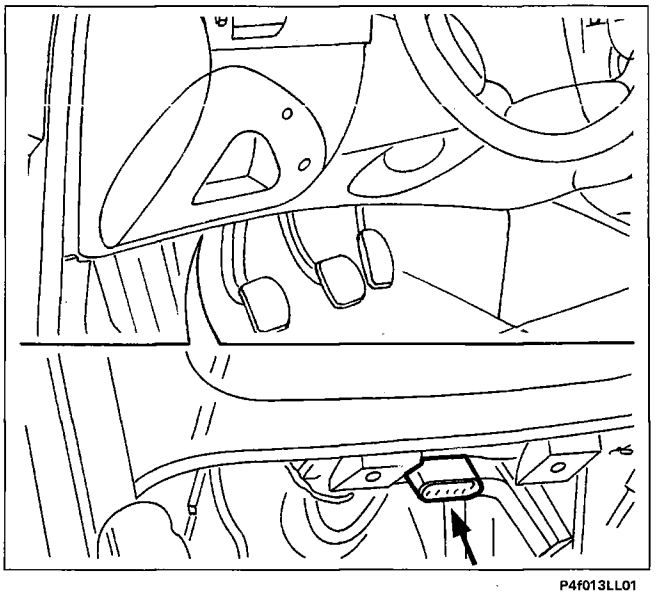
4f002UJ01

Key

1. Filler
2. Multi-purpose valve
3. Active charcoal filter
4. Anti-evaporation solenoid valve
5. Fuel vapour intake on inlet manifold
6. Fuel tank
7. Engine management electronic control unit

LOCATION OF DIAGNOSTIC SOCKET

The diagnostic socket for the analysis of the engine management system is located under the junction unit in the dashboard. This socket also makes the connection with the diagnostic equipment (Examiner or other instruments) for the other electronic control units on the vehicle.
In effect, it is a "standardized" 16-way diagnostic socket which can be connected to the diagnostic equipment using the "MPX97" adaptor.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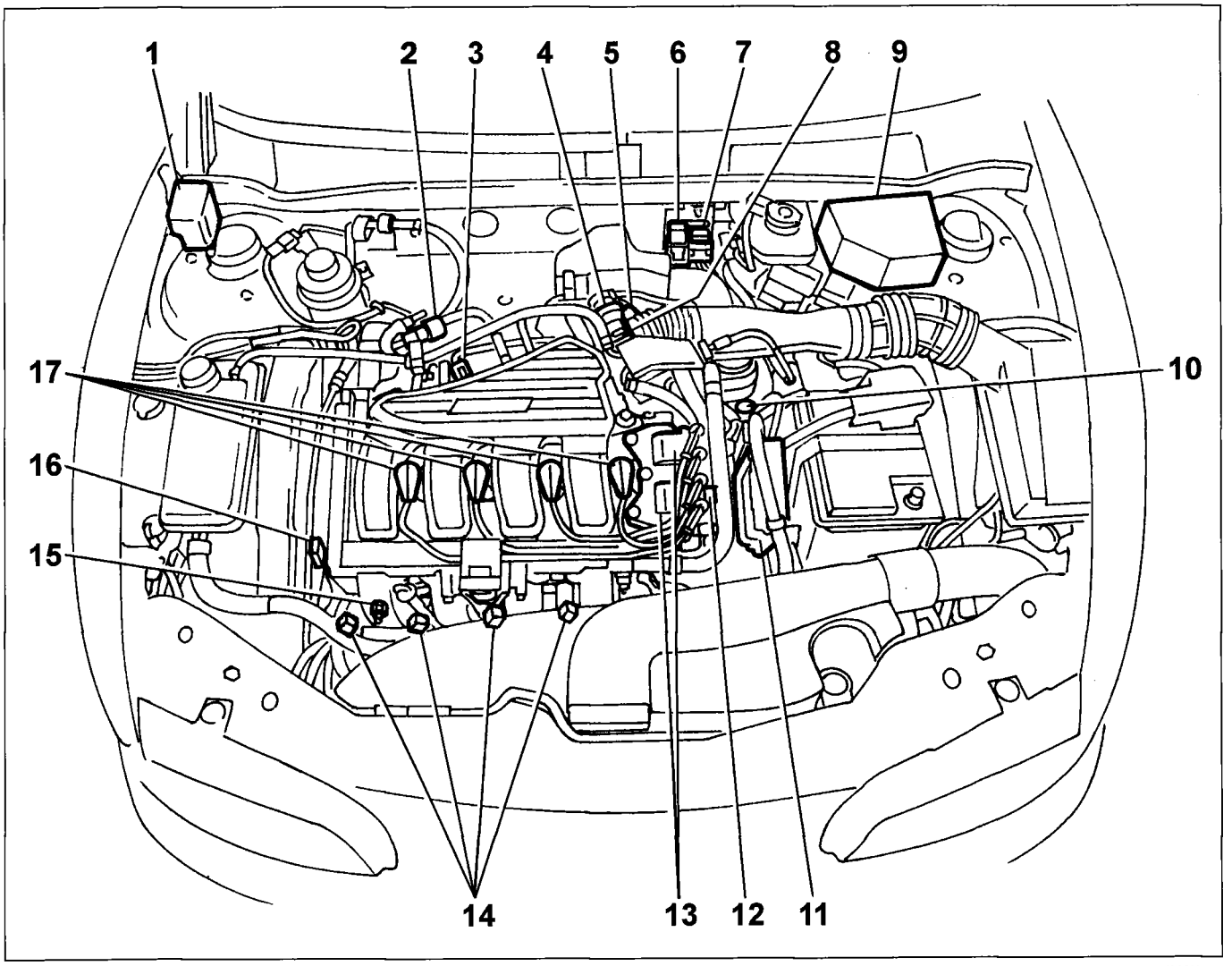
LOCATION OF INJECTION/IGNITION SYSTEM COMPONENTS IN THE ENGINE COMPARTMENT

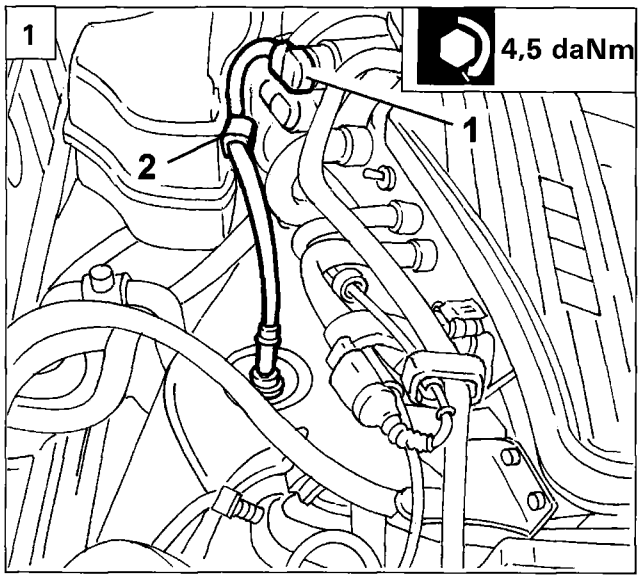


4f003UJ01

Key

1. Active charcoal filter
2. Anti-evaporation solenoid valve
3. Intake air pressure and temperature sensor
4. Engine idle adjustment stepping motor on throttle casing
5. Throttle valve position sensor on throttle casing
6. System relay feed
7. Protective fuse
8. Throttle case
9. Maxi-fuse protecting I.E. system (EFI)
10. Speedometer sensor
11. Engine management control unit
12. Coolant temperature sensor
13. Ignition coil
14. Injectors
15. Rpm and TDC sensor
16. Timing sensor
17. Spark plugs

10.



4F004UJ01

FRONT LAMBDA SENSOR

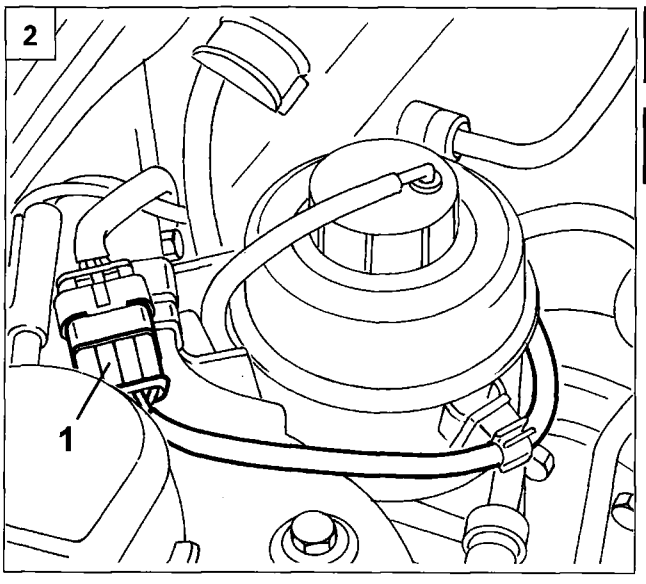
Removing

- Disconnect the negative battery terminal.

1. Disconect the electrical conection (1a), release the wiring from the retaining band (2) and disconnect the Lambda sensor (3).

Refitting

- Position the sensor and tighten it to torque avoiding forcing the component which would damage it irreparably.
  Apply special grease (e.g. Bosch 5 964080112) to the threaded part of the sensor.



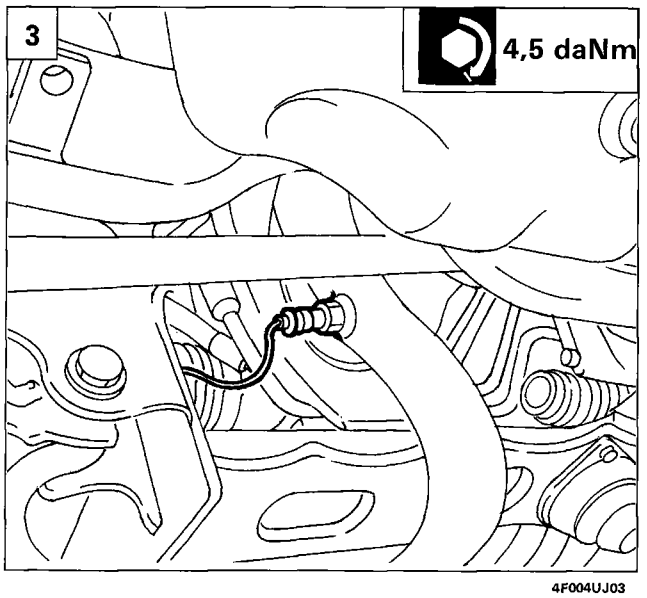
4F004UJ02

REAR LAMBDA SENSOR

Removing

- Position the vehicle on a lift.
- Disconnect the negative battery terminal.

2. Disconnect the electrical connection (1) and release the wiring from the retaining bands.

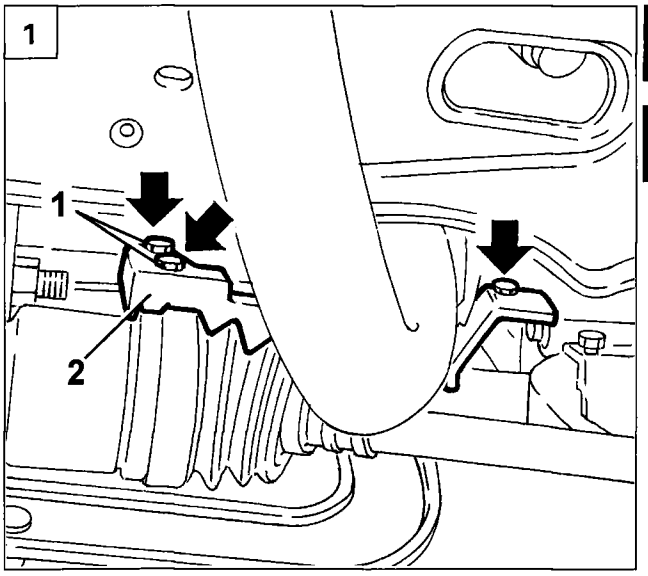


4F004UJ03

3. Raise the vehicle and disconnect the Lambda sensor.

Refitting

- Position the sensor and tighten it to torque avoiding force on the component which would damage it irreparably.
  Apply special grease (e.g. Bosch 5 964080112) to the threaded part of the sensor.
- Connect the connector and renew the Lambda senor cable fastenings.



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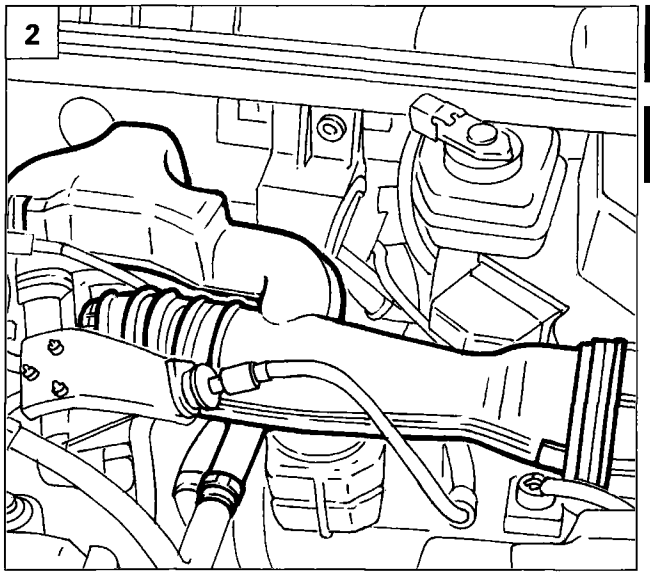


4F005UJ02

CATALYTIC CONVERTER HEAT SHIELD

Removing-refitting

- Position the vehicle on a lift and disconnect the negative battery terminal.

1. Raise the vehicle and undo the bolts (1) fixing the heat shield for the driveshaft boot, then detach the heat shield (2); undo the other lower bolt for the catalyzer heat shield.

- Lower the vehicle and detach the front Lambda sensor as described in the relvant paragraph.

2. Loosen the bands shown and detach the air hose from the filter to the throttle casing, complete with resonator.

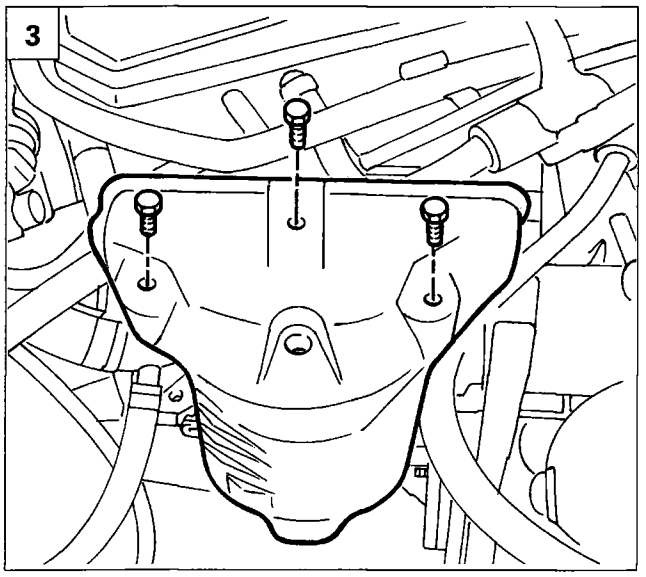
3. Undo the upper bolts fixing the heat shield and detach it.

CATALYTIC CONVERTER

Removing-refitting

- Position the vehicle on a lift and disconnect the negative battery terminal.
- Disconnect the front Lambda senor as described in the relevant paragraph.
- Detach the catalytic converter heat shield as described in the relevant paragraph.

4. Undo the nuts fixing the catalytic converter to the exhaust manifold.



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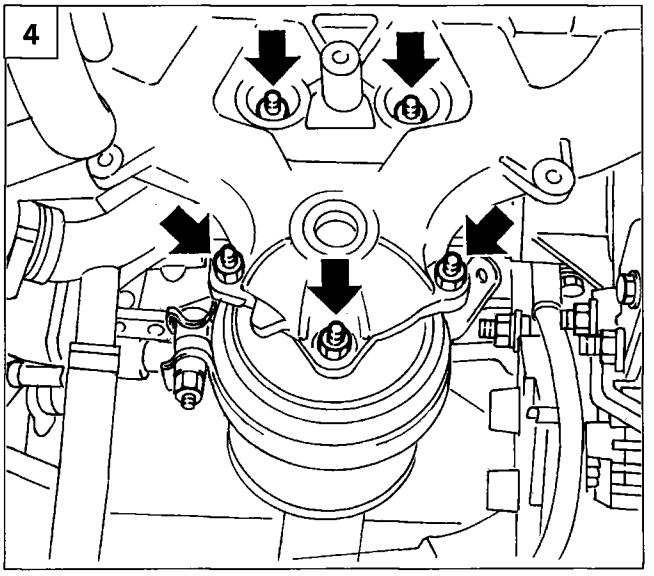

4F005UJ04

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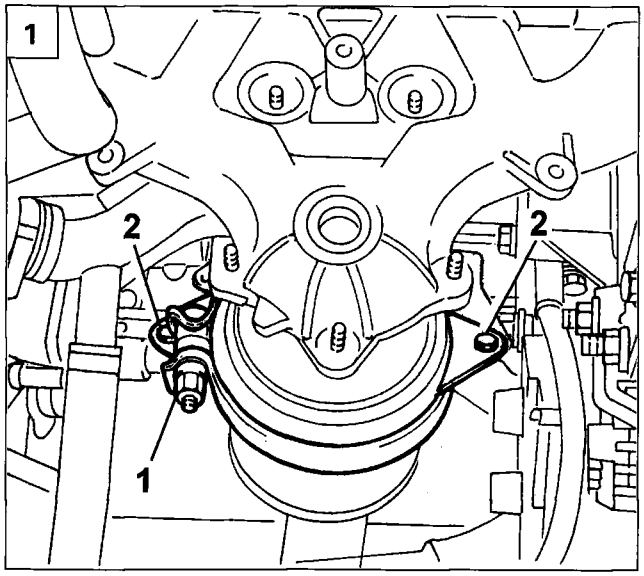


4F006UJ01

1. Loosen the band securing the catalyzer acting on the bolt (1) and undo the bolts (2) fixing the band to the bolts (2) fixing the band to the bracket.

2. Disconnect the connector for the rear Lambda sensor and release the cable from the retaining bands along the routing.

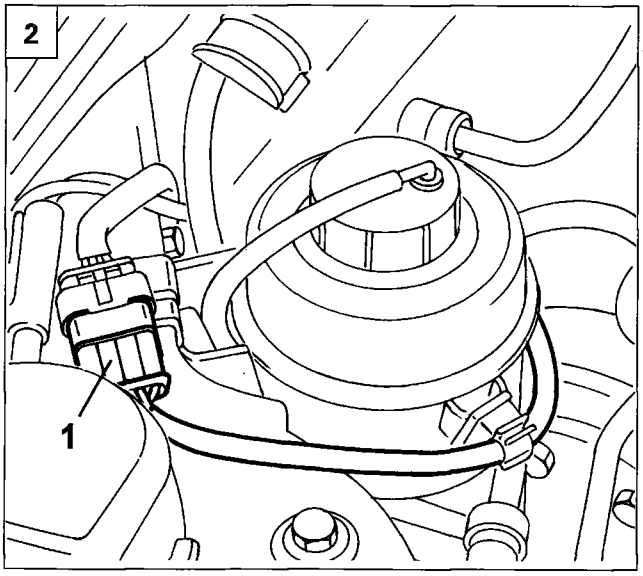
3. Raise the vehicle, undo the bolts fixing the catalytic converter to the rear exhaust pipe and detach the converter, complete with rear Lambda sensor.

EXHAUST MANIFOLD

Removing-Refitting

- Position the vehicle on a lift, disconnect the negative battery terminal and disconnect the following components, as described in the relevant paragraphs.
- Front Lambda sensor
- Catalytic converter heat shield
- Catalytic converter.

4. Remove the protective cover for the power assisted steering pump drive belt.



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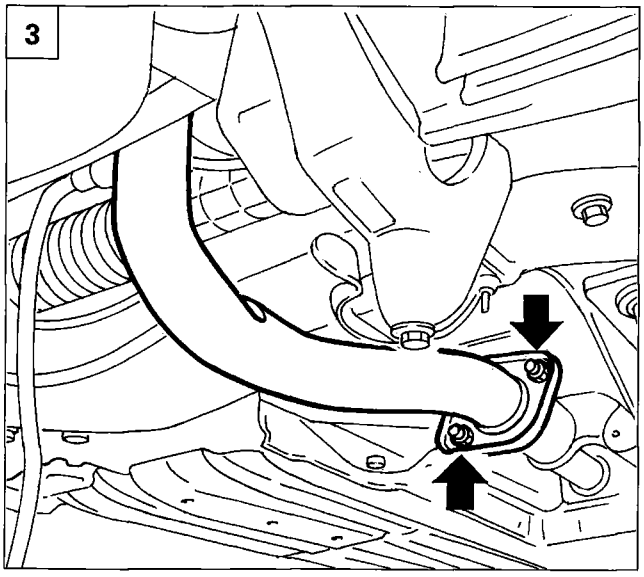

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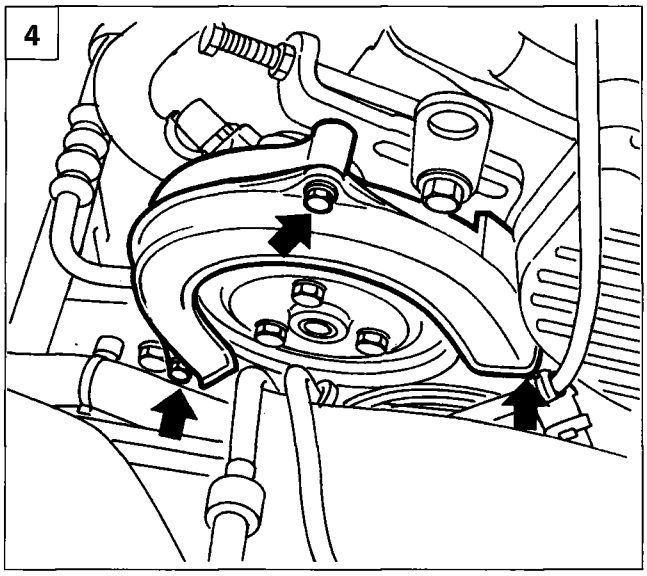

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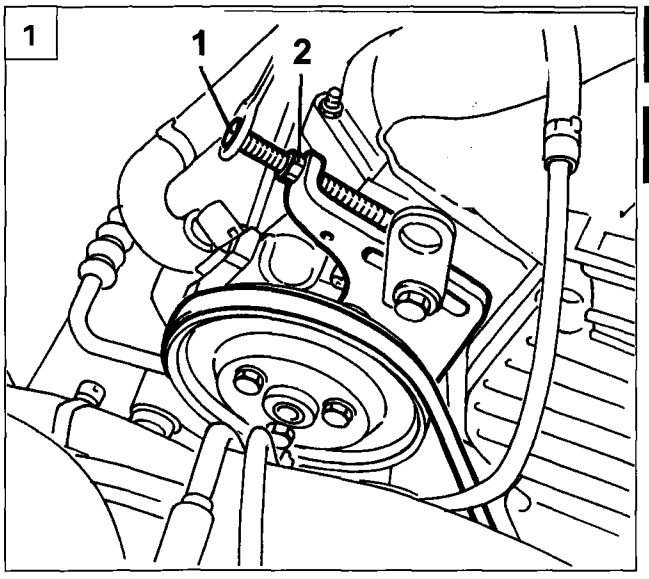

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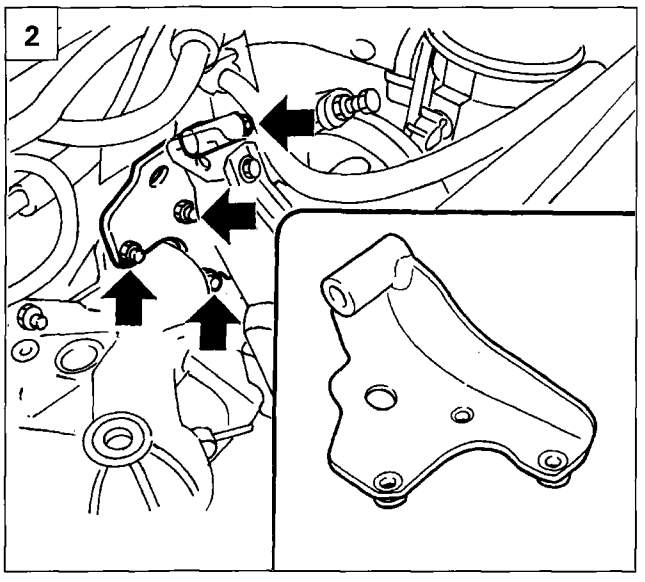

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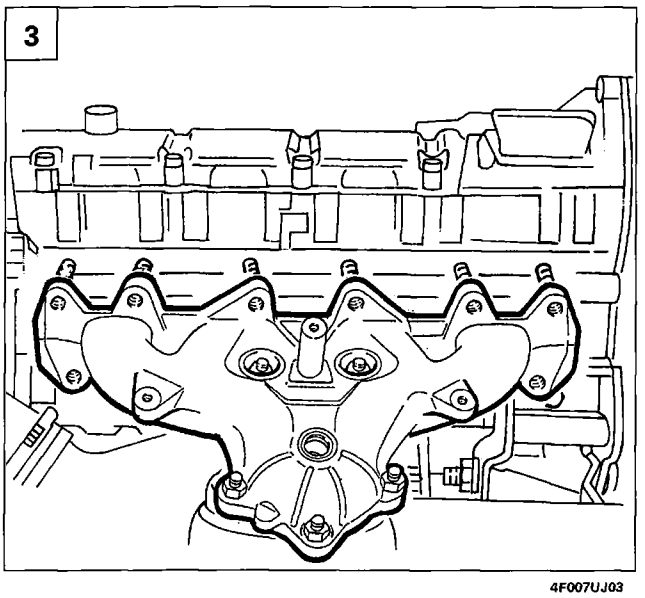


4F007UJ03

1. Loosen the belt tension using the lock nut (2) and the adjustment screw (1); then release the belt from the pulley.
2. Undo the bolts fixing the bracket for the power assisted steering pump mounting and detach the pump.
3. Undo the nuts fixing the exhaust manifold to the cylinder head and detach the manifold.

- To refit, reverse the order of the operations carried out for the removal; tension the power assisted steering pump drive belt, using the adjustment screw; use tool 189576200 to check that the tension is between 32 and 45 daN.

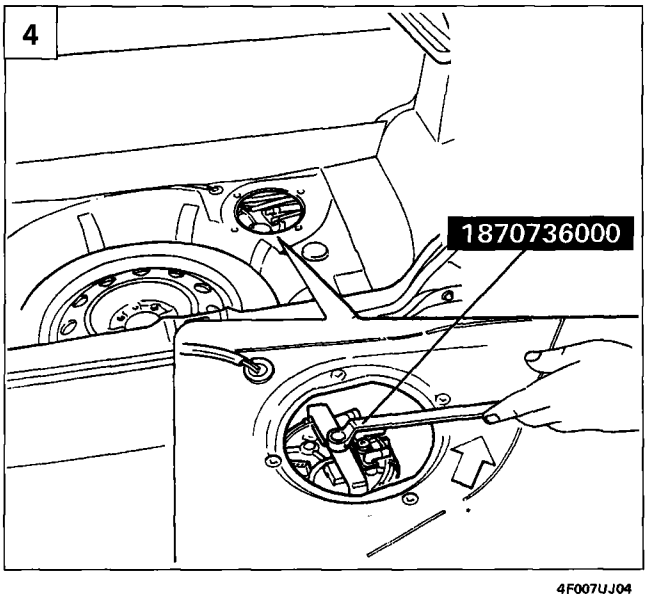
ELECTRIC FUEL PUMP WITH LEVEL SENDER UNIT

Removing-refitting

- Disconnect the negative battery terminal.
- Lift up the lining in the luggage compartment and remove the fuel pup protective cover.
- Disconnect the electrical connection for the electric pump assembly and the fuel supply and breather pipes.

4. Undo the ring nut fixing the electric fuel pump to the tank using tool 1870736000. The gasket on the tank housing should be replaced each time the pump drip tray is removed-refitted.

NOTE *The position of the fuel pump is fixed and is established by a reference in the housing in the tank which sould correspond to the projection on the pump drip tray.*



4F007UJ04

Page

FUEL FEED SYSTEM

ENGINE MANAGEMENT SYSTEM

Foreword

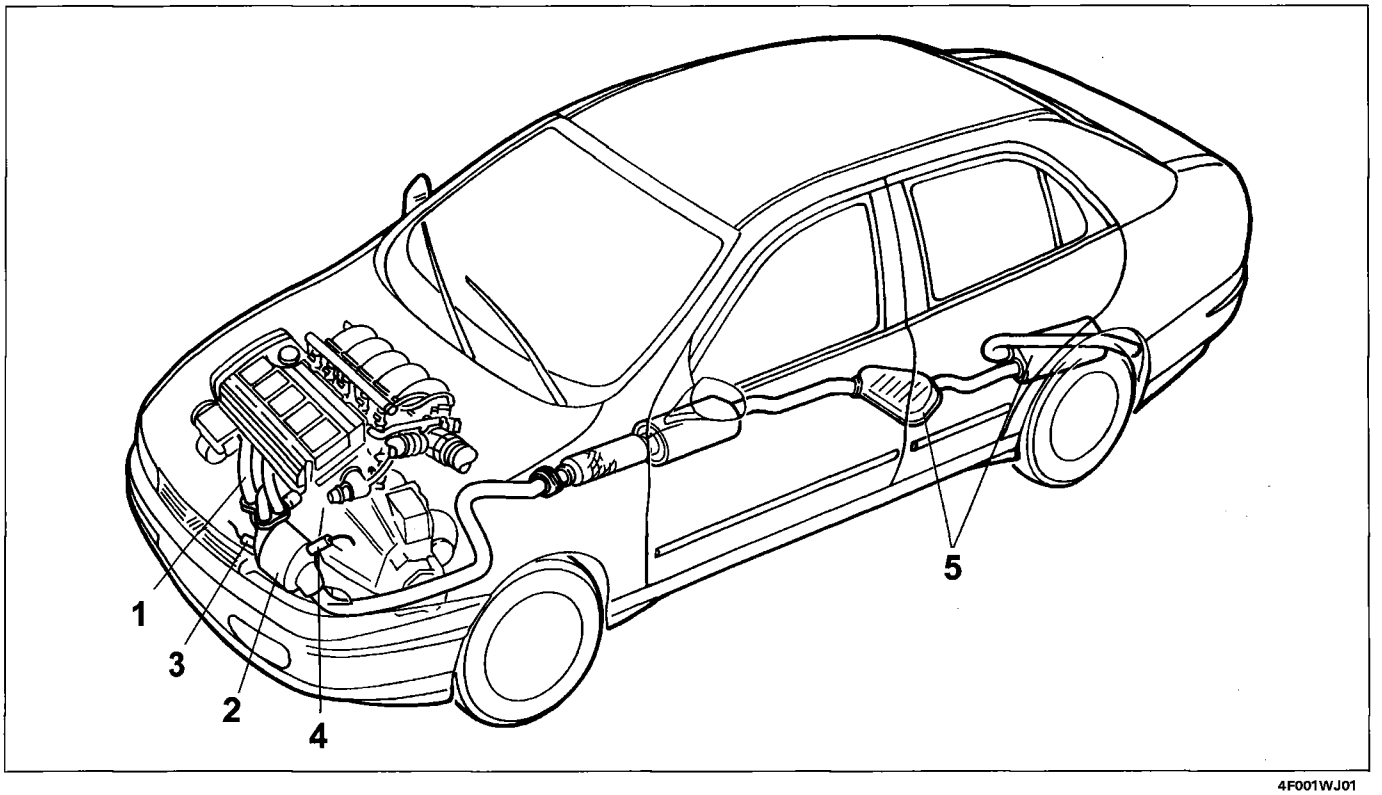
The Marea-Marea Weekend 1998 20v is equipped with a 5 cylinder in line engine with 20 valves, 1998 cc, twin overhead camshaft and a Bosch ME3.1 integrated electronic injection/ignition system.

The fuel system differs from the one described for the 1998 20v "99 range" version through the addition of several variants to make it compatible with the **EEC** Stage 3 **EOBD** regulations.

The main modifications to the system can be summarized as follows:
- Catalytic converter near the exhaust manifold to take maximum advantage of the heat of the gases.
- Two Lambda sensors, one upstream (front) and one downstream (rear) which check the quality of the exhaust gases and the operation of the catalyzer.
- Adoption of an accelerometre sensor on the right shock absorber turret, used to distinguish between engine torque variations doe to the uneveness of the road surface and those due to failed ignition in the combustion chamber (misfire).
- Adoption of a timing sensor on the inlet side timing pulley.
- Multi-purpose valve on the tank to prevent leaks.
- Adoption of raipd attachment connectors for the anti-evaporation system pipes.
- Cap on the fuel filler with an attachment cable.

For further information on the fuel system, refer to publication 507137.

DIAGRAM SHOWING ENGINE EXHAUST ASSEMBLY



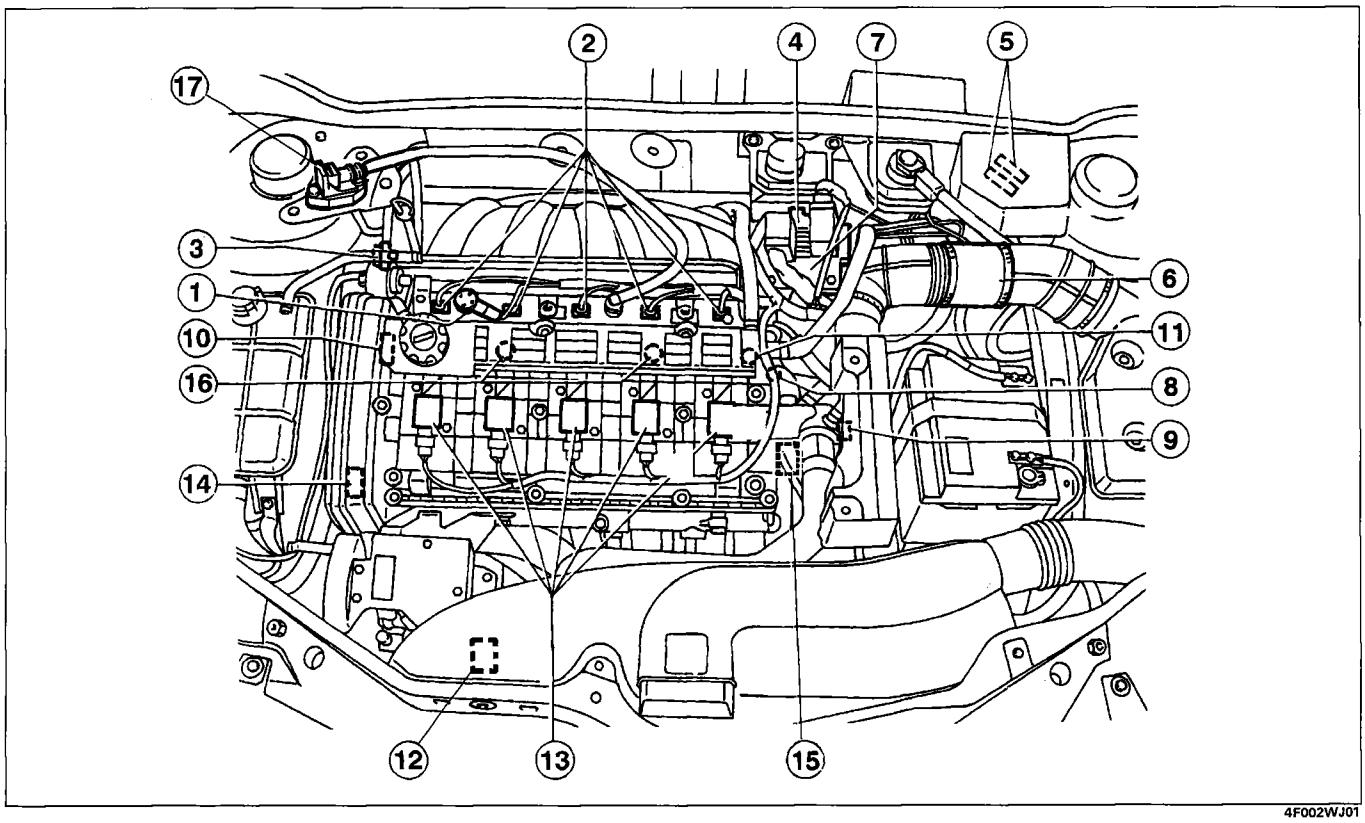
4F001WJ01

Key

1. Exhaust manifold
2. Catalytic converter
3. Front Lambda sensor
4. **R**ear Lambda sensor
5. **S**ilencers

10.

LOCATION OF INJECTION/IGNITION SYSTEM COMPONENTS



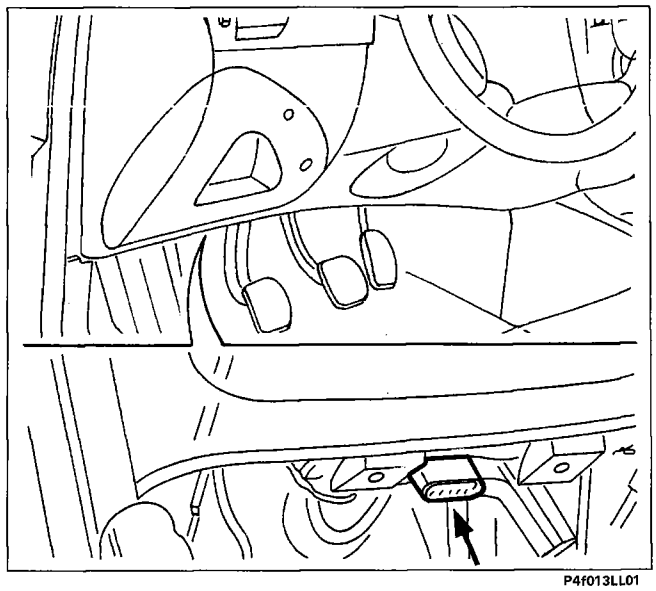
4F002WJ01

Key

1. Variable valve timing control solenoid
2. Injectors
3. Fuel vapour cut-out solenoid valve
4. Injection/ignition control unit
5. General system protective fuse
6. Flow meter/air temperature sensor
7. Motorized throttle body
8. Engine coolant temperature sensor
9. Vehicle speed sensor
10. Variable geometry manifold actuator solenoid valve
11. RPM sensor
12. Front Lambda sensor connector
13. Ignition coil
14. Timing sensor
15. Rear Lambda sensor connector
16. Detonation sensors
17. Accelerometer

LOCATION OF DIAGNOSTIC SOCKET

The diagnostic socket for the analysis of the engine management system is located under the junction unit in the dashboard. This socket also makes a connection with the diagnostic equipment (Examiner or other instruments) for the other electronic control units on the vehicle.
It is a "standardized" 16-way diagnostic socket which can be connected to the diagnostic equipment using the "MPX97" adaptor.



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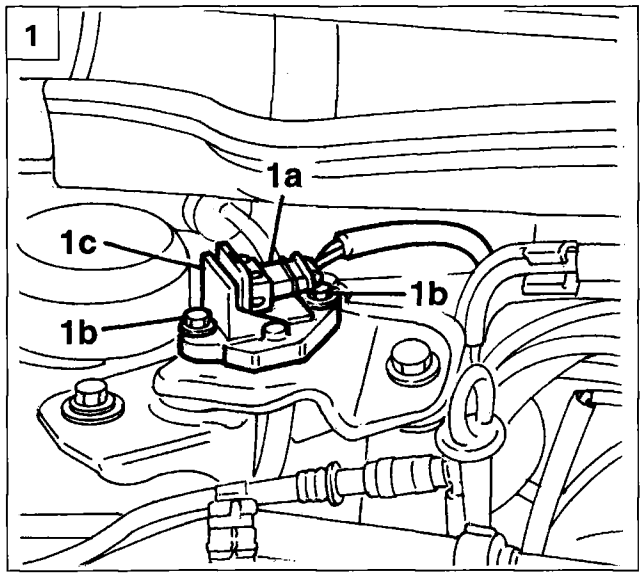


4F003WJ01

REMOVING-REFITTING ACCELEROMETER

Removing

- Disconnect the negative battery terminal.

1. Disconnect the electrical connector (1a), undo the fixing bolts (1b) and remove the device (1c).

Refitting

- Reverse the order of the operations carried out for the removal.

REMOVING-REFITTING FRONT LAMBDA SENSOR

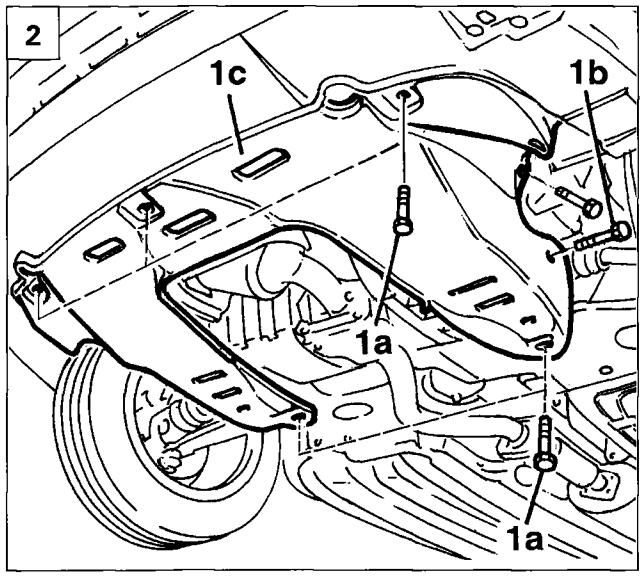
Removing

- Position the vehicle on a lift.
- Disconnect the negative battery terminal.
- Raise the lift.

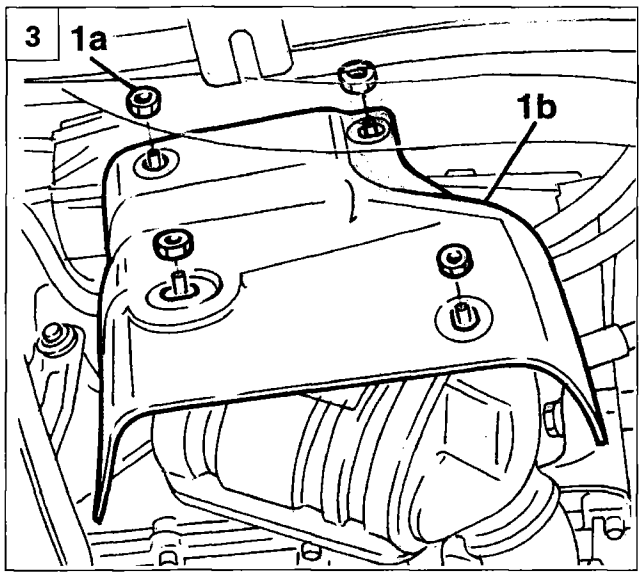
2. Undo the lower fixing bolts (1a) and the side fixing bolts (1b) and remove the shield (1c) under the engine.

3. Undo the fixing nuts (1a) and remove the lower section (1b) of the heat shield.

4. Disconnect the electrical connector (1a) and undo the front Lambda sensor (1b).



4F003WJ02



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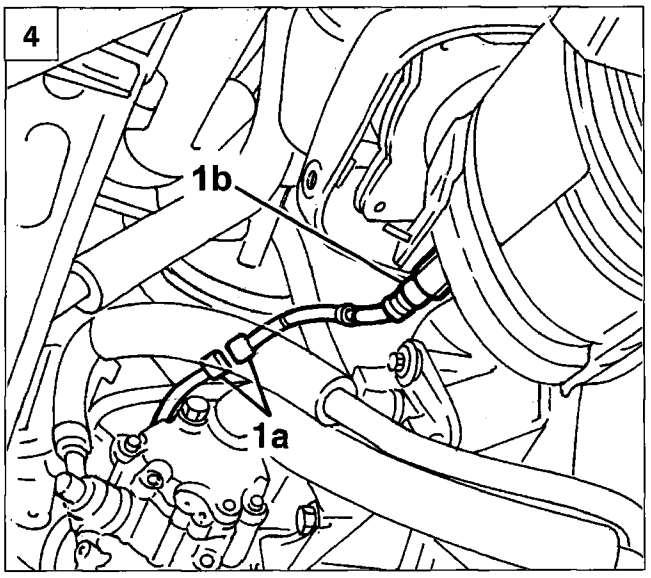

4F003WJ04

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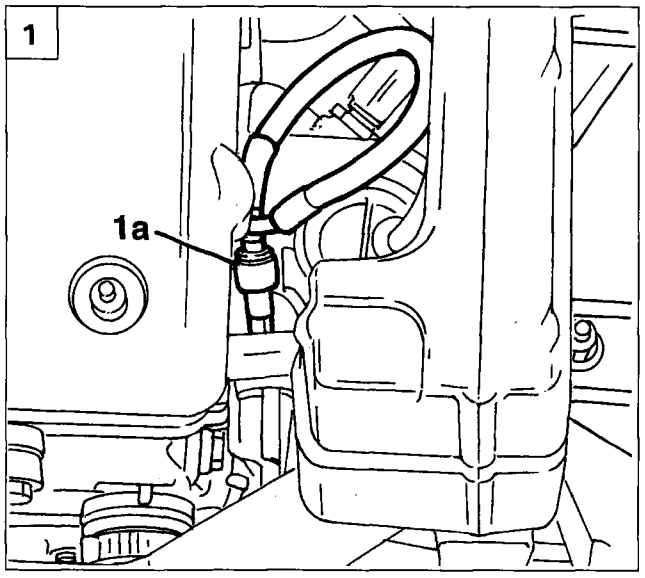


4F004WJ01

- Release the electrical wiring for the front Lambda sensor from the retaining bands and remove the sensor.

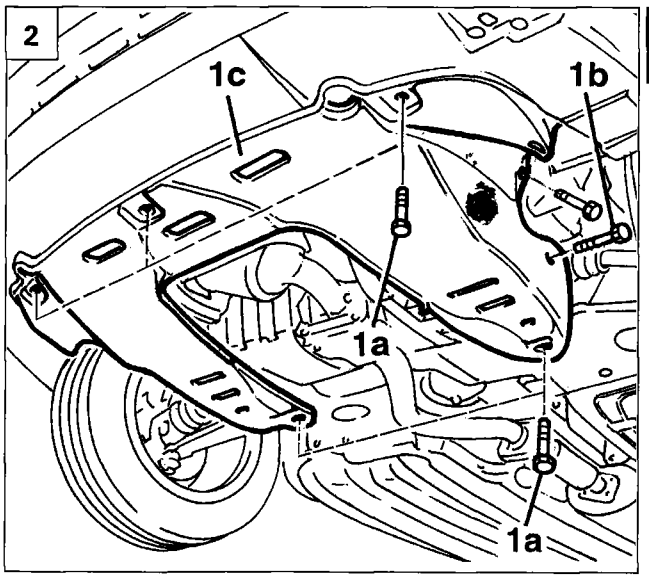
Refitting

NOTE *Apply special grease (e.g. Bosch VS 14016- FT) to the threaded part ot the sensor*

- Place the Lambda sensor in position and tighten to torque.

Lambda sensor : 4.5 daNm

- Reverse the order of the operations described for the removal.



4F004WJ02

REMOVING-REFITTING REAR LAMBDA SENSOR

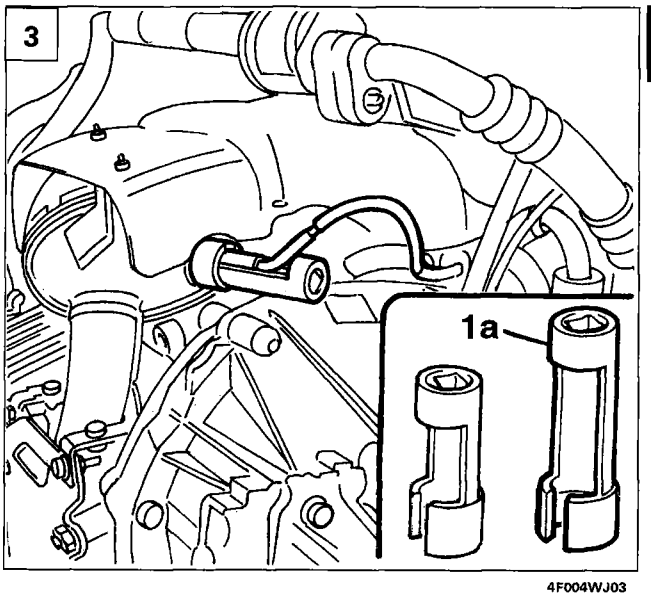
Removing

- Position the vehicle on a lift.
- Disconnect the negative battery terminal.

1. Disconnect the electrical connector (1a) and release the electrical wiring from the retaining bands.

- Raise the lift.

2. Undo the lower fixing bolts (1a) and the side fixing bolts (1b) and remove the shield (1c) under the engine.



4F004WJ03

3. Use tool USAG 875 (1a), shown in the diagram or a similar tool to undo the rear Lambda sensor.

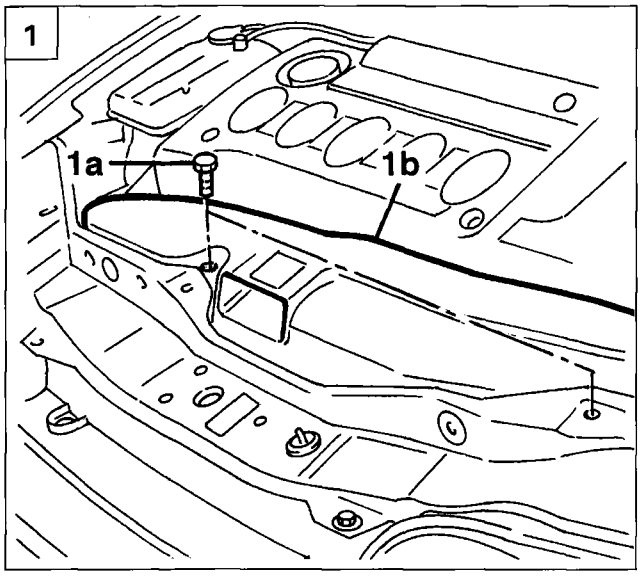
Refitting

NOTE *Apply special grease (e.g. Bosch VS 14016- FT) to the threaded part of the sensor.*

- Place the Lambda sensor in position and tighten to torque.

Lambda sensor : 4.5 daNm

- Reverse the order of the operations carried out for the removal.



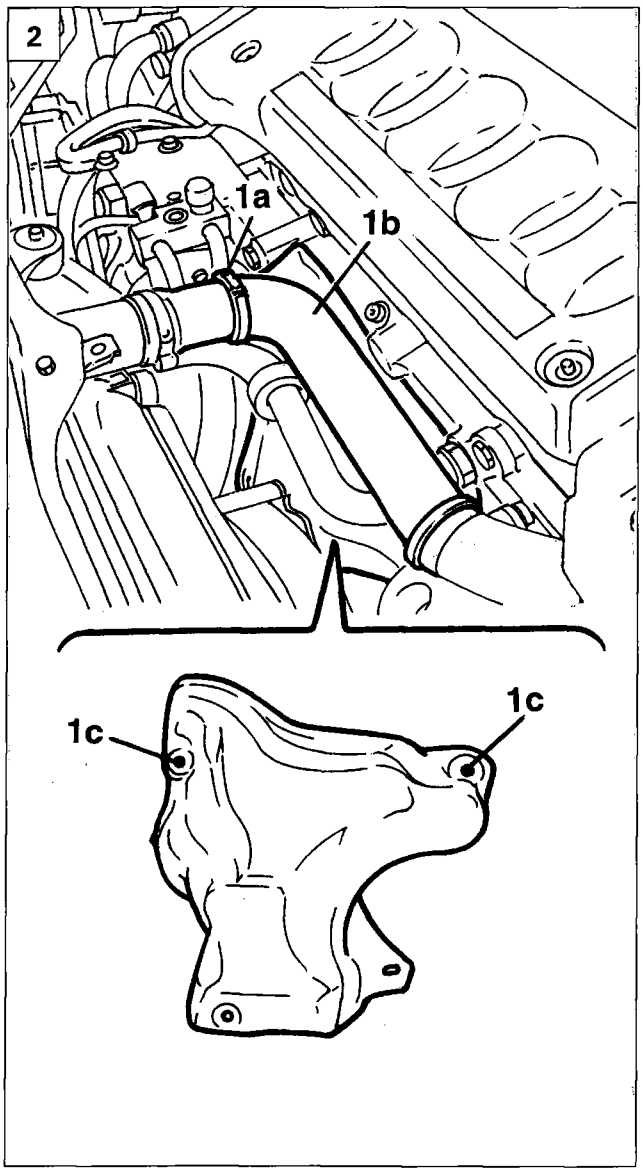
4F005WJ01

REMOVING-REFITTING HEAT SHIELD

Removing

- Position the vehicle on a lift.
- Disconnect the negative battery terminal.

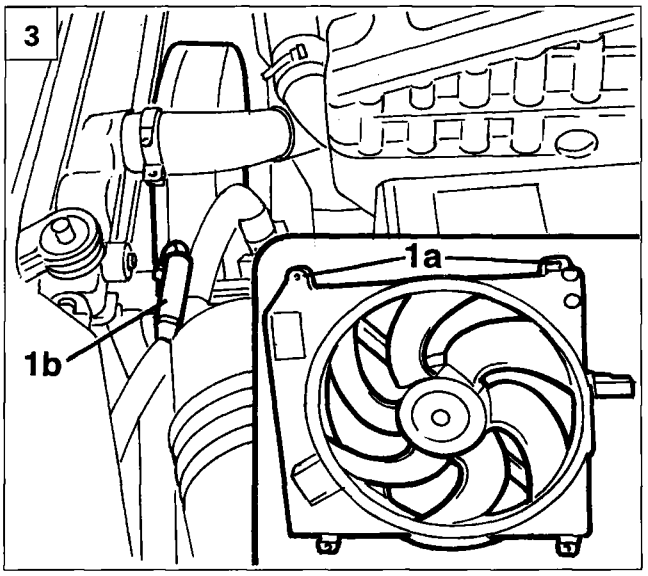
1. Undo the fixing bolts (1a) and remove the air duct (1b).



4F005WJ02

2. Open the retaining band (1a) and place the engine coolant return pipe to the radiator (1b) at the side in order to undo the bolts (1c) fixing the upper section of the heat shield.

3. Undo the upper bolts (1a) fixing the fan and disconnect the electrical connector (1b).



4F005WJ03

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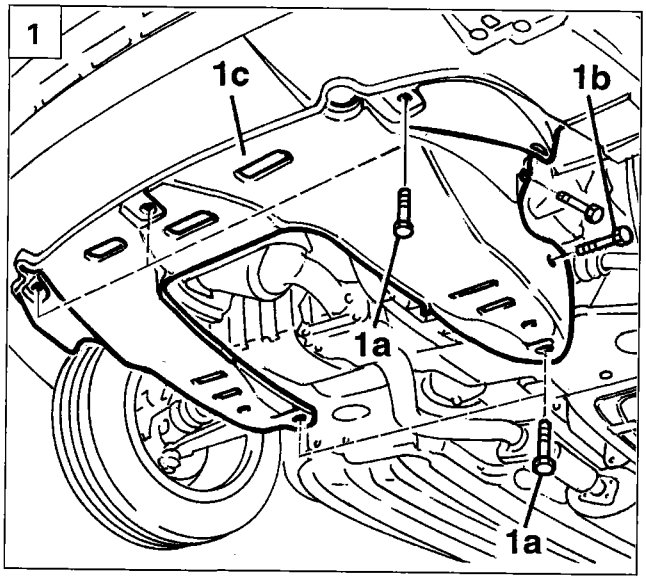
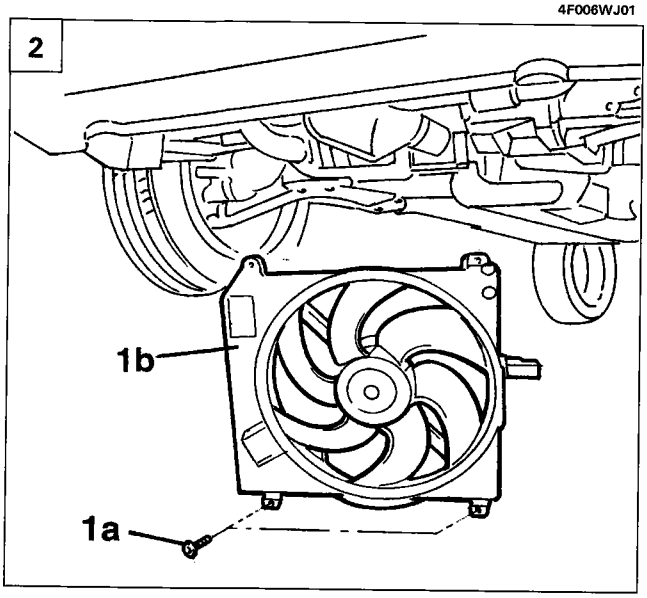


4F006WJ01

- Raise the lift.

1. Undo the upper fixing bolts (1a) and the side fixing bolts (1b) and remove the shield (1c) under the engine.

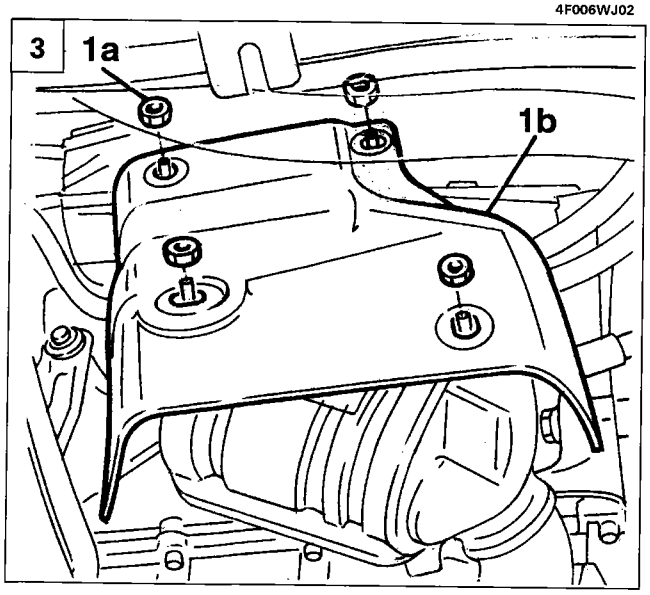


4F006WJ02

2. Undo the lower bolts (1a) and remove the fan (1b).

3. Undo the fixing nuts (1a) and remove the lower part (1b) of the heat shield.

4. Remove the upper part (1a) of the heat shield.



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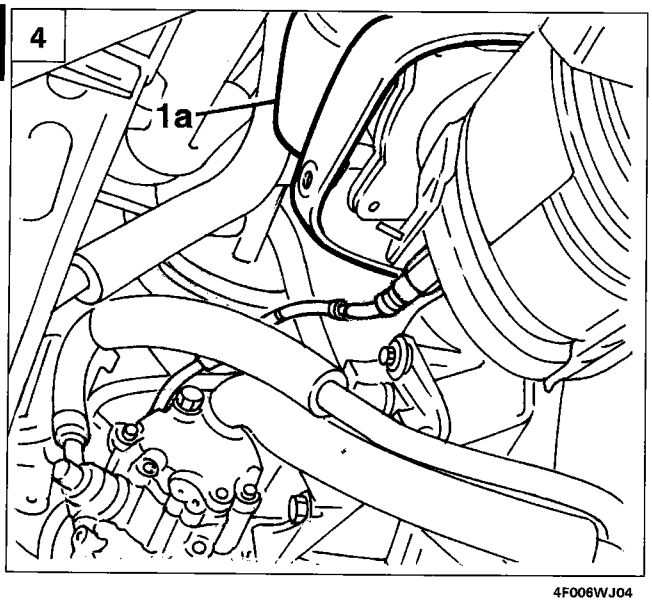

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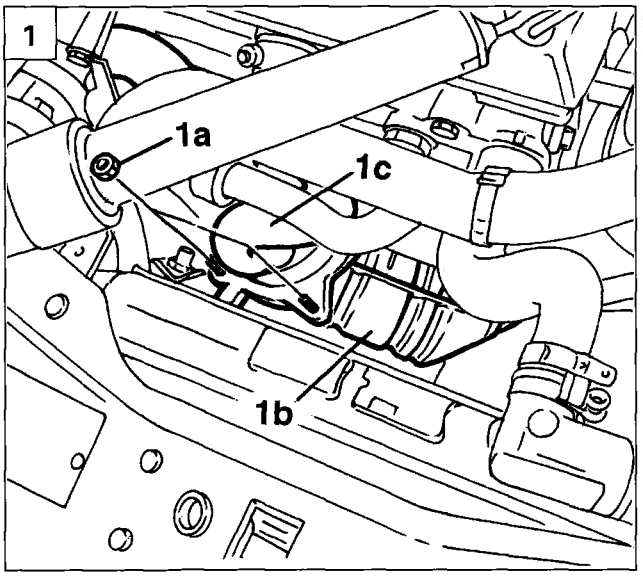

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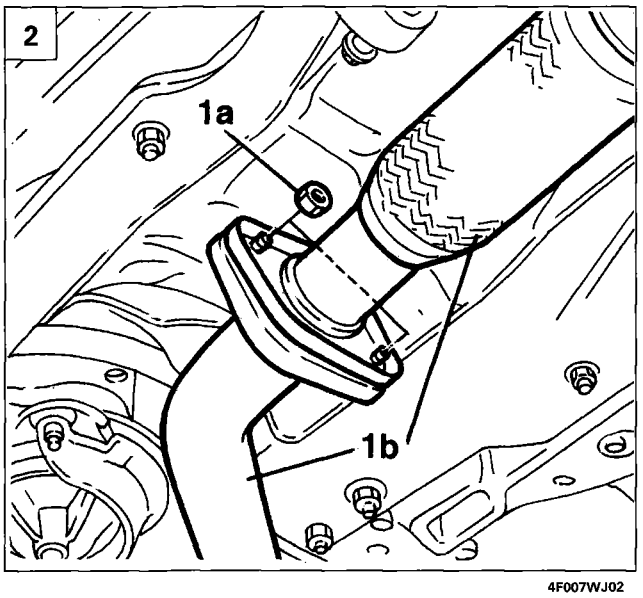
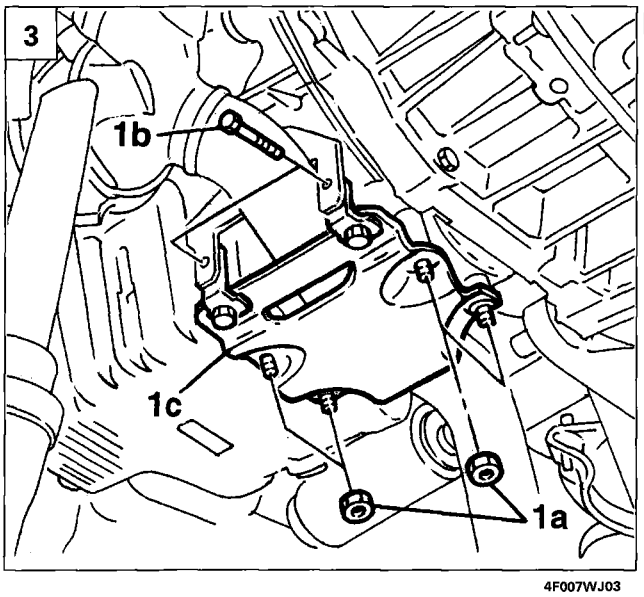


4F007WJ02



4F007WJ03

REMOVING-REFITTING CATALYTIC CONVERTER

Removing

- Position the vehicle on a lift.
- Disconnect the negative battery terminal.
- Remove: the upper and lower heat shields, the front and rear Lambda sensors, carrying out the operations described in the relevant chapters.
- Lower the lift.

1. Undo the fixing nuts (1a) and separate the catalytic converter (1b) from the exhaust manifold (1c).

Nuts 1a: 3.2 daNm

- Raise the lift.

2. Undo the fixing nuts (1a) and separate the exhaust pipe (1b).

Nuts 1a: 4.2 daNm

3. Undo the nuts (1a) and the bolts (1b) and remove the bracket (1c).

Nuts 1a: 2.5 daNm

Bolts 1b: 2.5 daNm

- Remove the catalytic converter.

Refitting

- Reverse the order of the operations carried out for the removal.

FUEL SYSTEM

INTRODUCTION

Marea and Marea Weekend 1.9 JTD cars are equipped with a 4 cylinder in line, 1910 cc turbodiesel engine with two valves per cylinder, an overhead camshaft, turbocharger and intercooler and electronic injection.

The fuel system ensures correct engine operation and can be divided into the following subsystems:

- Fuel feed circuit with common rail injection;
- air feed circuit;
- exhaust circuit;
- blow by vapour recirculation circuit;
- Exhaust Gas Recirculation (EGR) circuit

Operation of the various circuits making up the fuel system is optimised by an electronic control system managed by a special control unit.

The main feature of the fuel system is common rail fuel injection. Common rail is a higher pressure electronic injection system for fast direct injection diesel engines.

The main features of the common rail system are as follows:

- availability of high injection pressures (up to 1350 bars);
- possibility of modulating these pressures (from a minimum of 150 bars to a maximum of 1350 bars) independently of engine speed (rpm) and engine load;
- ability to operate at high engine speeds (up to 6000 rpm);
- precise injection control (injection advance and duration);
- reduced fuel consumption;
- reduced emissions.

FUEL SYSTEM MANAGEMENT STRATEGIES

The management program (software) is stored inside the control unit memory and consists of a series of strategies, each of which manages a precise system control function.

Through the use of information providd by the various sensors (input), each strategy processes a set of parameters based on data stored in special control unit memory areas. It then controls system actuators (output), i.e. the devices that allow the engine to operate.

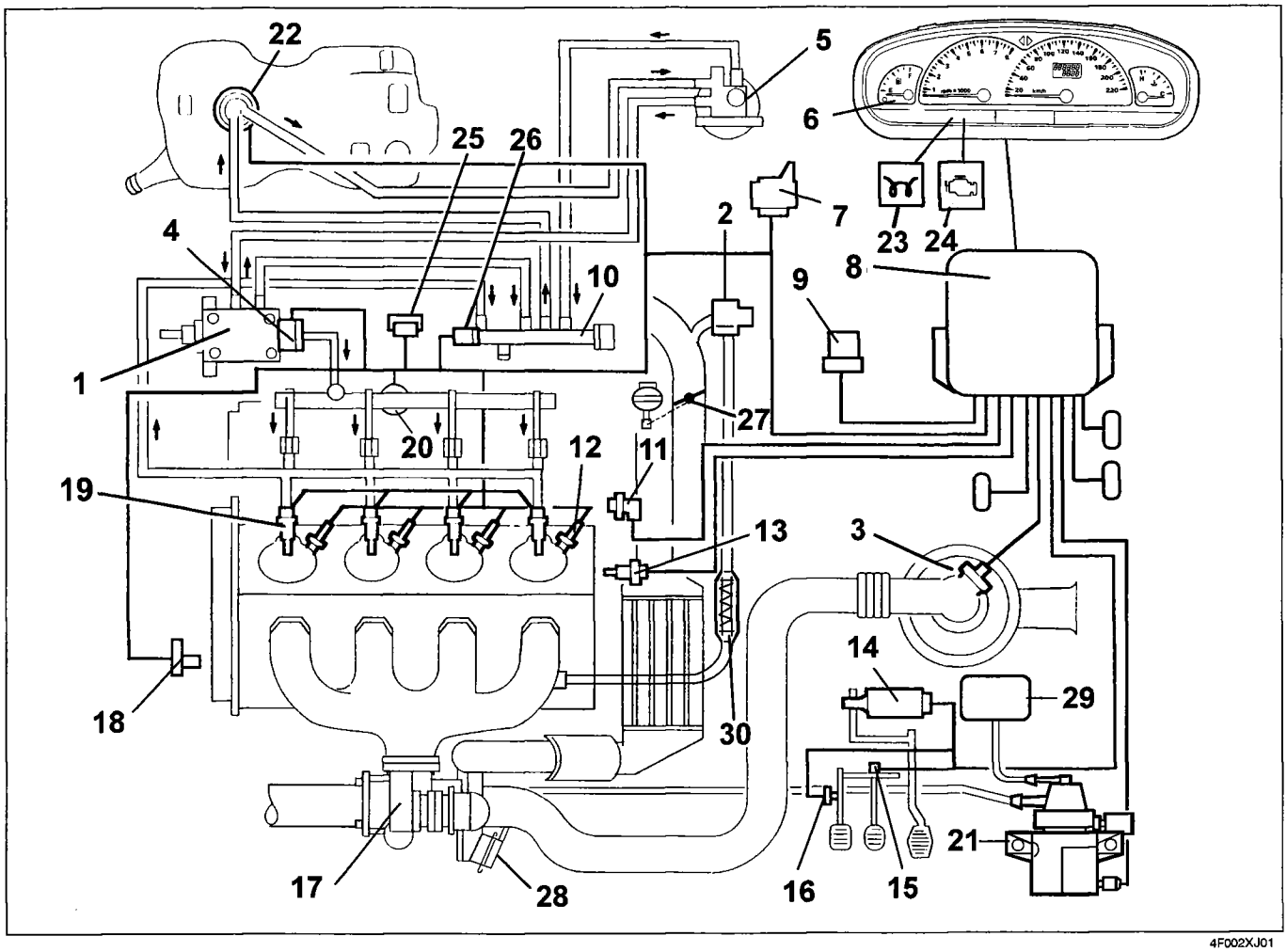
The main purpose of these management strategies is to determine the exact amount of fuel to be injected into the cylinders with timing (injection advance) and pressure designed to achieve the best possible engine performance in terms of power, fuel consumption, fumes, emissions and handling.

The main system management strategies are essentially as follows:

- control of injected fuel quantity;
- control of injection advance;
- control of injection pressure;
- control of auxiliary fuel pump;
- control of injection during over-run (cut-off);
- control of idle speed;
- control of maximum speed limitation;
- control of maximum torque limitation;
- control of fuel temperature;
- control of engine coolant temperature;
- control of air turbocharging pressure;
- control of glow plugs;
- control of exhaust fumes;
- control of exhaust gas recirculation (EGR);
- control of climate control system activation;
- control of engine immobiliser operation (Fiat CODE);
- self-diagnosis

10.

FUEL SYSTEM OPERATING DIAGRAM



4F002XJ01

1. Pressure pump
2. Electrically-controlled EGR valve
3. Flow meter
4. Pressure regulator
5. Fuel filter
6. Instrument panel
7. Glow plug preheating control unit
8. Electronic control unit
9. Injection system relay
10. Return manifold (low pressure)
11. RPM sensor
12. Glow plugs
13. Engine coolant temperature sensor
14. Potentiometer on accelerator pedal
15. Switch on brake pedal
16. Switch on clutch pedal
17. Variable geometry turbocharger
18. Timing sensor
19. Injectors
20. Fuel pressure sensor
21. Variable geometry turbocharger control solenoid
22. Auxiliary fuel pump
23. Glow plug preheating warning light
24. System failure warning light
25. Pressure relief sensor
26. Fuel temperature sensor
27. Throttle valve
28. Variable geometry actuator
29. Vacuum tank
30. Exhaust gas heat exchanger

Control of injected fuel quantity

The control unit controls the fuel pressure regulator and injectors on the basis of output signals from the accelerator pedal potentiometer, flow meter and rpm sensor.
The timing and thus the injection sequence are determined when the engine is started up using signals from the rpm and timing sensor (synchronisation stage); injection timing is then implemented using the rpm sensor signal alone and considering a injection sequence of 1-3-4-2.

The control unit inhibits injection in the following cases:

- fuel pressure level greater than 1500 bars;
- fuel pressure level lower than 120 bars;
- engine speed higher than 6000 rpm.

When the engine has warmed up, maximum injection duration (injector opening time) is 1500 ns, but it can reach 3000 ns during the start-up stage.

Control of injection advance

The electronic control unit determines injection advance mainly on the basis of the quantity of fuel to be injected.
The injection advance is then corrected on the basis of coolant temperature and speed in order to compensate for ignition delays due to low temperatures in the combustion chamber during warm-up.
The optimum injection point is also processed to ensure driving comfort and emission limits laid down by Euro 3 legislation.

Control of injection pressure

This control is of particular importance because injection pressure influences the following parameters:

- amount of fuel taken into the cylinders for the same injection time duration;
- injected fuel nebulation;
- spray penetration;
- lag between electrical control to injection and actual injection start and end times.

The above parameters engine behaviour significantly, particularly in terms of power output, exhaust emissions, noise levels and handling.
The injection control unit controls the pressure governor on the basis of engine load to obtain an optimal line pressure at all times.
When the engine is cold, injection pressure is corrected on the basis of engine speed and engine coolant temperature to meet engine needs at different operating temperatures.

Control of auxiliary fuel pump

The auxiliary fuel pump submerged in the tank is supplied by the injection control unit by means of a relay when the ignition key is turned on.
Fuel supply to the pump is inhibited when one of the following condition occurs:

- when the ignition has been turned on for a certain length of time without the engine running;
- if the inertia switch cuts in.

Control of injection during over-run (cut-off)

The fuel cut-off strategy is implemented when the injection control unit receives information that the accelerator pedal has been released from the potentiometer.
Under these conditions, the control unit cuts off the fuel supply to the injectors and restores it before idle speed is reached.

10.

Control of idle speed

On the basis of signals from the rpm sensor and engine coolant temperature sensor, the injection control unit controls the pressure governor and alters the injector control times to maintain idle speed stable at all times.
Under certain conditions, the idle speed control unit also considers battery voltage.

Control of maximum speed limitation

According to rpm level, the injection control unit limits maximum speed by means of two types of intervention:

- as maximum speed approaches, it reduces the amount of fuel injected to reduce line pressure;
- when maximum speed is exceeded, it inhibits operation of the auxiliary pump and injectors.

Control of maximum torque limitation

On the basis of rpm level, the injection control unit computes limit torque and maximum permitted fume index parameters on the basis of predefined, stored maps.
It then corrects the above parameters using engine coolant temperature and car speed data. The resulting values are then used to modulate the amount of fuel to be injected by adjusting the pressure regulator and injectors.

Control of fuel temperature

The injection control uint is kept constantly informed of fuel temperature by a sensor on the return manifold.
If fuel temperature exceeds a set value (about 110 °C), the control unit reduces line pressure by adjusting the pressure governor, leaving injection times unaltered.

Control of coolant temperature

The injection control unit is constantly informed of coolant temperature by a sensor on the thermostat.
If engine coolant temperature or air conditioning fluid pressure exceeds certain levels, the control unit performs the following actions:

- It reduces the amount of fuel injected by adjusting the pressure governor and injectors (power reduction);
- it controls the engine radiator cooling fan.

Control of glow plugs

The injection control unit controls operation of the glow plug preheating control unit to bring the temperature in the combution chambers up to levels that promote fuel self-ignition and thus make start-up easier.
The control unit controls the operation of the glow plug control unit for a certain time both before (preheating) and after (postheating) engine start-up and also controls activation of the warning light on the control panel.
Preheating, postheating and glow plug warning light activation times vary according to engine coolant temperature.

Exhaust fumes control

Through this function the injection control unit limits any exhaust fumes that could be produced during transition speeds.
To satisy these requirements the control unit processes the signals supplied by the accelerator pedal potentiometer, the rpm sensor and the air flow meter and controls the fuel pressure regulator and the injectors to meter the correct amount of fuel to inject.

Exhaust gas recirculation control

On the basis of the signals supplied by the rpm sensor, intake air quantity sensor, engine coolant temperature sensor and accelerator pedal position sensor, the control unit calculates the operating times for the EGR valve so that the exhaust gases are partly recirculated in certain engine operating conditions in line with Euro 3 pollution control standards.

Air conditioning system engagement control

The injection control unit manages the operation of the air conditioning system compressor electromagnet coupling following a logic aimed at preventing operating conditions that would adversely affect engine performance.

- When the compressor is switched on the injection control unit increases the quantity of fuel during idling to allow the engine to adjust to the increased power requirements and momentarily interrupts the supply to the compressor in high engine power requirement conditions (strong acceleration).

Engine immobilizer function control

The system is equipped with an engine immobilizer function. This function is achieved through the presence of a specific control unit (Fiat CODE), capable of conversing with the injection control unit and an electronic key with a special transmitter for sending a recognition code.
Each time the key is turned to the OFF position, the Fiat CODE system completely deactivates the injection control unit.
When the key is turned to the ON position the following operations take place, in order:

1. the injection control unit (whose memory contains a secret code) sends the Fiat CODE control unit a request to send the secret code to deactivate the immobilizer functions;
2. the Fiat CODE control unit responds by only sending the secret code after, in turn, having received the recognition code transmitted by the ignition key;
3. the recognition of the secret code allows the deactivation of the injection control unit immobilizer function and its normal operation.

Autodiagnosis

The complete electronic fault diagnosis of the injection system is carried out by connecting the special equipment (EXAMINER or EXAMINER PLUS) to the standardized diagnostic socket (EOBD).
The system is also equipped with a self-diagnostic function which recognizes, memorizes and signals any faults.
If a fault is detected in the sensors or actuators, the recovery strategy is immediately activated in order to ensure that the engine functions at an acceptable level. The vehicle can be driven to a service centre for the appropriate repairs to be carried out.

10.

The control unit autodiagnostic system checks the signals coming from the sensors and compares them with the figures allowed:

- signalling faults during starting
- warning light on for 4 seconds indicates test stage
- warning light off after 4 seconds indicates no fault with components that could alter the pollution control standard figures
- warning light on after 4 seconds indicates fault.
- signalling faults during operation
- warning light on indicates fault
- warning light off indicates no fault with components that could alter the pollution control standard figures.
- recovery
- from time to time, the control unit defines the type of recovery according to the components which are faulty
- the recovery parameters are managed by components which are not faulty.

Control of cylinder balancing during idling

According to the signals coming from the sensors, the injection control unit controls the idle speed torque, altering the injector operating times.

Control of irregular operation

Depending on the signals coming from the sensors, the injection control unit corrects the amount of fuel to be injected in order to improve driveability and reduce jerking whilst driving.

The correction is achieved through the fuel pressure regulator and by varying the injector operating times.

Control of electrical balance

According to the battery voltage, the injection control unit alters the idle speed, to guarantee a sufficient current supply from the alternator in situations where the consumers are absorbing a great deal of power.

The variation in the idle speed is achived by regulating the fuel pressure and altering the injector operating times.

VGT variable geometry turbocharger control (1910 JTD 110 CV)

The injection control unit processes the signal coming from the supercharging sensor, at the various engine operating speeds, and determines the quantity of fuel to be injected, acting on the fuel pressure regulator and the injector opening times.

In addition, through the solenoid valve, the control unit regulates the geometry of the turbine in order to ensure optimum performance in all operating conditions.

Turbocharger waste gate valve control (1910 JTD 100 CV)

At the various engine operating speeds, the injection control unit processes the signal coming from the supercharging sensor and determines the amount of fuel to inject, acting on the fuel pressure regulator and the injector opening times.

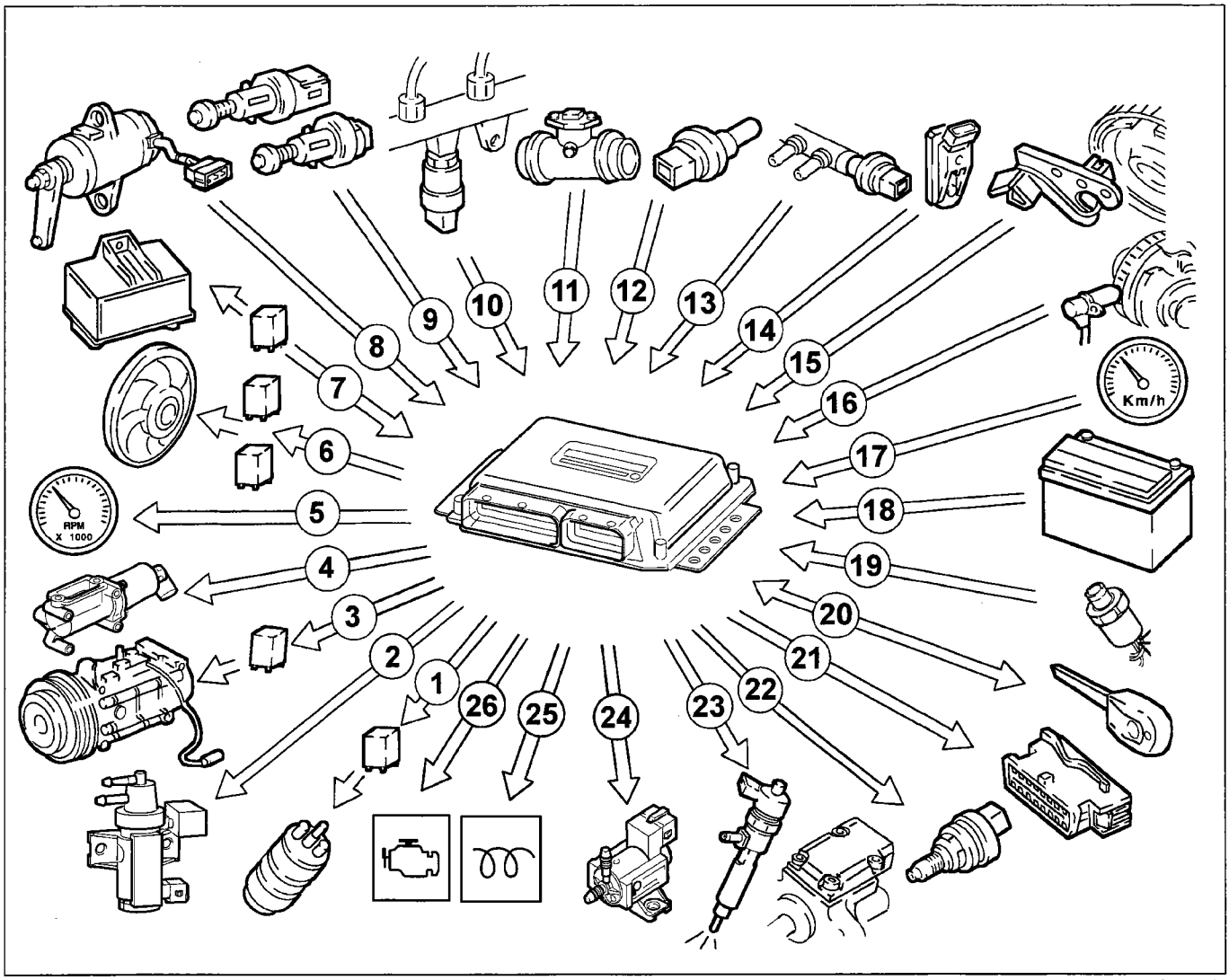
In addition, the control unit controls the opening of the turbocharger waste gate valve, via the solenoid valve, in order to ensure excellent performance in all operating conditions.

Control of throttle closing when engine is switched off

When the engine is switched off (ignition key in OFF position) the injection control unit closes the throttle valve located on the air intake duct via the special solenoid valve.

This action makes it possible to limit the tiresome shuddering of the engine whilst it is switching off.

DIAGRAM SHOWING INFORMATION FLOW BETWEN THE INJECTION CONTROL UNIT AND SENSORS/ACTUATORS

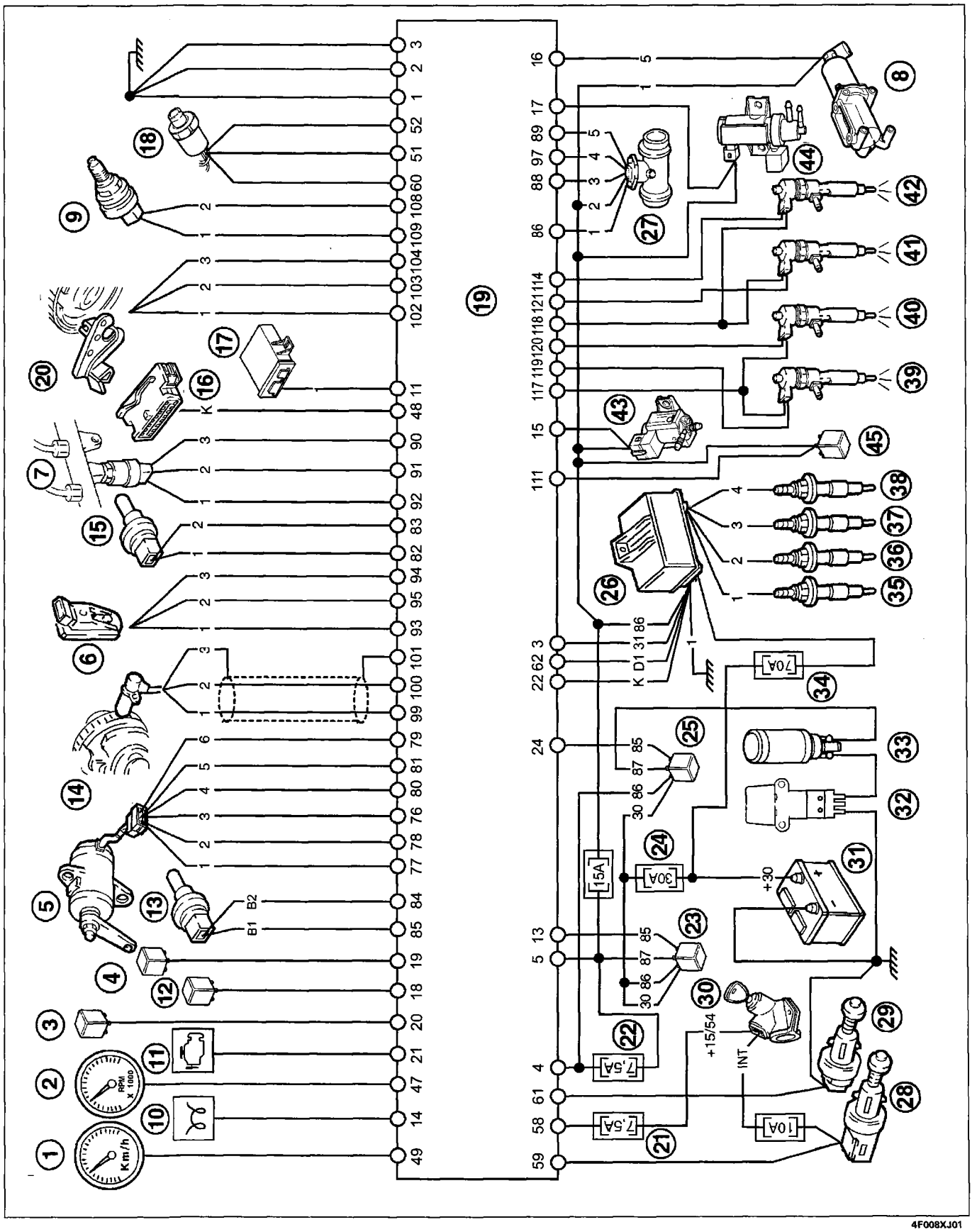


4F007XJ01

1. Auxiliary fuel pump
2. Variable geometry turbocharger control solenoid
3. Climate control compressor
4. Electric EGR valve
5. Rev counter
6. Engine radiator fan
7. Glow plug preheating control unit
8. Potentiometer on accelerator pedal
9. Brake and clutch pedal switches
10. Fuel pressure sensor
11. Intake air flow and temperature sensor (debimeter)
12. Coolant temperature sensor
13. Fuel temperature sensor
14. Pressure relief sensor
15. Timing sensor
16. Rpm sensor
17. Vehicle speed signal
18. Battery
19. Four stage pressure switch
20. Fiat CODE control unit
21. Diagnostic socket
22. Fuel pressure regulator
23. Injectors
24. Throttle valve control solenoid
25. Glow plug preheating warning light
26. Injection system failure warning light

10.

INJECTION SYSTEM WIRING DIAGRAM



Compents of injection system wiring diagram

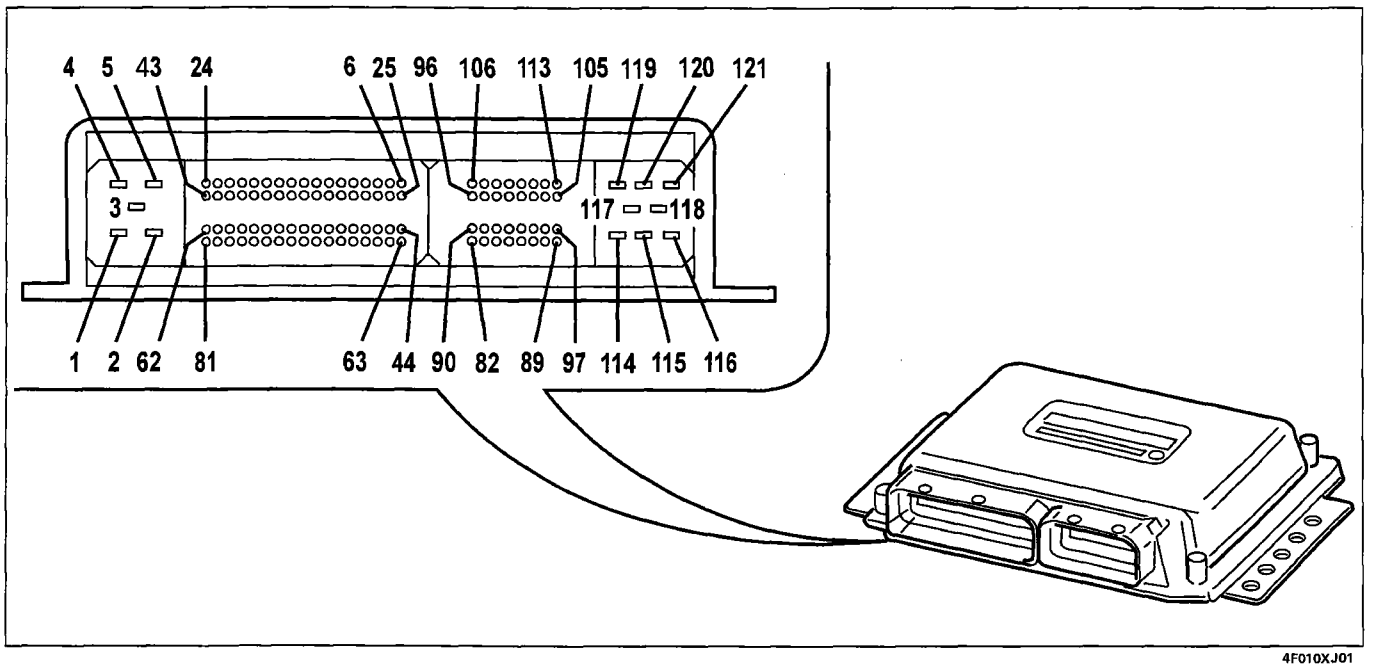
1. Vehicle speepd
2. Rev counter
3. Engine radiator fan low speed relay
4. Radiator fan high speed activation relay
5. Potentiometer on accelerator pedal
6. Timing sensor
7. Fuel pressure sensor
8. EGR system modulator solenoid
9. Fuel pressure regulator
10. Glow plug preheating warning light on control panel
11. Injection system failure warning light
12. Air conditioning system relay
13. Coolant temperature sensor
14. Rpm sensor
15. Fuel temperature sensor
16. Diagnostic socket
17. Fiat CODE control unit
18. Four stage pressure switch
19. Injection electronic control unit
20. Pressure relief sensor
21. 7.5A fuse protecting electronic injection system (+15 power supply from ignition switch)
22. 7.5A fuse protecting electronic injection system (+30 power supply from ignition switch)
23. Main injection system relay
24. 30A fuse protecting injection system
25. Auxiliary fuel pump relay
26. Glow plug preheating control unit
27. Intake air flow and temperature sensor (debimeter)
28. Brake pedal switch
29. Clutch pedal switch
30. Ignition switch
31. Battery
32. Inertia switch
33. Auxiliary fuel pump (submerged in tank)
34. 60A fuse protecting glow plug control unit
35. Cylinder no. 1 glow plug
36. Cylinder no. 2 glow plug
37. Cylinder no. 3 glow plug
38. Cylinder no. 4 glow plug
39. Cylinder no. 1 injector
40. Cylinder no. 2 injector
41. Cylinder no. 3 injector
42. Cylinder no. 4 injector
43. Throttle valve control solenoid
44. Variable geometry turbocharger control solenoid
45. Diesel filter heater relay

10.

ELECTRONIC INJECTION CONTROL UNIT

The control unit processes signals from the various sensors by applying software algorithms and controls the actuators accordingly (particularly the injectors and pressure regulator) to achieve the best possible engine service conditions.
The control unit is "flash E.P.R.O.M." type, i.e. it can be reprogrammed from outside without andy need to adjust the hardware.
The injection control unit contains a built-in absolute pressure sensor and is connected to the wiring by means of a 121 pin connector.

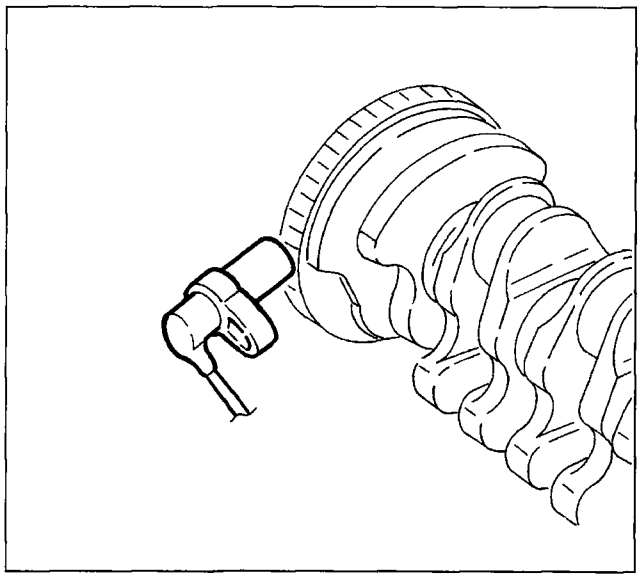
Control unit connection identification (PIN-out)



4F010XJ01

1 Earth
2 Earth
3 Earth
4 Actuator power supply
5 Injector/ECU power supply
6 Not connected
7 Not connected
8 Not connected
9 Not connected
10 Not connected
11 Fiat CODE
12 Not connected
13 Injection relay
14 Glow plug control
15 Throttle body solenoid
16 EGR valve
17S VGT solenoid
18 Air conditioner relay
19 Radiator fan high speed relay
20 Radiator fan low speed relay
21 Diagnostic warning light control
22 Glow plug activation control
23 Not connected
24 Auxiliary fuel pump relay
25 Not connected
26 Not connected
27 Not connected
28 Not connected
29 Not connected
30 Not connected
31 Not connected
32 Not connected
33 Not connected
34 Not connected
35 Not connected
36 Not connected

37 Not connected
38 Not connected
39 Not connected
40 Not connected
41 Not connected
42 Not connected
43 Not connected
44 Not connected
45 Not connected
46 Not connected
47 Engine rpm signal output
48 Diagnostic line k
49 Vehicle speed signal input
50 Not connected
51 Activation signal from 4-stage pressure switch
52 Activation signal from 3-stage pressure switch
53 Not connected
54 Not connected
55 Not connected
56 Not connected
57 Not connected
58 Key ON signal
59 Brake switch
60 Air conditioner activation request
61 Clutch switch
62 Glow plug diagnosis
63 Not connected
64 Not connected
65 Not connected
66 Not connected
67 Not connected
68 Not connected
69 Not connected
70 Not connected
71 Not connected
72 Not connected
73 Not connected
74 Not connected
75 Not connected
76 Accelerator pedal 1 earth
77 Accelerator pedal 1 signal
78 Accelerator pedal 1 power supply
79 Accelerator pedal 2 earth
80 Accelerator pedal 2 signal
81 Accelerator pedal 2 power supply
82 Diesel temperature sensor (pin 1)
83 Diesel temperature sensor (pin 2)
84 Coolant temperature sensor (pin 1)
85 Coolant temperature sensor (pin 2)
86 Air flow meter (pin 1)
87 Not connected
88 Air flow meter (pin 3)
89 Air flow meter (pin 5)
90 Fuel pressure sensor (pin 3)
91 Fuel pressure sensor (pin 2)
92 Fuel pressure sensor (pin 1)
93 Turbo pressure sensor (pin 1)
94 Turbo pressure sensor (pin 3)
95 Turbo pressure sensor (pin 2)
96 Not connected
97 Air flow meter (pin 4)
98 Not connected
99 RPM sensor (pin 1)
100 RPM sensor (pin 2)
101 RPM sensor (pin 3)
102 RPM sensor (pin 1)
103 Timing sensor (pin 2)
104 Timing sensor (pin 3)
105 Not connected
106 Not connected
107 Not connected
108 Fuel pressure regulator
109 Fuel pressure regulator
110 Not connected
111 Heater relay control Fuel filter
112 Not connected
113 Not connected
114 Cylinder 4 injector control
115 Not connected
116 Not connected
117 Cylinder 1 and 2 injector power supply
118 Cylinder 3 and 4 injector power supply
119 Cylinder 1 injector control
120 Cylinder 2 injector control
121 Cylinder 3 injector control



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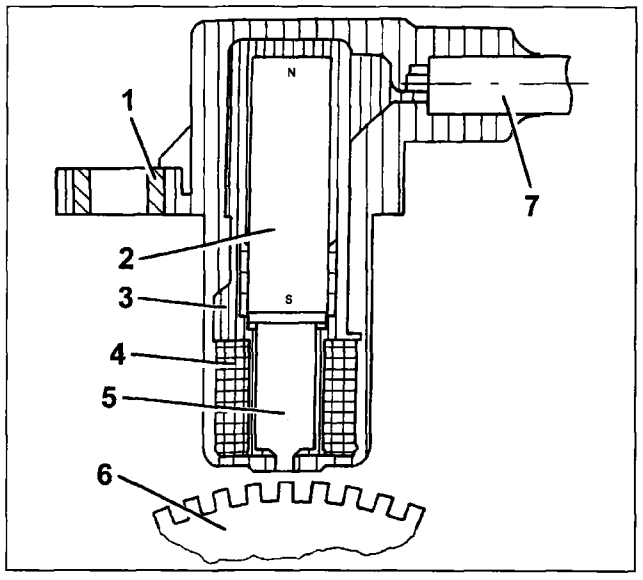

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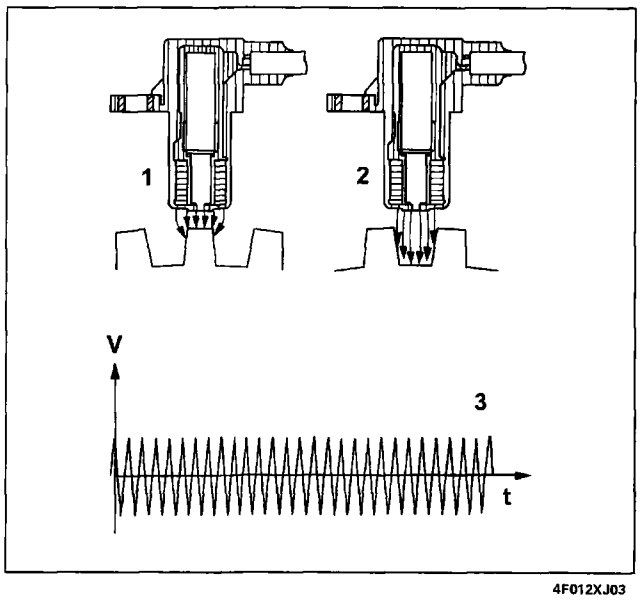


4F012XJ03

RPM SENSOR

The rpm sensor is fitted to the engine crankcase and faces the phonic wheel on the crankshaft.

The sensor is inductive type, i.e. it works by varying a magnetic field generated when the phonic wheel teeth (60-2 teeth) pass in front of the sensor element.

The injection control unit uses the rpm sensor signal to determine crankshaft speed and angular position.

Operation

The changeover from full to empty due to the presence or absence of teeth sets up a magnetic flux change sufficient to generate an induced alternating voltage proportional to the number of teeth on the phonic wheel.
The peak sensor output voltage value, all things being equal, depends on the distance between the sensor and the tooth (gap).

1. Steel bush
2. Permanent magnet
3. Sensor case
4. Winding
5. Core
6. Phonic wheel
7. Electrical connection

To obtain the correct signal, the specified gap between phonic wheel and sensor should be between 0.8 and 1.5 mm
This distance is not adjustable. When the gap is not as specified, check the condition of the sensor and phonic wheel.

Winding resistance
860 Ohm ±110% at 20 °C

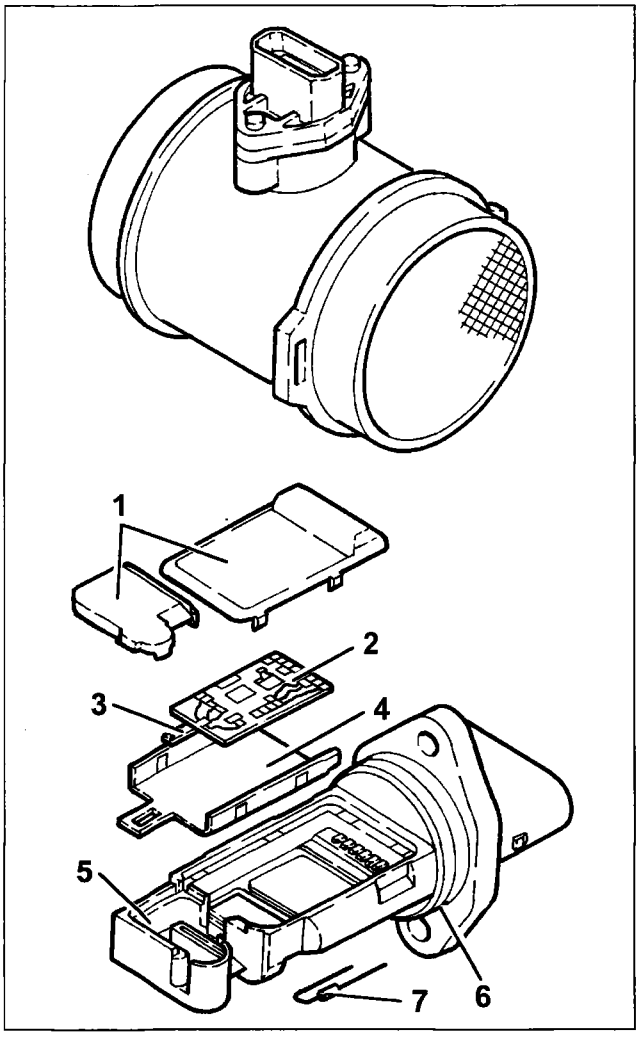
1. Maximum magnetic flux
2. Minimum magnetic flux
3. Induced alternate voltage

TIMING SENSOR

The Hall effect sensor is fitted to the cylinder head and faces the camshaft pulley.
An opening on the pulley allows the timing sensor to detect the engine timing position and indicate it to the injection control unit.
The injection control unit uses the timing sensor signal to detect TDC at the end of compression.

Operation

A semi-condulator layer, through which a current passes, immersed in a magnetic field (lines of force perpendicular to the direction of the current), produces a difference in power, known as Hall voltage.
If the intensity of the current remains constant, the voltage produced only depends on the intensity of the magnetic field. The intensity of the field can simply be altered periodically to produce a modulated electrical signal. Signal frequency is proportional to the speed with which the magnetic field changes.
To achieve this change, the sensor is crossed by a metal ring (inner part of the pulley) with an opening.
When it moves, the metal part of the ring covers the sensor to magnetic field and the output signal is therefore low; Conversely, the sensor generates a high signal at the opening when the magnetic field is present.
This signal, together with the rpm and TDC signals, allows the injection control unit to identify piston position and determine injection point.



4F013XJ01

AIR FLOW METER (DEBIMETER)

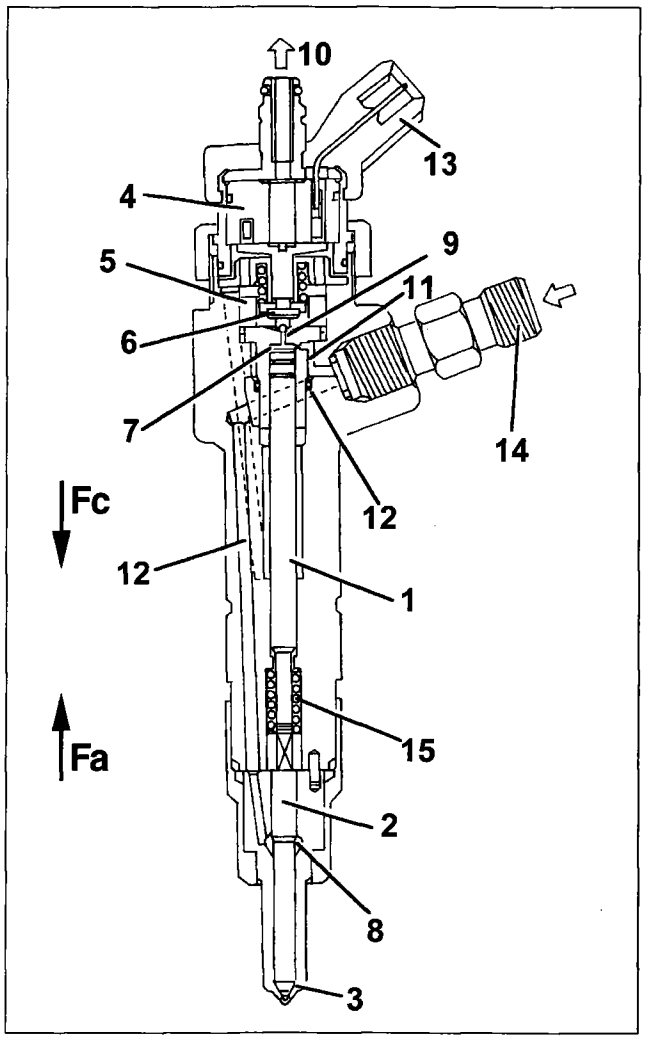
The debimeter is located on the air intake sleeve and is hot film type.
The debimeter contains an intake air temperature sensor.

Operation

The principle of operation is based on a heated membrane fitted into a measurement channel through which engine intake air flows.
The hot film membrane is maintained at a constant temperature (about 120 °C higher than incoming air) by the heater coil.
The mass of air flowing through the measurement channel tends to take heat from the membrane. To keep the membrane at constant temperature, a certain current level must flow through the resistance.
Because this current is proportional to the mass of air that flows to the engine, it can be measured with a Wheatstone bridge and the resulting signal is sent to the injection control unit.

1. Covers
2. Electronic card
3. Sensor
4. Mounting plate
5. Mount
6. o-ring
7. Temperature sensor

10.



4F014XJ01

1. Pressure rod
2. Pin
3. Nozzle
4. Coil
5. Pilot valve
6. Ball plunger
7. Control area
8. Supply volume
9. Control volume
10. Fuel outlet connector (low pressure)
11. Control port
12. Supply port
13. Electrical connection
14. Fuel input connector (high pressure)
15. Spring

INJECTORS

The injectors are fitted to the cylinder head and are electromagnetic in type. They are controlled directly by the injection control unit.
The injectors come with a high-pressure supply port and a recirculation pipe at environmental pressure; The supply port is connected to a delivery manifold (rail) with pipes designed to withstand the high service pressures.

The injector can be divided into two parts:

- Actuator/spray made up of a pressure rod (1), pin (2) and nozzle (3);
- control solenoid made up of coil (4) and pilot valve (5).

Operation

Injector operation may be divided into three stages:

1. rest position

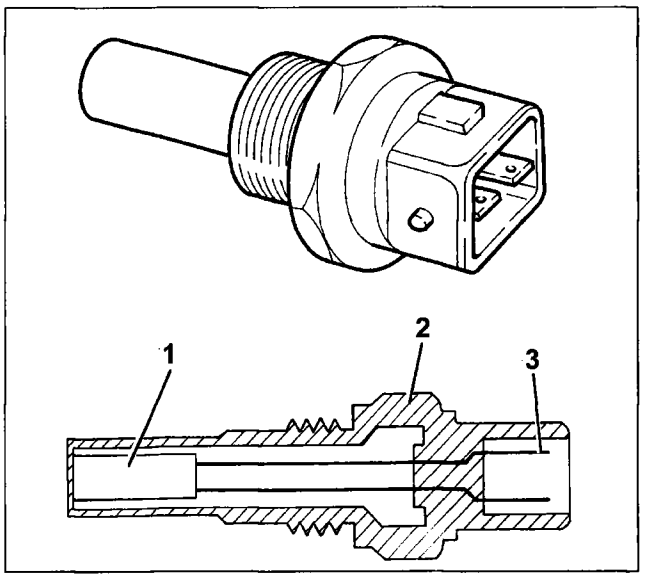
Coil (4) is deactivated and plunger (6) is in closed position to prevent fuel entering the cylinder: Fc > Fa where Fc is the force generated by pressure acting on the control area (7) of pressure rod (1) and Fa is the force due to the pressure acting on supply volume (8).

2. Start of injection

Coil (4) is excited and causes plunger (6) to rise. Fuel flows from control volume (9) to the return manfold to bring about a pressure drop in control area (7). Simultanteously, line pressure through supply port (12) exerceses a force Fa > Fc on supply volume (8) to cause pin (2) to rise and thus allow fuel into the cylinders.

3. end of injection

Coil (4) is deactivated and causes plunger (6) to return to closed position. The resulting balance of forces makes pin (2) return to rest position and injection therefore ends.



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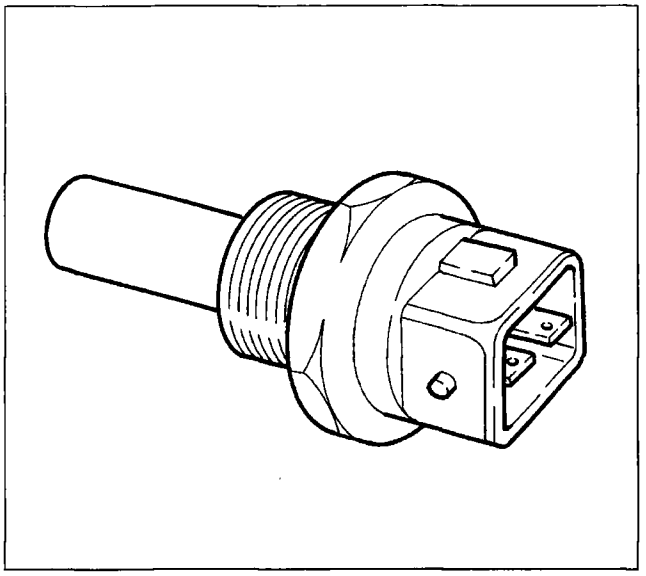

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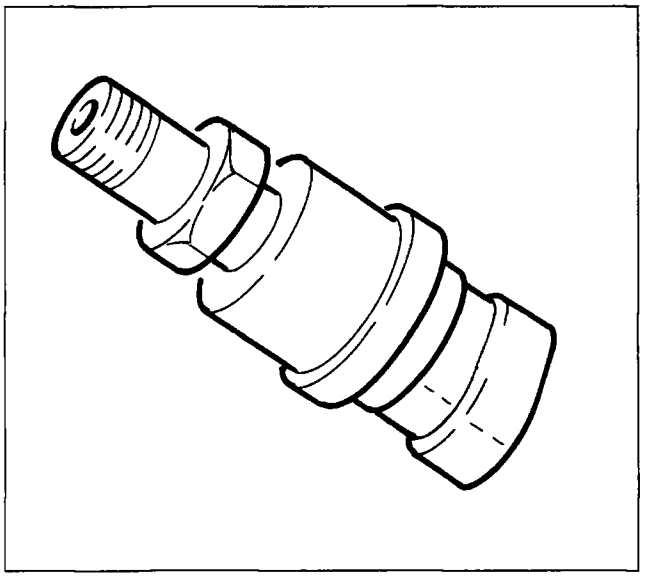


4F015XJ03

ENGINE COOLANT TEMPERATURE SENSOR

The sensor is fitted to the thermostat and measures the temperature of the engine coolant by means of an NTC thermistor with a negative resistance coefficient.
Because the sensor is made using semiconductor technology, the resistance falls if sensor element temperature rises with increasing coolant temperature.
Because resistance does not change in linear manner, it is higher at low temperatures than at high temperatures for the same temperature increase.

1. NTC resistance
2. Sensor case
3. Electrical connector

FUEL TEMPERATURE SENSOR

The sensor is fitted on the return manifold and measures fuel temperature by means of an NTC thermistor with a negative resistance coefficient.

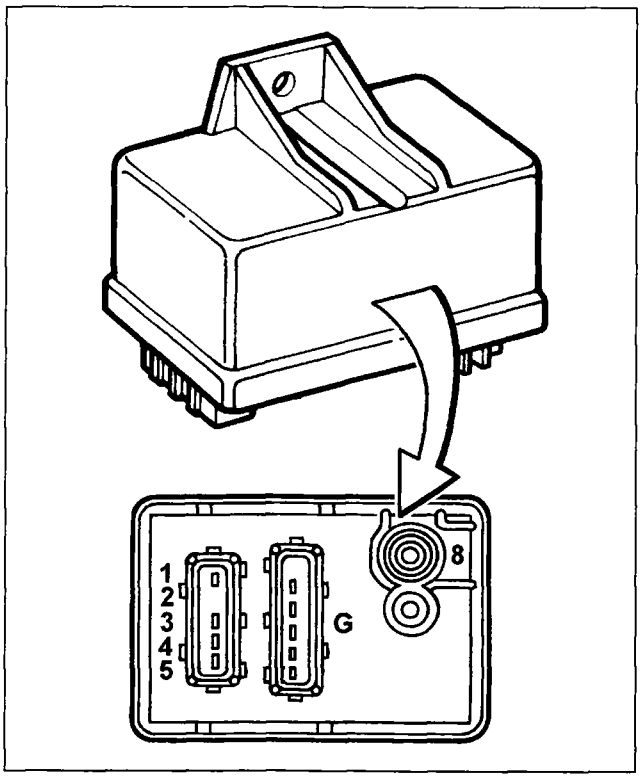
Refer to the previous description of the coolant temperature sensor for sensor operation.

FUEL PRESSURE SENSOR

The sensor is fitted in the middle of the fuel delivery manifold (rail) and is responsible for providing a return signal (feedback) to the control unit in order to:

- adjust injection pressure;
- regulator injection duration.

10.



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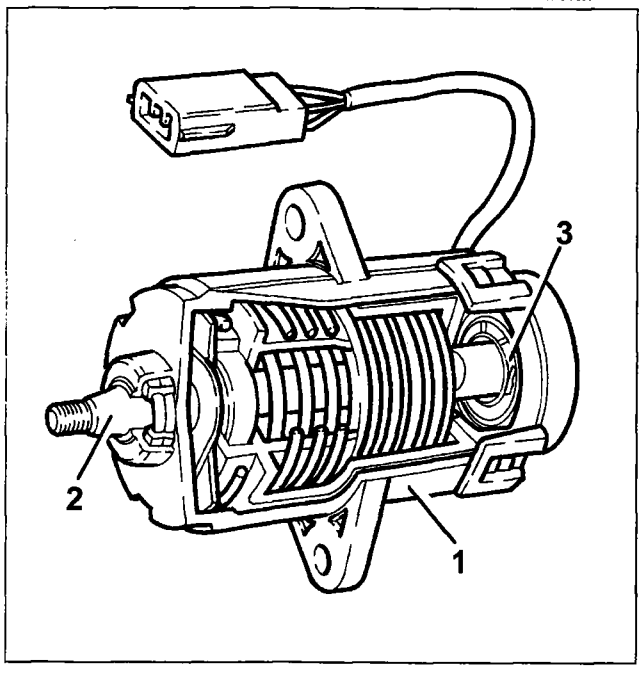


4F016XJ02

GLOW PLUG PREHEATING CONTROL UNIT

The glow plugs are controlled by means of a preheating control unit under the direct control of the injection control unit.
The preheating control unit contains a smart relay that sends a return response (feedback) to the injection control unit, which is thus informed of faults in the preheating control unit or glow plug short-circuits to earth.

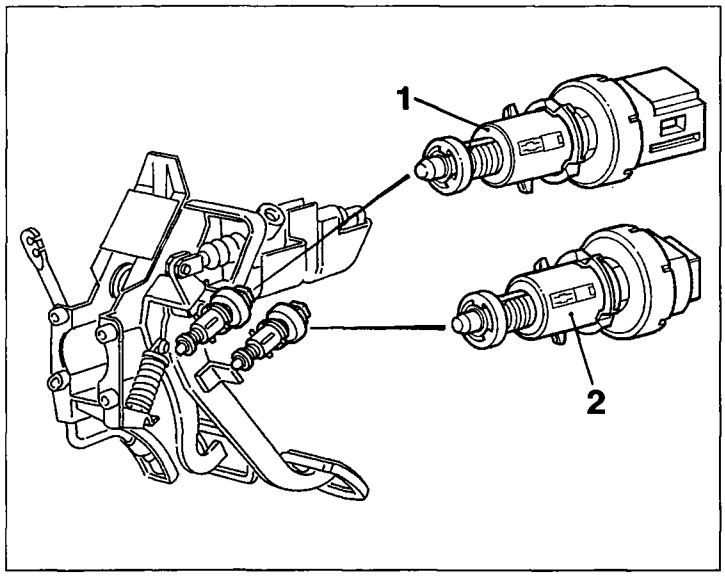
The figure shows the connectors on the base of the preheating control unit and the pin-out

1. Earth
2. Injection control unit (pin 22)
3. Power supply from main injection relay
4. Not connected
5. Injection control unit (pin 62)
8. Positive from battery (+30)

G. Glow plugs (only four outputs are used)

ACCELERATOR PEDAL POTENTIOMETER

Accelerator pedal position is converted to an electrical voltage signal and send to the injection control unit by a potentiometer connected to the accelerator pedal.
Accelerator pedal position is processed together with rpm information to provide injection times and pressure.
The sensor consists of a case (1) secured to the pedal by a flange, which contains an axially-positioned shaft (2) connected to two potentiometers (3): main and safety potentiometers.
A coil spring on the shaft ensures the correct resistance to pressure while a second spring ensures return upon release.



4F017XJ01

TEST

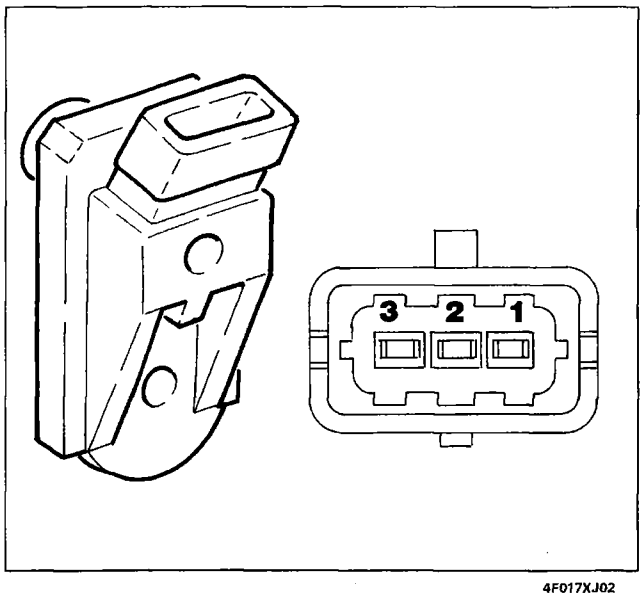
A switch (1) on the brake pedal controls the car brake lights; the same switch sends a signal to pin 59 of the injection control unit

The control unit uses the "brake pedal depressed" signal to:

- detect a situation of over-run;;
- check the plausibility of the signal from the accelerator potentiometer

CLUTCH PEDAL SWITCH

A switch (2) on the clutch pedal is connected to pin 61 of the injection control unit.
The injection control unit uses the "brake pedal operated" signal to distinguish gear engaged and gear shift conditions.



4F017XJ02

PRESSURE RELIEF SENSOR

The sensor is fitted to the intake manifold and the signal sent to the injection control unit is used to:

- regulate injection pressure;
- regulate injection duration.

The figure alongside shows the sensor and electrical connector with the following pin-out:

1. pressure signal
2. Earth
3. Fuel feed system

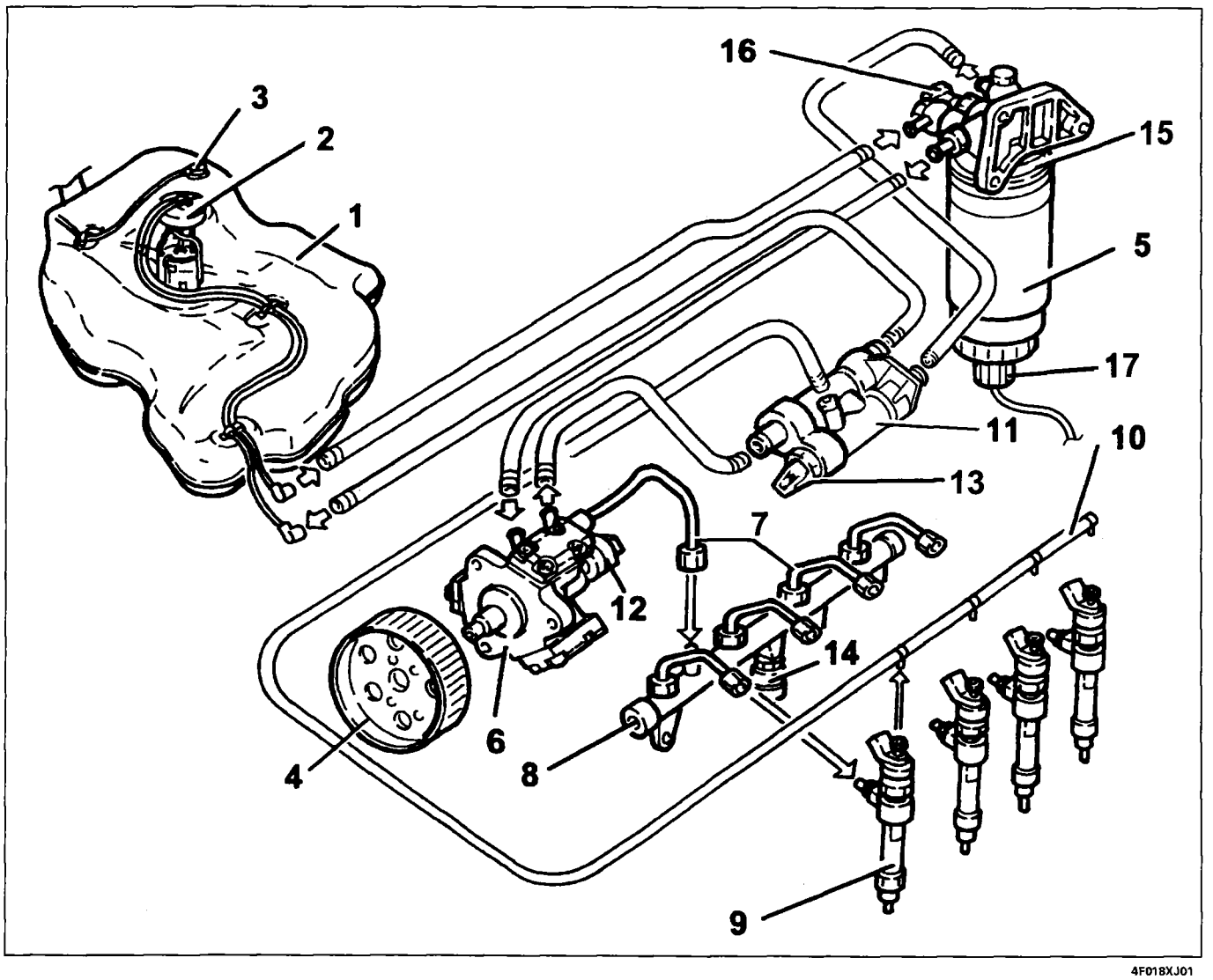
ATMOSPHERIC PRESSURE SENSOR

The atmospheric pressure signal is built into the injection control unit. It is responsible for measuring atmospheric pressure in order to correct measured air flow and reference air flow values to control the EGR function.

10.

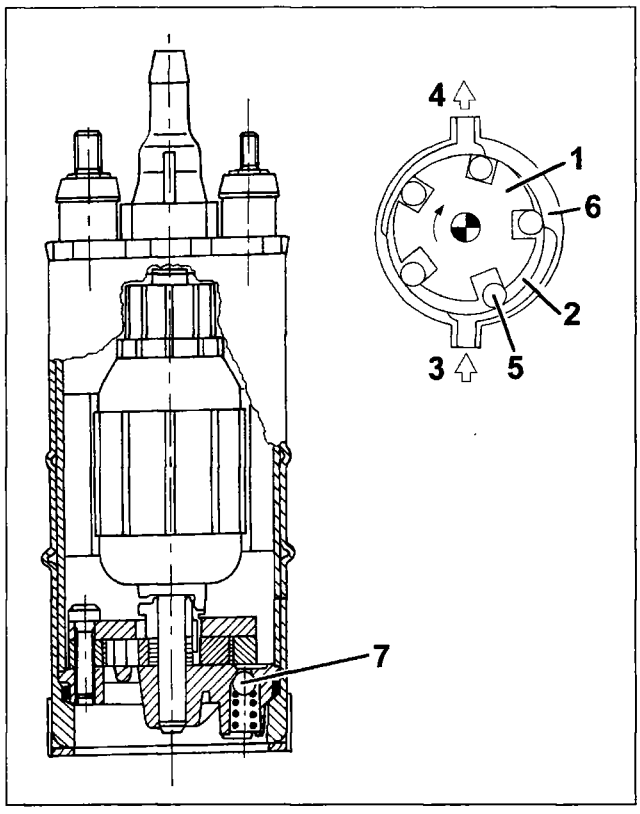
FUEL SUPPLY CIRCUIT

Operationally-speaking, the fuel supply circuit is divided into a low pressure circuit and a high pressure circuit.
The low pressure circuit consists of a tank, multifunction valve, auxiliary fuel pump submerged in the tank and a return manifold.
The high pressure circuit consists of a radialjet pressure pump, delivery manifold and injectors.



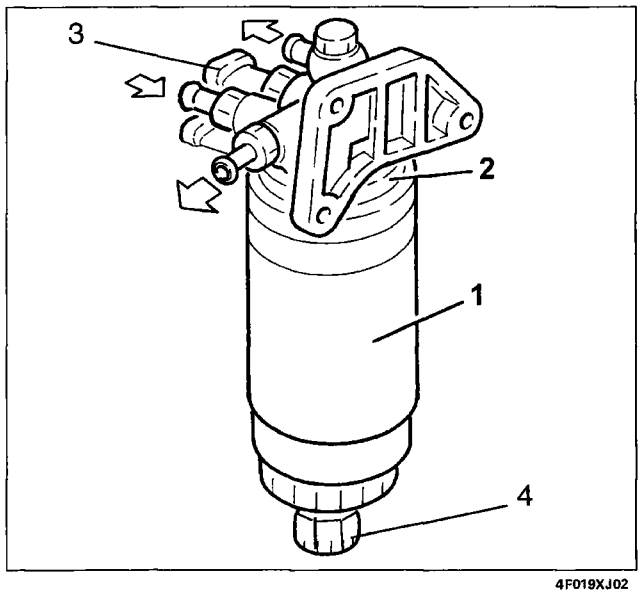
4F018XJ01

1. Fuel tank
2. Submerged fuel pump (auxiliary) with fuel level gauge control
3. Multifunction valve
4. Pressure pump control pulley
5. Diesel filter cartridge
6. Pressure pump
7. High pressure pipe
8. Delivery manifold (rail)
9. Injectors
10. Fuel recirculation pipe (injector return)
11. Return manifold
12. Pressure regulator
13. Fuel temperature sensor
14. Fuel pressure sensor
15. Diesel heater
16. Fuel temperature sensor
17. Sensor indicating presence of water in fuel filter



4F019XJ01

1. Impeller
2. Volumes
3. Intake port
4. Outlet port
5. Rollers
6. Outer race
7. Pressure relief valve



4F019XJ02

SUBMERGED FUEL PUMP ASSEMBLY (AUXILIARY) AND LEVEL GAUGE CONTROL

The assembly consists mainly of:

- a roller-type fuel pump;
- a fuel level gauge;
- a fuel filter

The submerged fuel pump is volumetric type with rollers and a motor with brushes and permanent magnet excitation.

Impeller (1) is driven by the electric motor to turn and create volumes (2) that move from intake port (3) to outlet port (4).

These volumes are delimited by rollers (5) that adhere to outer race(6) as the motor turns.

The pump is fitted with two valves: a check valve to prevent the fuel circuit emptying (with the pump off); a second pressure relief valve (7) that short-circuits the outlet to the inlet when pressures exceed 5 bars.

FUEL FILTER

The fuel filter is located in the engine bay.

The filter is cartridge type with a filter element (1) made up of a pack of paper discs with a filtering area of some 5300 cm 2 and a filter gauge of 4 - 5 microns.

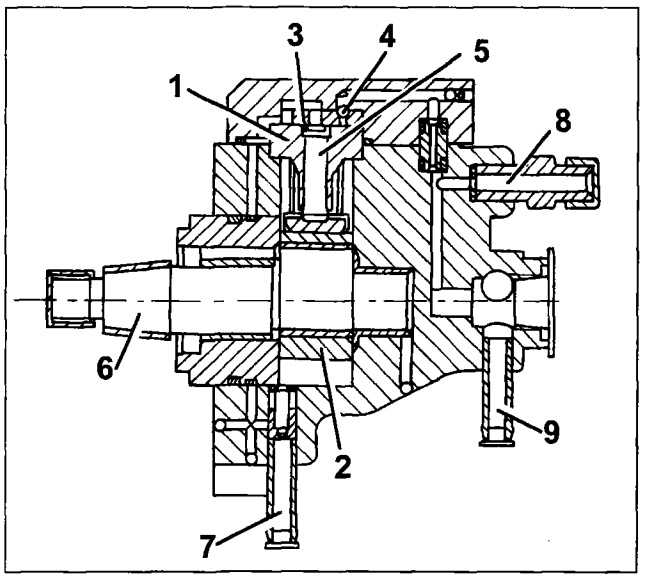
The filter is equipped with a fuel preheating device (2) controlled by the engine control unit via a relay.

The control unit activates or deactivates the diesel filter on the basis of a diesel temperature signal sent by sensor (3) on the filter.

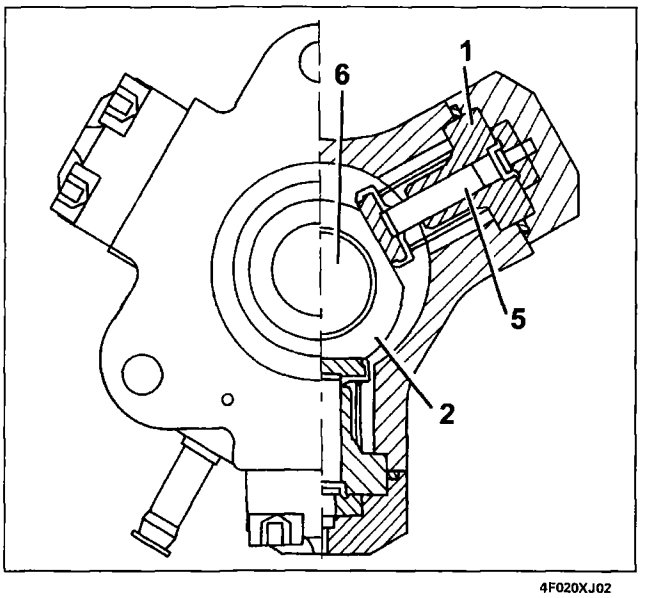
A plug (4) screwed to the base of the fuel filter cartridge is used to drai off the water. The plug incorporates a sensor for the detection of water in the diesel filter connected to a warning light on the instrument panel.

1. Filter cartridge
2. Diesel preheating device
3. Diesel temperature sensor
4. Water drain plug with sensor to detect presence of water in diesel filter

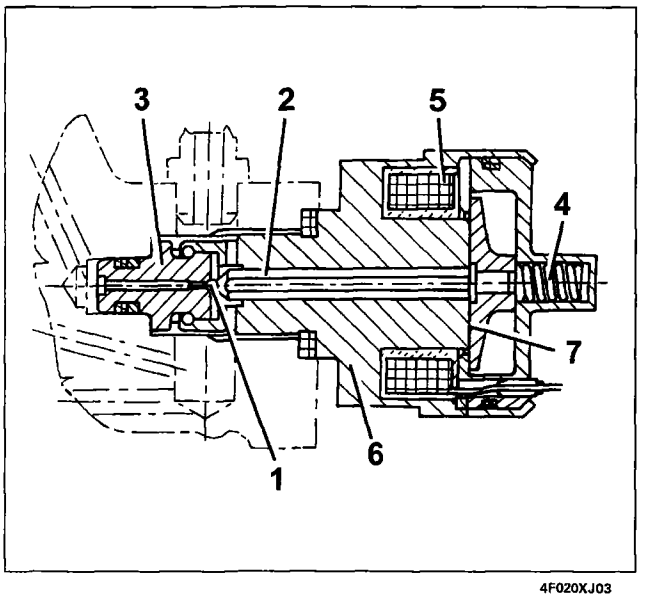
10.



4F020XJ01



4F020XJ02



4F020XJ03

PRESSURE PUMP

The pressure pump is radialjet type with three radial pistons (total capacity 0.657 cc). It is controlled by a timing belt with or without timing requirements.

Each pump unit consists of:

a piston (5) opered by a cam (2) integral with the pump shaft (6);

a plate-type intake valve (3);

a delivery ball valve (4).

The pressure pump must be supplied at a pressure of at least 0.5 bars; and for this reason the fuel system is equipped with an auxiliary pump submerged in the tank.

The pressure pump is lubricated and cooled by the diesel fuel via channels and is able to deliver a maximum pressure of 1350 bars.

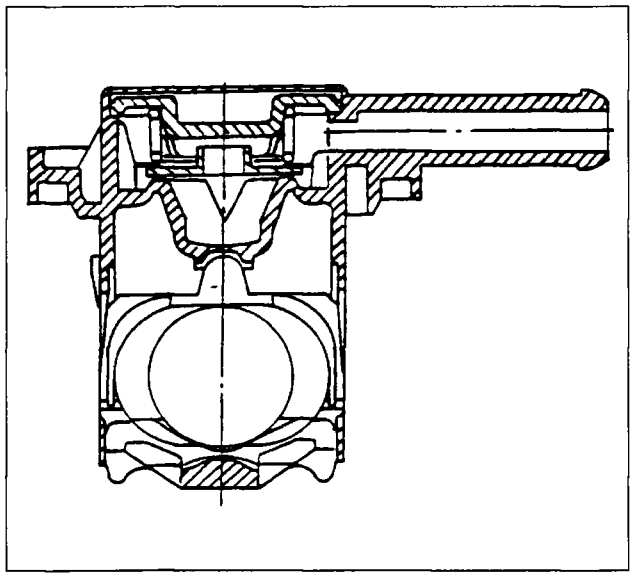
1. Cylinder
2. Cam
3. Plate-type intake valve
4. Ball-type delivery valve
5. Piston
6. Pump shaft
7. Diesel intake connection - low pressure - from fuel filter
8. Diesel delivery connection - high pressure - to manifold (rail)
9. Diesel delivery connection - low pressure - recirculation

PRESSURE REGULATOR FILTER

The fuel pressure regulator is fitted to the pressure pump and controlled directly by the injection control unit. It regulates fuel feed pressure to the injectors.

The pressure regulator consists mainly of the following parts:

1. Ball plunger
2. Pin
3. Valve
4. Preload spring
5. Coil
6. Body
7. Anchor



4F021XJ01

MULTIFUNCTION VALVE

The multifunction valve is located on the fuel tank and performs the following functions:

- tank pressurisation
- ventilation
- seal if the car rolls over

Tank pressurisation

Tank pressurisation is maintained at a level between 55 and 75 mbars by means of a valve mounted on a sealing rim.

The valve is supported by a steel plate and held in place by a spring.

When tank pressure exceeds a specified level, it overcomes spring resistance and allows the valve to rise so that vapours can flow out.

When the pressure returns to within specified limits, the valve closes again

Ventilation

Under certain car service conditions, a vacuum may build up in the tank due to the effect of:

- heat changes;
- fuel consumption

in this case, the valve's function is to make up pressure inside the tank by letting air into the tank.

If this function is not performed correctly, the car may judder or stall due to difficulties in supplying the pump.

Seal if the car rolls over

The roll-over function prevents fuel emerging from the tank if the car rolls over or tilts to a great extent. During normal car operation (bends, acceleration, braking etc.), the fuel slops about and may emerge. The highly-sensitive roll-over valve prevents this happening.

DELIVERY MANIFOLD (RAIL)

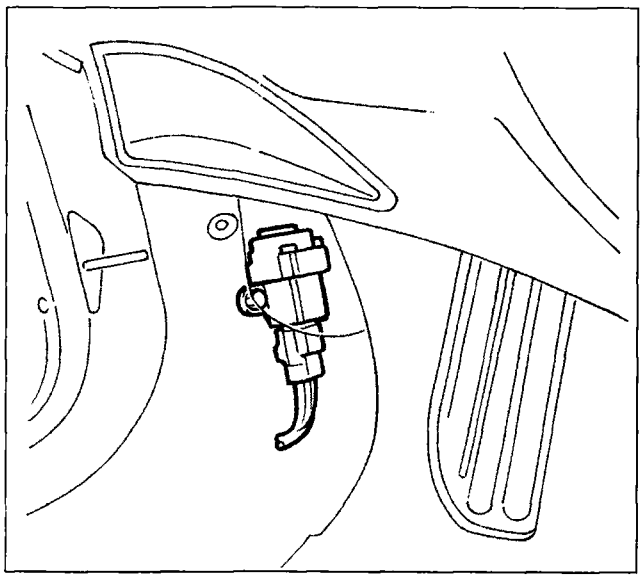
The delivery manifold (rail) is fitted to the cylinder head on the intake side.

Its volume damps fuel pressure fluctuations due mainly to:

- operation of the pressure pump;
- injector opening.

A fuel pressure sensor is fitted in the middle of the delivery manifold.
Hydraulic connections (high pressure) are via special steel pipes.

10.



4F022XJ01

INERTIA SAFETY SWITCH

To increase car occupant safety in the case of impact, the car is fitted with an inertia switch located inside the passenger compartment secured to the inside of the left panel.

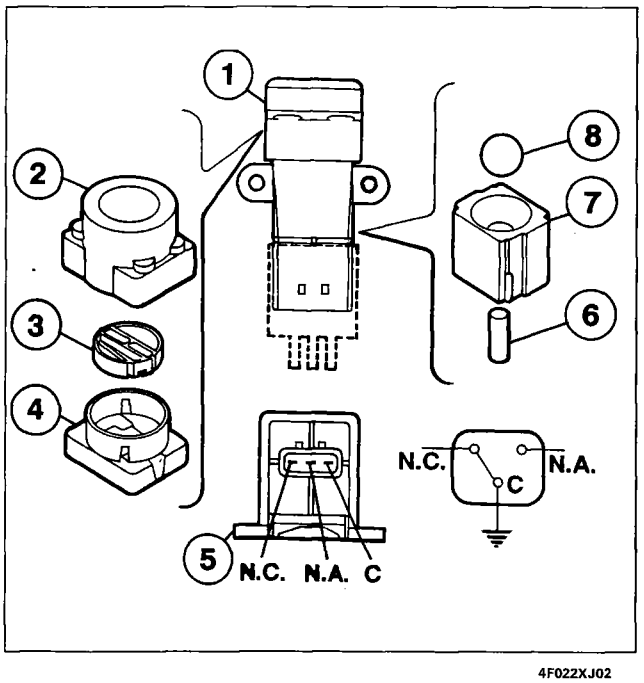
This sensor reduces the possibility of fire (due to emerging fuel) by deactivating the auxiliary fuel pump that supplies the injection circuit.

The switch consists of a steel ball, fitted in a tapered housing, kept in place by the attraction force of a permanent magnet.

In the case of violent impact, the ball is released from the magnetic detent and opens the normally closed (NC) electrical circuit to cut off the auxiliary fuel pump connection to earth, and as a consequence the supply to the injection system.

To restore the auxiliary pump earth connection, move back the seat and press the switch until a click is heard.

Even after an apparently slight impact. if there is a smell of fuel or there are leaks from the fuel system, do not turn the switch back on, but search for the fault and remedy it to prevent the risk of fire.



4F022XJ02

Inertia switch components

1. Inertia switch assembly
2. Sheath
3. Button
4. Upper side
5. Engagement side
6. Permanent magnet
7. Permanent magnet seat
8. Steel ball

C Common terminal
N.C. Normally closed contact
N.A. Normally open contact

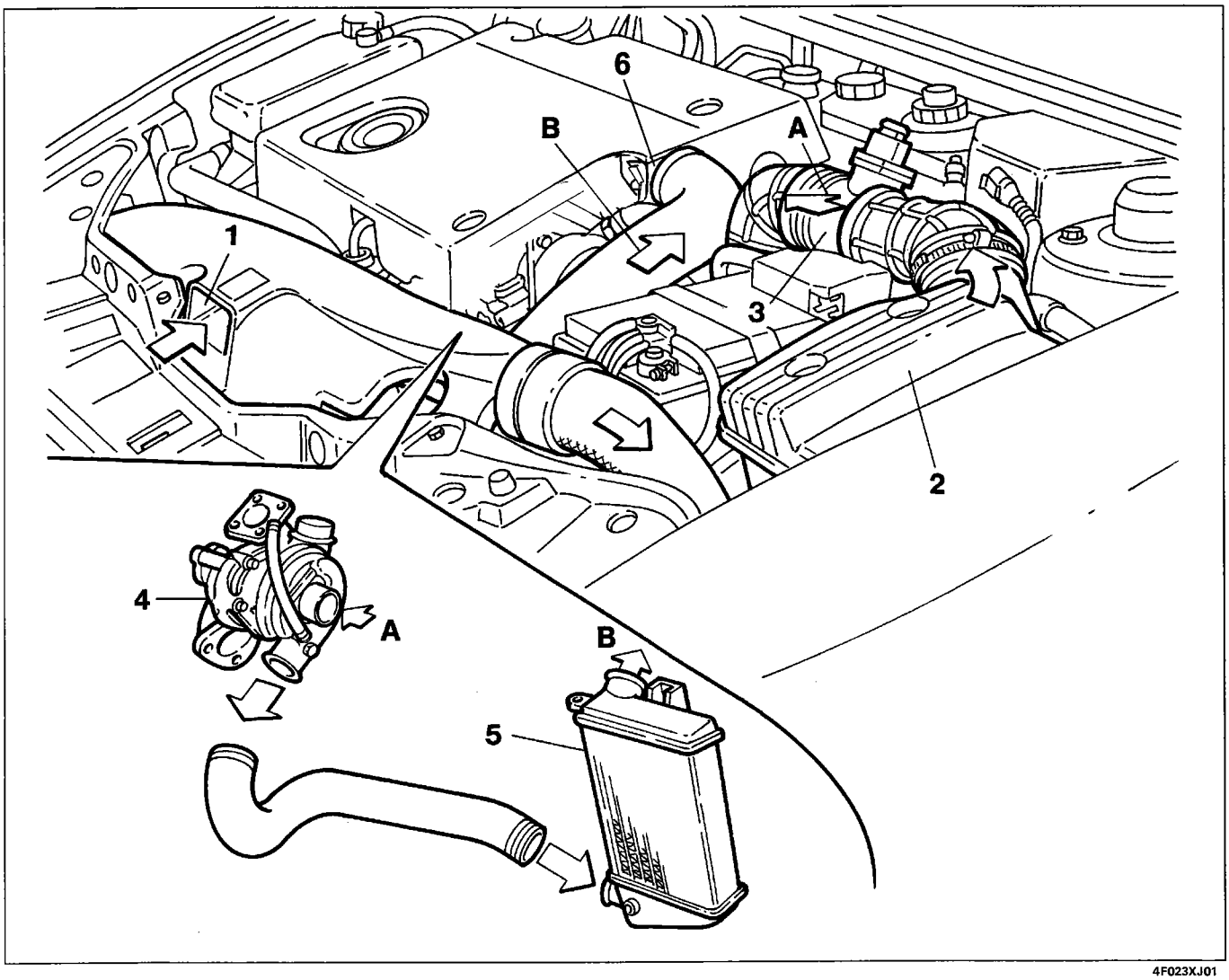
AIR INTAKE CIRCUIT

The air intake circuit is turbocharged by means of of a GARRET variable geometry turbocharger and an intercooler.

The turbocharger is low inertia type. Its design is based on a new principle of turbocharging whereby the turbocharger aims to increase torque within the range of most frequent use (e.g. at low speeds).

After passing through the filter (1), intake air is compressed by the exhaust gas-drive turbocharger (4), cooled by intercooler (5) and sent to throttle body (6) and the intake manifold from where it is distributed to the cylinders.

Air intake circuit diagram



4F023XJ01

1. Intake vent
2. Air filter
3. Intake air flow meter (debimeter)
4. Variable geometry turbocharger
5. Air-air intercooler
   A. To turbocharger
   B. To intake manifold
6. Throttle body

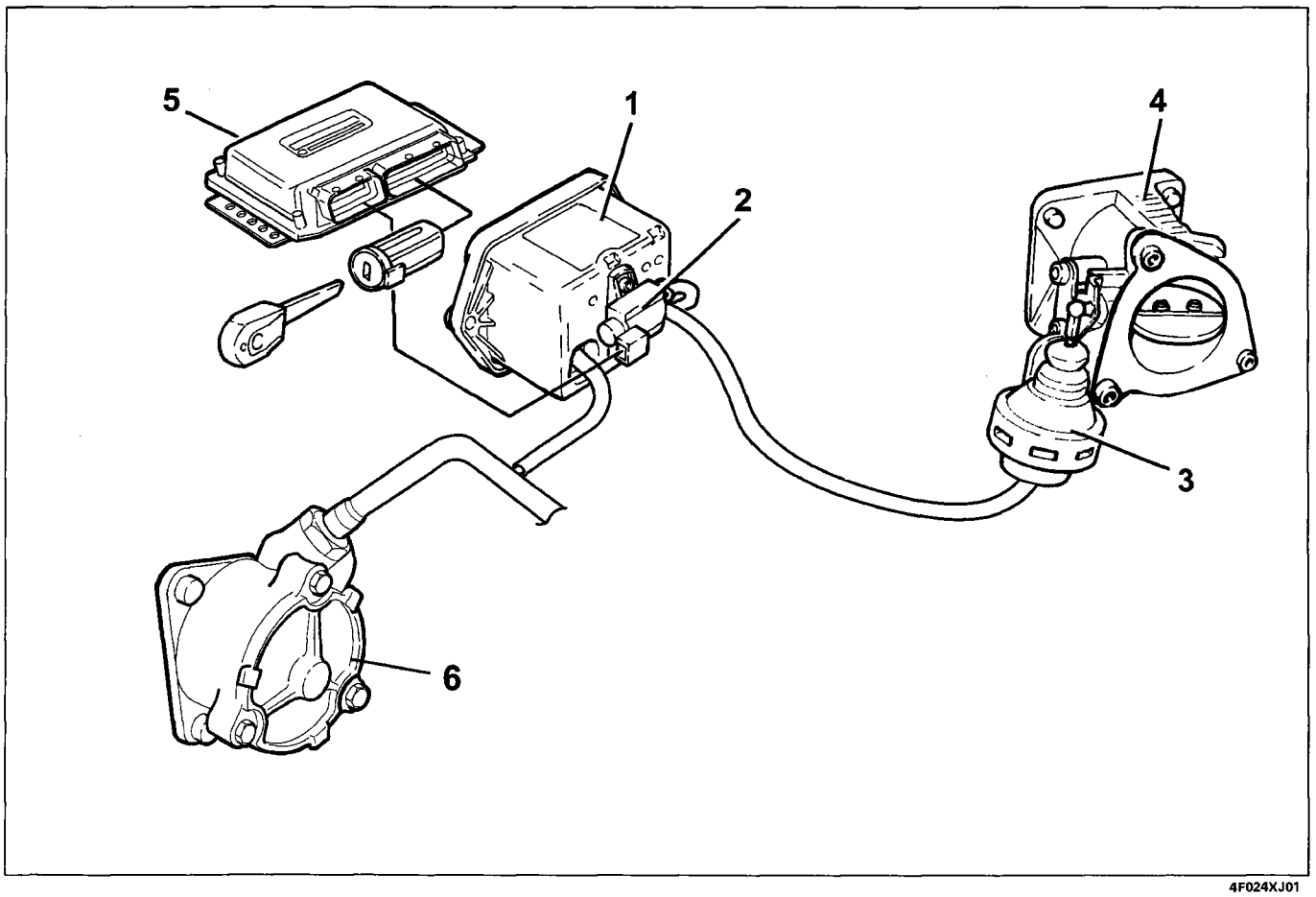
10.

THROTTLE BODY

To reduce engine noise during shut-down, a throttle has been added to the intake port with the aim of closing off the air flow to the cylinders.
Throttle valve opening or closure is controlled by an engine control unit (5) that manages a control actuator (3) on throttle body (4) via solenoid (2).

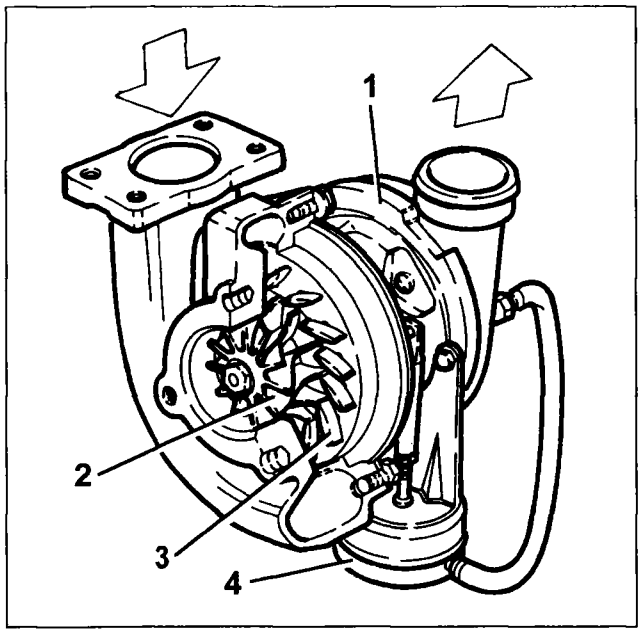
Operation

When the engine is off, the throttle is open because no vacuum is present.
When the engine is running, the throttle is open because the Pierburg solenoid is not activated and prevents the vacuum reaching the pneumatic actuator.
A vacuum builds up in the tank during engine operation.
During engine shut-down (when the ignition key is turned OFF), the control unit keeps the actuator supply relay activated for a further 4 or 5 seconds and simultaneously earths the Pierburg valve. The Pierburg valve opens to send the vacuum that has built up in the vacuum tank to the pneumatic actuator, which closes the throttle to cut off the flow of air to the cylinders.



4F024XJ01

1. Vacuum tank;
2. Pierburg solenoid controlling throttle body actuator;
3. Pneumatic actuator on throttle body
4. Throttle body
5. Engine control unit
6. Vacuum pump



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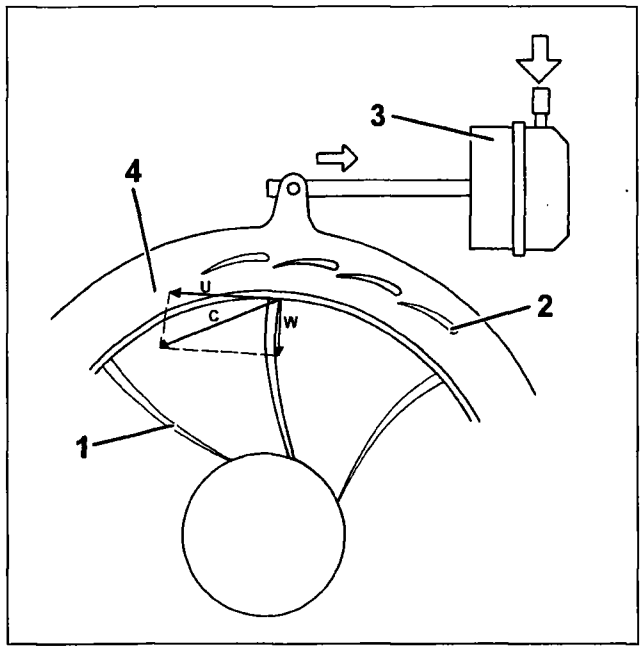

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TURBOCHARGER (1910 JTD 110 CV)

The turbocharger used in the application of the EURO 3 standards in the variable geometry type connected to the exhaust manifold.

The turbocharger is controlled by the engine management control unit via a duty-cycle solenoid valve.

The increased volumetric output for the engine is achieved, in the case of variable geometry compressors, through the use of:

- a centrifugal compressor (1)
- a turbine (2)
- a series of moving vanes (3)
- a pneumatic actuator (4) controlling the moving vanes.
- asolenoid valve (5) controlling the actuator

The variable geometry turbocharger makes it possible to:
- increase the speed of the exhaust gases in the turbine at low engine speeds
- slow down the speed of the exhaust gases in the turbine at high speeds.

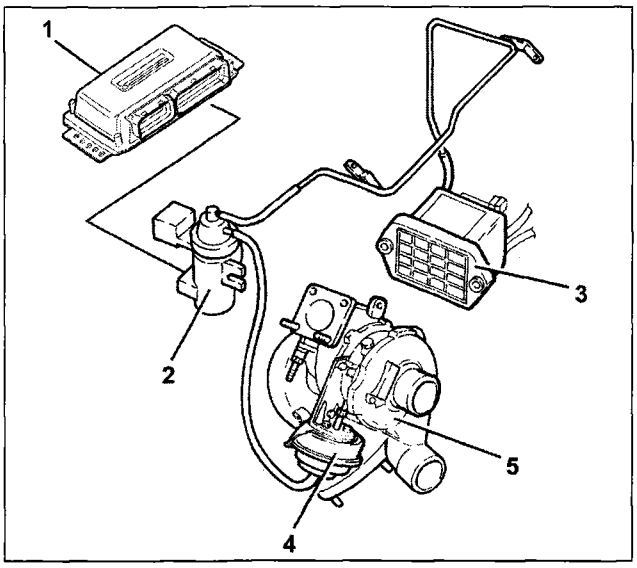
The control of the speed (kinetic energy) of the exhaust gases makes it possible to produce increased engine torque at low speeds and greater maximum power at high speeds.

Operation at low rotation speeds

When the engine is operating at low speeds, the exhaust gases possses little kinetic energy: under these circumstances a conventional turbine would rotate slowly, supplying a limited supercharging pressure.
On the other hand, in the variable geometry turbine (1), the moving vanes are in the maximum closure position and the small passage sections between the vanes increase the speed (C) of the intake gases.
Increased intake speeds lead to increased peripheral speeds (U) of the turbine and, consequently, the compressor.
The speed of the gases inside the impeller is indicated by the vector (W).

1. Turbine
2. Moving vanes
3. Pneumatic actuator
4. Rotary seal

10.



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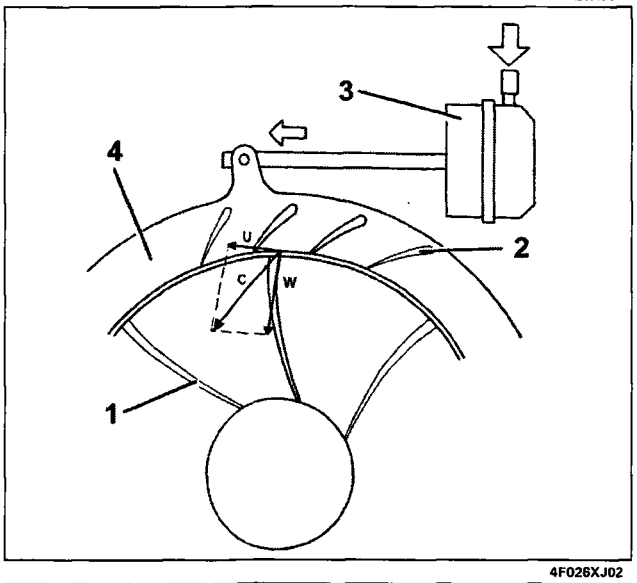

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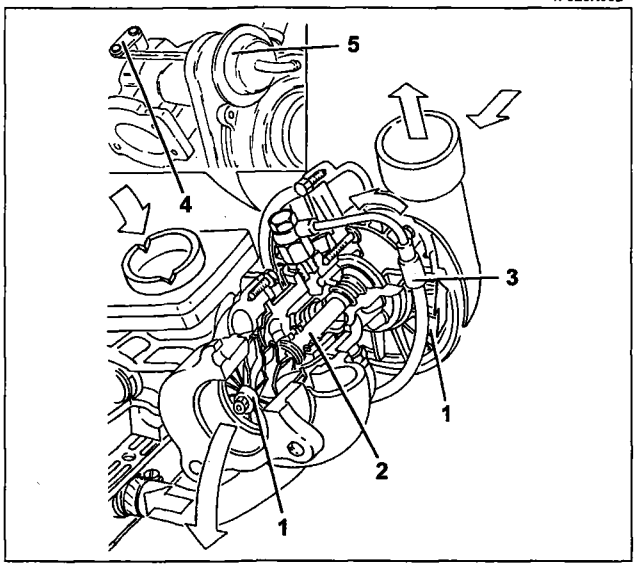


4F026XJ02

Operation at high rotation speeds

When the engine speed is increased, the kinetic energy of the exhaust gases increases gradually.
As a result, the speed of the turbine (5) increases and consequently the supercharging pressure.
The VGT solenoid valve (2) operated by the injection control unit (1), through the actuator (4) causes the moving vanes to change position until the maximum opening position is reached.

1. Injection control unit
2. VGT solenoid valve
3. Vacuum reservoir
4. Pneumatic actuator
5. Turbine

There is therefore an increase in the passage sections and consequently a slowing down in the flow of exhaust gases which pass through the turbine (1) at the same speed or slower than the low speed conditions.
The speed of the turbine (1) decreases and settles down at a suitable vaule for the correct operation of the engine at high speeds.

1. Turbine
2. Moving vanes
3. Pneumatic actuator
4. Rotary seal

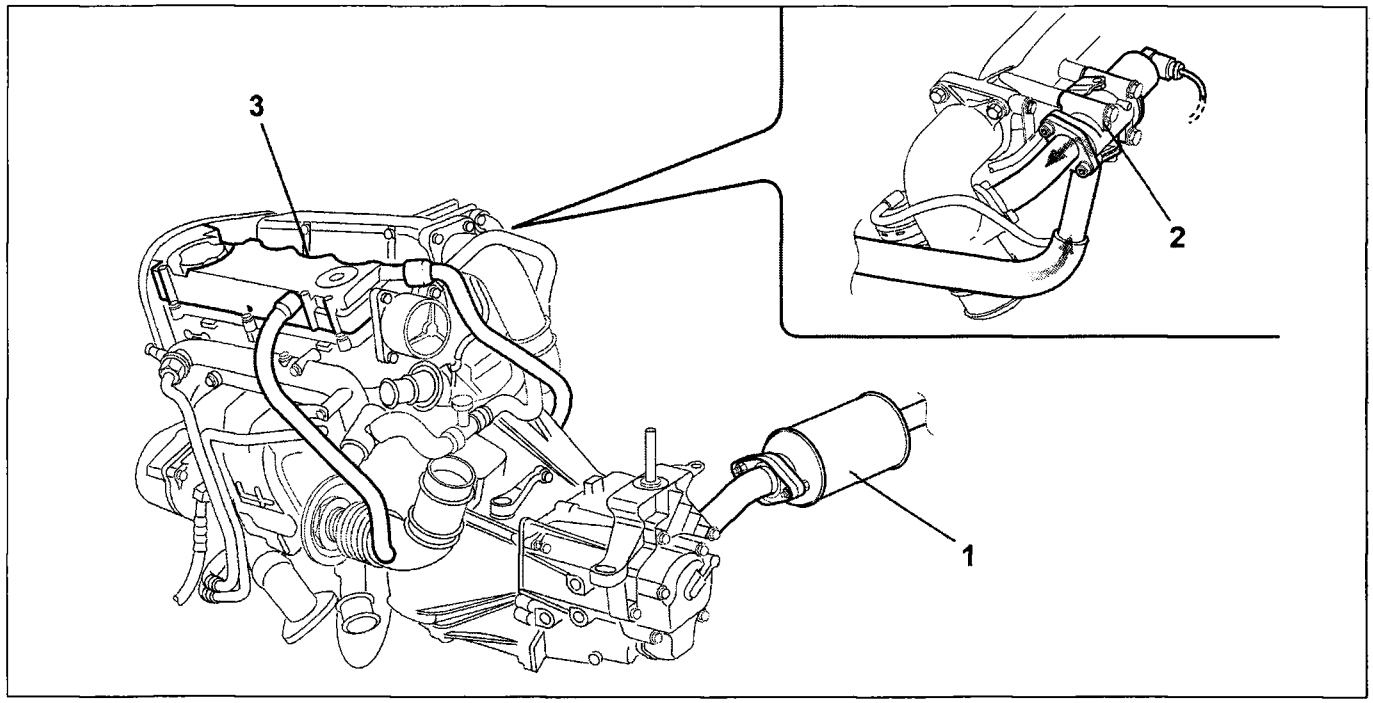
***TURBOCHARGER (1910 JTD 100 CV)**
It basically consists of two impellers (1) on one shaft (2) which rotates on floating bearings lubricated by a duct (3) from the engine lubrication circuit.
The oil used dissipates some of the large amount of heat given off by the exhaust gases at the turbine.
There is a waste gate valve (4) fitted on the turbocharger, operated by a pneumatic actuator (5), that makes it possible to shutter the flow of exhaust gases to the turbine, according to the engine power/torque requirements.
The pneumatic actuator is controlled by the engine management control unit via a solenoid valve.

* The turbocharger used on the 1910 JTD 100 CV version is the fixed geometry type.

EMISSION CONTROL DEVICES

The car is equipped with devices designed to reduce polluting emissions in accordance with Euro 3 reguirements:

- Oxidising catalytic converter (1)
- Exhaust gas recirculation circuit (EGR) (2)
- Crankcase blow-by vapour recirculation circuit (3).



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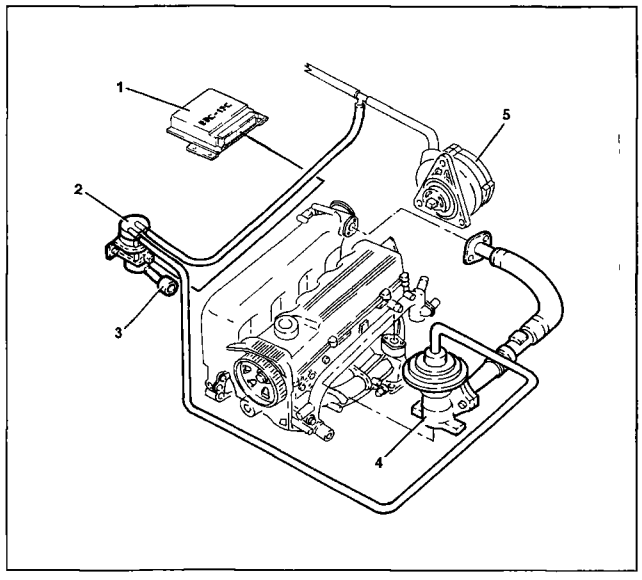


4F0Z7XJ02

OXIDISING CATALYTIC CONVERTER

The oxidising catalytic converter is a post-treatment device used to oxidise CO, HC and particulate and convert them to carbon dioxide (CO2) and water vapour (H2O).
The catalytic converter consists of a ceramic honeycomb case (1) with its chambers impregnated with platinum, a substance that catalyses oxidation reactions.
Exhaust gases flow through the chambers and heat the catalytic converter where they trigger the conversion of pollutants to inert compounds.
The chemical reaction involved in oxidising the CO, HC and particulate is effective at temperatures between 200 °C and 350 °C.
Above 350 °C, the sulphur in the diesel begins to oxidise to produce sulphur dioxide and sulphuric acid.

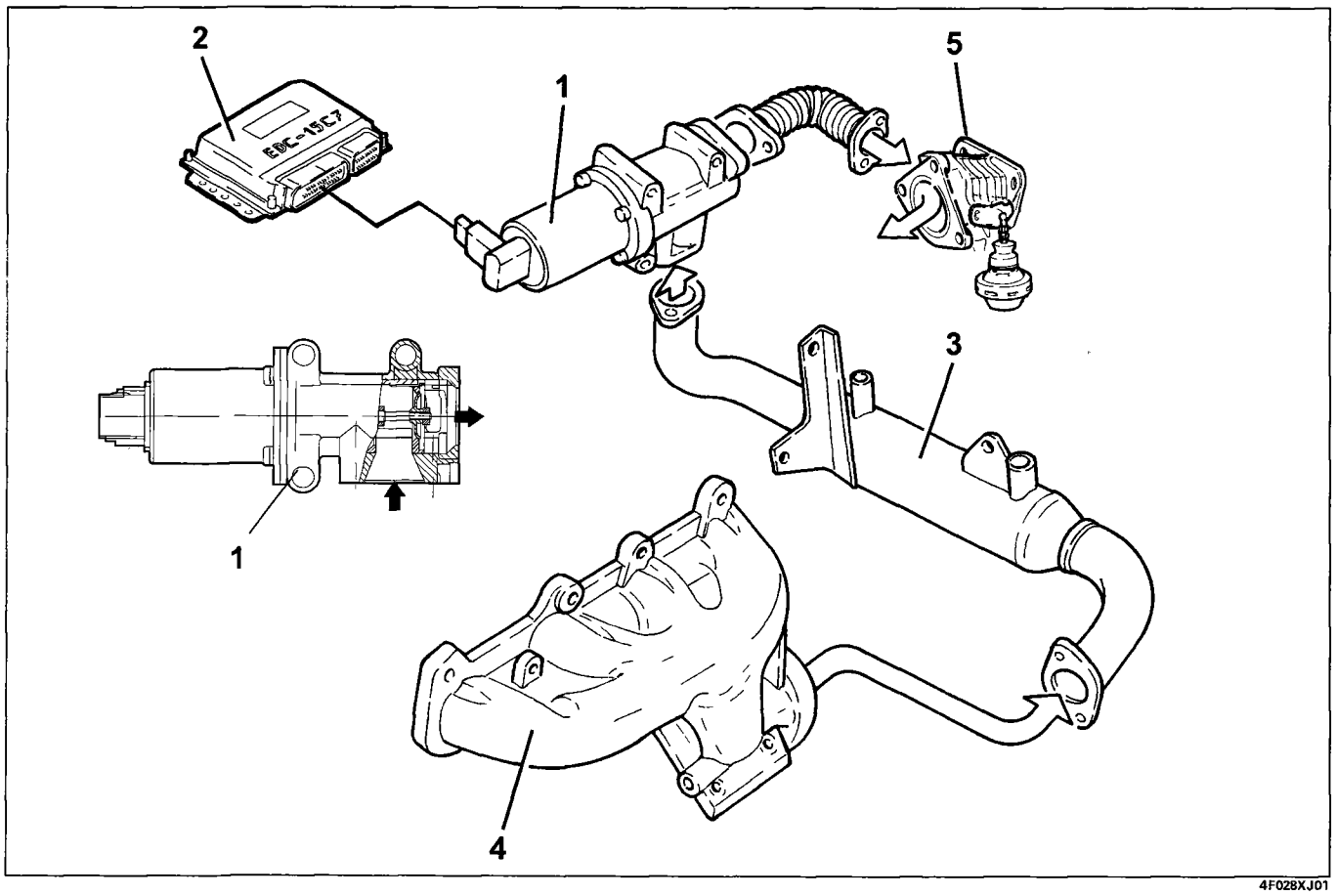
EXHAUST GAS RECIRCULATION CIRCUIT (EGR)

This system sends a proportion of exhaust gases to the intake under certain engine service conditions. This dilutes the fuel mixture with inert gsaes to lower peak temperature in the combustion chamber; This helps limit the formation of nitrogen oxides (NOx) and reduces exhaust levels by 30-50%.

10.

The EGR valve consists of:

- a Pierburg EGR solenoid (1) operated by engine management unit (2)
- a pipe from the exhaust manifold (4) (from which the exhaust gases flow)
- an air-water heat exchanger (3) (that lowers exhaust gas temperature)
- a pipe connected to throttle body (5) to which exhaust gases are admitted



4F028XJ01

Operation

With coolant temperature > 20°C and engine speeds between 800 and 3000 rpm, the engine management unit controls the EGR solenoid by means of a square wave signal.

Changes in this signal allow the EGR coil to move a plunger and thus modulate the flow of exhaust gas from the exhaust manifold to the intake manifold; this achieves two results:

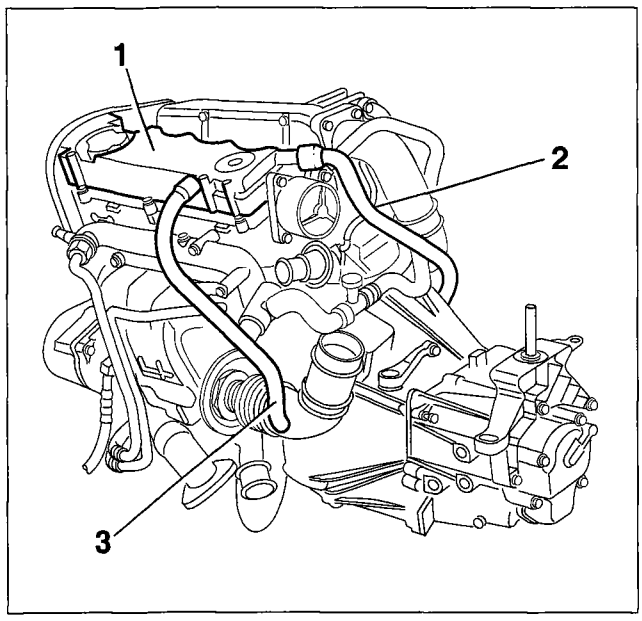
- less air is taken in
- combustion temperature is lowered (due to the presence of inert gases), thus reducing the formation of NOx (nitrogen oxides).

The engine management control unit is constantly informed of recirculation gas quantity via data from the debimeter. If the intake of a given quantity of air (Qam) is required for a given rpm and the level sent by the debimeter (Qar) is lower, the difference (Qgr) is the amount of gas recirculated.

Qam – Qar = Qgr

Qam = stored theoretical air quantity
Qar = actual air quantity
Qgr = recirculated gas quantity

An atmospheric pressure signal is used in controlling the EGR valve to detect when the car is being driven at altitude. The recirculation gas quantity can then be reduced to prevent engine fumes.



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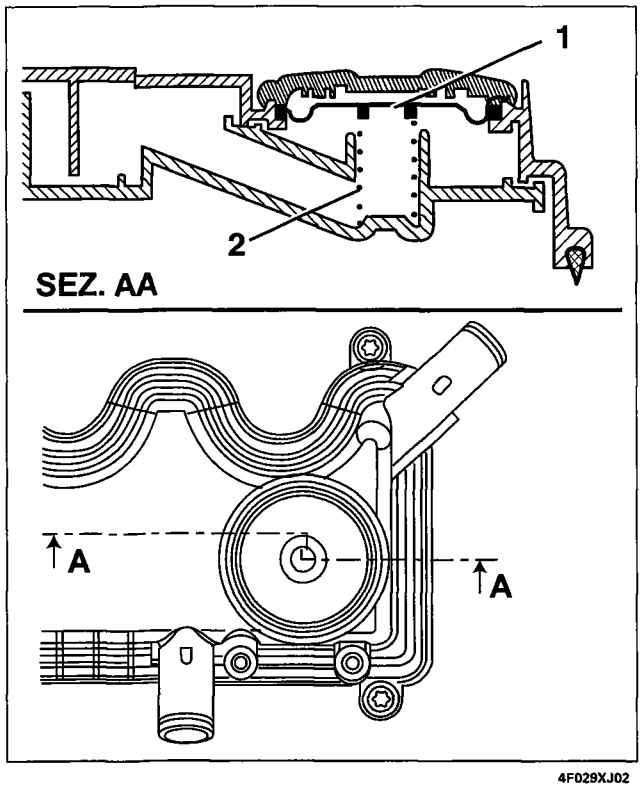

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RECIRCULATION CIRCUIT FOR CRANK-CASE VAPOURS (BLOW-BY)

The control of the oil vapour emissions is achieved through a separator (1) (function carried out by the tappet cover) which collects the vapours released by the crankcase in the pipe (2).

The difference in temperature between the separator and the oil vapours causes partial condensation.

The vapours which have not condensed are sent, via the pipe (3), to the turbocharger air intake hose.

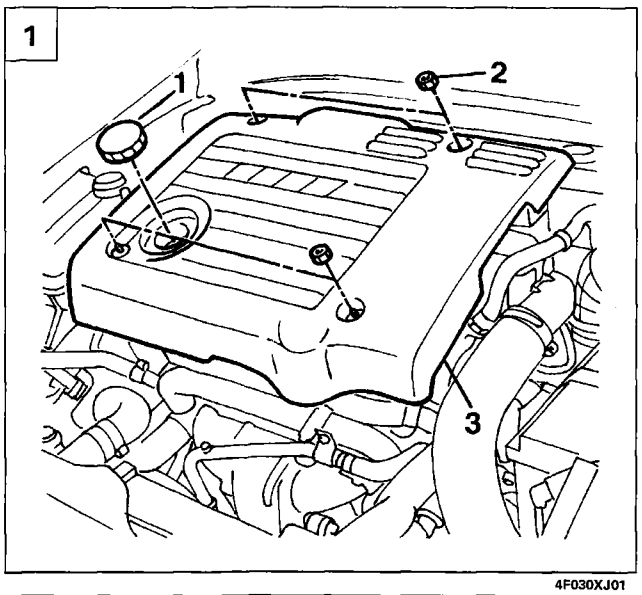
The adjustment valve, consisting of a spring (1) and a diaphragm (2), on the tappet cover makes it possible to prevent intake.

When the vacuum values inside the tappet cover exceed a pre-set limit, the diaphragm moves downwards sealing the duct from the crankcase.

10.

THROTTLE CASING

1



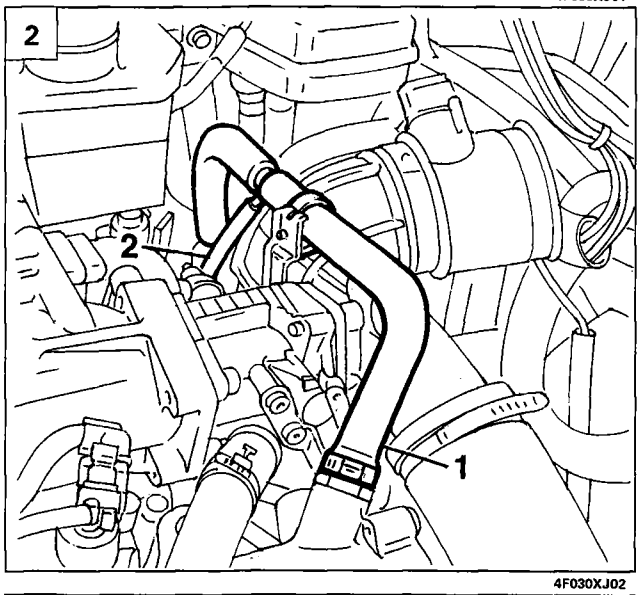
4F030XJ01

Removing-refitting

- Remove the battery from the engine compartment, then proceed as described below;

1. Remove the engine oil filler cap (1), then undo the fixing nuts (2) and remove the sound insulation cover (3).

2



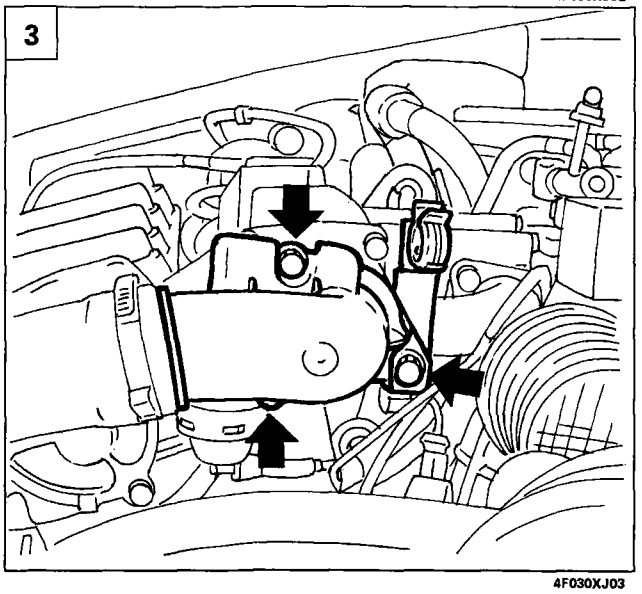
4F030XJ02

2. Disconnect the vacuum intake pipe (1) from the vacuum unit acting on the retaining band. Also disconnect the pipe (2) connected to the vacuum reservoir.

3. Undo the bolts fixing the connector pipe between the throttle casing and the hose connected to the intercooler.

4. Disconnect the oil vapour recovery pipe from the tappet cover, acting on the retaining band.

3



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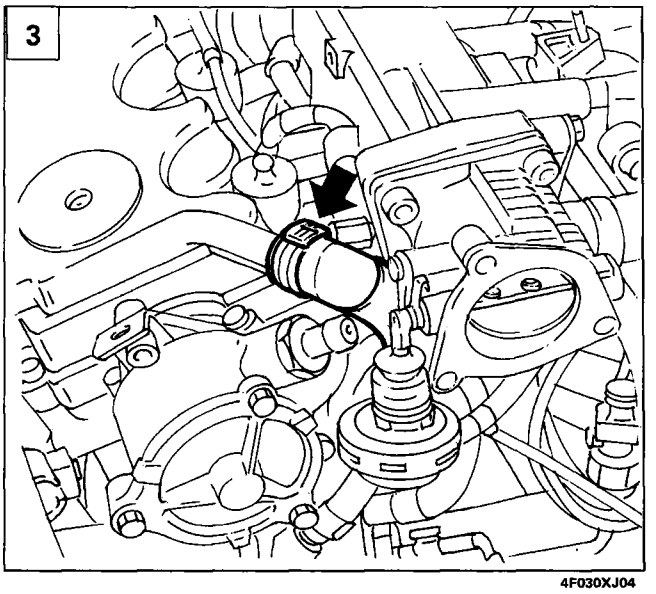

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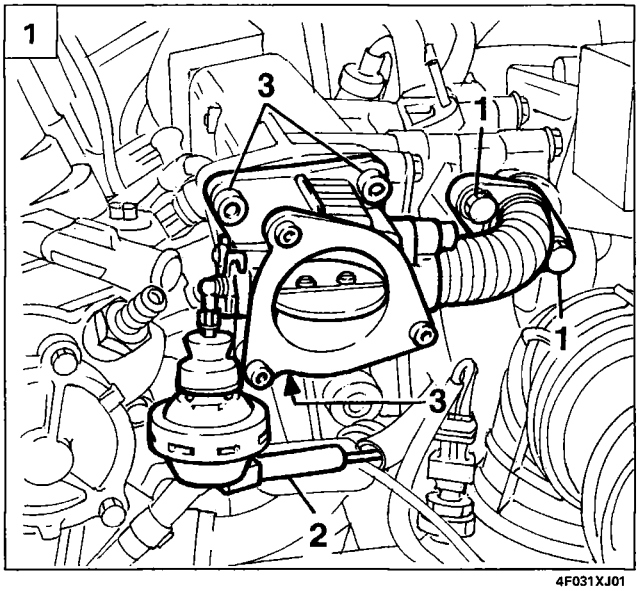

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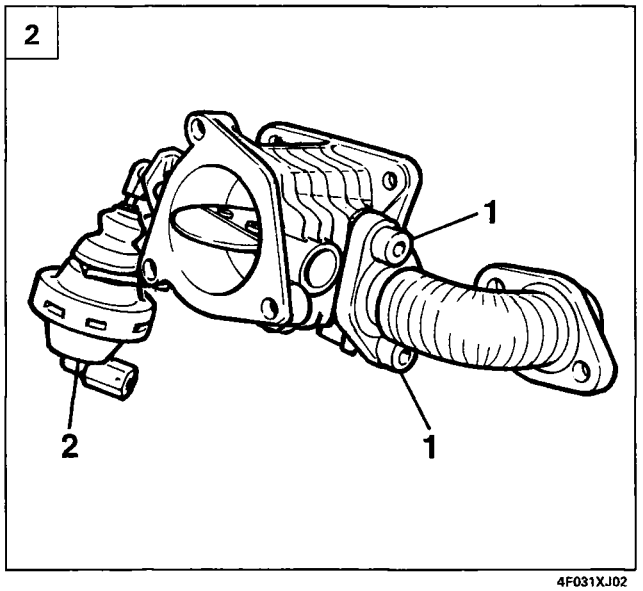


4F031XJ02

1. Undo the bolts (1) fixing the expansion joint to the E.G.R. valve, disconnect the pipe connecting the pneumatic valve and the solenoid valve, then undo the bolts (3) and remove the throttle casing.

2. At the bench, undo the bolts (1) and separate the expansion joint from the throttle casing.
The pneumatic valve (2) is secured to the throttle casing.

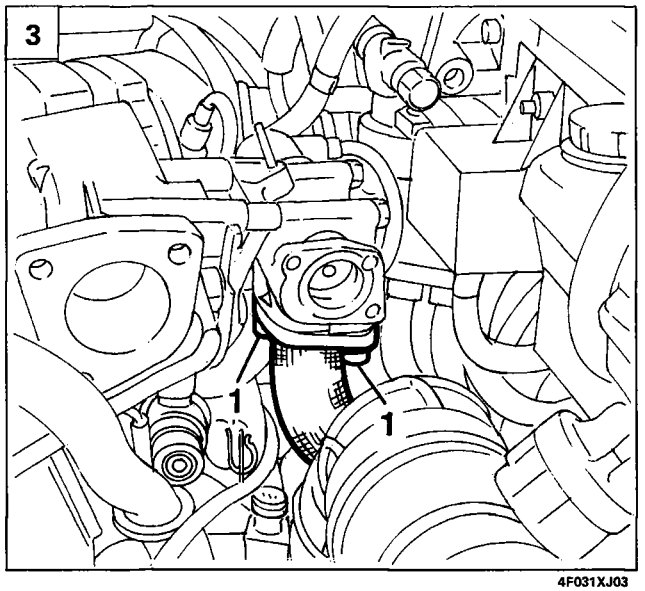
E.G.R. VALVE

Removing-refitting

- Remove the throttle casing, following the description in the previous paragraph.

3. Loosen the bolts (1) fixing the pipe connecting the E.G.R. and the heat exchanger.

4. Disconnect the electrical connection (1) for the E.G.R. valve self-adjustment motor; undo the bolts (2) fixing the E.G.R. valve to the intake manifold, then lift up the valve and remove the bolts fixing the pipe connected to the heat exchanger (loosened previously).



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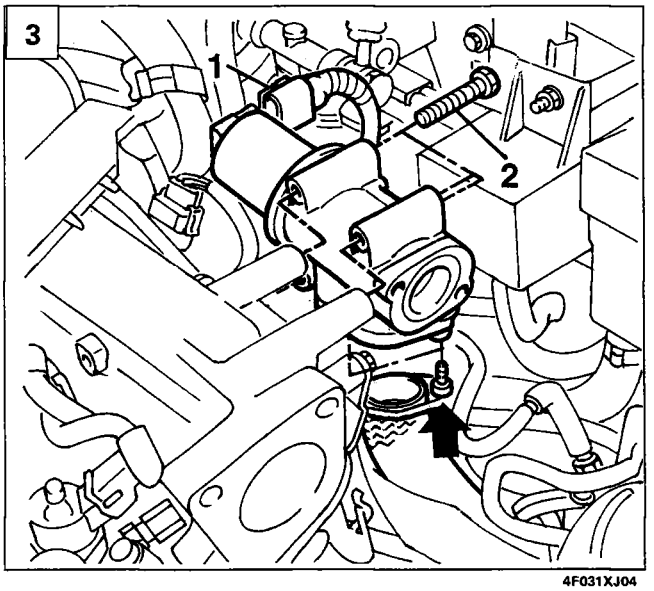

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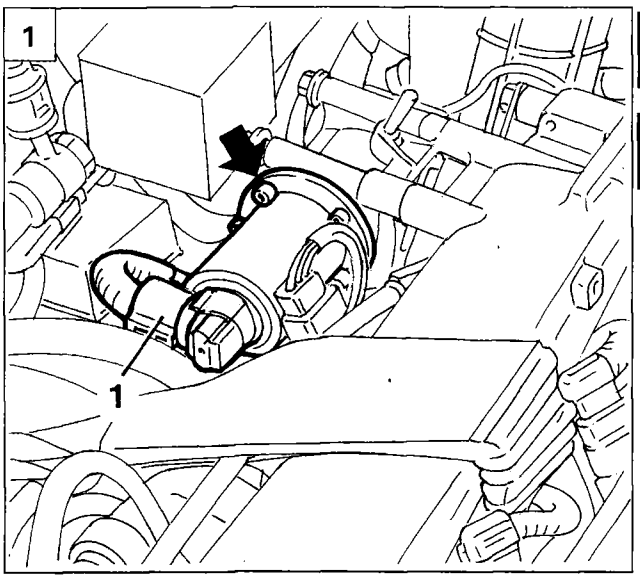

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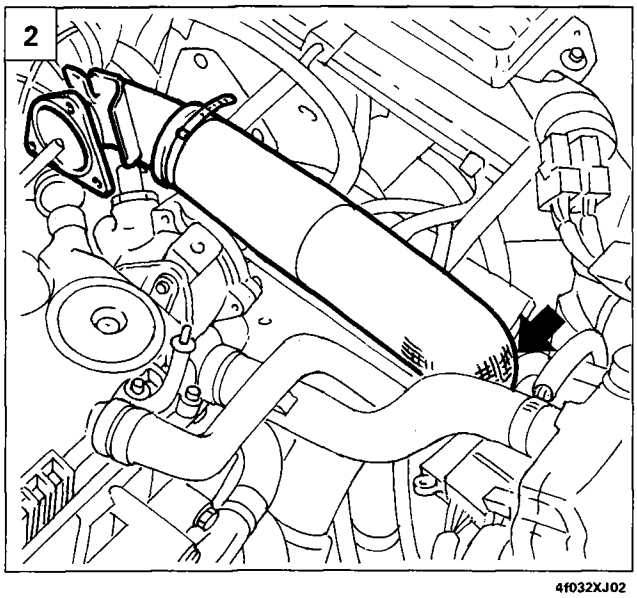

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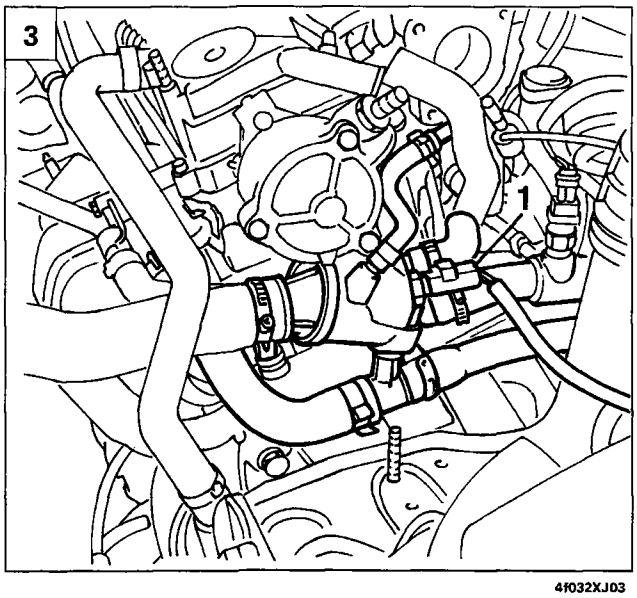


4f032XJ03

E.G.R. VALVE SELF-ADJUSTMENT MOTOR

Removing-refitting

- Disconnect the negative battery lead, then remove the sound insulation shield following the instructions in the previous paragraphs.

1. Disconnect the electrical connection (1), then loosen the bolts fixing the E.G.R. valve self-adjustment motor and remove it.

E.G.R. VALVE HEAT EXCHANGER

Removing-refitting

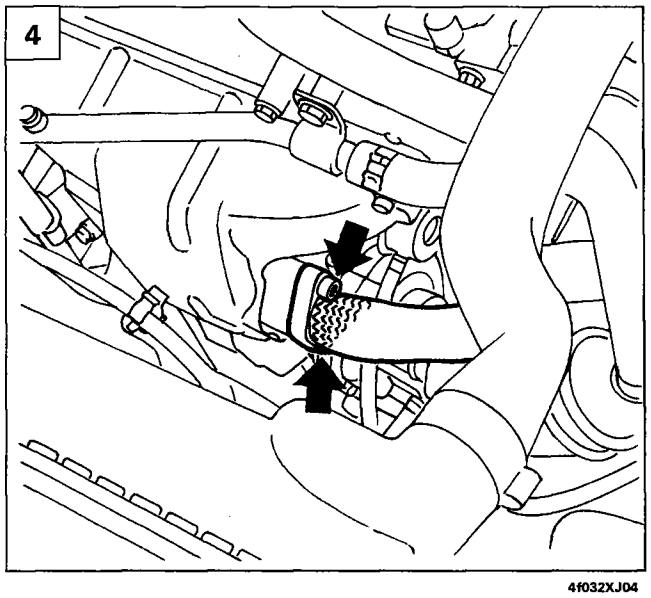
- Remove the throttle casing and the E.G.R. valve following the instructions in the previous paragraphs.

2. Remove the hose connecting the throttle casing to the intercooler.

- Drain the engine coolant.

3. Disconnect the pipes shown in the figure from the thermostat, acting on the retaining bands, then disconnect the electrical connection (1) for the engine coolant temperature sensor.

4. Undo the bolts fixing the heat exchanger pipe to the exhaust manifold.



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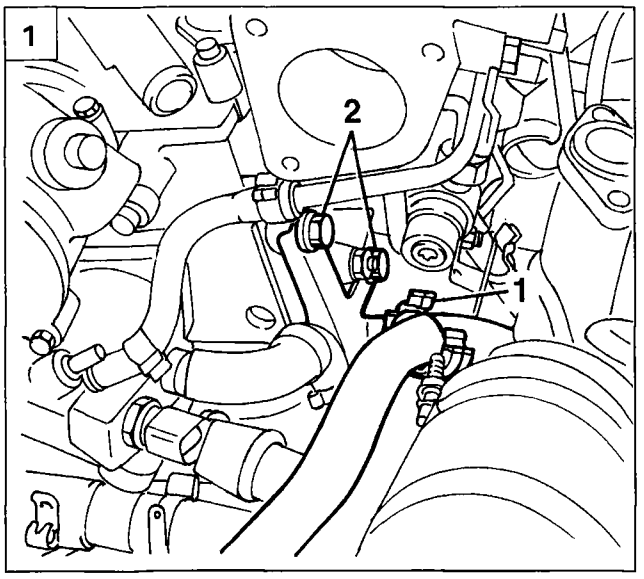

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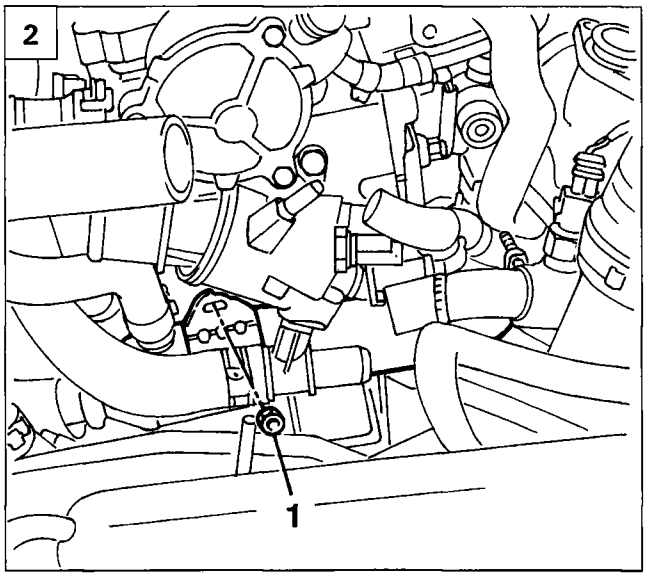

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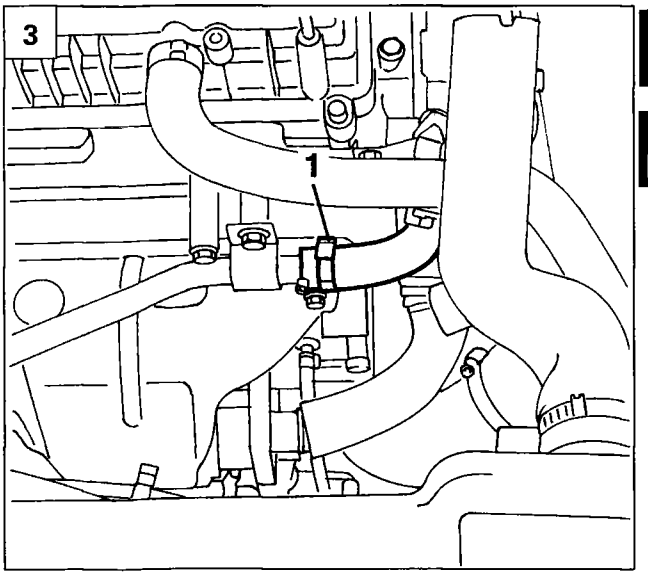

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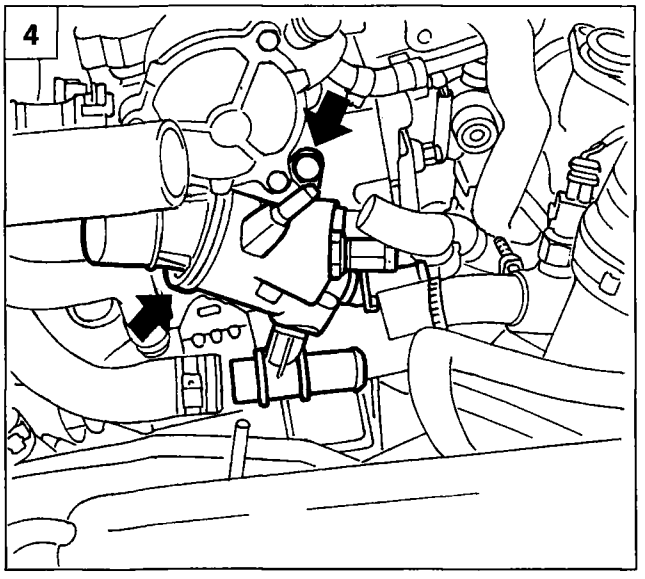
1. Open the band (1) retaining the oil vapour recovery pipe, then undo the bolts (2) fixing the E.G.R. valve heat exchanger mounting bracket.
2. Undo the nut (1), located under the thermostat, fixing the heat exchanger.
3. Disconnect the band (1) retaining the coolant pipe for the heat exchanger.
4. Undo the bolts shown in the diagram and remove the thermostat to allow the subsequent extraction of the heat exchanger.
5. Remove the heat exchanger from the engine compartment.



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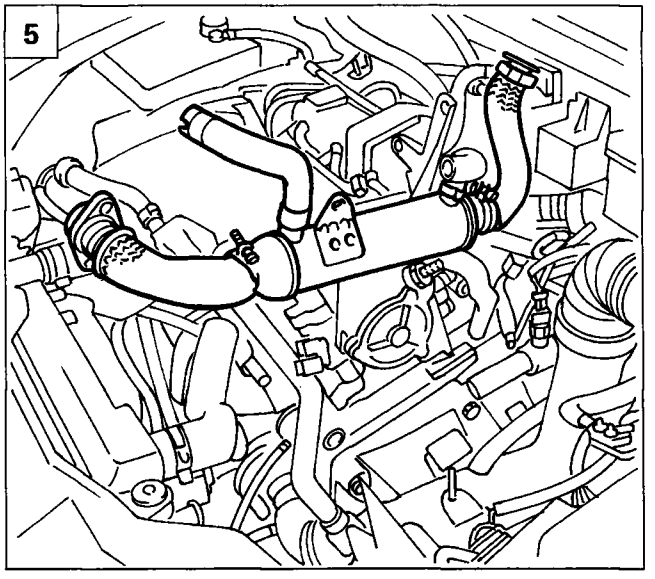

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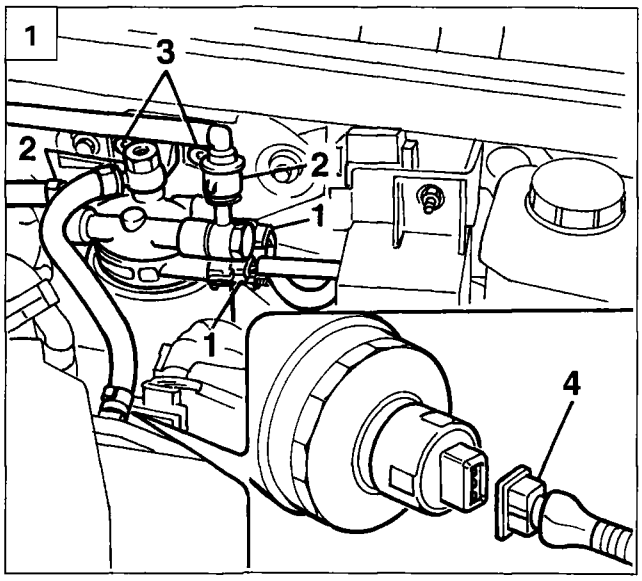
1



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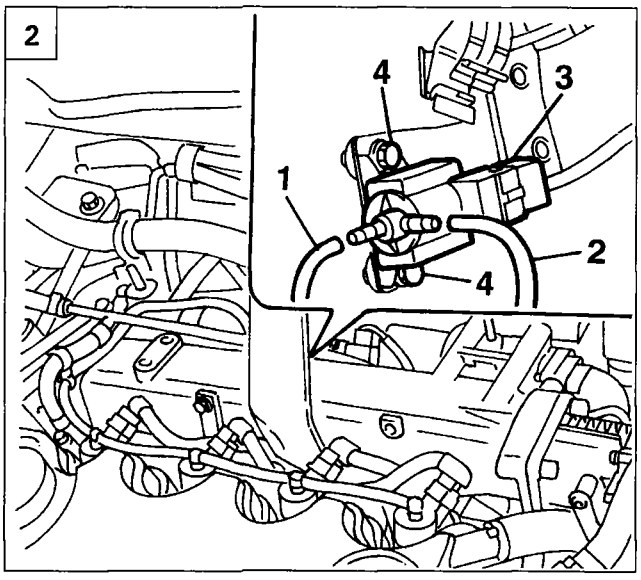

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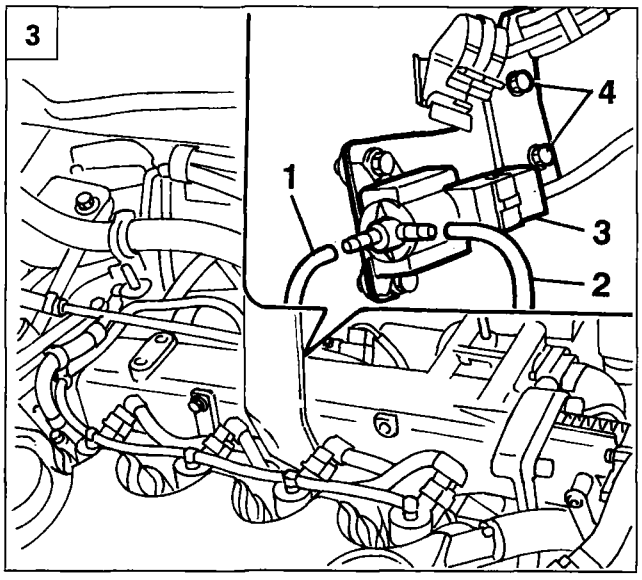


4F034XJ03

SOLENOID VALVE ON VACUUM RESERVOIR FOR THROTTLE CASING PNEUMATIC VALVE

Removing-refitting

- Disconnect the negative battery lead, then remove the sound insulation shield following the instructions in the previous paragraphs.

1. Disconnect the electrical connections (1) at the fuel filter and the supply and return pipes (2) at the reservoir and the supply pipe to the pump, then loosen the nuts (3) fixing the fuel filter mounting. Lift up the filter and disconnect the electrical connection (4) for the water in the diesel sensor.

- Release the power assisted steering fluid supply pipe from the reservoir to the pump from the retaining band.

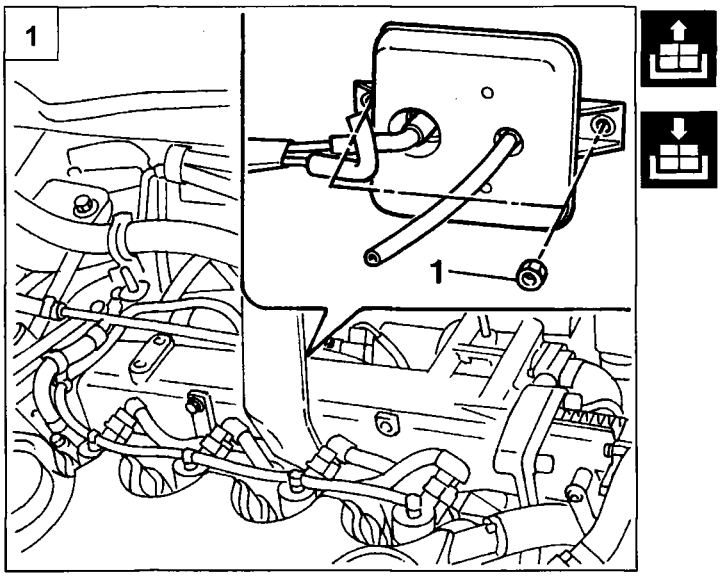
2. Disconnect the pipe (1) connected to the vacuum reservoir and the pipe (2) connected to the vacuum intake pipe from the solenoid valve. Disconnect the electrical connector (3), then undo the fixing bolts (4) and remove the solenoid valve.

VACUUM RESERVOIR

Removing-refitting

- Disconnect the negative battery lead, then remove the sound insulation shield and the fuel filter, following the instructions in the previous paragraphs.
- Release the power assisted steering fluid supply pipe from the reservoir to the pump from the retaining band.

3. Disconnect the pipe (1) connected to the vacuum reservoir and the pipe (2) connected to the vacuum intake pipe from the solenoid valve. Disconnect the electrical connector (3), then undo the fixing bolts (4) and remove the bracket, complete with solenoid valve, for the throttle casing pneumatic valve.



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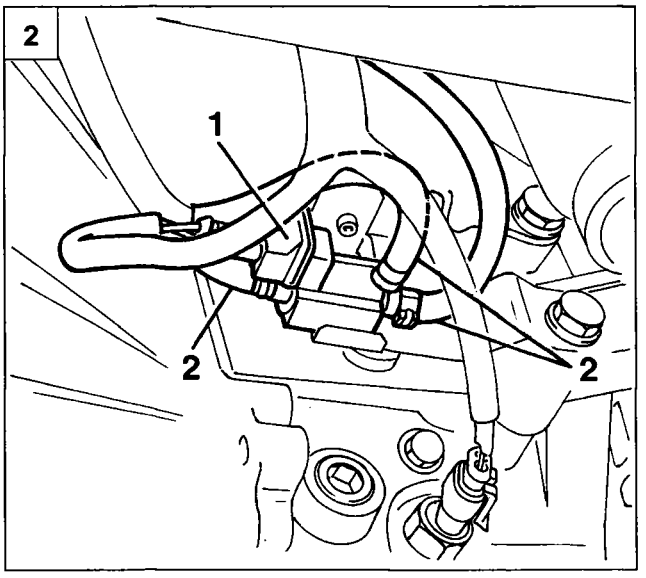
1. Undo the fixing nuts (1) and remove the vacuum reservoir.

SOLENOID VALVE CONTROLLING SUPERCHARGING PRESSURE

Removing-refitting

- Position the vehicle on a lift, then disconnect the negative battery lead.
2. Working from underneath the vehicle, disconnect the electrical connector (1) and the pipes (2).
3. Press the retaining tab on the rear of the mounting bracket and release the solenoid valve.



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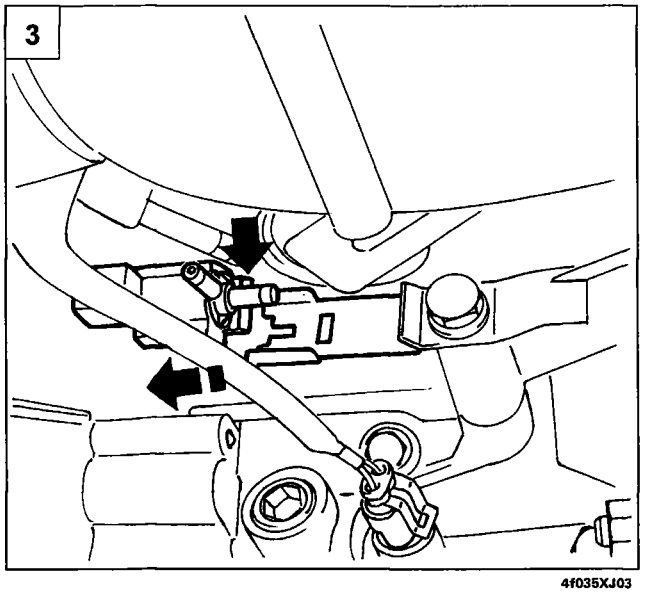
FUEL FILTER

Removing-refitting

4. Disconnect the electrical connections (1) from the fuel filter and the supply and return pipes to the tank and the supply pipes to the pump (2), then undo the nuts (3) fixing the fuel filter mounting. Lift up the filter and disconnect the electrical connection (4) for the water in the diesel sensor.



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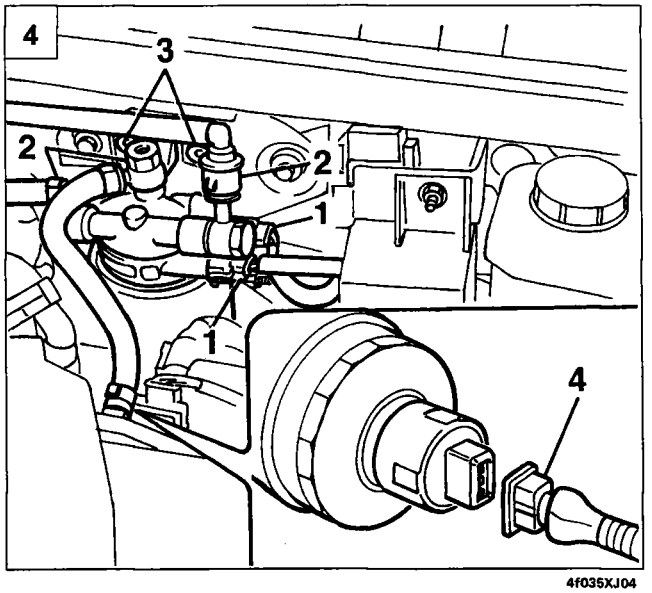

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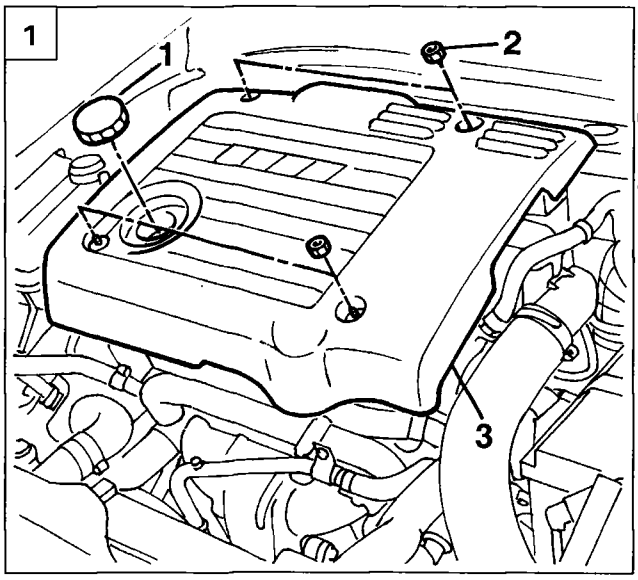

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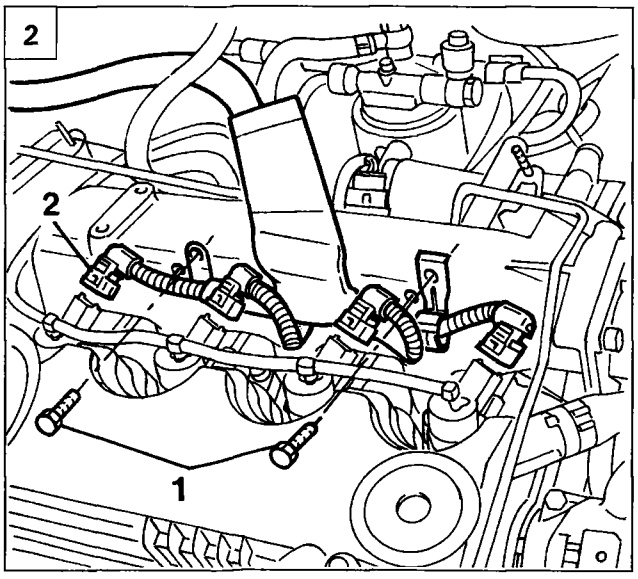

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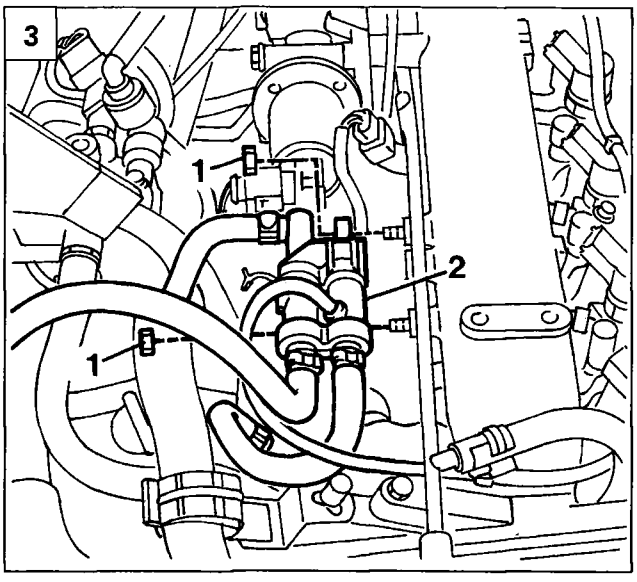


4f036XJ03

PRESSURE REGULATOR

NOTE *During the operations of removing-refitting the pressure regulator, work in extremely clean conditions.*

Removing

- If the vehicle is equipped with a shield under the engine, remove it.

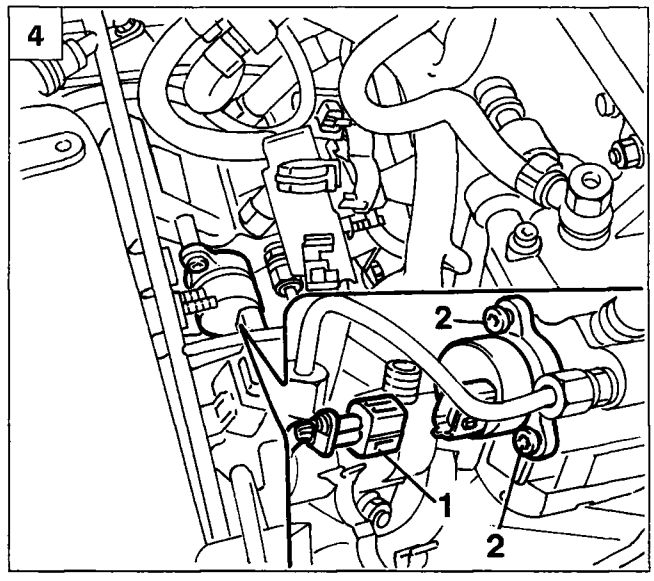
1. Remove the engine oil filler plug (1), then undo the fixing nuts (2) and remove the sound insulation cover (3).

2. Undo the bolts (1) fixing the retaining bands for the injector wiring.
   Disconnect the electrical connectors (2) for the injectors and place the wiring to the side.

- Release the injection cable loom from the retaining bands.

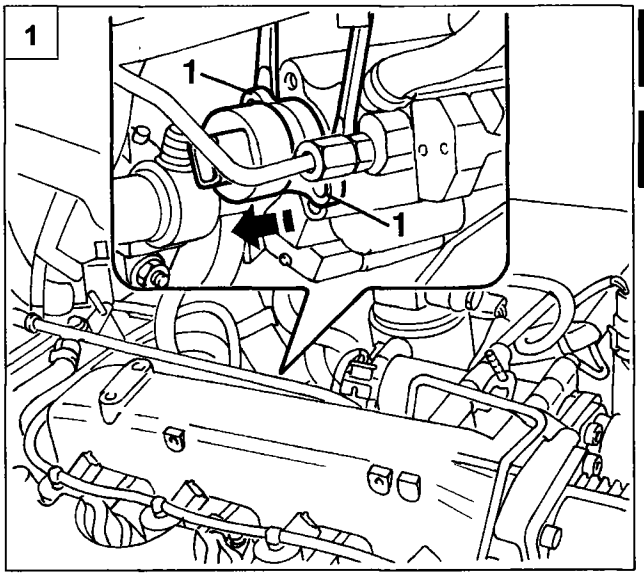
3. Undo the nuts (1) fixing the fuel return manifold pipe (2) to the intake manifold.
   Place the fuel return manifold pipe to the side.

4. Disconnect the electrical connector (1) for the pressure regulator, then undo the bolts (2) fixing the regulator to the pump.



4f036XJ04

1



4f037XJ01

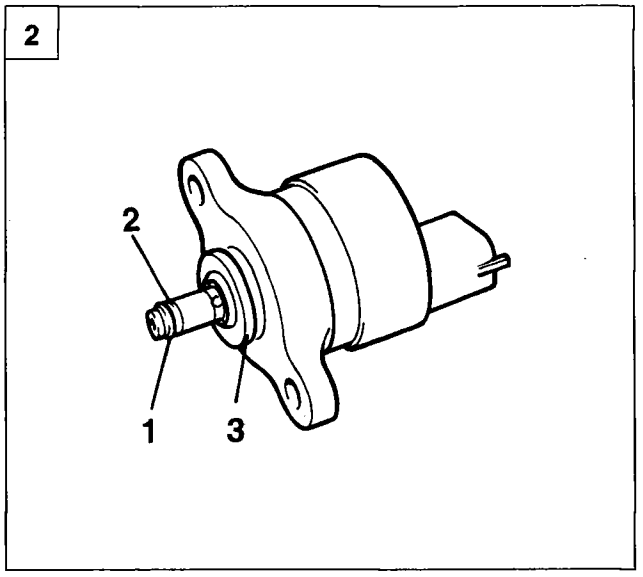
1. Grip the outer casing of the regulator, partly extract it and, at the same time, rotate it so that the fins (1) which contain the openings for the fixing bolts are positioned horizontally.

NOTA *Do not grip the pressure regulator by the electrical connector.*

Insert the blades of two screwdrivers by the fins (1) and very carefully extract the pressure regulator.

NOTE *Do not use a screwdriver or other tools in the seal areas between the regulator and the pressure pump.*

2



4f037XJ02

2. Pressure regulator

1. High pressure seal (black or green)
2. Anti-extrusion seal (white)
3. Low pressure seal (black)

NOTE *If the high pressure seal accidentally remains inside the pump casing, turn the ignition key to the ON position (engine switched off); this will operate the pump shaft and a small amount of fuel and the seal will come out.*

NOTE *Do not, under any circumstances, use any tools for extracting the high pressure seal and this could damage the inner surface of the pump.*

Refitting

- Suction off any impurities present inside the pump casing.
- Check the condition of the three seals and make sure they are correctly positioned before fitting.
- Slightly lubricate the outer surface of the three seals using vaseline. Do not, under any circumstances, lubricate the other surfaces of the pressure regulator.
- Insert the pressure regulator in its housing on the pump, pressing gently and, at the same time, rotating the regulator until it is is contact with the surface of the pump.

NOTE *Do not, under any circumstances, use a hammer or other tools when fitting the pressure regulator.*

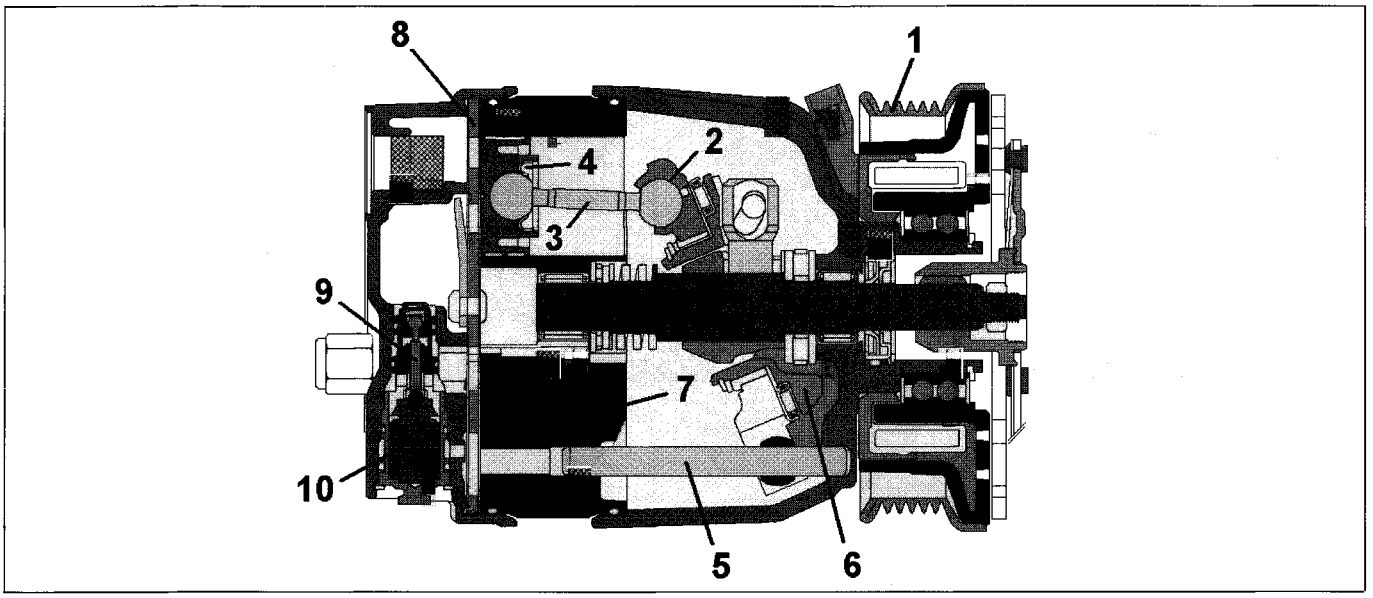
- Fit the two bolts fixing the pressure regulator to the pump acsing, and tighten them to a torque of 0.9±0.1 daNm.
- Reconnect the electrical connector and complete the refitting of the remaining components reversing the order of the operations carried out for the removal.

page

**FOR ANYTHING NOT DEALT WITH,
REFER TO THE BASIC MANUAL, SECTION 50.**

COMPRESSOR (1596 engine)

The compressor fitted on this version is the HR V5 variable capacity type, illustrated in the diagram below, and consists of:
- a crankcase (7) which contains the bores in which the pistons (4) slide;
- an assembly comprising a shaft on which an inclined plate (6) is fitted on which a disc (2) guided by a pin (5) integral with the five connecting rods (3) controlled by the pistons (4) rotates on roller bearings;
- a cylinder head which contains the intake and supply ducts as well as the housing for the regulation valve (9);
- a plate (8), between the crankcase and the cylinder head, which contains the inlet and supply valves;
- a pulley assembly with an electro-magnet coupling (1).



4F001EH01

1. Pulley with coupling
2. Disc
3. Connecting rod
4. Piston
5. Disc guide pin
6. Inclined plate
7. Crankcase
8. Valve holder plate
9. Regulation valve
10. Valve control bellows

Operation

The alternating drive required for the sliding of the pistons in the bores/liners is produced by the rotary motion of the inclined plate (6), whilst the variation in the capacity, dependent on the piston stroke, is chieved through the alteration in the angle of the disc (2) controlling the connecting rods (3).
The inclination of the above mentioned disc depends on the difference in pressure between the intake duct and the inside of the compressor. This difference, measured by the bellows (10), operates the regulation valve (9) and consequently causes the movement of the disc (2).
When the request for conditioned air is high, the regulation valve (9) is positioned in such a way that it uncovers an opening which places the intake side in contact with the inside of the compressor; as, in this case, there is no difference in pressure, the compressor operates at maximum capacity corresponding to the position of the disc illustrated in the previous section.
When the air request is less, the valve is positioned so that the supply section is in contact with the crankcase and, at the same time, it stops the flow between the latter and the intake side activated previously.

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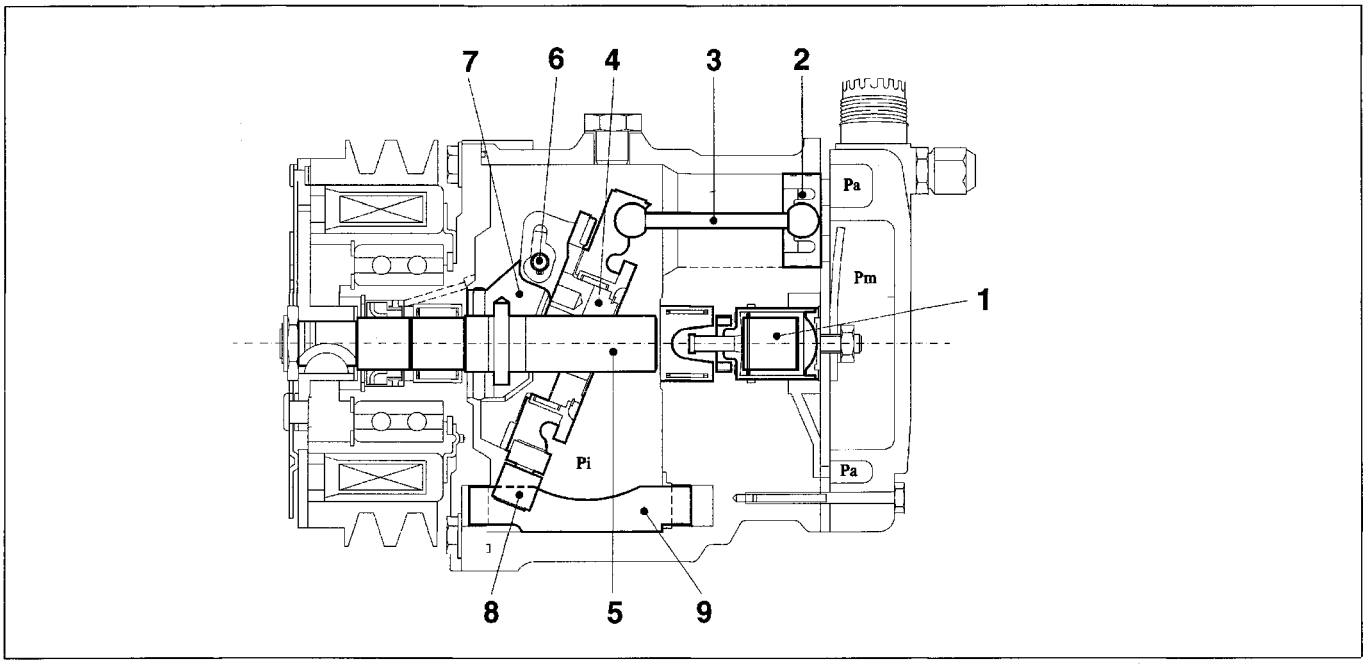
COMPRESSOR (1910 JTD)

The compressor fitted on this version is the SANDEN SD7V16 variable capacity type.
The capacity of the compressor varies starting from the maximum value (161.3 cm^3/rev) and is gradually reduced (up to 10.4 cm^3/rev) according to the system load variations. - changed outside temperature and/or humidity conditions or sharp variations in the engine load.
This solution is defined as "unlimited variable capacity".
The compressor is the alternating piston type: the variation in capacity is achieved by tilting the connecting rod holder plate with a consequent variation of the piston stroke: the movement of the plate is activated by an internal regulation valve according to the balance of pressure upstream and downstream of the compressor. In particular, a low intake pressure involves the shuttering of the compressor (reduced capacity), whilst a high pressure involves operation at maximum power (maximum capacity).



4F002EH01

1 Diaphgram valve
2 Pistons
3 Connecting rods
4 Connecting rod plate
5 Shaft
6 Pin
7 Arm
8 Slide
9 Guide
Pa Intake pressure
Pi Pressure inside the compressor
Pm Supply pressure

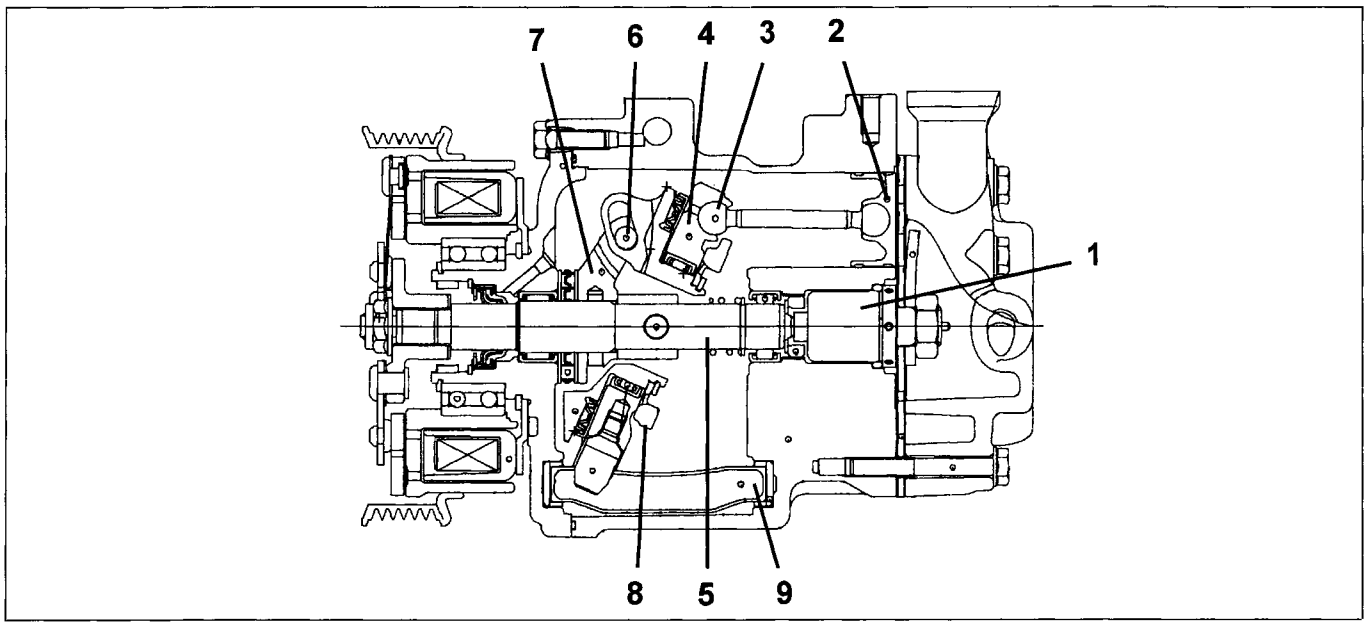
Operation

The SD7V16 compressor is illustrated in the diagram; it consists of seven pistons (2) and connecting rods (3) fastened to a connecting rod holder plate (4). The rotary motion of the plate (4), on the shaft (5) produces the alternating movement of the pistons.
A change in the plate angle allows an alteration in capacity: maximum inclination (as in the diagram) for maximum capacity; almost zero inclination (vertical position) for minimum capacity (virtually nil).
The plate (4) rotates around the pin (6) hinged on the shaft (5) arm (7).
The movement of the plate (4) in relation to the shaft (5) takes place by means of splining made from a low resistance material.
The plate (4) slides below along a guide (9) via a runner (8) made from a low friction material.
The diaphragm valve (1) controls the flow rate adjustment according to the difference between Pa (intake pressure) and Pi (pressure inside the compressor).

N.B. the solution adopted for this compressor is designed to keep the internal pressure Pi constant, with advantages in terms of ease of adjustment and quiet, smooth operation.

COMPRESSOR (1998 engine)

The compressor fitted on this version is the SANDEN SD6V12 variable capacity type.
The capacity of the compressor varies starting from the maximum value (125.1 cm^3/rev) and is gradually reduced (up to 6.2 cm^3/rev) according to the system load variations. - changed outside temperature and/or humidity conditions or sharp variations in the engine load.
This solution is defined as "unlimited variable capacity".
The compressor is the alternating piston type: the variation in capacity is achieved by tilting the connecting rod holder plate with a consequent variation of the piston stroke: the movement of the plate is activated by an internal regulation valve according to the balance of pressure upstream and downstream of the compressor. In particular, a low intake pressure involves the shuttering of the compressor (reduced capacity), whilst a high pressure involves operation at maximum power (maximum capacity).



4F003EH01

1. Diaphgram valve
2. Pistons
3. Connecting rods
4. Connecting rod plate
5. Shaft
6. Pin
7. Arm
8. Slide
9. Guide

Operation

The operation is the same as described for the previous SANDEN 7V16 compressor.

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SPECIFICATIONS

TABLE SHOWING QUANTITIES OF OIL AND GAS FOR CLIMATE CONTROL SYSTEM

The table below summarizes the types of oil and the quantities of oil and coolant.

ENGINE TYPE	COMPRESSOR	TYPE OF OIL	QUANTITY OF OIL (cm^3)	QUANTITY OF GAS (g)
1596 16V	HR V5	UNICON RL 488	265	600 ± 25
1998 20V	SD 6V12	SP10	135	600 ± 25
1910 JTD	SD 7V16	SP10	135	600 ± 25

**FOR ANYTHNING NOT DEALT WITH,
REFER TO THE BASIC MANUAL, ASSEMBLY 50.**

page

PROTECTION AND SAFETY DEVICES

All the vehicle supply lines were designed taking into account the most up-to-date directives in terms of safety and protection, especially to prevent fires.

There are 2 types of protection:
- active protection, aims to reduce the causes of faults "at source"
- passive protection, aims to limit the effects of a fault as much as possible

The first category includes a carefully designed wiring layout with wires positioned and carefully anchored on tracks that are repaired and protected if necessary.
The cables connected to the alternator and the motor were modified for this reason by adding protective caps etc. A strengthened sheath was also introduced for some of the more exposed sections of wiring.

The passive protection includes all interventions to reduce faults due to high current (overload, short circuit).

All system fuses were rated based on the nominal absorbtion of the loads activated at the same time, to ensure intervention in cases of a clear short circuit.

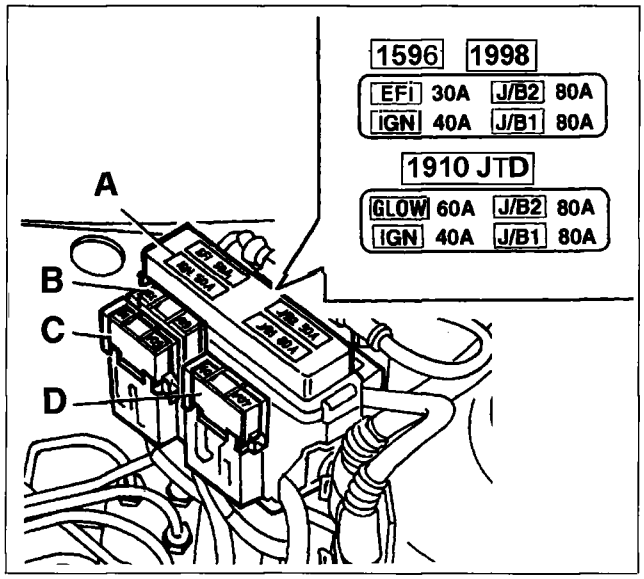
The introduction of a box containing 4 maxifuses with other fuses connected on the outside means all the supplies can be protected except for the cable that connects the battery to the starter motor and the cable that connects the starter motor to the recharging alternator. These cables are therefore protected by a strengthened supplementary sheath.

In "MAXI" fusebox **A**:

EFI electronic injection fuse (petrol)
GLOW: plug fuse (diesel)
IGN: ignition switch fuse
J/B2 fuse master supply
J/B1 fuse master supply

Next to the box.

B: fan fuse (see table)
C: ABS 60A fuse
D: second fan fuse: 40A (JTD)



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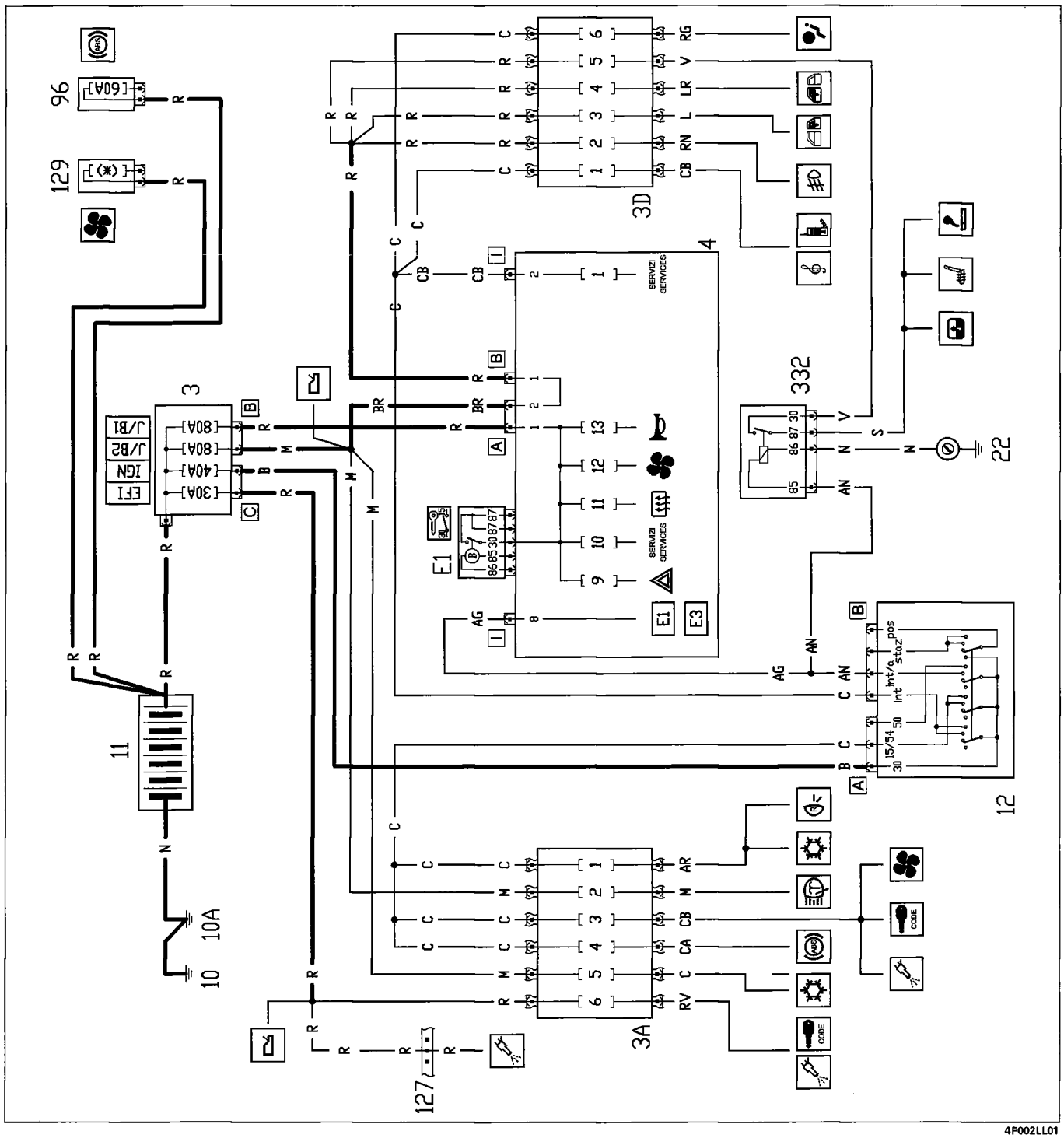
FUSE B	
30A	engine petrol without air conditioner
40A	1596 with air conditioning, JTD
50A	1998 wth air conditioning

55.

Main supplies wiring diagram (petrol engine types)

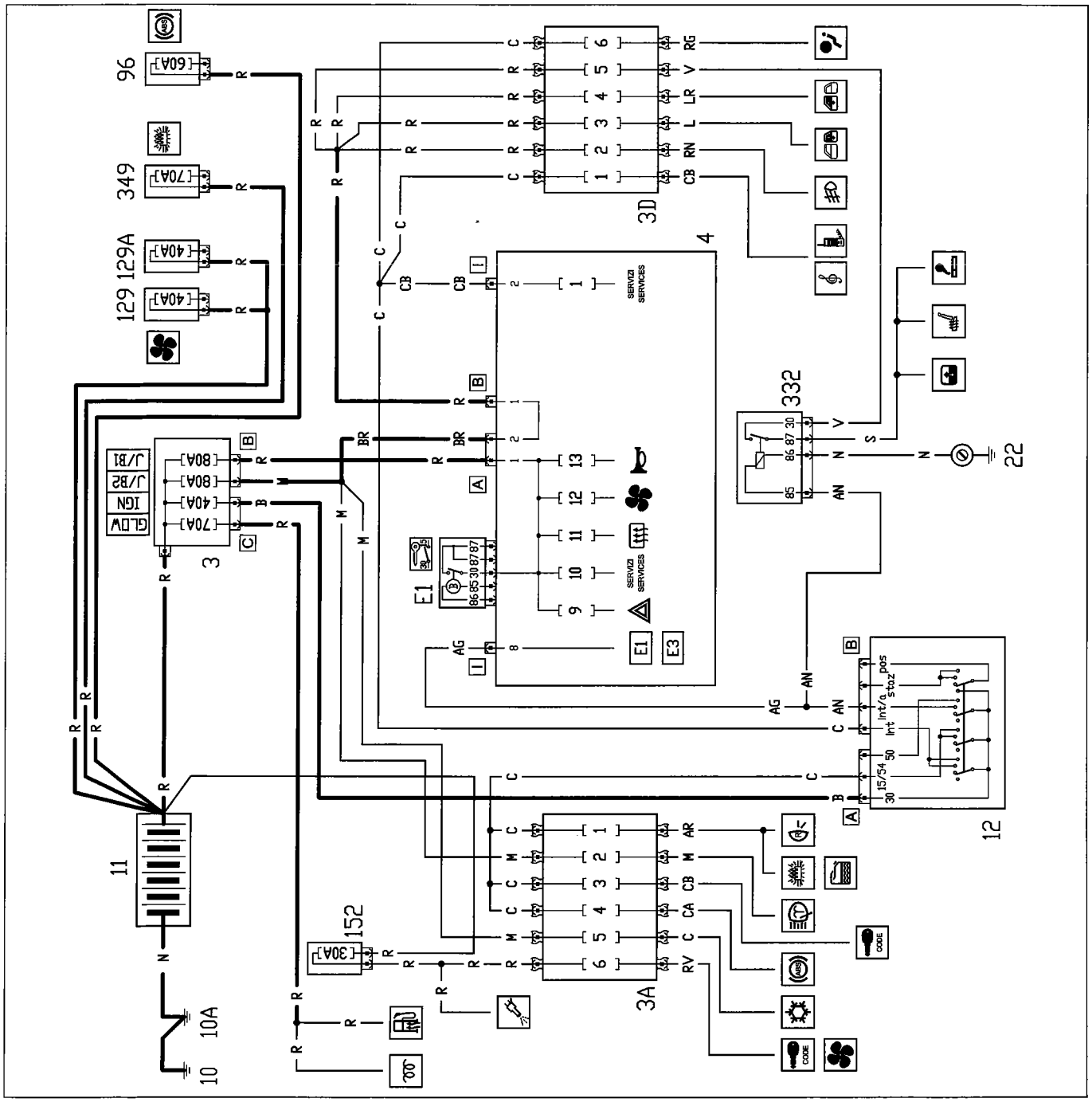


Component key

3B/C Power fusebox
3A/D Supplementary fusebox
4 Junction unit
10 Engine battery earth
10A Bodyshell battery earth.
11 Battery
12 Ignition switch
96 Power fuse protecting A.B.S
129 Engine cooling fan protection power fuse.
332 Ignition activated power relay.

(*) See table on previous page.

Main supplies wiring diagram (diesel engine types)



Component key

3B/**C** Power fusebox
3A/D Supplementary fusebox
4 Junction unit
10 Engine battery earth
10A Bodyshell battery earth
11 Battery
12 Ignition switch
96 Power fuse protecting A.B.S
129 Engine cooling fan protection power fuse.
129A Power fuse protecting engine cooling fan no.2
201 Heaer plugs control unit
332 Ignition activated power relay.

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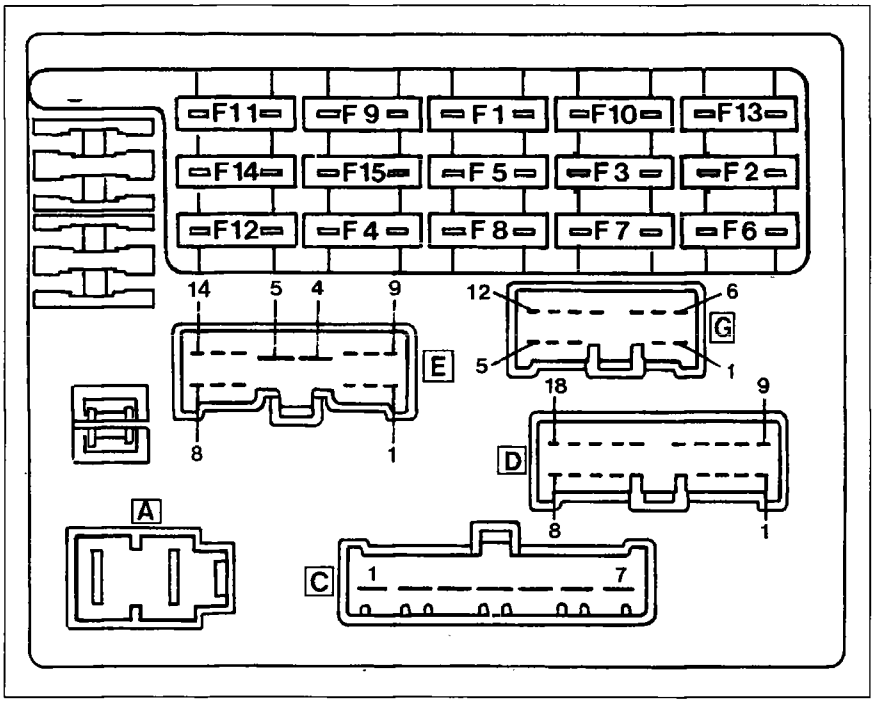
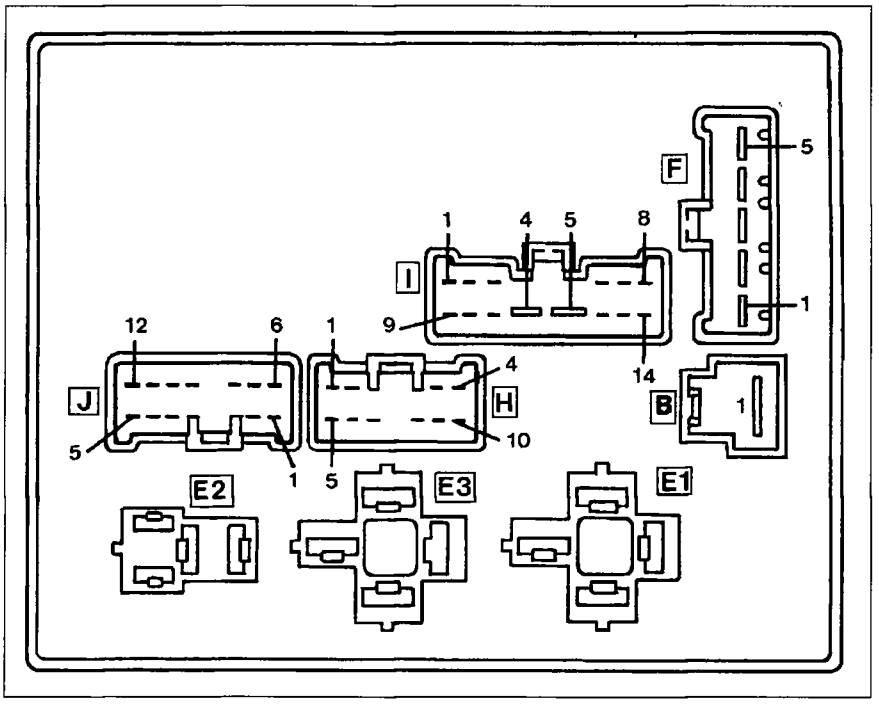
Junction unit



4f02AL01

Front view of control unit and location of fuses

The connectors cannot be connected incorrectly as each has its own unique shape. The letters identifying the connectors are the same as those used in the wiring diagrams .



4f02AL02

Rear view of control unit and location of relays.

E1. Switch discharge relay for starting (30A)
E2. Horn relay (20A)
E3. Heated rear windscreen relay (30A)

NOTE *connectors A, C and D: are connected to the front lead. connectors B,F, I, J and H are connected to the facia lead connectors E and G are connected to the rear lead*

DESCRIPTION OF WIRING AND CONNECTORS

CONNECTOR A		
N. No.	Wiring colour	Circuit involved
1	R	Supply (+30) from fuse box
2	BR	Supply (+30) from fuse box

CONNECTOR c		
N. No.	Wiring colour	Circuit involved
1	RN	Car interior fan power supply (with air conditioner), air conditioner control unit
2	MB	Fuel pump control, inertia switch
3	AN	Car interior fan power supply (only heater), air conditioner control unit
4	H	Right dipped beam headlamp
5	HN	Left dipped beam, headllamp enablement
6	VN	Left main beam
7	V	Right main beam

CONNECTOR E		
N. No.	Wiring colour	Circuit involved
1	RN	Right brake light
2	GR	Rear view mirror control light
3	RG	Left brake light
4	MN	Rear window power supply
5	MB	Fuel pump, inertia switch
6	-	N.C.
7	AN	Left rear turn signal
8	-	N.C.
9	GR	Right rear side light (without check panel)
10	HL	Left number plate light (without check panel)
11	-	N.C.
12	RG	N.C.
13	RN	N.C.
14	R	Supplementary brake light

CONNECTOR B		
N. No.	Wiring colour	Circuit involved
1	R	Power supply to electric windows, door lock, service control unit, main beam relay, fog lamp, sun-roof, heated seats, cigar lighter

CONNECTOR D		
N. No.	Wiring colour	Circuit involved
1	G	Left headlamp alignment
2	G	Right headlamp alignment
3	G	Headlamp alignment control
4	AN	Front and left side turn signal
5	AR	Alarm control unit power supply
6	HB	Right headlamp alignment power supply
7	H	Left headlamp alignment power supply
8	H	Headlamp alignment control
9	B	Reversing light control
10	Z	Horns.
11	Z	Horns.
12	-	N.C.
13	GV	Right front side light
14	AR	Brake light power supply
15	A	Front and right side turn signal
16	GL	Left front side light
17S	-	N.C.
18	RN	Brake light control

CONNECTOR F		
N. No.	Wiring colour	Circuit involved
1	HR	Dipped beam control
2	-	N.C.
3	LR	Main beam control
4	-	N.C.
5	G	Side light power supply from ignition

DESCRIPTION OF WIRING AND CONNECTORS (cont)

CONNECTOR G		
N. No.	Wiring colour	Circuit involved
1	HB	Right number plate light (without check panel)
2	-	N.C.
3	AR	Rear view mirror power supply
4	-	N.C.
5	A	Right rear turn signal
6	BN	Left reversing light (only Marea)
7	B	Right reversing light
8	GN	Left rear side light (without check panel)
9	RG	Rear courtesy light power supply (left for Marea Weekend)
10	RN	Remote control receiver power supply
11	RN	Front courtesy light power supply
12	RN	Right rear courtesy light power supply (Marea Weekend)

CONNECTOR I		
N. No.	Wiring colour	Circuit involved
1	AN	Hazard warning light power supply
2	CB	+15 power supply from ignition
3	-	N.C.
4	CB	Stalk unit power supply
5	C	Power supply, windscreen wiper
6	N	Earth
7	LN	Horn signal
8	AG	+15 power supply from ignition (start-up excluded)
9	AB	Hazard warning light power supply
10	AB	Hazard warning lights and instrument panel power supply (from January 2001)
11	AB	Hazard warning light power supply
12	AR	Turn signal power supply
13	R	Instrument panel power supply
14	-	N.C.

CONNECTOR H		
N. No.	Wiring colour	Circuit involved
1	AN	Right turn signal warning light
2	C	Power supply, door lock, radio
3	AN	Right turn signal control
4	RN	Right brake light (versions with Check Panel)
5	A	Left turn signal control
6	A	Left turn signal control
7	A	Left turn signal warning light
8	AN	Right turn signal control
9	RV	Brake light control (versions with Check Panel)
10	MN	Mirror demister control

CONNECTOR J		
N. No.	Wiring colour	Circuit involved
1	RG	Left brake light (versions with check panel)
2	AG	Alarm and instrument panel power supply (to December 2000)
3	GN	Side light warning light, switch panel lighting, automatic transmission control lighting
4	BC	Rear window control
5	R	Power supply, radio
6	LB	Main beam warning light
7	RV	Radio phone power supply
8	-	N.C.
9	R	Radio power supply
10	GN	Radio lighting
11	GN	Instrument lighting dimmer
12	GN	Cigar lighter lighting

LIST OF FUSES AND MAJOR PROTECTED CIRCUITS

Fuse No.	Amp	Symbol	Protected circuit	Fuse No.	Amp	Symbol	Protected circuit
1	10(*)	SERVIZI SERVICES	Brake light - Supplementary brake light - Turn signal - Instrument power supply	6	10		Right main beam headlamp
2	10		Right front side light - Left rear side light - Right number plate light - Radio light - Instrument dimmer lighting - Side light warning light - Cigarette lighter light - Switch panel light - Automatic transmission control light - Carphone light - heater/air conditioner control lighting	7	10		Left main beam headiamp - main beam headlamp warning light
				8	20		Radio - Door lock - Boot light
				9	10		Hazard warning lamps - Instrument power supply (from January 2001)
				10	10	SERVIZI SERVICES	Internal lights (front and back) - Instrument supply (to December 2000) - remote control receiver and alarm control unit supply - Car phone power supply - Tester output power supply
3	10		left front side light - Right rear side light -Left number plate light - Mirror control light -	11	30		Heated rear windscreen - Mirror demisting
				12	30		Car interior climate control fan motor (air conditioned).
4	10		Right dipped beam headlamp	13	20		Air conditioner control unit - horns
				14	20		Windscreen wiper - Rear windscreen wiper - Windscreen / Rear windscreen wiper - Headlamp washer intermittence
5	10		Left dipped beam headlamp - Headlamp alignment corrector - Headlamp washers intermittence	15	20		Air conditioner control unit - Car interior climate control fan motor (heated).

(*) Replaced with 15A if tow-hook installed.

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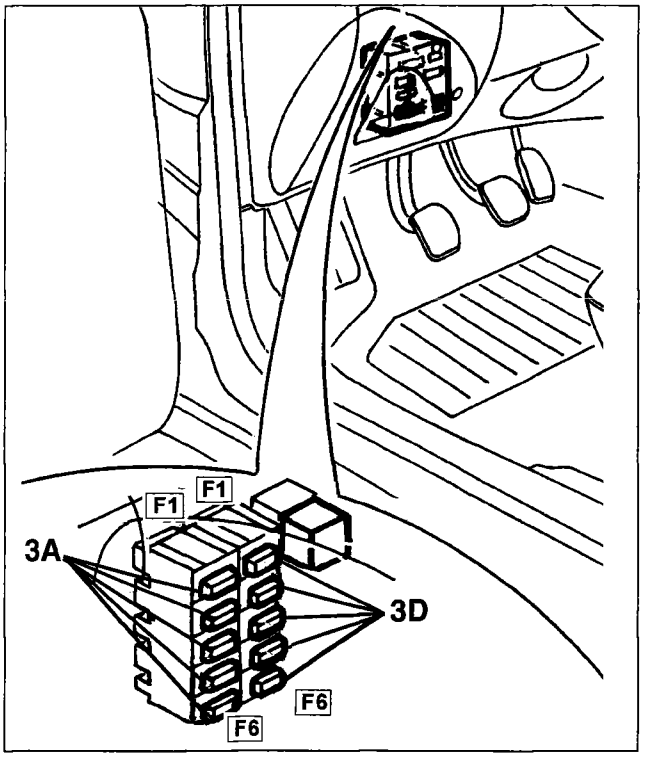
SUPPLEMENTARY FUSEBOX



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Many shunt fuses are found under the facia just above the junction control unit

The fuses are grouped in two special multiple connectors, one for the front wiring the other for the facia wiring, according to a pre-set position and located as shown in the figure:

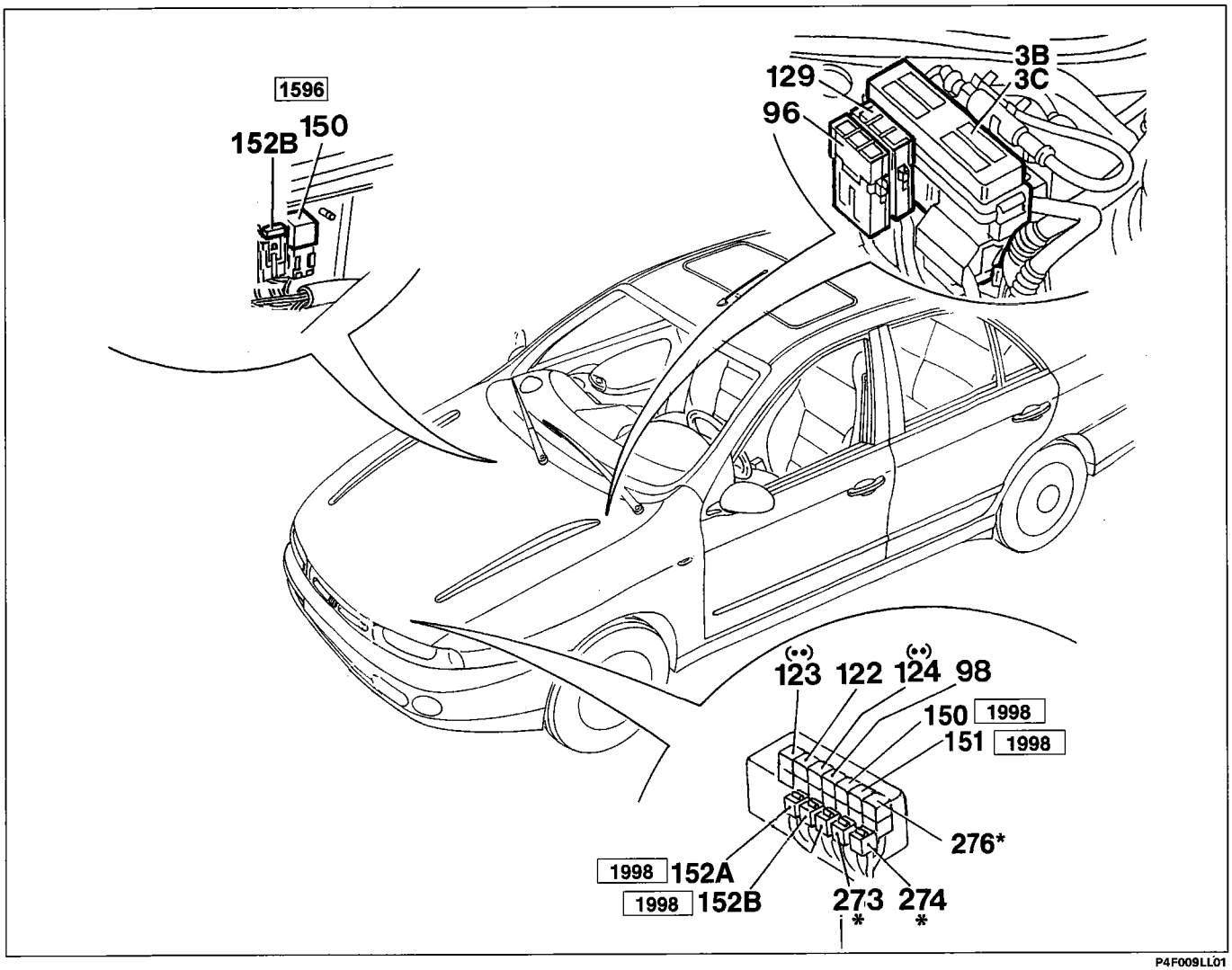
3A: front wiring

Fuse	Protected circuit	Amp
- F1	Fuse protecting ignition activated services (15/54)	7.5
- F2	Fuse protecting headlamp washers	20
- F3	Fuse protecting injection and CODE, fan	7.5
- F4	Fuse protecting ABS	10
- F5	Fuse protecting compressor and air conditioner	7.5
- F6	Fuse protecting injection memory and CODE, fan	7.5

3D: facia wiring

Fuse	Protected circuit	Amp
- F1	Fuse protecting ignition activated services (INT)	7.5
- F2	Fuse protecting foglamps	15
- F3	Fuse protecting rear electric windows	25
- F4	Fuse protecting front electric windows	25
- F5	Fuse protecting sunroof, seats, cigarette lighter	30
- F6	Fuse protecting airbag	10

LOCATION OF RELAYS AND FUSES ON THE VEHICLE (BONNET - Petrol engine types)

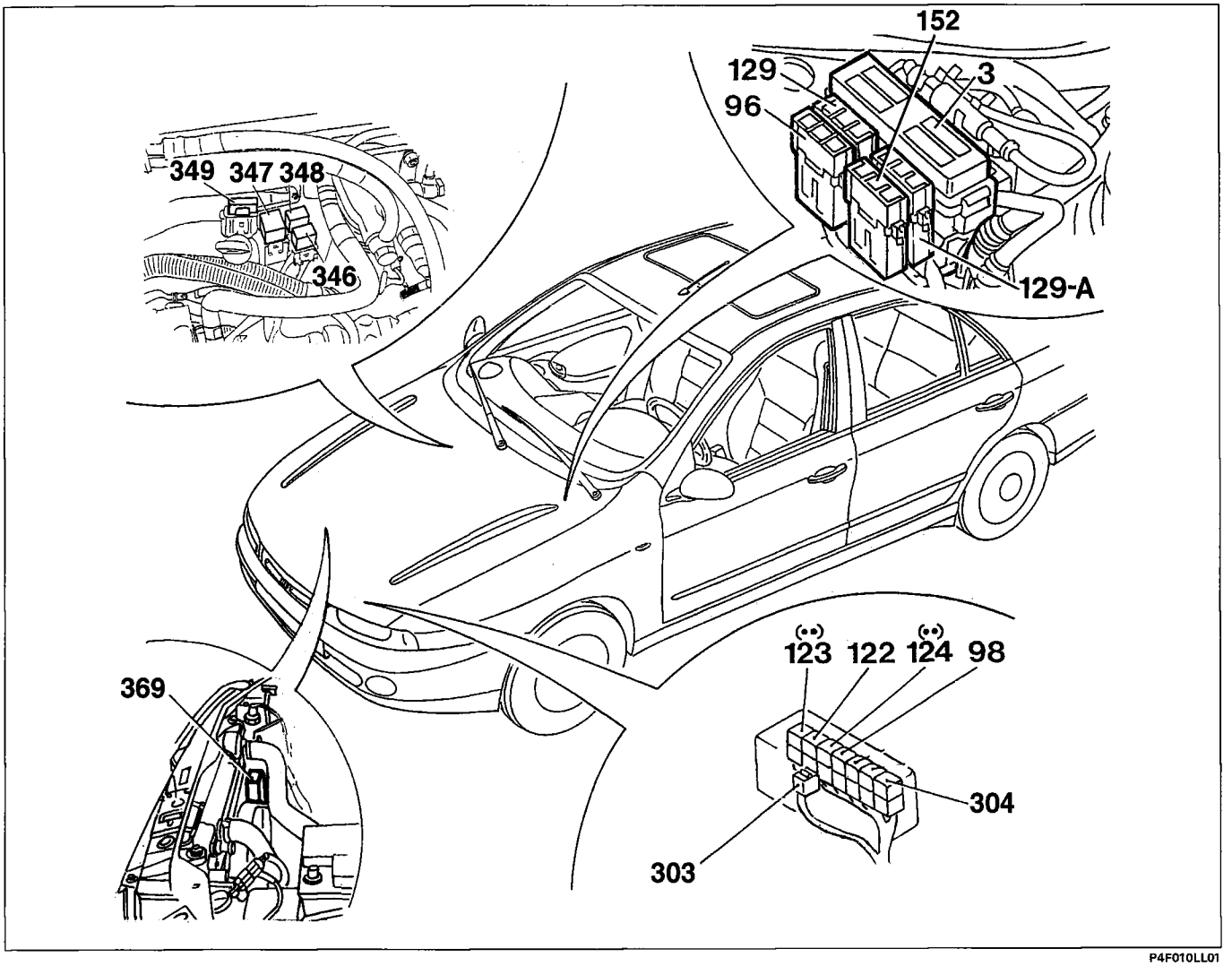


3B-3C Power fusebox
96 Power fuse protecting ABS
98 Headlamp washer intermittent function
122 Engine cooling fan low speed relay
123 Engine cooling fan high speed timer
124 Air condiitoning compressor control relay
129 Power fuse protecting engine coling fan
150 Injection system relay feed
151 Lambda probe control relay for fuel pump and injectors
152 Fuse protecting injection system
152A Fuse protecting injection system
152B Fuse protecting injection system
273 Fuse protecting automatic transmission system
274 Fuse protecting automatic transmission system
276 Starter enablement relay

(••) Versions with air conditioning
(*) With automatic transmission

55.

LOCATION OF RELAYS AND FUSES ON THE VEHICLE (BONNET - Diesel engine types)

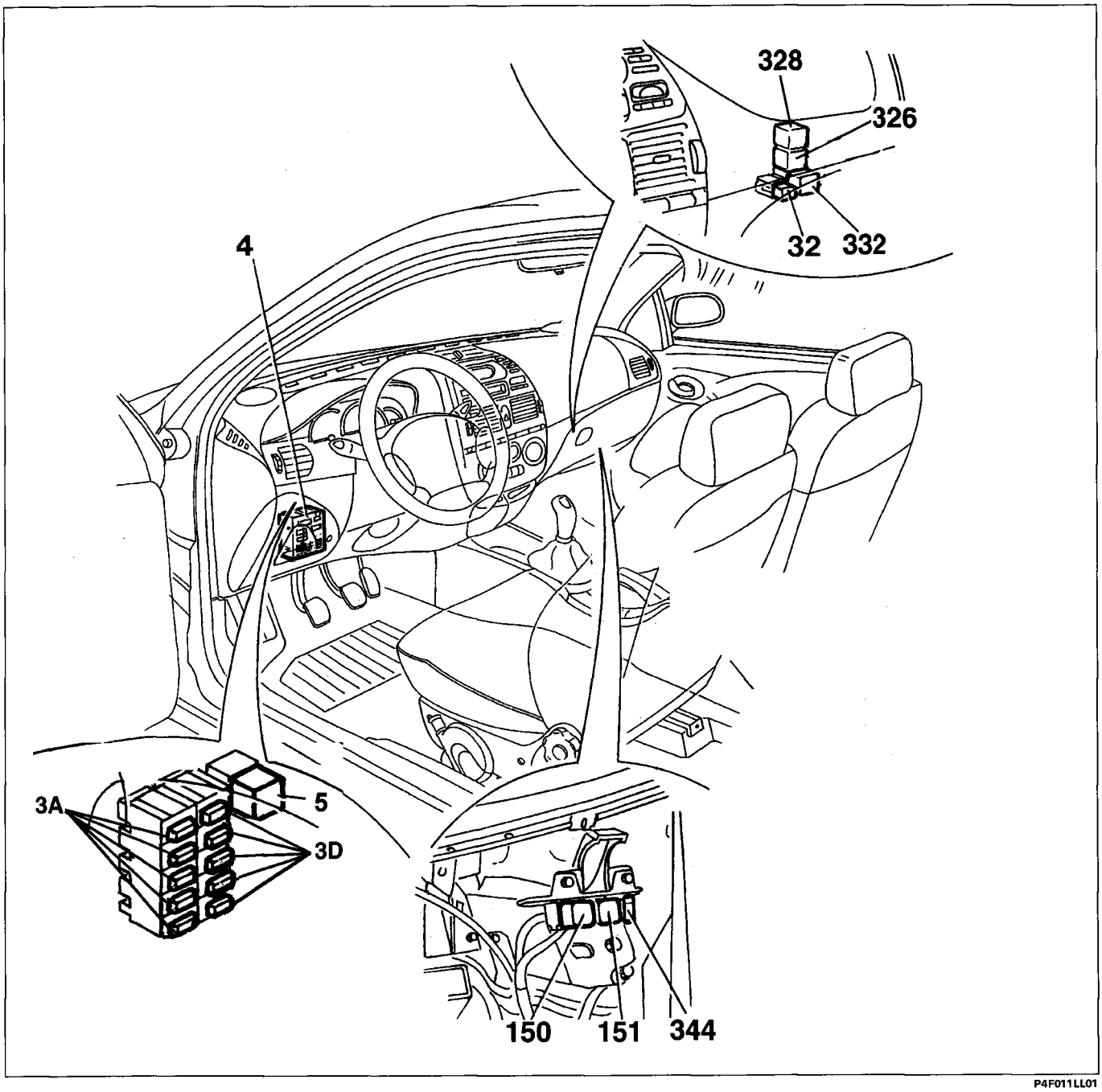


P4F010LL01

3B/C Power fusebox
96 Power fuse protecting A.B.S
98 Headlamp washer intermittent function
122 Engine cooling fan low speed relay
123 Engine cooling fan high speed timer
124 Air condiitoning compressor control relay
129 Engine cooling fan protection power fuse
129A Power fuse protecting engine cooling fan no. 2
152 Fuse protecting injection system
303 Fuse protecting diesel preheating
304 Diesel preheating protection relay.
346 Additional heater relay
347 Additional heater relay
348 Additional heater remote control swictch
349 Additional heater protection fuse
369 Engone cooling fan remote control switch

(••) Versions with air conditioning

LOCATION OF RELAYS AND FUSES ON THE CAR (PASSENGER COMPARTMENT)



3A/D Supplementary fusebox
4 Junction unit
5 Dipped headlamps relay feed
32 Fog lamp control relay
150 Injection system relay feed
151 Lambda probe control relay for fuel pump and injectors
152 Fuse protecting injection system
326 Additional heater control unit
328 Hazard warning lights relay
332 Ignition activated power relay.
344 I.E. protective fuse

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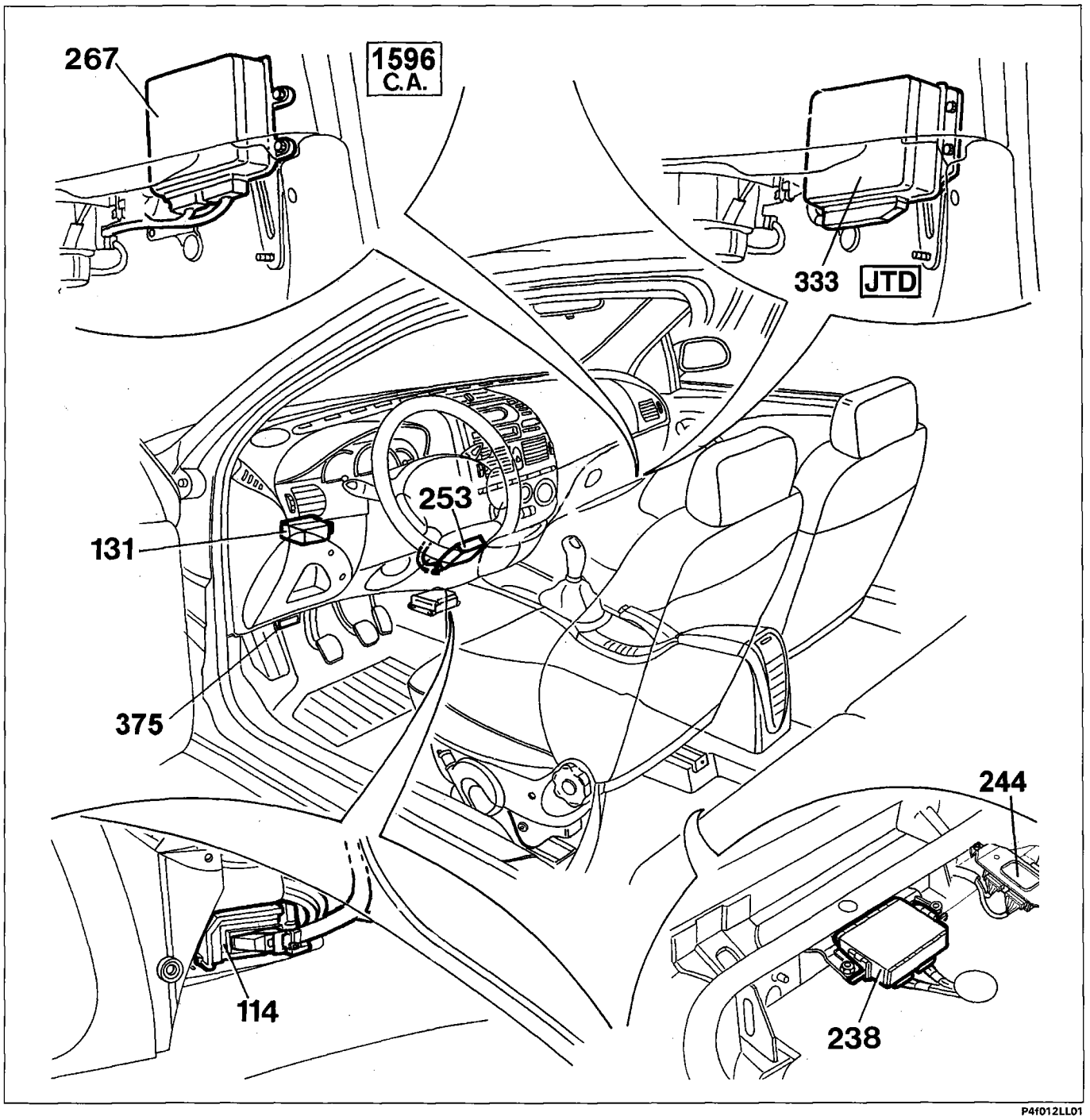
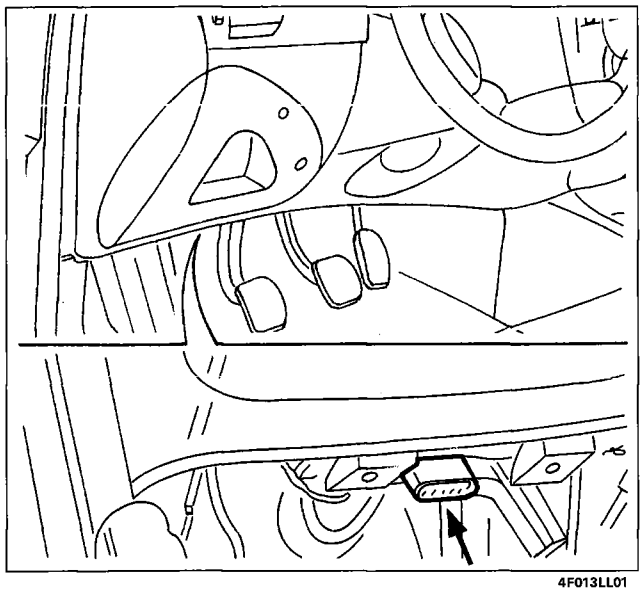
LOCATION OF CONTROL UNITS AND DIAGNOSTIC SOCKETS (PASSENGER COMPARTMENT)



114 Air bag electronic contol unit
131 Fiat-CODE electronic control unit
238 Rear electric windows control unit
244 Integrated services control system
253 Air conditioner control unit
267 Automatic transmission control unit
333 Injection control unit (JTD)
375 Standardized diagnostic socket


4F013LL01

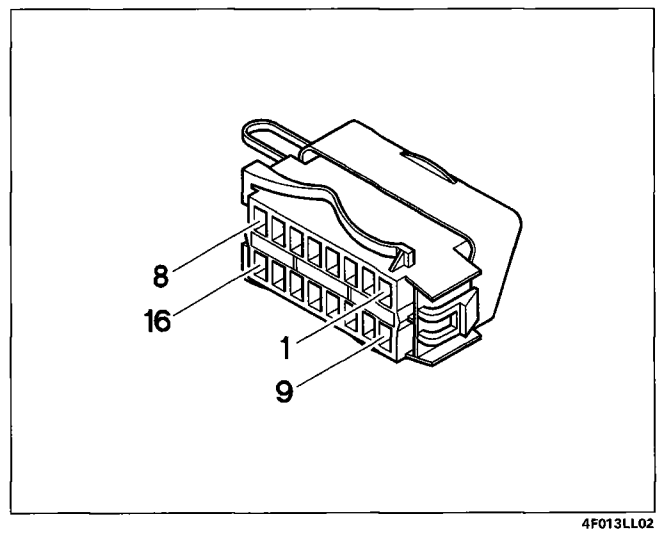
The vehicle is fitted with numerous electronic control units which have autodiagnostic functions.
When these control units are connected to diagnostic equipment (Examiner or other instruments) it is possible to read the autodiagnostic information (parameters, errors) or carry out active diagnosis.
On the version with EOBD (European On Board Diagnosis) which conforms to Directive 98/69/CE (EURO 3), there is not an individual diagnostic socket for each control unit, but a single, standardized 16-way diagnostic socket, on the left hand side of the dashboard, under the junction unit.

The diagnostic equipment (Examiner or other instruments) is connected to it using a special adaptor known as "MPX 97". Using this adapator it is possible to select the system the autodiagnosis is going to be carried out on.

Pin- out

Pin	System
1	ABS
2	N.C.
3	Air Bag
4	Power earth
5	Signal earth
6	N.C.
7	Engine management and FIAT CODE
8	N.C.
9	Climate control
10	N.C.
11	Alarm
12	N.C.
13	N.C.
14	N.C.
15	Automatic transmission.
16	Connector supply

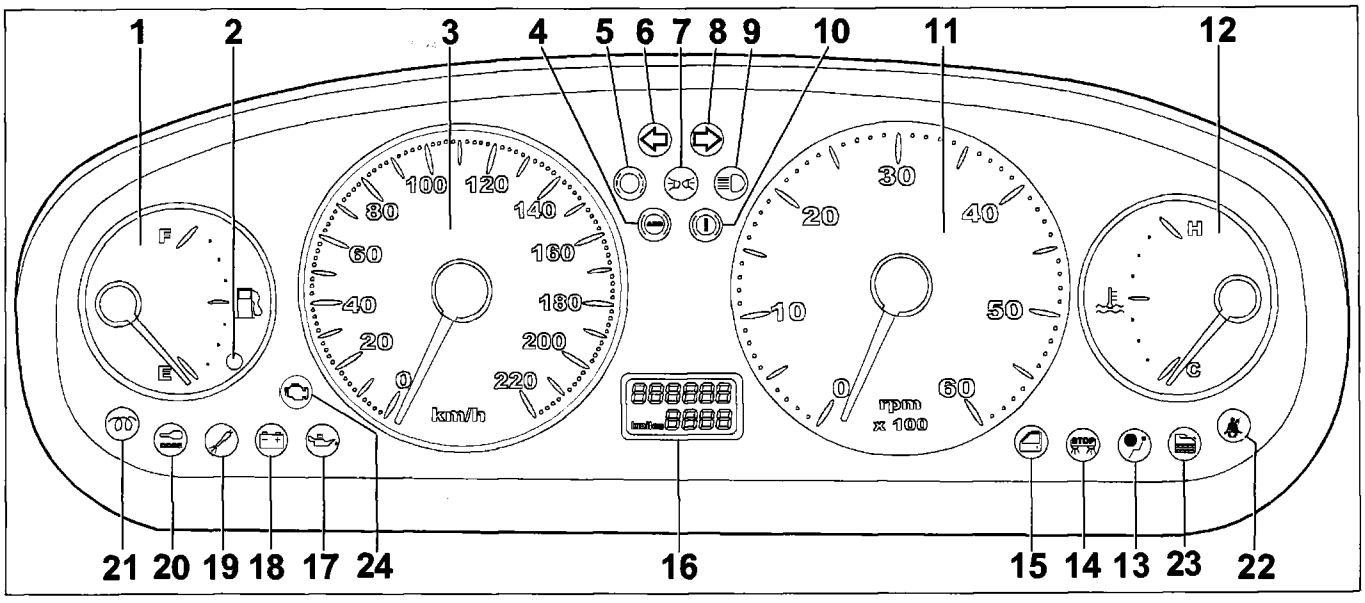
View of connector, cable entry side



4F013LL02

55.

INSTRUMENT PANEL (excluding C.A.)

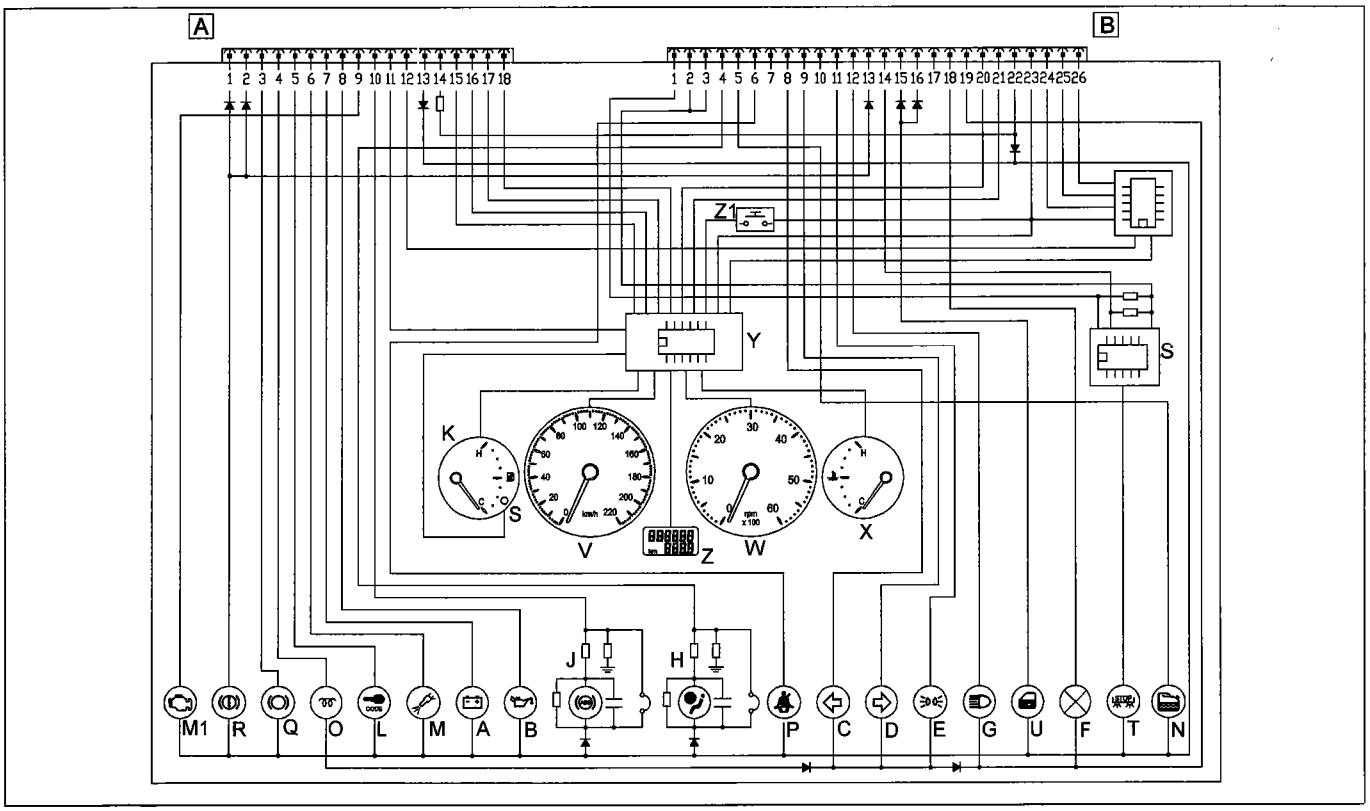


P4F014LL01

Front side

1. Fuel level gauge
2. Fuel reserve warning light
3. Speedometer
4. ABS failure warning light
5. Brake pad wear warning light
6. Left direction indicator warning light
7. Side lights warning light
8. Right direction indicator warning light
9. Main beam warning light
10. Low brake fluid level and handbrake applied/EBD system failure warning light
11. Rev counter
12. Engine coolant temperature gauge
13. Air Bag fault warning light
14. Brake light failure warning light
15. Doors open warning ilght
16. Trip counter/mileometer/outdoor temperature gauge
17. Low engine oil pressure warning light
18. Generator warning light
19 Injection system failure warning light
20. FIAT CODE system warning light
21. Heater plugs warning light
22. Seat belt warning light
23. Water in diesel filter warning light
24. EOBD warning light

Wiring diagram



P4F015LL01

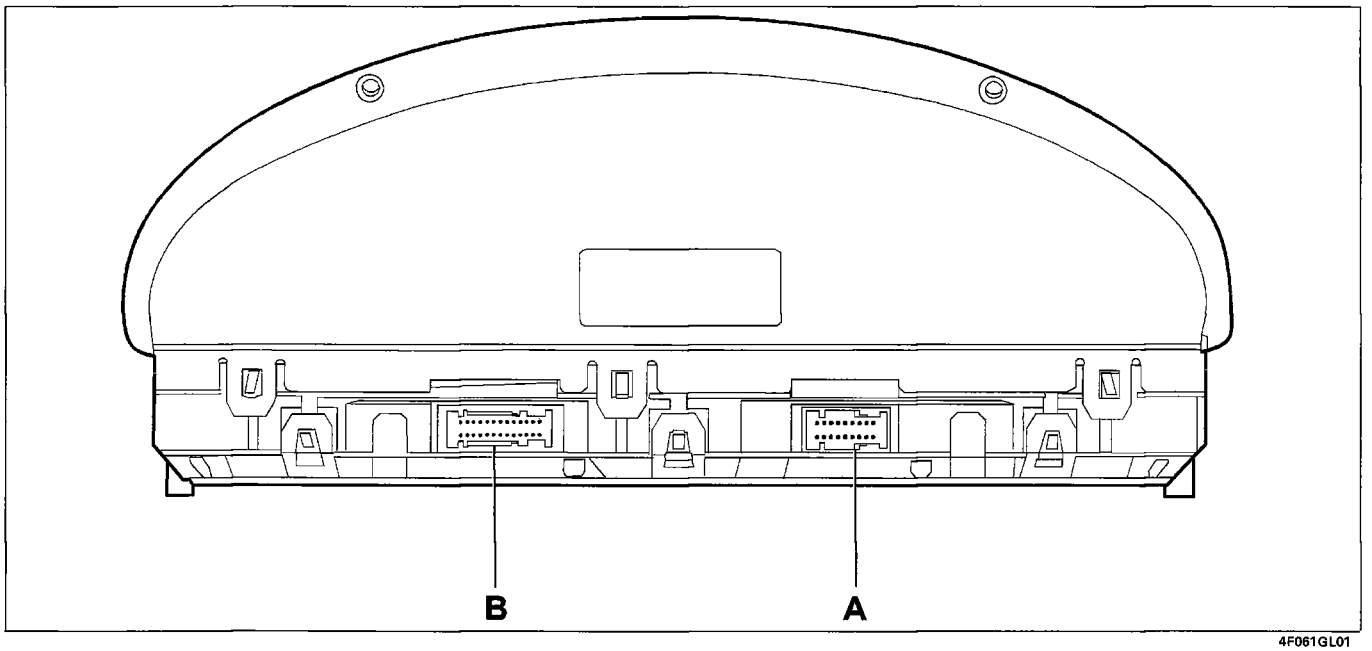
(*) JTD

(**) TD 75 BHP

A. Battery recharging warning light
B. Low engine oil pressure warning light
C. Left direction indicator warning light
D. Right direction indicator warning light
E. Side lights warning light
F. Instrument panel symbol lighting
G. Main beam warning light
H. Air Bag fault warning light
I. ABS failure warning light
J. Fuel reserve warning light
K. Fuel level gauge
L. FIAT CODE system warning light
M. Injection system failure warning light
M1. EOBD warning light
N. Water in diesel filter warning light
O. Heater plugs warning light
P. Seat belt warning light
Q. Brake pad wear warning light
R. Low brake fluid/handbrake on/EBD system failure warning light
S. Brake light electronic control module
T. Brake light failure warning light
U. Doors open warning ilght
V. Speedometer
W. Rev counter
X. Engine coolant temperature gauge
Y. Electronic module
Z. Milometer - trip meter/outside temperature gauge
Z1 Odometer reset button

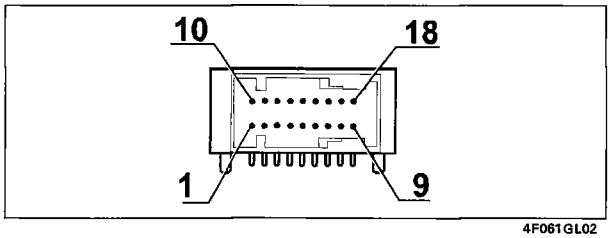
* Short-circuit plugs

55.

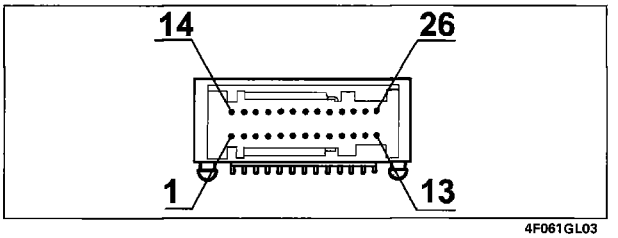


4F061GL01

Rear side (the connector sockets are shown)



4F061GL02



4F061GL03

Connector A (on front lead)

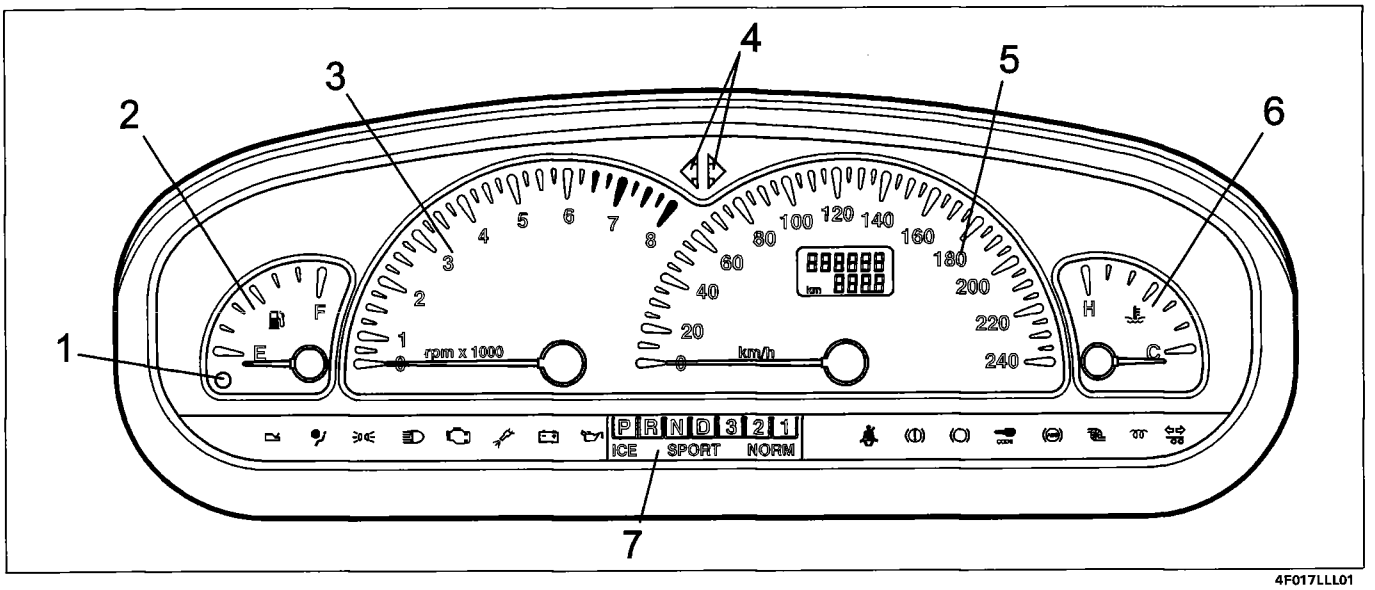
Pin no.	Cable colour	Circuit involved
1	BV	EBD system failure
2	BN	Brake fluid level
3	BR	Brake pad wear
4	CL	Heater plugs (JTD)
5	MN	FIAT CODE
6	LN	Injection system failure (JTD)
7	HN	Battery recharging
8	HG	Engine oil minimum pressure
9	LN	EOBD (petrol only)
10	RV	ABS fault
11	GN	Reserve signal (petrol only)
12	VB	Speedometer signal
13	AG	+30 battery
14	CN	Speedometer generator power supply
15	HB	engine coolant temperature
16	HL	Outdoor temperature signal
17S	HM	Speedometer signal
18	L	Rev counter signal

(*) not connected in this version

Connector B (on facia lead)

Pin no.	Cable colour	Circuit involved
1	RG	Left brake light failure
2	RV	Brake light switch
3	RV	Brake light switch
4	C	Air Bag system fault
5	GV	Water in diesel filter (JTD)
6	M	Seat belt
7	-	N.C.
8	A	Left turn signal
9	AN	Right turn signal
10	-	N.C.
11	GN	Side lights
12	LB	Main beam headlamps
13	BN	Handbrake on
14	RN	Right brake light failure
15	H	Doors open
16	CN	Boot open
17S	-	N.C.
18	GR	Instrument panel light
19	N	Lighting earth
20	HG	Fuel level
21	GL	Outdoor temperature display
22	R	+15 from ignition
23	N	electronic earth
24	-	speedometer signal (*)
25	VN	Speedometer signal
26	-	speedometer signal (*)

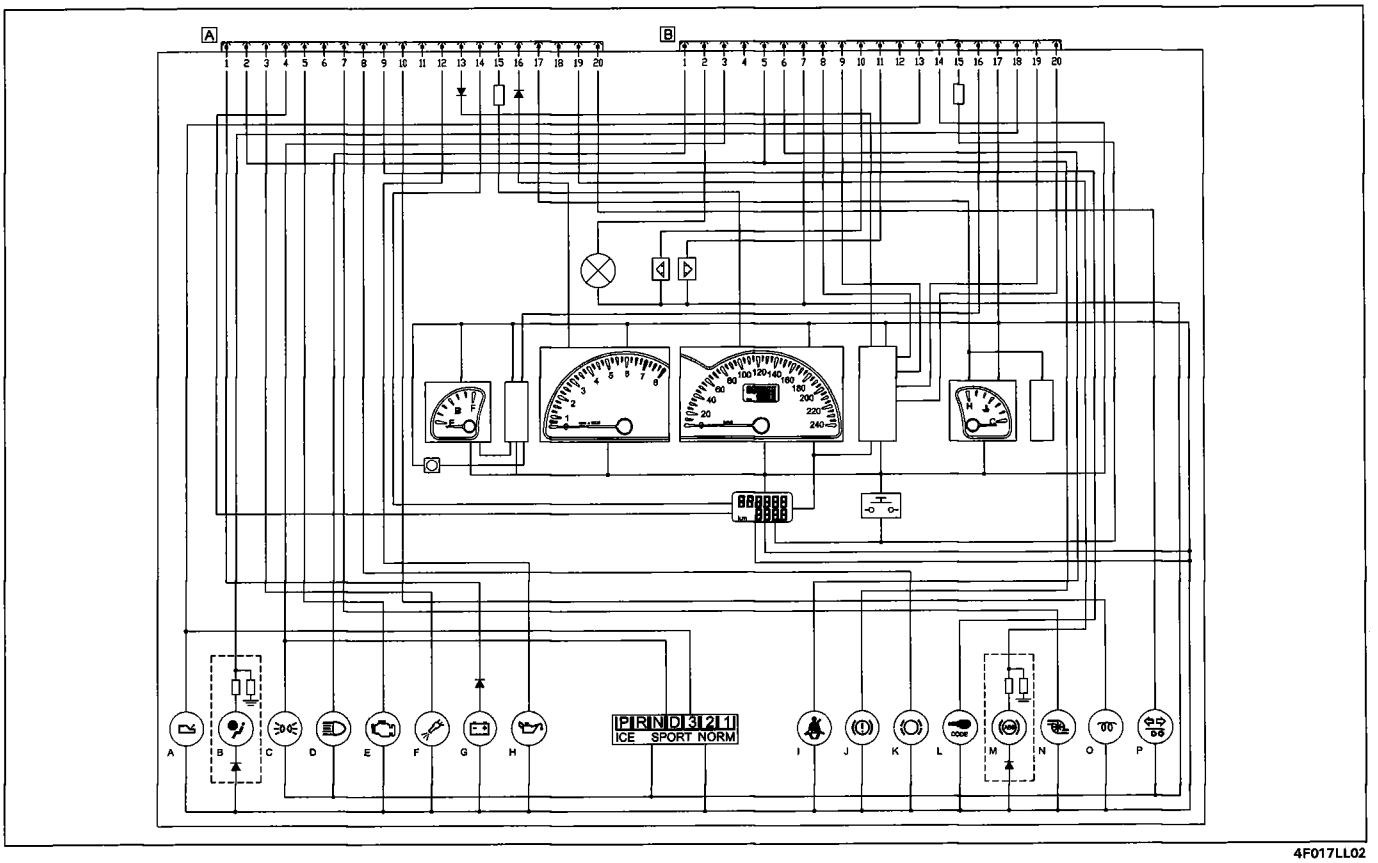
INSTRUMENT PANEL FOR ELX, HLX TRIM LEVELS



4F017LLL01

Front side

1. Fuel reserve warning light
2. Fuel level gauge
3. Rev counter
4. Direction indicators warning light
5. Analogue speedometer and digital milometer
6. Engine coolant temperature gauge
7. Gears indicator for automatic transmission



4F017LL02

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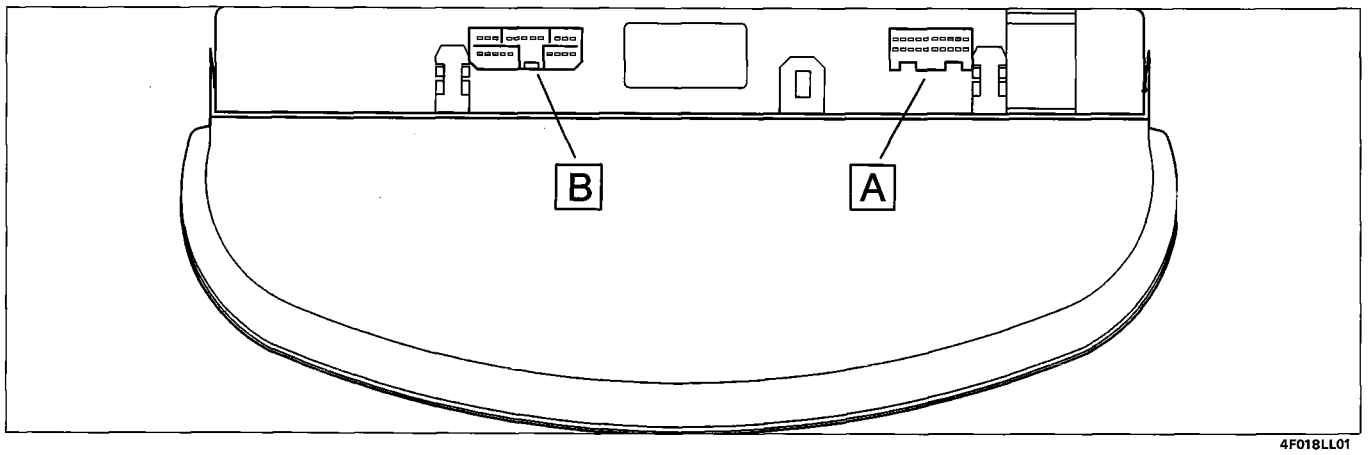
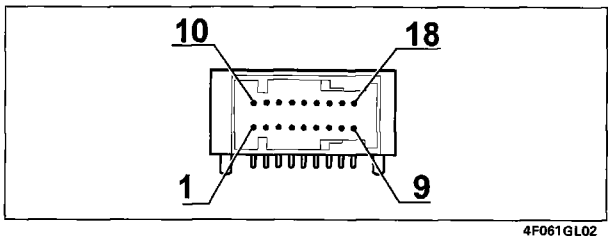
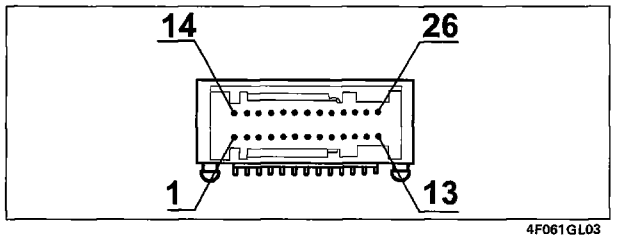


4F018LL01

Rear side (the connector sockets are shown)



4F061GL02



4F061GL03

Connector A

N°	Cable colour	Circuit involved
1	HN	Generator (G)
2	BN	Brake fluid level (J)
3	-	Injection system failure (*)
4	AG	+30
5	LN	EOBD (E)
6	-	Not connected
7	-	Turbocharging (N)
8	BR	Brake pad wear (K)
9	MN	Fiat Code (L)
10	-	Heater plugs (*)
11	-	Not connected
12	HG	Minimum oil pressure (H)
13	HM	Speedometer signal
14	HL	Outside temperature signal
15	CN	Speedometer module supply
16	L	Rev counter signal
17	HB	Coolant temperature gauge
18	-	Not connected
19	RV	ABS failure (M)
20	-	Trailer lights (*)

Connector B

N°	Cable colour	Circuit involved
1	LB	Main beam headlamps (D)
2	GR	Instrument panel light
3	GN	Side lights (C)
4	-	Not connected
5	BN	Handbrake (J)
6	M	Seat belt (I)
7	N	Earth
8	-	Speedometer signal (*)
9	VB	Speedometer signal
10	A	Left turn signal
11	AN	Right turn signal
12	-	Not connected
13	CA	Automatic transmission (A)
14	N	Earth (electronic)
15	GL	Outside temperature switch
16	HG	Fuel level
17	R	+15
18	C	Air Bag failure (B)
19	GN	Fuel reserve
20	-	Speedometer signal

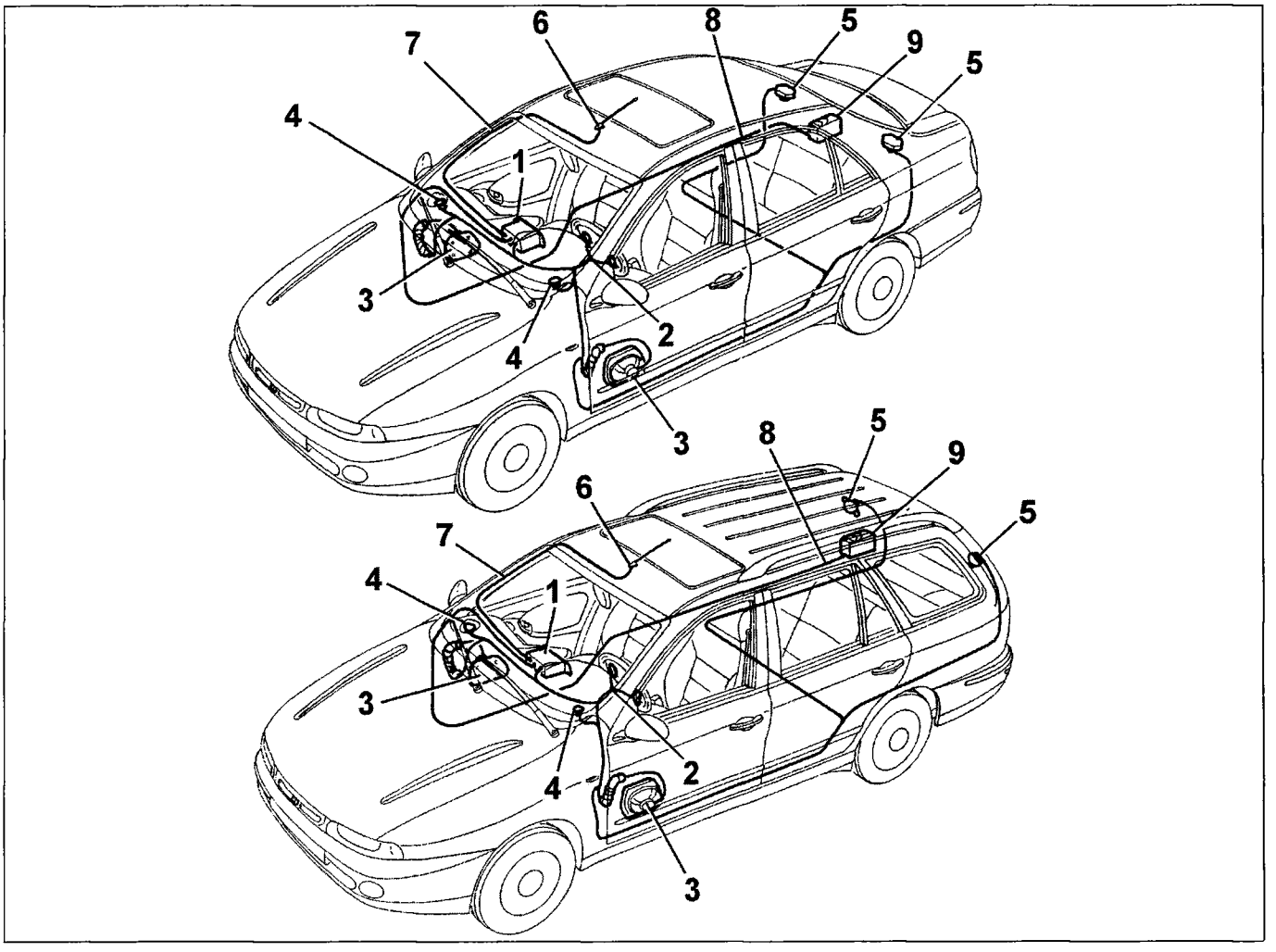
(*) not used

GENERAL DESCRIPTION

The car radio reception and playing system has been developed with the acoustic properties of the passenger compartment in mind to offer outstanding sound reproduction at all times.
The system is installed on the car directly during production, without subsequent interventions. All wires are integral with the car wiring.

The system includes:
- radio
- front speakers (with separate tweeters)
- rear speakers
- radio supply leads
- radio and speaker connection leads
- radio controls on steering wheel
- coaxial aerial connection lead
- stylus aerial on roof
- connection lead for CD changer, located in boot.

LOCATION OF SYSTEM COMPONENTS



4F019LL01

Component key

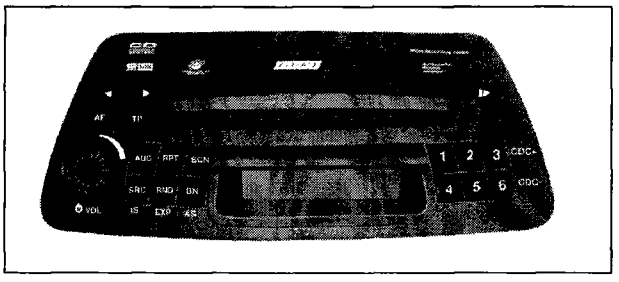
1 Radio
2 Radio controls on steering wheel
3 Front speaker
4 Front tweeter
5 Rear speaker
6 Aerial
7 Coaxial aerial lead
8 Lead for CD changer
9 CD player/changer

55.

CAR RADIO

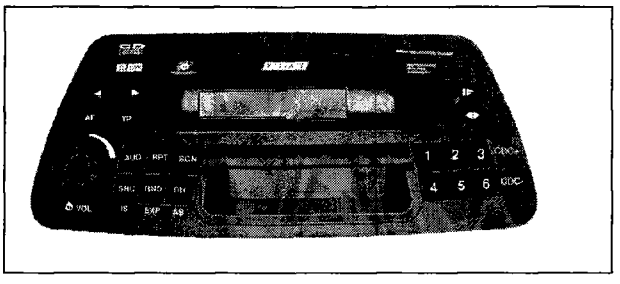
The radio is customised to fit in with the instrument facia styling. It is fixed because it cannot be adapted to any other car.
It comes in three versions:

RADIO H4 : ***with CD player, theft protection, predisposition for handsfree mobile phone use, connection lead for CD changer, possibility of steering wheel controls.***



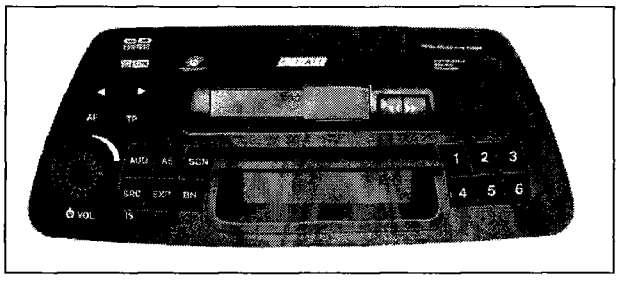
4F020LL01

RADIO H3 : ***with cassette player, theft protection, predisposition for handsfree mobile phone use, connection lead for CD changer, possibility of steering wheel controls.***



4F020LL02

RADIO M2 : ***with cassette player, predisposition for handsfree mobile phone use***



4F020LL03

AERIAL

The car is fitted with aN aerial on the roof.

Electrically-controlled aerial

The car radio is fitted with the wiring for controlling an automatic electric aerial (that rises when the car radio is switched on and lowers when the radio is switched off).

SPEAKERS

The special sound system comprises:
- 2 elliptical mid-woofer speakers 130 x 180 mm with a power output of 30W max each;
- 2 diffusori fluid iron tweeter dome speakers with a max power output of 40W max;
- 2 full-range Ø 130 mm speakers with a power output of 30W max each *(only for H4 and H3)*

TECHNICAL DATA

Radio power *(H4 and H3 versions)*

- 4 x 15W (with standard sound system made up of mid-woofer + tweeter and full range speakers).

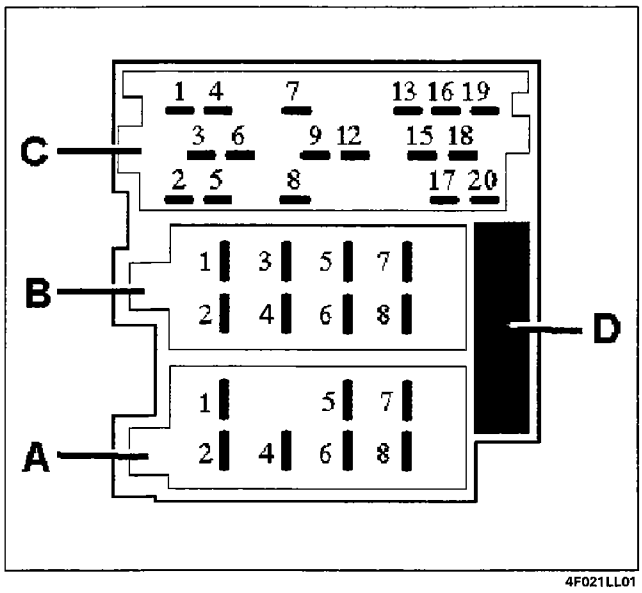
Radio power *(version M2)*

- 2 x 15W (with standard sound system made up of mid-woofer + tweeter speakers).
- 4 x 5W (with optional 4-channel speaker system that can be installed by After Market).

WARNING *The standard system is 2 x 15W. If a 2 x 15W system is fitted, an adaptor is fitted between radio and wiring.*

Fuse

The radio is fitted with a 10A fuse (D). ***(5A for the M2 version)***



4F021LL01

CONNECTIONS

Connector A

A1 SCV signal (+) for adjusting volume according to speed
A2 Phone Mute signal for mobile phone
A4 +12V ignition-operated voltage supply
A5 aerial supply output +12V (max. 0.5A)
A6 +12V display lighting output voltage
A7 +12V direct supply voltage
A8 Earth

Connector B

B1 rear speaker (right +)
B2 rear speaker (right -)
B3 front speaker (right +)
B4 front speaker (right -)
B5 front speaker (left +)
B6 front speaker (left -)
B7 rear speaker (left +)
B8 rear speaker (left -)

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Supplementary connections

Connector C

Line output: possibility of connection for power amplifier (Booster)or active speaker

C1 Rear speaker (left +)
C2 Rear speaker (right +)
C3 Earth (-)
C4 Front speaker (left +)
C5 Front speaker (right +)
C6 Switch signal for power amplifier: on/off (max. 0.3A).

Phone input

Possibility of mobile phone handsfree connection
C7 NF phone
C12 NF phone earth

Remote control from steering wheel *(H4 and H3 versions)*

C8 Earth
C9 Remote control

Cd changer connection *(H4 and H3 versions)*

C13 CD bus control line
C15 CD bus earth
C16 +12V supply voltage for cd changer
C17 Switching voltage for cd changer
C18 NF CD earth
C19 left NF CD
C20 rifht NF CD

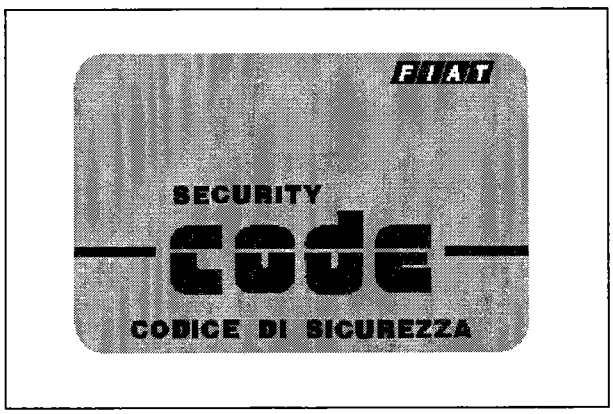
WARNINGS

Anti-theft protection

The radio comes with a theft protection system comprising of a segret 4 digit code.
The protection system makes the rdaio inoperable if it is removed from the facia as a result of a theft. See the following pages to activate the antitheft device

CODE card

The radio identity document shows the model, serial number and secret code.
The serial number is the same as the number stamped on the set frame
If the set is lost, the CODE card facilitates search investigations and speeds up claim settlement by insurers due to the ownership document.



4F023LL01

If the antitheft protection is active and the radio is disconnected from the car battery, the radio is still protected electronically
It may only be operated again by entering a special code.

Display

If the set is disconnected from the voltage supply, the display figures flash when it is reconnected.
The flashing figures are a reminder that the clock must be reset as described below.

Extended function field (EXP key)

The EXPERT control level allows the user to use a range of functions beginning with the base control yet without losing an overall view.

Operation with mobile phone (PHONE)

The radio is designed for connection to a mobile phone handsfree system (using the **PHONE IN** input).
The radio sound is deactivated while the mobile phone is in operation.
PHONE appears on the display.

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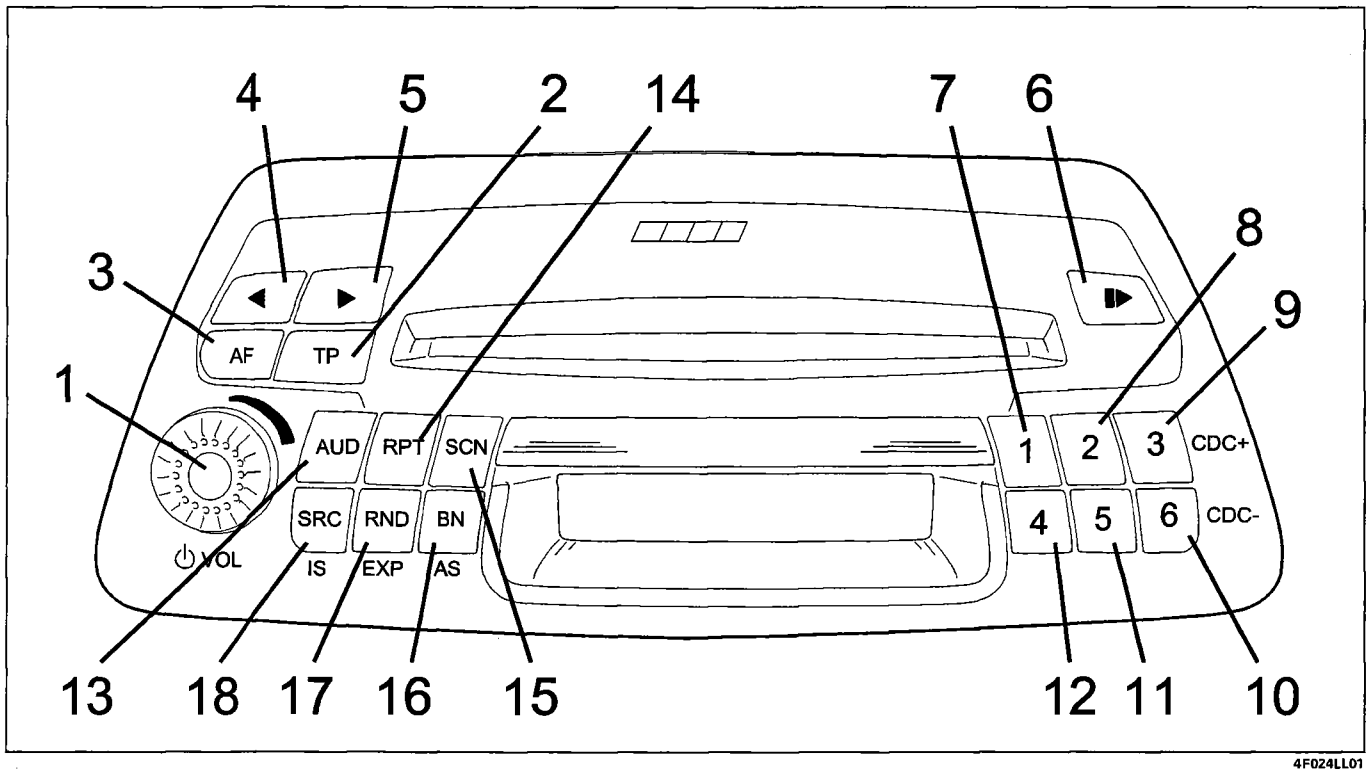
CONTROL DESCRIPTION

RADIO H4

This comes with a CD player, antitheft protection, predisposition for mobile phone handsfree operation, connection lead for CD changer, possibility of steering wheel controls.



4F024LL01

The tables on the following pages details key functions according to operating mode (RADIO, CD, CD CHANGER, PHONE).

Key	function	Status EXPERT	RADIO mode		CD mode		CD-CHANGER mode		PHONE mode
			short press	> 2 sec. press	short press	> 2 sec. press	short press	> 2 sec. press	short press
1	Radio on/off VOL/AUD adjustment	-	On/off: press VOL/AUD adjustment: Turn left: down, Turn right: up		On/off: press VOL/AUD: Turn left: down, Turn right: up		On/off: press VOL/AUD: Turn left: off, Turn right: up		On/off: press VOL/AUD: Turn left: down, Turn right: up
2	TP Traffic Program	-	TP ON/OFF	PTY	TP ON/OFF	-	TP ON/OFF	-	-
3	AF: Alternative frequency	-	AF ON/OFF	RDF ON/OFF	-	-	-	-	
4	Previous (left)	IS=OFF	FM: Search - AM: Search - PTY: Select next programme	FM:MAN – AM:MAN – PTY: automatic search (within programme)	Track -N	Fast return (continuous)	Track -N	Fast return (continuous)	-
		IS=ON	FM: Store next IS AM: Search - PTY: Select next programme programme	FM:MAN – AM:MAN – PTY: automatic search (within programme)	Track -N	Rapid return (continuous)	Track -N	Rapid return (continuous)	-
5	Previous (right)	IS=OFF	FM: Search + AM: Search + PTY: Select next programme	FM:MAN + AM:MAN + PTY:automatic search (within programme)	Track +N	Fast forward (continuous)	Track +N	Fast forward (continuous)	
		IS=ON	FM: Store next IS AM: Search + PTY: Select next programme	FM:MAN + AM:MAN + PTY: automatic search (within programme)	Track +N	Fast forward (continuous)	Track +N	Fast forward (continuous)	
6	Eject	-	Eject (CD)	-	Eject (CD)	-	Eject (CD)	-	Eject (CD)
7	Preset station 1	-	FM/AM/PTY: recall preset station 1	FM/AM: store preset station 1 PTY: store program	-	-	-	-	-
8	Preset station 2	-	FM/AM/PTY: recall preset station 2	FM/AM: store preset station 2 PTY: store programme	-	-	-	-	-

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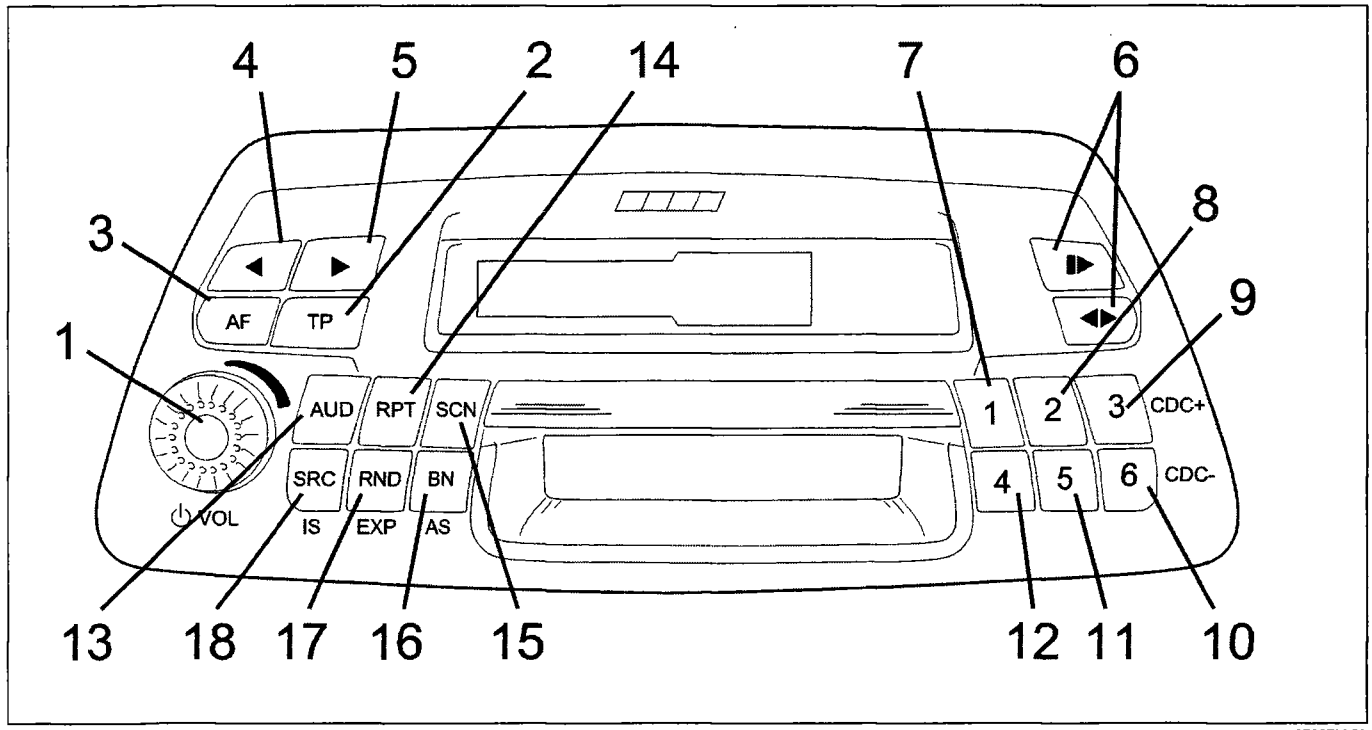
9	Preset station 3	-	FM/AM/PTY: recall preset station 3	FM/AM: store preset station 3 PTY: store programme	-	-	CDC +	-	-		
10	Preset station 6	-	FM/AM: recall preset station 6	FM/AM: store preset station 6 PTY: store programme	-	-	CDC –	-	-		
11	Preset station 5	-	FM/AM/PTY: recall preset station 5	FM/AM: store preset station 5 PTY: store programme	-	-	-	-	-		
12	Preset station 4	-	FM/AM/PTY: recall preset station 4	FM/AM: store preset station 4 PTY: store programme	-	-	-	-	-		
13	AUD: Sound settings	-	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	RESET return to original B/T/B/F/- AUD settings (CENTER)	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	RESET return to original B/T/B/F/- AUD settings (CENTER)	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	RESET return to original B/T/B/F/- AUD settings (CENTER)	RESET return to original B/T/B/F/- AUD settings (CENTER)	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	
14	RPT: Repeat	-	-	-	On/off repeat track	-	On/off repeat track	On/off repeat CD	-		
15	SCN Automatic scan	IS=OFF	Automatic scan of all stations preset on band in use	Automatic scan of all stations tunable on band in use (Search)	Automatic selection of CD tracks	-	Autoamtic selection of CD tracks	-	-		
		IS=ON	Automatic scan of all stations preset on band in use	Automatic scan of all stations in intelligent search system (IS) (Store)	Automatic scan of CD tracks	-	Automatic scan of CD tracks	-	-		
16	BN: Select frequency band	-	FM1, FM2, FM3, MW, LW	Automatic store of preset station groups	-	-	-	-	-		
17S	RND: Random repeat	-	-	EXPERT on/off	Random tracks	EXPERT on/off	Random tracks (on selected CD)	EXPERT on/off	-		
18	SRC: Select source	IS=OFF	CD, RADIO, CDC (if connected)	-	CD, RADIO, CDC (if connected)	-	CD, RADIO, CDC	-	-		
		IS=ON	CD, RADIO, CDC (if connected)	Update intelligent search and store IS	CD, RADIO, CDC (if connected)	-	CD, RADIO, CDC	-	-		

RADIO H3

This comes with a cassette player, antitheft protection, predisposition for mobile phone handsfree operation, connection lead for CD changer, possibility of steering wheel controls.



4F027LL01

The tables on the following pages details key functions according to operating mode (RADIO, CASSETTE, CD CHANGER, PHONE).

55.

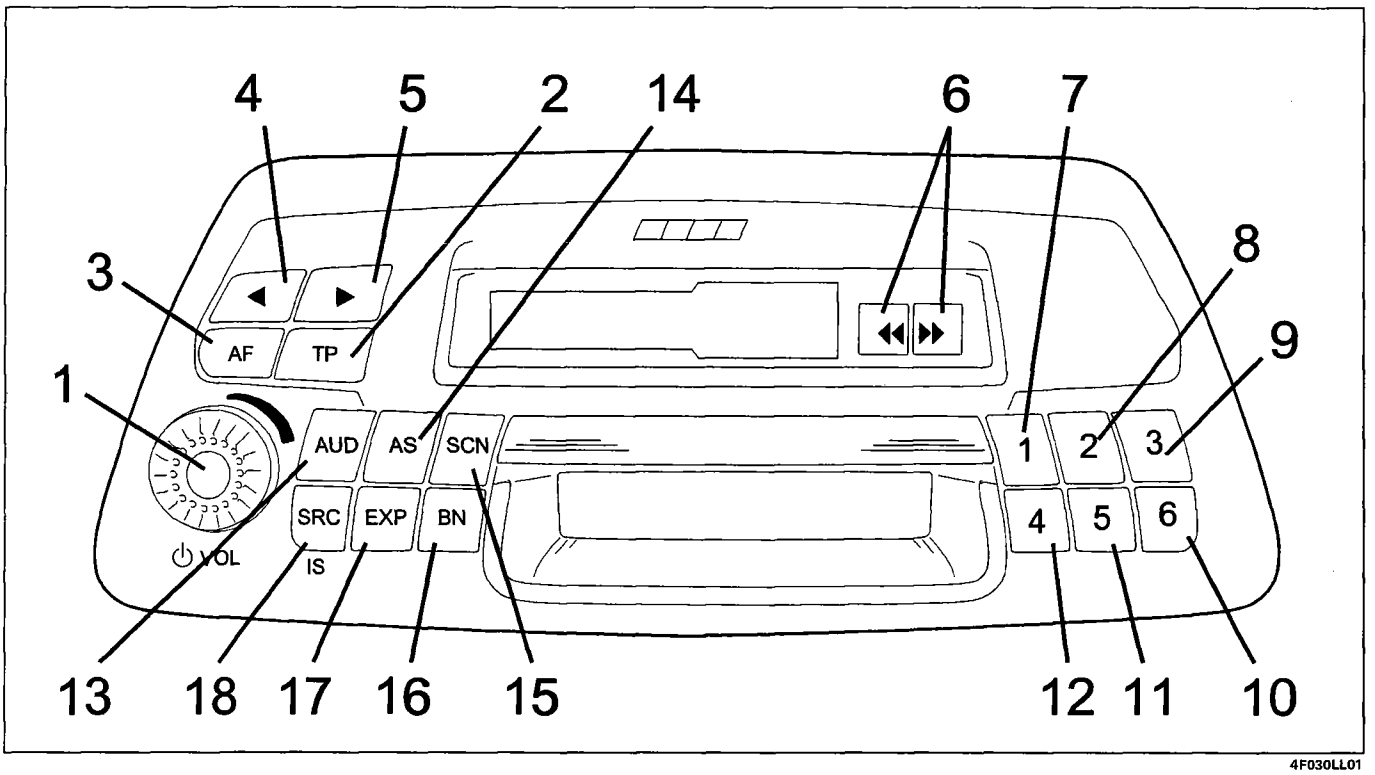
Key	Function	Status EXPERT	RADIO mode		CASSETTE mode		CD-CHANGER mode		PHONE mode
			short press	> 2 sec. press	short press	> 2 sec. press	short press	> 2 sec. press	short press
1	Radio on/off VOL/AUD adjustment	-	On/off: press VOL/AUD adjustment: Turn left: down, Turn right: up	-	On/off: press VOL/AUD adjustment: Turn left: down, Turn right: up	-	On/off: press VOL/AUD adjustment: Turn left: down, Turn right: up		On/ off: press VOL/AUD adjustment: Turn left: down, Turn right: up
2	TP Traffic programme	-	TP ON/OFF	PTY	TP ON/OFF	-	TP ON/OFF	-	-
3	AF: Alternate frequency	-	AF ON/OFF	RDF ON/OFF	-	-	-	-	
4	Previous (left)	IS=OFF	FM: search – AM: search - PTY: Select next programme	FM:MAN – AM:MAN – PTY: automatic search (within programme)					-
		IS=ON	FM: (store next IS AM: search – PTY: Select next programme	FM:MAN – AM:MAN – PTY: automatic search (within programme)					
		MSS=OFF			Fast return (to beginning of tape)		Track - N	Fast rewind (continuous)	
		MSS=ON			Track –N max. 9)		Track – N	Fast rewind (continuous)	-
5	programme (right)	IS=OFF	FM: search + AM: search + PTY: Select next programme	FM:MAN + AM:MAN + PTY: automatic search (within programme)					
		IS=ON	FM: (store next IS AM: search + PTY: Select next programme	FM:MAN + AM:MAN + PTY: automatic search (within programme)					
		MSS=OFF			fast forward (to end of tape)		Track +N	fast forward (continuous)	
		MSS=ON			Track +N max.9)		Track +N	fast forward (continuous)	-
6	Eject		Eject Tape		Eject Tape		Eject Tape		Eject Tape
	Reverse	-		-	Reverse/Normal	-		-	-

7	Preset station 1	-	FM/AM/PTY: recall preset station 1	FM/AM: store preselected station 1 PTY: store programme	-	-	-	-	-
8	Preset station 2	-	FM/AM/PTY: recall preset station 1	FM/AM: store preselected station 2 PTY: store programme	-	-	-	-	-
9	Preset station 3	-	FM/AM/PTY: recall preset station 3	FM/AM: store preselected station 3 PTY: store programme	-	-	CDC+	-	-
10	Preset station 6	-	FM/AM/PTY: recall preset station 6	FM/AM: store preselected station 6 PTY: store programme	-	-	CDC+	-	-
11	Preset station 5	-	FM/AM/PTY: recall preset station 5	FM/AM: store preselected station 5 PTY: store programme	-	-	-	-	-
12	Preset station 4	-	FM/AM/PTY: recall preset station 4	FM/AM: store preselected station 4 PTY: store programme	-	-	-	-	-
13	AUD: Audio settings	-	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	RESET return to original B/T/B/F/- AUD settings (CENTER)	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	RESET return to original B/T/B/F/- AUD settings (CENTER)	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	RESET return to original B/T/B/F/- AUD settings (CENTER)	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)
14	RPT: Repeat	-	-	-	On/off repeat track	-	On/off repeat track	On/off repeat CD	-
15	SCN: Automatic scan	IS=OFF	Automatic scan of all preset stations on band in use	Automatic scan of all stations tunable on band in use (Search)		-	Automatic scan of CD tracks	-	-
		IS=ON	Automatic scan of all preset stations on band in use	Automatic scan of all stations on intelligent search system IS (Store)		-	Automatic scan of CD tracks	-	-
16	BN: Select frequency band	-	FM1, FM2, FM3, MW, LW	Automatically store preset station groups	-	-	-	-	-
17S	RND: Random repeat	-	-	EXPERT on/off		EXPERT on/off	Random tracks (on selected CD)	EXPERT on/off	-
18	SRC: Select source	IS=OFF	CD, RADIO, CDC (if connected)	-	CD, RADIO, CDC (if connected)	-	CD, RADIO, CDC	-	-
		IS=ON	CD, RADIO, CDC (if connected)	Update intelligent search and store IS	CD, RADIO, CDC (if connected)	-	CD, RADIO, CDC	-	-

55.

RADIO M2

This comes with a cassette player and predisposition for mobile phone handsfree operation



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The tables on the following pages details key functions according to operating mode (RADIO, CASSETTE, PHONE).

Key	Function	Status EXPERT	RADIO mode		CASSETTE mode		PHONE mode
			short press	press > 2 secs	short press	press > 2 sees	short press
1	radio on/off VOL/AUD adjustment	-	On/off: press VOL/AUD adjustment: Turn left: down, Turn right: up	-	On/off: press VOL/AUD adjustment: Turn left: down, Turn right: up	-	On/off: press VOL/AUD adjustment: Turn left: down, Turn right: up
2	TPTraffic programme	-	TP ON/OFF	PTY ON	TP ON/OFF	-	-
3	AF: Alternate frequency	-	AF ON/OFF	RDF ON/OFF	-	-	-
4	Previous (left)	IS=OFF	FM: Search – AM: Search - PTY: Select next programme	FM:MAN – AM:MAN – PTY: Automatic search (within programme)			-
		IS=ON	FM: Store next IS AM: Search – PTY: Select next programme	FM:MAN – AM:MAN – PTY: automatic search (within programme)			
5	programme (destra)	IS=OFF	FM: Search + AM: Search + PTY: Select next programme	FM:MAN + AM:MAN + PTY: automatic search (within programme)			
		IS=ON	FM: Store next IS AM: Search + PTY: Select next programme	FM:MAN + AM:MAN + PTY: automatic search (within programme)			
6	Fast rewind				Fast rewind		
	Fast forward				Fast forward		
	Reverse or Eject (IF PRESSED TO-GETHER)	-		-	Reverse/Normal (IF PRESSED HALF WAY) Eject Tape (IF FULLY DEPRESSED)	-	
7	Preset station1	-	FM/AM/PTY: recall preset station1	FM/AM: store preset station 1 PTY: store programme	-	-	-
8	Preset station2	-	FM/AM/PTY: recall preset station2	FM/AM: store preset station 2 PTY: store programme	-	-	-
9	Preset station3	-	FM/AM/PTY: recall preset station3	FM/AM: store preset station 3 PTY: store programme	-	-	-

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10	Preset station 6	-	FM/AM/PTY: recall preset station 6	FM/AM: store preset station 6 PTY: store programme	-	-	-	
11	Preset station 5	-	FM/AM/PTY: recall preset station 5	FM/AM: store preset station 6 PTY: store programme	-	-	-	
12	Preset station 4	-	FM/AM/PTY: recall preset station 4	FM/AM: store preset station 4 PTY: store programme	-	-	-	
13	AUD: audio settings	-	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	RESET return to original B/T/B/F/-AUD settings (CENTER)	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	RESET return to original B/T/B/F/-AUD settings (CENTER)	Bass (B), Treble (T), Balance (B), Fader (F), Loudness (LD)	
14	AS: Automatic store	-	Automatic store in preset station group	-		-	-	
15	SCN: Automatic scan	IS=OFF	Automatic store of all preset stations on band in use	Automatic store of all stations tunable on band in use (Search)		-	-	
		IS=ON	Automatic store of all preset stations on band in use	Automatic store of all stations in intelligent search system IS (Store)		-	-	
16	BN: Select frequency band	-	FM1, FM2, FM3, MW, LW		-	-	-	
17S	EXP: Expert	-	-	EXPERT on/off		EXPERT on/off	-	
18	SRC: Select source	IS=OFF	TAPE, RADIO	-	TAPE, RADIO	-	-	
		IS=ON	TAPE, RADIO	Update intelligent search and storage IS	TAPE, RADIO	-	-	

OPERATION

ON/OFF

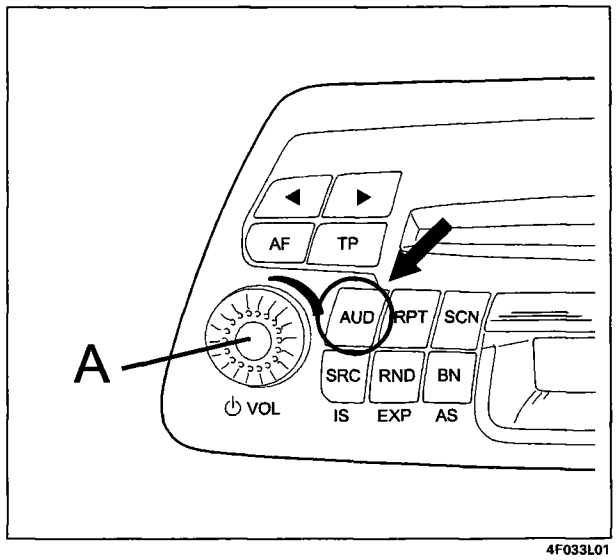
The set can be turned on and off in two ways.
1. Press knob A (VOL).
2. Turn on/off by means of car ignition switch. This function may be set in the EXPERT control level. Manual activation and deactivation are possible at all times in this case.

Note: *if the EXPERT "IGN" function is not active, the radio goes off automatically 20 minutes after the engine is turned off.*

ADJUSTING VOLUME AND SOUND

Volume

Adjust to required volume by means of knob A (VOL).
the display shows: «VOL 00» □ «VOL **31**».



Adjusitng sound

For each of the settings BASS, TREBLE, FADER, BALANCE, LOUDNESS:
1. Select functions by pressing the AUD key once or more.
2. Select the required sound setting by means of key A or select the basic setting: press the AUD key for longer than 2 seconds until the display shows «CENTER» Or «- -«.
3. Finish adjustment: press the AUD key several times until the display shows «VOL ...».

NOTE: *the radio comes with a sound reproduction condition memory specific to each source type..* This makes it possible to set different sound geometries (FADER, BALANCE) and frequency responses (BASS, TREBLE, LOUDNESS) for radio, cassette and phone sources (Automatic Sound Memory function)..After about 5 seconds, the control level with the current settings is automatically abandoned.

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Example 1: bass setting.

Repeatedly press the **AUD** key until the display shows: «BASS 00».
Use the **A** key to adjust the bass tones.
To restore all sound settings to neutral (all set to zero), keep the **AUD** key depressed for longer than 2 seconds until the display shows "00"

NOTE: *this reset function only applies to the source in current use; the existing settings remain valid for the others. The LOUDNESS FUNCTION IS NOT INCLUDED IN THIS RESET. FUNCTION MUST ALWAYS BE DEACTIVATED MANUALLY.*

Example 2: LOUDNESS setting

Repeatedly press the **AUD** until the display shows»LOUD».
To activate(LOUD ON), turn the volume key anticlockwise; to deactivate (LOUD OFF) turn it clockwise.
When the Loudness function is active, the display shows the symbol «LD».

Volume distribution FAD (FADER)

The FADER is used to distribute volume between the front speaker group «F» (Front) and rear group «R» (Rear). Use knob **A.** to adjust the function.
The display shows «FAD F -- -- R».
Only for version M2: *the function must be activated (see EXPERT settings) in the case of changes to the speaker system (4 x 5W speakers).*
With the standard system (2 x 15W speakers) the function is not usable

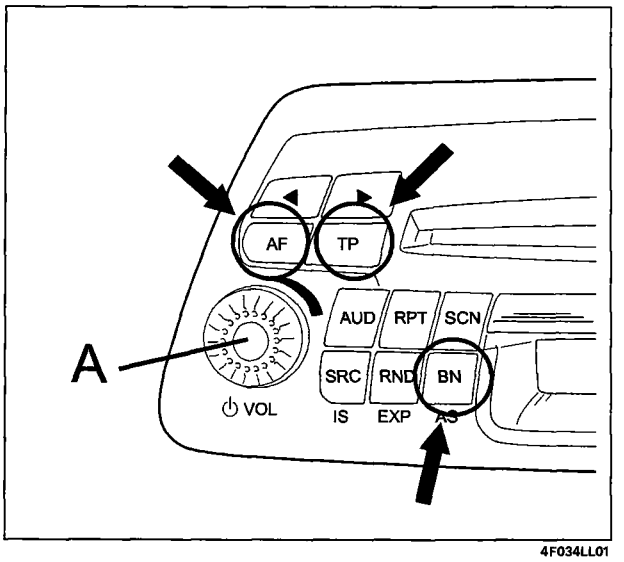
Volume ratio BAL (balance)

Balance is the volume ratio between the left and right hand speakers Use knob **A.** to adjust the function
The display shows«BAL L -- -- R».

Manual switching to MONO

See EXPERT settings This function is recommended when the radio is tuned to a station with a lot of interference, to reduce the background noise.

RADIO (Tuner)



Range selection

FM range: press the **BN** key repeatedly until the display shows the required range «FM 1», «FM 2» or «FM 3».
AM Range: press the **BN** key repeatedly until the display shows «MW» (medium wave) or «LW» (long wave).

Last station memory

Once the selection has been made, the last programme tuned on this range can be played (Last Station Memory) While in Last Station Memory mode, the set stores the settings present before it is turned off: selected station, CD or TAPE, and plays them when the set is turned on again.

Stereo reception - FM

When a stereo station is received, the display shows the corresponding symbol.

Traffic information reception (TP)

TP (Traffic Program): RDS station able to transmit traffic broadcasts.
TP function activation
Give the TP key a short press This enables the traffic broadcast reception function: the display shows the message "TP"
When traffic information is received with the TP function active and another sound source is playing (e.g. CD or tape), the source is interrupted to listen to the radio information and the display shows the message "TA INFO" for 10 seconds.
At the end of the traffic information, the soruce is automatically switched to the source selected originally.

NOTE: *if the station tuned in is not an RDS station able to broadcast traffic information, a search is automatically started for an RDS station when the TP function is selected.*

Interrupting traffic information

Give the TP key a short press. The function still remains active to receive future traffic information.

RDS-EON

Because the radio offers the **EON** service, another station belonging to the same network may tune in while listening to a radio station to provide traffic information (only with TP function enabled); it will return to the original station automatically at the nd of the news.

NOTE: *traffic information is provided at minimum volume.* This volume may be adjusted by means of the EXPERT control menu.
If only traffic information is to be played, activate the function by means of the TP key and set the volume to zero using knob A

Alternative frequency (AF)

During reception of an RDS programme that is broadcast by several stations at different frequencies, the radio will automatically switch to the frequency with the best local reception.

NOTE: *in a very poor reception area, the user may become aware of attempts to switch between sound frequencies due to frequent pauses.* In this case, it is advisable to deactivate the AF function temporarily.

55.

Deactivating **AF** function

NOTE: *tihs function can be deactivated only when receiving stations with alternative frequencies. To deactivate the AF, simply give the* **AF** *key a short press. When a short message »*AF **OFF***» will appear on the display. Do the same to reactivate.*

NOTE: *the AF OFF reception condition should be considered a local, temporary solution because it involves manual compensation of a broadcasting service.*

For this reason, tuning will automatically be switched to AF ON upon each manual or automatic tuning control or selection of another stored station.
The AF OFF condition can be stored, together with the station, when it is activated before storage.
If an attempt is made to deactivate AF for a station that is not broadcasting using an RDS protocol, the message "NO AF" will appear on the display.

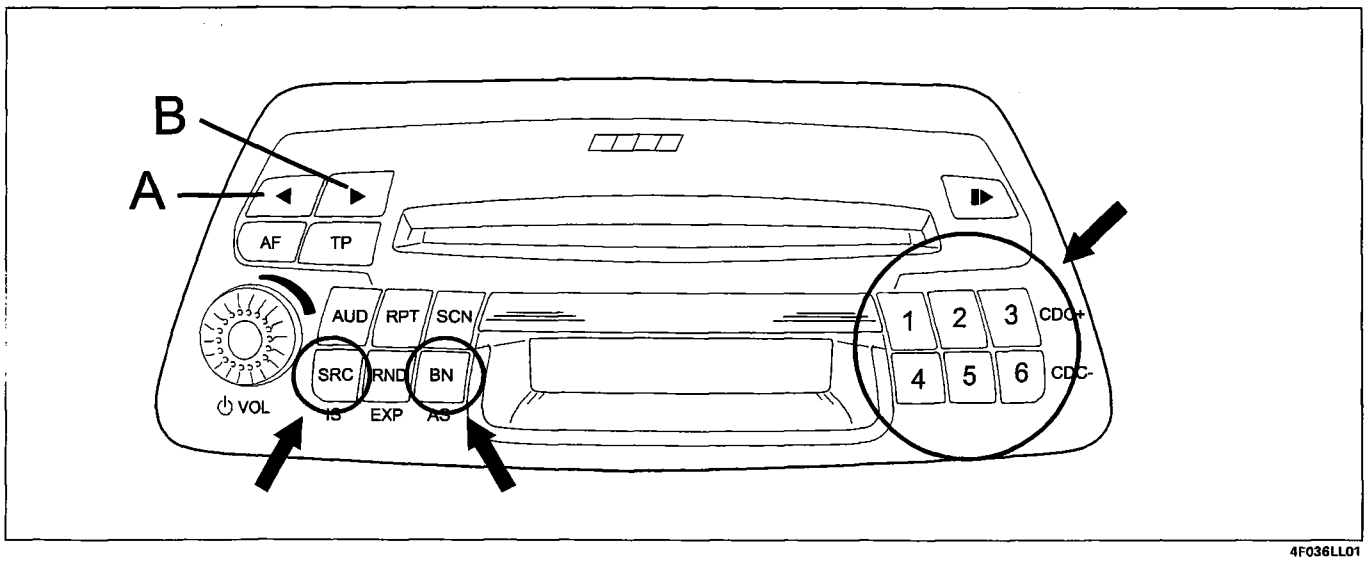
RDS OFF

With some stations (e.g. MF103.3-ISORADIO in Italy), it is advisable t store the station in RDS OFF mode to receive optimum reception.
To activate RDS OFF mode, simply press the **AF** key for more than 2 seconds.
RDS OFF mode, as with AF OFF mode, is absolutely temporary. The RDS OFF condition can be stored, together with the station, whenever it is activated before storage.

Storing **RDS** stations/programmes

Press the selection key for stations **1** to **6** for more than 2 seconds until the station can be heard again.

NOTE: *the AF ON/OFF and RDS ON/OFF modes are stored together with the station.*



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TUNING

Tuning RDS stations/programmes with automatic search for stations

1. Use the **BN** key to select the range: FM1, FM2, FM3, MW or LW.
   The automatic search within FM ranges operates with two degrees of sensitivity. During the first search through the reception range, the search is carried out for stations with high field intensity (local stations). The second search seeks stations with low field intensity (distant reception). The message "**DX**" appears on the display during the search.
   The DX function may be deactivated (see chapter on EXPERT control level)
2. An automatic search in the required direction may be started by giving a short press to one of the keys **A** or **B**. The display shows the relevant frequency: when a station with an identification code is found, this is shown on the display. Otherwise the frequency indication remains.
   If the **RDS** station/programme tunes within the selected range, it is stored on a selection key for stations **1** to **6**. The relevant number appears on the display, e.g. "3" for memory position 3.
3. If the tuned station is to be stored on a selection key, proceed as described in the paragraph on station selection keys.

Recalling stored RDS station/programme

Use the **BN** key to select the range: FM1, FM2, FM3, MW or LW.
Give a short press to the selection key for stations 1 to **6**.
Even if the radio power supply is disconnected, the memory contents of the station selection keys are maintained.

Manual frequency tuning

1. Use key **BN** to select the range:: FM1, FM2, FM3, MW or LW.
2. Pres one of the keys **A** or **B** for 2 seconds until "**MAN**" appears on the display and the frequency tuning is not visible. Continual switching takes place during fast forward when one of the keys is held down.
3. Use keys **A** or **B** to tune in the required direction: the frequency will be increased or reduced by **50** Hz while in FM or 1 kHz in AM.
4. If the tuned station is to be stored on one of the station selection keys, proceed as described in the paragraph on "Station selection keys".
5. Conclusion of manual frequency tuning: give a short press to one of the station selection keys from 1 to **6**.

NOTE: *If no key is pressed for 60 seconds, manual frequency tuning is automatically concluded.*

Automatic station storage: AUTOSTORE

Automatically store the most powerful stations in the selected local reception range on station keys **1** to **6**.
Range selection: FM I, FM 2, FM 3, MW or LW.
Press the **BN** key for more than 2 seconds until the message "**AS**" appears on the display and the frequency indication changes.
The station with the best reception can be heard at the end of the search.

55.

Tuning RDS programmes (IS LEARN) function (see EXP)

The IS LEARN function (which can be run only after activating the EXPERT function) can be used to store up to 30 programmes in the IS memory (virtual memory area that does not correspond to storage keys).
Stored programmes can be called up one by one as described in the EXP section.
The IS memory is useful when the station selection keys are restored or when the tuning stops on a new reception field and you do not wish to deleted stored stations from preset keys.

Starting the automatic IS LEARN function

Use the **BN** key to select the range «FM 1», «FM 2» or «FM 3».
Press the SRC key for longer than 2 seconds. «IS ...» will appear on the display. the receiver starts the search.
If an attempt is made to start the IS LEARN search without the IS mode being active (see EXPERT), the display will show the message "EXPERT".

NOTE: *Always wait for the end of the automatic intelligent search (IS).*

If no reception is possible, the automatic intelligent research may stay on, e.g. in an underground garage or if the aerial is defective. In this case, the automatic search can be interrupted by pressing one of the station selection keys from 1 to 6.
The automatic intelligent search IS ensures up to 30 stations can be stored with optimum reception.
During automatic intelligent search IS, RDS programmes are stored first ordered by programme code, followed by FM stations.

Calling up the contents of the IS memory

Stations can be called up from the memory in the required direction by giving a short press to one of the keys A or **B**. «IS-SCAN» appears on the display during station selection.

Programme types (PTY)

Many radio programmes offer the programme type service (PTY) in the FM range (FM1, FM 2, FM3) The message «NEWS» is displayed during a news programme, for example.
The PTY function activates a search filter that allows the radio to tune only to stations that broadcast programmes with a preset PTY code.

Programme types

The types of programme offered by a radio station vary according to the type of programme transmitted.

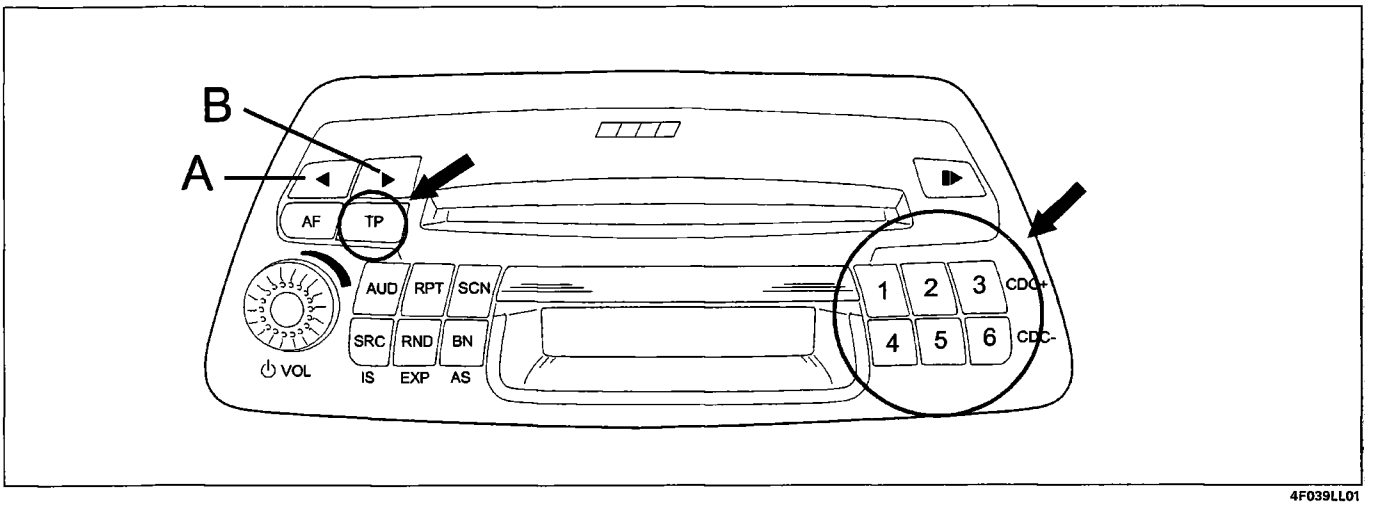
NEWS	News and topical matters
AFFAIRS	Politics and events
INFO	Special information programmes
SPORT	Sports broadcasts
EDUCATE	Education and training
DRAMA	Radio plays and readings
CULTURE	Culture, church and religion
SCIENCE	Science
VARIED	Various
POP	Pop music (hits and chart music)
ROCK M	Rock music
EASY M	Easy listening
LIGHT M	Light classical music
CLASSICS	Classical music
OTHER M	Unclassified music programmes

WEATHER	Weather forecasts
FINANCE	Financial news
CHILDREN	Children's programmes
SOCIAL A	Social information
RELIGION	Religious and philosophical broadcasts
PHONE IN	Listeners' phone-ins (*)
TRAVEL	Tourist information
LEISURE	Leisure, hobbies and pastimes
JAZZ	Jazz music
COUNTRY	Country music
NATIONAL	National broadcasts
OLDIES	Golden Oldies
FOLK M	Folk music
DOCU	Special documentaries
NO PTY	*No identification code*

(*) differs from phone-in function, activated only with the handsfree connection for mobile phone

Automatic PTY search

When selecting a programme type, an automatic search may be activated in two ways.



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1. Six programme types are allocated to the 6 programme keys (station selection keys). The preset allocation may be altered as required.
2. A programme type may be selected from the stored list and an automatic search may then be started.

The procedure is described below:

1. Reactivate PTY function

Press the TP for longer than 2 seconds until the message «PTY ON» appears on the display. Then the last type of programme selected will appear on the display (e.g. «POP»).

2. setting programme type

Give a short press to a key from **1** to **6**. An automatic PTY search is started for the next station offering the selected programme type and the programme type is briefly displayed (e.g. "POP"), followed by the station code and the message "PTY".

Alternatively, press one of the keys **A** or **B** repeatedly until the required programme type appears on the display.

Press one of the keys A or **B** for more than 2 seconds until the automatic PTY search starts. The automatic PTY search stops automatically on the next station offering the preselected programme type, and shows the programme type (e.g. «POP») and the message «PTY».

NOTE: *If no station offers the selected programme type, the last station tuned is played and the PTY function is abandoned.*

3. deactivating the PTY function

This occurs automatically after about 10 seconds.

Storing PTY programme keys: station selection keys

The standard setting is defined in the table:

1	2	3	4	5	6
NEWS	SPORT	POP	ROCK M	CLASSICS	EDUCATE

Each station selection key may be occupied by any programme type as required:

1. Activating the PTY function:
   Press the TP key for longer than 2 seconds until the display shows »PTY ON» and select the set programme type (e.g. «NEWS»).
2. Press one of the keys **A** or **B** repeatedly until the required programme type appears on the display.
3. Press one of the station selection keys for longer than 2 seconds.

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Scanning stored stations (SCAN)

The SCAN function allows automatic scanning of stored stations.
With IS LEARN OFF (EXP):
- short press: scan of all preset stations (**k**eys **1-6**) for all FM bands, or the **6** MW stations, or the **6** LW stations
- press for more than 2 seconds: scan of all stations receivable on the FM band.

With IS LEARN ON (EXP):
- short press: scan of all preset stations (**k**eys **1-6**) for all FM bands
- press for longer than 2 seconds: scan IS LEARN

EXPERT CONTROL LEVEL

To make daily radio control as easy as possible, the supplementary control level (EXPERT) contains several settings that may be required once only or only occasionally.

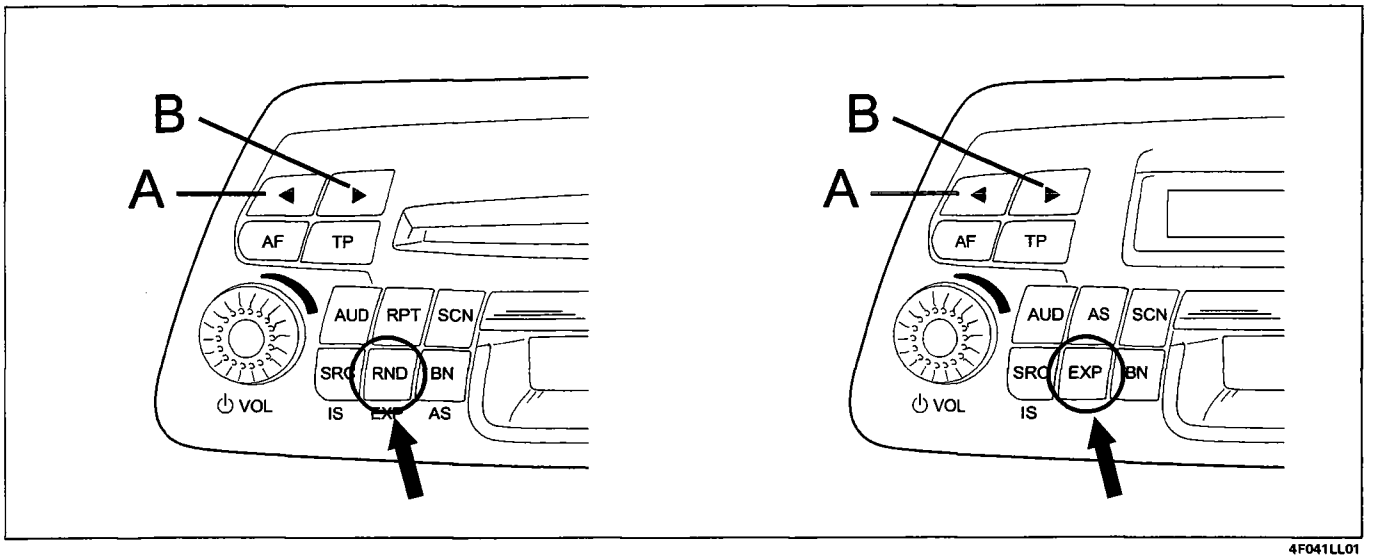
LIST OF POSSIBLE EXPERT SETTINGS

1	Hour setting (TM)
2	Activation/deactivation of time synchronisation with time sent by some RDS stations (SYNC)
3	Setting of maximum volume upon start-up (ON VOL)
4	Setting of minimum volume for traffic information (TA VOL)
5	Activation deactivation by means of car ignition switch (IGN)
6	IS LEARN activation/deactivation (IS)
7	LRN activation/deactivation (LRN)
8	Automatic program change (REG) activation/deactivation
9	Delayed booster activation (BDLY)
10	Suppression of sound in case of incoming/outgoing phone call with handsfree set connected (PHONE)
11	Setting phone input sensitivity (PHONE)
12	Activation of security code (CODE)
13	Control of volume according to speed (SC VOL)
14	Sound confirmation of functions (BEEP)
15	Choice of MONO/STEREO radio broadcasting (MONO)
16	LOC activation/deactivation (LOC)

ALTERING EXPERT SETTINGS

Turning on EXPERT

Depress the **EXP** key for 2 seconds until «**EXPERT**» appears on the display.



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Choosing options

Select the settings to be checked or altered using keys **A** or **B**.
Example: Setting maximum volume upon start-up. (N.3): use keys **A** or **B** to select the required option (e.g. ONVOL 13), the display shows «ONVOL 13». The selected station is played at the set speed.

Altering the setting

Turn the volume knob to set the required volume, the display shows "ONVOL 20", for example.
Turn the knob clockwise: increase the value; turn the knob anticlockwise: reduce the value.

Concluding the setting

Set the next function using keys **A** or **B**
Alternatively, press the **EXP** for 2 seconds until "EXIT" appears on the display. **EXPERT** mode is closed (except for the code and clock).

POSSIBLE SETTINGS

1 - set time

«TM 2:13» appears, for example.
Turn the volume knob to set hours and minutes:
- turn fast to adjust hours
- turn slow to adjust minutes

Give a short press to the **EXP** key to start the clock.

2 - activate/deactivate synchronisation of the clock with the time sent by some RDS stations

- turn volume knob clockwise: «SYNC ON»: the built-in clock goes forward (synchronisation) toward RDS information.
- turn the knb anticlockwise: »**SYNC** OFF».

Synchronisation may be deactivated in places where no RDS **TIMER** signal is received.

NOTE: *The signal sent by the stations may often be incorrect.*

55.

3 - setting maximum volume upon start-up

«ONVOL 20» appears for example, where 20 is the setting in a range that extends up to 31
- turn volume knob clockwise: VOL +
- turn volume knob anticlockwise: VOL –

Volume is limited only when volume is higher than the set value when the radio is turned off.

4 - setting minimum volume for traffic information

«TA VOL **16**» appears for example (limit values from 4 to 31)
- turn volume knob clockwise = VOL +
- turn volume knob anticlockwise = VOL -

During adjustment, the volume is as selected for traffic news.

5 - automatic deactivation by means of car ignition switch

- turn volume knob clockwise: «IGN ON» appears : in this way, the radio can be turned on/off using the car ignition switch.
- turn volume knob anticlockwise: "IGN OFF": activation/deactivation takes place only via the VOL knob.

6 - IS LEARN activation/deactivation

- turn volume knob clockwise: «IS ON» appears
- turn volume knob anticlockwise: «ISN OFF».

7 - LRN activation/deactivation

With «LRN OFF» (standard mode) the radio remains on the selected station until the incoming signal is practically illegible.
In «LRN ON» mode, the radio turns to another station as soon as the incoming signal quality falls.
When in an area where the reception of RDS programmes with traffic news is uncertain, the station search may be blocked in the radio function.
- turn volume knob clockwise: «LRN ON» appears: automatic search of traffic news broadcasts is activated automatically,
- turn volume knob anticlockwise: «LRN OFF»: automatic search of traffic news broadcasts is not activated.

8 - activation/deactivation of automatic regional programme change

When the same RDS programme is transmitted from various regional stations, the radio may switch between stations due to the reception field.
- turn volume knob clockwise: "REG ON" appears: regional p rogramme may be changed automatically in this mode.
- turn volume knob anticlockwise: «REG OFF»: regional programme cannot be changed automatically.

9 - delayed activation/deactivation for connected booster (BDLY)

NOTE: *remember that the Booster switch signal is connected to pin C6 of the radio.*

This mode eliminates the abrupt on/off manoeuvre:
- turn volume knob clockwise: »BDLY ON» appears
- turn volume knob anticlockwise: «BDLY OFF»: is disabled.

10 - suppression of sound in case of incoming/outgoing phone call

- turn volume knob clockwise: «PHONE OFF» no use of phone connection
- turn volume knob clockwise: «PHONE ON»: the radio sound is automatically deactivated in the case of a phone call

The «PHONE ON" function required the mobile phone mount base to be connected.

The «PHONE IN» function allows a conversation via the car speakers in the case of a phone call.
The «PHONE IN» function requires the mobile phone to be connected in handsfree mode

If the radio is off, a phone call (IN or OUT) is still possible. In this case the radio

- comes on automatically;
- allows listening under sound conditions identical to the last phone call (BASS, TREBLE, FADER, BALANCE);
- goes off automatically at the end of the phone call

11 - setting mobile phone input sensitivity

Allows adaptation to the signal broadcast level for the type of handsfree system installed.

- turn volume knob anticlockwise: «PHONE 00» : low input sensitivity
- turn volume knob clockwise: «PHONE 03»: high input sensitivity

12 - security code activation

The code is not activated if «CODE» appears on the display.
If «SAFE» appears on the display, the code is activated.

NOTE: *See next section for more detailed instructions.*

13 - Controlling volume according to vehicle speed (**SCV**)

Standard value: «SCVOL 19»
Function off: «SCVOL - -«
Function at maximum efficiency: «SCVOL 34»

Setting:

1. Vehicle still, engine on: set required volume using the relevant knob.
2. Depress the EXP key for more than 2 seconds until «EXPERT» appears on the display.
3. Use keys A or B to select the «SCVOL» setting.
4. Set the required value using the volume knob:
   - turn volume knob clockwise: VOL +
   - turn volume knob anticlockwise: VOL –

14 - audible function confirmation (BEEP)

The BEEP function is active in the system
This function gives an audible confirmation (BEEP) of the functions. Function activation requires continuous pressing of the key for a time greater than or equal to **2** seconds.

15 - select MONO/STEREO radio reproduction

- turn volume knob clockwise: «MONO ON».
- turn volume knob anticlockwise: «MONO OFF».

16 - activate/deactivate LOC

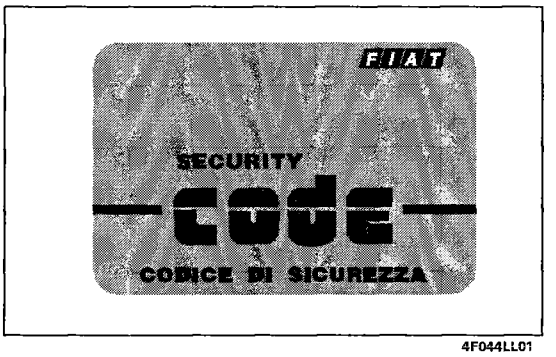
The automatic search in the FM range may be used at two sensitivity levels When in search of stations, the set may be tuned with high field intensity (local stations) or low field intensity (distant reception).

- turn volume knob clockwise: «LOC ON».
- turn volume knob anticlockwise: «LOC OFF».

55.

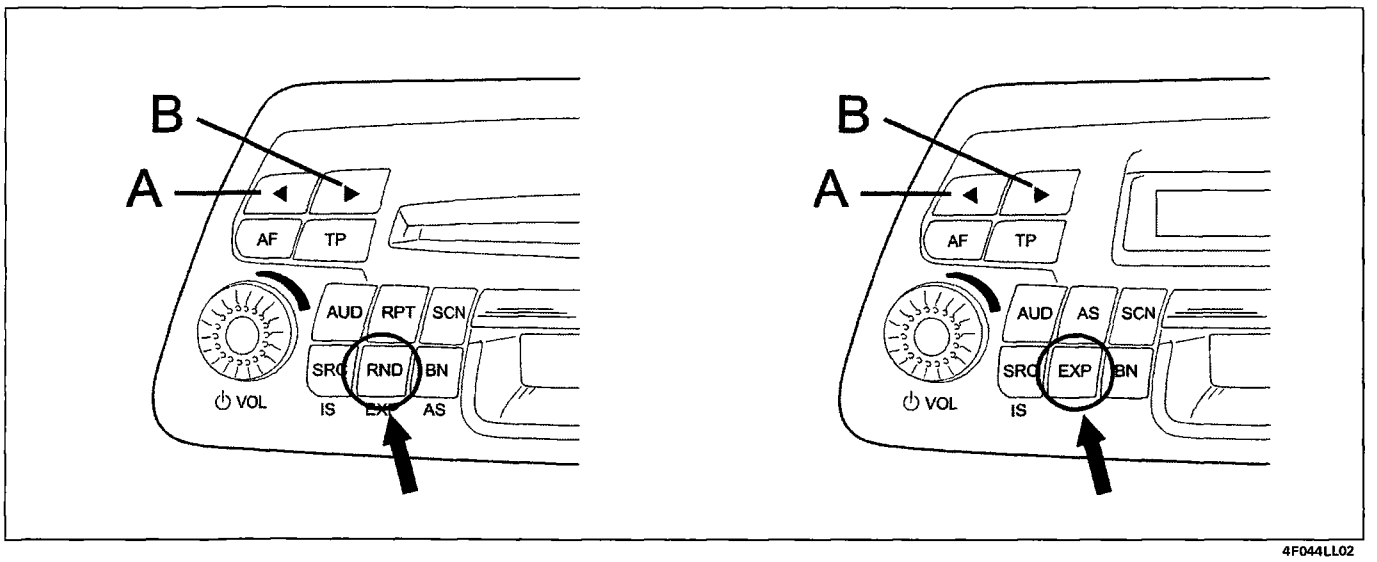
CODING

When coding is activated, the radio is protected electronicall as soon as the radio is disconnected from the car power supply. It can be made to work again only by entering the code.
The radio code is on the CODE CARD



4F044LL01

ATTENTION: coding is not activated initially by the Manufacturer



4F044LL02

ACTIVATING THE CODE

1. Select the EXPERT code level and press keys **A** or **B**, until «**CODE**» appears on the display.
2. Enter the first figure of the code by turning the volume knob and confirm by pressing the **RND/EXP** key.

Example: **1 7 0** 3

- turn the volume knob to display the figure«1---«
  press the **RDN/EXP** key briefly to confirm
- turn the volume knob to display the figure«17□«
  press the **RDN/EXP** key briefly to confirm
- turn the volume knob to display the figure«170-«
  press the **RDN/EXP** key briefly to confirm
- turn the volume knob to display the figure«1703»»
  press the **RDN/EXP** key briefly to confirm

3. To confirm the code: press the EXP key, «SAFE» appears on the display : the code is activated.
4. To deactivate EXPERT mode: press the **EXP** key until «**EXIT**» appears on the display.

Checking code activation

Select the EXPERT control level and press keys **A** or **B** until «SAFE» or «CODE» appears on the display:
If «SAFE» appears: the code is activated
If « CODE» appears: the code is not activated

DEACTIVATING THE CODE

1. Activate EXPERT mode: «SAFE» appears on the display.
2. Set the code, as described previously.
3. To confirm the code: briefly press the **EXP** key until «CODE» appears on the display: the coding is no longer active.

NOTE: *If an incorrect code is entered, the message «SAFE» remains on the display and the procedure must be repeated in full. Respect the* ***waiting times*** *between one attempt and the next, as indicated below.*

RESTORING TO OPERATION

If the radio is disconnected from the car power supply (e.g. when servicing), it is protected electronically with the code active.
1. Turn on the radio: the message «SAFE» appears on the display, «1 - - - -« appears after more than 3 seconds. The «1» marks the number of input attempts.
2. Set the code, as described in CODE ACTIVATION.
3. Confirm the code by pressing the EXP key briefly. The message "SAFE" appears on the display.

The radio switches on after about 3 seconds.

NOTE: *If an incorrect code is entered, the message «SAFE» remains on the display, the radio does not come on and the procedure must be repeated completely. Respect the* ***waiting times*** *between one attempt and the next, as indicated below.*

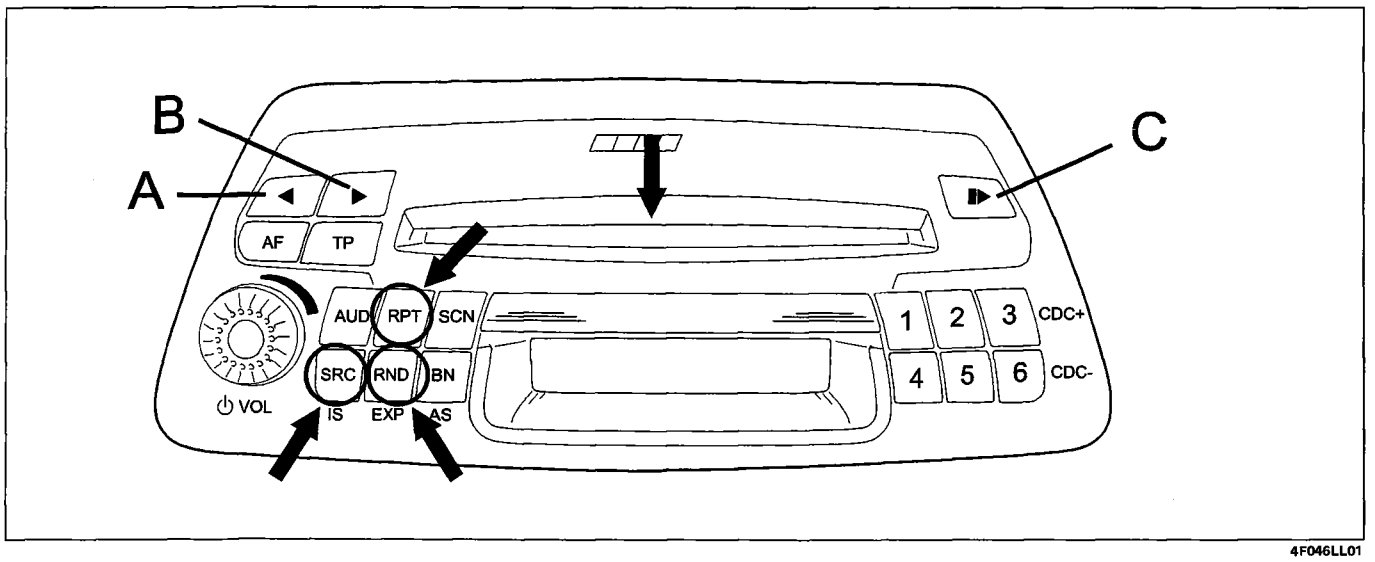
WARNING: waiting times
To make it impossible to restore the radio to operation and deactivate the code by repeated, successive attempts, specific waiting times must be left between attempts.
The radio must not be switched on during the standby time.
It must still be connected to the power supply
As long as the message "SAFE" is on the display, the waiting time is not over.
The waiting time is up when the number of the next attempt can be seen on the display (e.g. "2- - - -").
The following table shows the waiting times between attempts:

Unsuccessful attempts (number shown on display)	Approximate waiting time
1	21 seconds
2	1.5 seconds
3	5.5 seconds
4	22 seconds
5	1.5 seconds
6	6 seconds
7	24 seconds

55.

COMPACT DISC PLAYER – *only for H4 version*

Activating CD operation
Place a CD in the slot and press slightly, the player will draw in the CD automatically.
If a CD is already present in the slot, press the SRC key until the message «DISC» appears on the display; the CD begins to play automatically.
SRC = Source ; the sources are: RADIO, DISC, CDC (CD Changer)



4F046LL01

Choosing a track
Keep tapping key A to choose a track in increasing order; similarly, keep tapping key **B** to choose a track in decreasing order.

Fast forward to a track
Hold keys A or **B** down continuously to fast forward or retur to the track being played.

Repeating a track
Press the **RPT** key to repeat the track being played currently; the wording «**RPT** ON» appears on the display for a few seconds.
The current track will be repeated until the function is deactivated by pressing the RPT key again; the wording «**RPT** OFF» appears on the display for a few seconds.

RANDOM track selection
Tracks to be played are selected automatically after pressing the **RND** key; the message «RND ON» appears on the display for a few seconds.
The function is interrupted by pressing **RND** again; the message «RND OFF» appears on the display for a few seconds.

Automatic track scan
Press the **SCN** key to play all tracks on the CD for about 10 seconds each. The message «SCN ON» appears on the display for a few seconds
The function is suspended by pressing SCN again; the message «SCNOFF» appears on the display for a few seconds.

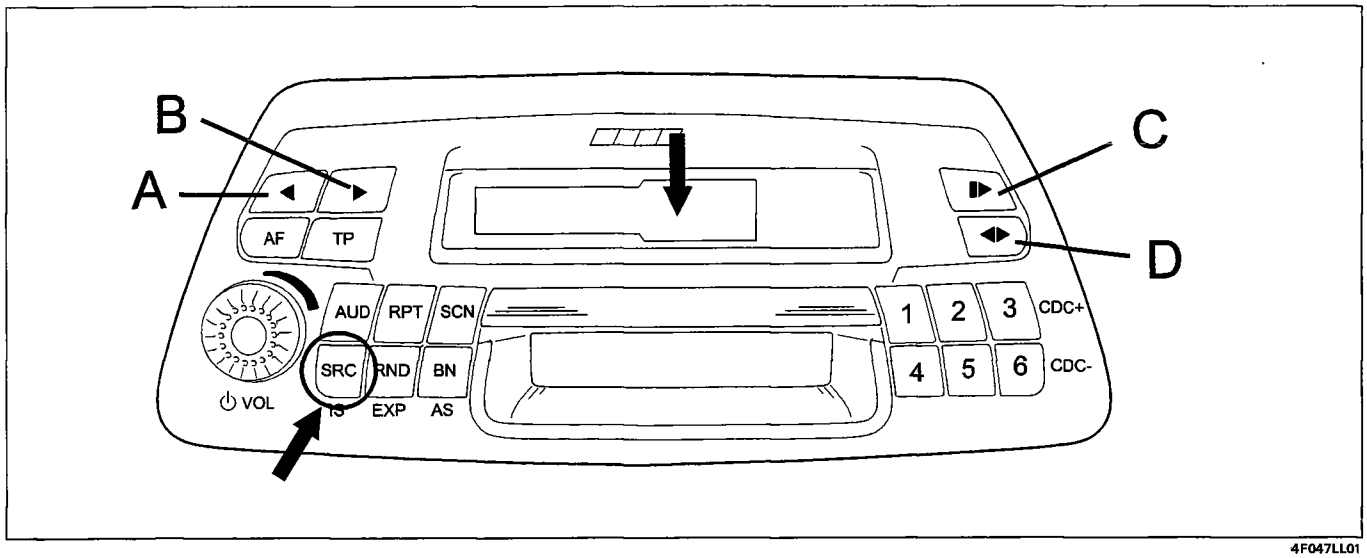
Concluding operation and removing the CD
Simply press the C EJECT key to remove the CD from the player.
The wording «EJECT» appears for a few seconds on the display.
Alternatively press the **SRC** key, the source changes from DISC to CDC (if CD Changer present) or RADIO. Source selection is sequential: RADIO, DISC, CDC.

NOTE: *Status of RPT, RND, SCN functions are not stored when the radio set is turned off.*

TAPE PLAYER) - *version H3*

Activating tape operation

Place a tape in the slot. «TAPE **A**» or«TAPE **B**» appears on the display.
If the slot already contains a tape, press the SRC repeatedly until «TAPE» appears on the display.
SRC = Source; the sources are: RADIO, TAPE, CDC.



4F047LL01

Changing tape side

Press the D REVERSE key briefly.
When the end of the tape is reached the side changes automatically.
The meanings of the symbols on the display are as follows:
«TAPE A» : top side of tape
«TAPE B» : bottom side of tape.

MSS function

MSS = Music-Search-System
This function can be used to forward/rewind to the beginning of the track to obtain the "skip track" or "repeat track" function.
Pauses of at least 3 seconds are left between tracks for the MSS function (without an announcement text). Musical pieces with very low passages (e.g. classical music) are not suitable because these are treated as pauses.

Activating MSS

The MSS function can be turned on or off from the EXPERT menu; the standard condition is MSS ON
In this configuration, press key **B** to make the radio skip a number of tracks corresponding to the number of presses on the key; «+ --« appears on the display.
Example: 3 short presses on the key: skip three tracks;; «+3» appears on the display.

When keys **A** or **B** are pressed for longer than 2 seconds, the CD player is made to forward/rewind fully to the end of the tape.
If the MSS function is deactivated (from EXPERT) a short press on key **A** or **B** allows fast forward or fast rewind of the tape.

55.

Finish MSS before time

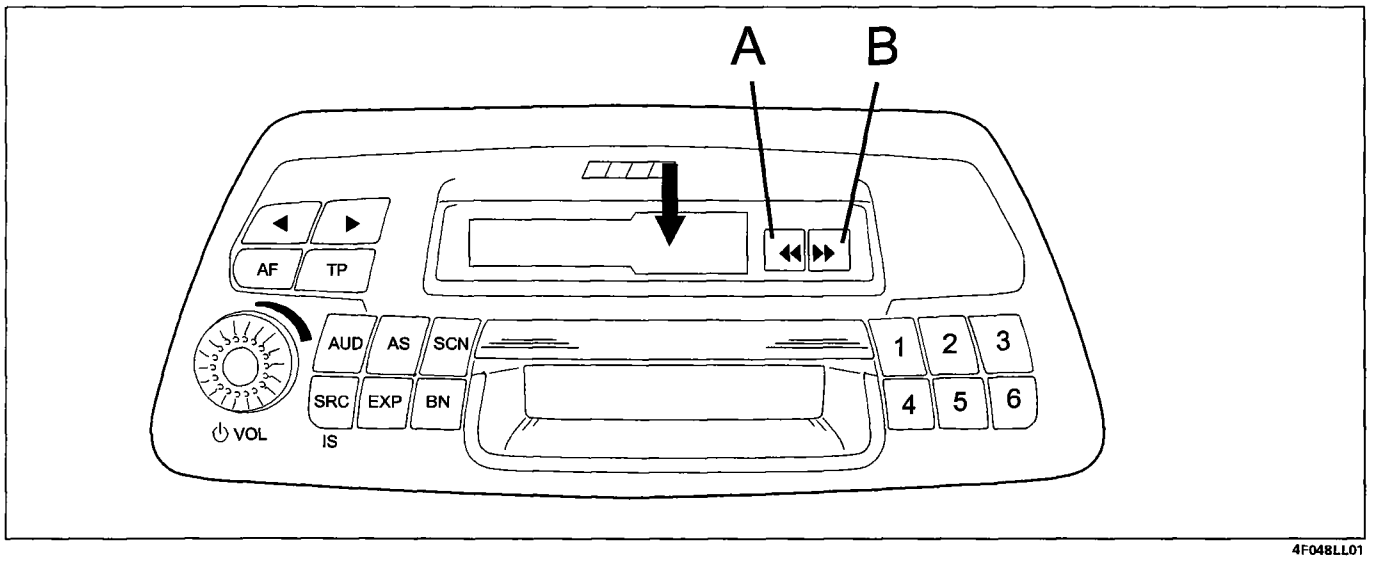
Press key A or B until «0» appears on the display. The player stops in its current forward/rewind position and starts to play the track from that point.

Concluding tape operation

Press the C EJECT key: the tape is ejected. «EJECT» appears briefly on the display
Alternatively press the key SRC, the source changes from TAPE to MCD (if CD CHANGER is present) or RADIO. source selection is sequential: RADIO, TAPE, MCD.

NOTE: *The source is switched immediately if the fast rewind or fast forward function is active but the tape player completes its current function.*

TAPE PLAYER - *version M2*



4F048LL01

Changing the tape side

Press keys A and B half way down.
When the end of the tape is reached the side changes automatically.
The meanings of the symbols on the display are as follows:
"TAPE A" : top side of tape
"TAPE B" : bottom side of tape.

Fast forward/rewind

Fully depress keys A and B

Suspending operation

To suspend operation, briefly press the key opposite to the active key.
The tape begins to play automatically

Concluding tape operation

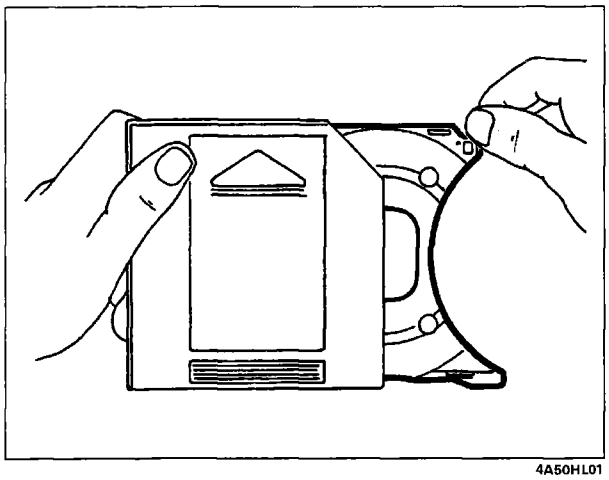
Fully depress the fast forward and rewind keys simultaneously. The tape will be ejected.

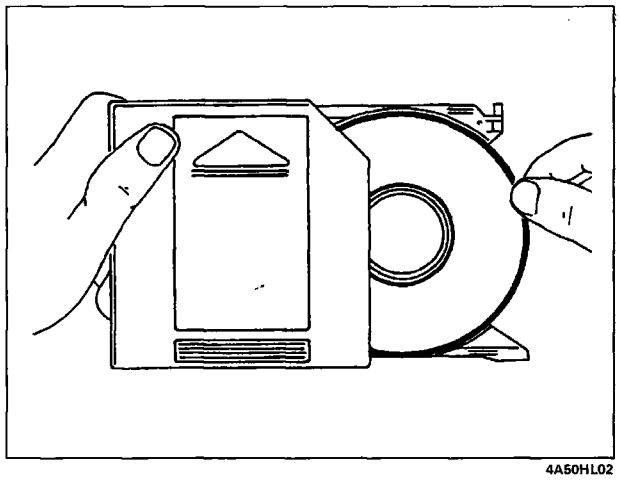
MULTIPLE COMPACT DISC PLAYER (CD changer)

The radio set (*in H4 and H3* versions) is designed to work with compatible compact disc players available from the Fiat Accessory range.
The Fiat Accessory range player comes with a loader that can hold up to 6 CDs.

Filling the loader

The holder contains 6 holders that can each contain one compact disc.
Take a holder from the loader for each CD to be played and insert the CD


4A50HL01

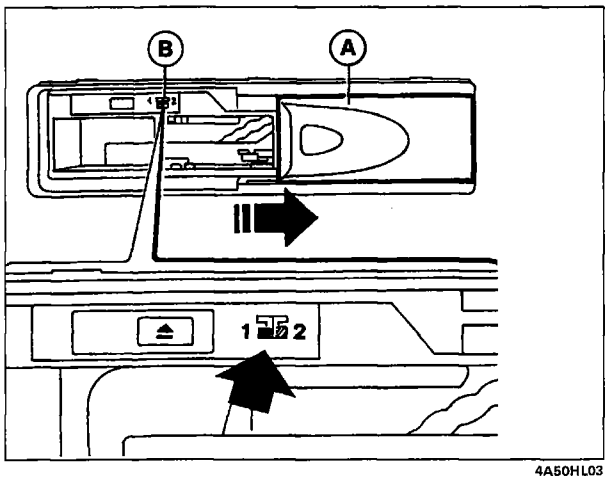

4A50HL02

Ensure the CD label is facing the correct way, i.e. toward the holder. Otherwise the player will not work

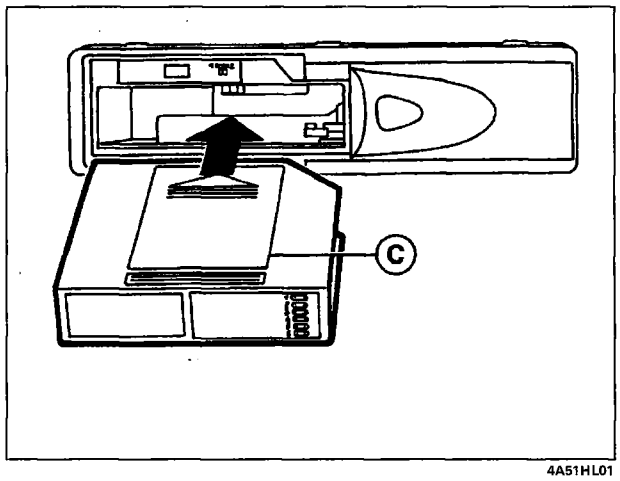
NOTE *The CD player is not designed for playing 8 cm CDs, which require adaptors available from Hi-Fi stores.*

Inserting the loader into the CD player.

Proceed as follows:
- move sliding flap **A** fully to the right until it locks
- check that switch **B** is in position "1"



4A50HL03



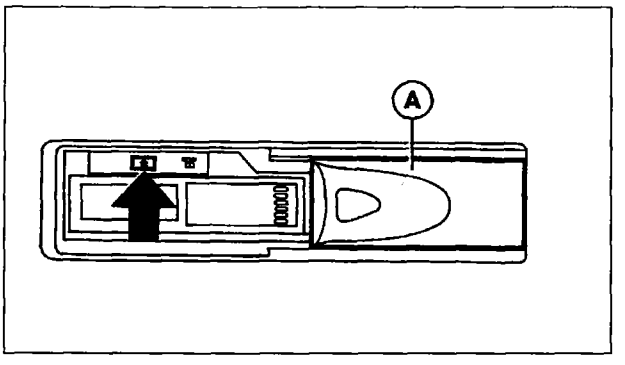
4A51HL01

- insert loader **C**- into the CD player with the labelled side (see arrow) facing up.
- close sliding flap **A** after inserting the loader in order to prevent foreign bodies or dust entering the CD player.

55.

Removing the loader from the CD player.

Proceed as follows:
- slide flap **A**- to the right until it is no longer locked
- press the eject button on the **CD** player, .



4A51HL03

Removing the CDs from the loader

Remove the CDs in order after removing the holders from the loader.

CD PLAYER OPERATION

Selecting CD changer programme source

Press the SRC briefly and repeatedly until the message «MCD» appears on the display.

Choosing a CD

Keep tapping station selection key 3 or 6 until the number of the required CD appears on the display.
3: previous CD
6: next CD

Selecting or repeating a track

Keep tapping the «RIGHT» or «LEFT» keys until the required track number appears on the display.
«RIGHT»: next track
«LEFT» : the track currently playing or the previous track is repeated.

Play a track on the selected CD for 10 seconds (SCAN)

Press the SCAN key briefly.
«SCAN ON» appears briefly on the display.
To stop this function briefly press SCAN key.
«SCAN OFF» appears briefly on the display.

Fast forward and return (TRACK FAST)

To listen to the track at reduced volume during track fast:
Forward: press "RIGHT" and hold down.
Return: press "LEFT" and hold down.

Repeat track (TRACK REPEAT)

To repeat the current track continually: press the RPT key, "TRK ON" appears on the display.
A different track may be selected.
Press RPT key again to suspend the function: «TRK OFF» appears on the display.

Repetition of a **CD (REPEAT)**

To repeat the current CD continously: press the RPT key for longer than 2 seconds: "RPT CD" appears on the display.
A different CD may be selected. To suspend the function, press the RPT key again for longer than 2 seconds: «RPT MAG» appears on the display.

Selecting tracks in a random sequence **(TRACK RANDOM)**

To start the random track search:
press the RND key: "RND **ON**" appears on the display. The selected CD tracks are played in a random sequence.
Press the RND key again to end the random track search: "RND OFF" appears on the display.

NOTE: *The TRACK RANDOM function cannot be combined with the TRACK REPEAT and CD REPEAT functions.*

Concluding **CD** operation

Press the **EJECT** key

Alternatively, press the SRC to listen to the radio again

ADVICE AND PRECAUTIONS

RECEPTION CONDITIONS

The reception conditions will vary greatly while driving.
Reception can be affected by mountains, buildings or bridges especialy when far away from the transmitter of the station you are listening to.

Note: *when listening to traffic information (TA), the volume may rise considerably compared to normal levels.*

MAINTENANCE

The radio is built for long-term use without any special maintenance requirements.
If necessary, clean the panel with a soft, antistatic cloth. Cleaning and polishing products could damage the surface.

TAPES

For optimal playing conditions:
- do not use poor quality tapes, with deformations or peeling labels;
- do not leave the tape inside the radio when not in use;
- do not introduce any objects into the cassette slot;
- do not expose the tapes to sunlight, excessive temperature or high moisture levels;
- replace the tapes in their cases after use;
- dirt on the playing heads caused by tapes could eventually lead to a reduction in high tones during playing. It is therefore advisable to clean the playing heads at intervals using a special non-abrasive head cleaning tape;
- it is preferable to C60 tapes or in the worst case C90 tapes to ensure optimum playing quality at all times. The very fine tape contained in very long cassettes could also break very easily;
- avoid inserting cassettes with loose tapes, particularly if C90, because the tape could emerge and block the mechanism. If the radio detects a loose tape or similar problems, the cassette is in any case automatically ejected;
- do not lubricate the tape mechanism;
- do not touch the playing heads with magnetic or hard items.

55.

COMPACT DISC

When using the Compact Disc player, remember that dirt or marks on the CD could cause the track to jump or lead to poor sound quality.
The same thing happens if CDs are inadvertantly bent.

For optimum playing conditions:
- carefully clean each CD to remove fingerprints and dust using a soft cloth;
- hold the CDs at the edges and clean from the middle outward;
- never use chemical products to clean (e.g. sprays, antistatic products or thinners) because they could damage the CD surfaces;
- replace the CDs in their containers after use to avoid creating marks or scratches that could cause the tracks to jump;
- do not expose the CDs to direct sunlight, high temperatures or moisture for long periods. Avoid bending;
- do not stick labels onto or write on the recorded surfaces of CDs;
- to remove a CD from its case, press in the centre and lift the disc out by holding carefully around the edges;
- always hold CDs by the edges. Never touch the surface;
- new CDs may be rough around the edges. When these discs are used, the radio may not play correctly.
- do not use CDs that are scratched, cracked or deformed etc. The use of such discs could lead to malfunction or damage.

page

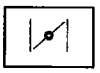
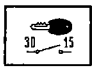
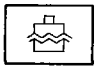
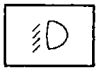
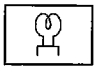
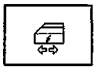
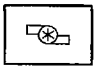
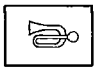
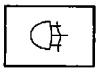
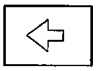
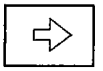
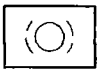
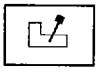
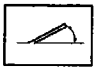
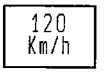
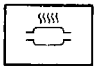
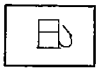
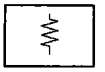
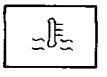
DESCRIPTION	Marea-Marea Weekend			
	1596	1596 a.t.	1910 JTD	1998
Side lights and warning light - Dipped headlamps - Main beam headlamps and warning light - Number plate lights (polyelliptic headlamps)	5	5	5	5
Side lights and warning light - Dipped headlamps - Main beam headlamps and warning light - Number plate lights (parabola headlamps)	7	7	7	7
Fog lights - Rear fog lights	9	9	9	9
Direction indicators and warning light (with alarm) - Hazard warning lights - Brake lights (with check) - Reversing lights	11	11	11	11
Direction indicators and warning light (without alarm) - Hazard warning lights - Brake lights (without check) - Reversing lights	13	13	13	13
Fiat Marea Car interior lighting - symbol lighting	15	15	15	15
Fiat Marea Weekend Car interior lighting - symbol lighting	17	17	17	17
Radio system - Cigar lighter	19	19	19	19
Front electric windows	21	21	21	21
Rear electric windows	23	23	23	23
Fiat CODE device and warning light	25	25	25	25
Alarm/door check	27	27	27	27
Central locking	29	29	29	29
Heated, electrically adjustable door mirrors	31	31	31	31

DESCRIPTION	Marea-Marea Weekend			
	1596	1596 a.t.	1910 JTD	1998
Predisposition for car phone and TELEPASS	33	33	33	33
Electric sun-roof	35	35	35	35
Headllamp alignment corrector	37	37	37	37
Adjustable, heated front seats	39	39	39	39
Air bag and pretensioners and failure warning light	41	41	41	41
Air bag with side bag and pretensioners and failure warning light	43	43	43	43
Windscreen wash/wipe – Rear wash/wipe – Horns – Heated rear window – Headlamp washer	45	45	45	45
Instrument panel connections	47	49	47	47
Check panel/door check connections	–	–	–	–
Thermostatically-adjustable climate control system/heater	51	51	53	55
Additional heater	–	–	57	–
Versions with climate control Engine cooling	59	59	61	63
Versions without climate control Engine cooling	65	65	61	–

DESCRIPTION	Engine types			
	1596	1585 c.a.	1910 JTD	1998
Anti-locking braking system (ABS) and failure warning light	67	67	67	67
Starting - Electronic ignition and injection - Recharging and warning light - Insufficient engine oil pressure warning light - Injection system failure warning light - Rev counter	69	69	–	71
Starting - Electronic injection - Recharging and warning light - Low engine oil pressure warning light - Heater plugs warning light - Injection system failure warning light - Fuel preheating	–	–	73	–
Starting - EGR control - Injection control - Heater plugs and warning light - Recharging and warning light - Low engine oil pressure warning light	–	–	–	–
Automatic transmission – System failure warning light	–	75	–	–
Diagnostic sockect connections	77	77	77	77
Preparation for TAXI	79	79	79	79

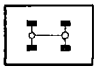
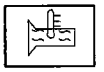
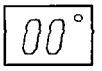
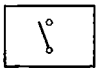
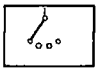
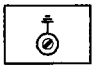
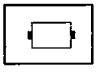
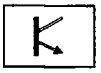
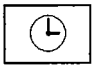
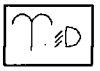
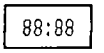
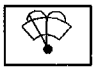
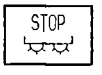
N.B. *The numbers in the table correspond to the page number of the electrical system in the manual*

Electrical symbols

 Position	 Choke	 Switch discharge
 Main beams	 Water in fuel filter	 Dipped beams
 Heated seat	 Heater plugs warning light	 Central locking direction indicators signal
 Seat belts	 Turbocharger pressure	 Horns
 Heated rear windscreen	 Rear fog lamps	 Left direction indicator
 Handbrake applied and low brake fluid level	 Fog light	 Right direction indicator
 ABS	 Brake pad wear	 Engine cooling
 Hazard warning lights	 Turbocharger pressure	 Windscreen wiper
 Direction indicator	 Automatic transmission fluid temperature	 Electronic sun-roof
 Handbrake applied and low brake fluid level	 Speed limits	 Catalytic converter temperature
 Recharging	 Fuel level	 Resistance
 Engine oil pressure	 Engine coolant temperature	 Diode

55.

Electrical symbols

 Warning light	 Trip computer control	 Differential lock
 Bulb	 Electronic injection	 Automatic transmission fluid temperature
 Fuse	 Engine oil level	 Temperature
 Switch open	 Brake fluid level (Japanese Version)	 Antitheft device
 Selector switch	 Doors ajar	 Electrically operated windows
 Coil control switch (relay)	 Central locking	 Earth
 Engine	 Controlled damping suspension Sport Function	 Number plate lights
 Rear wiper	 Transistor	 Pulse generator (timed operation)
 Headlamp washer	 Air-bag	 Analogue clock
 Windscreen wash/wipe	 ABS (Japanese version)	 Digital clock
 Rear wash/wipe	 Car brake failure	 Speedometer
 Engine oil pressure	 Windscreen wiper	 Rev counter

Electrical symbols

Digital speedometer


Digital rev counter


Digital fuel level


Analogue fuel level


Analogue engine coolant temperature


Economy gauge


Digital engine coolant temperature

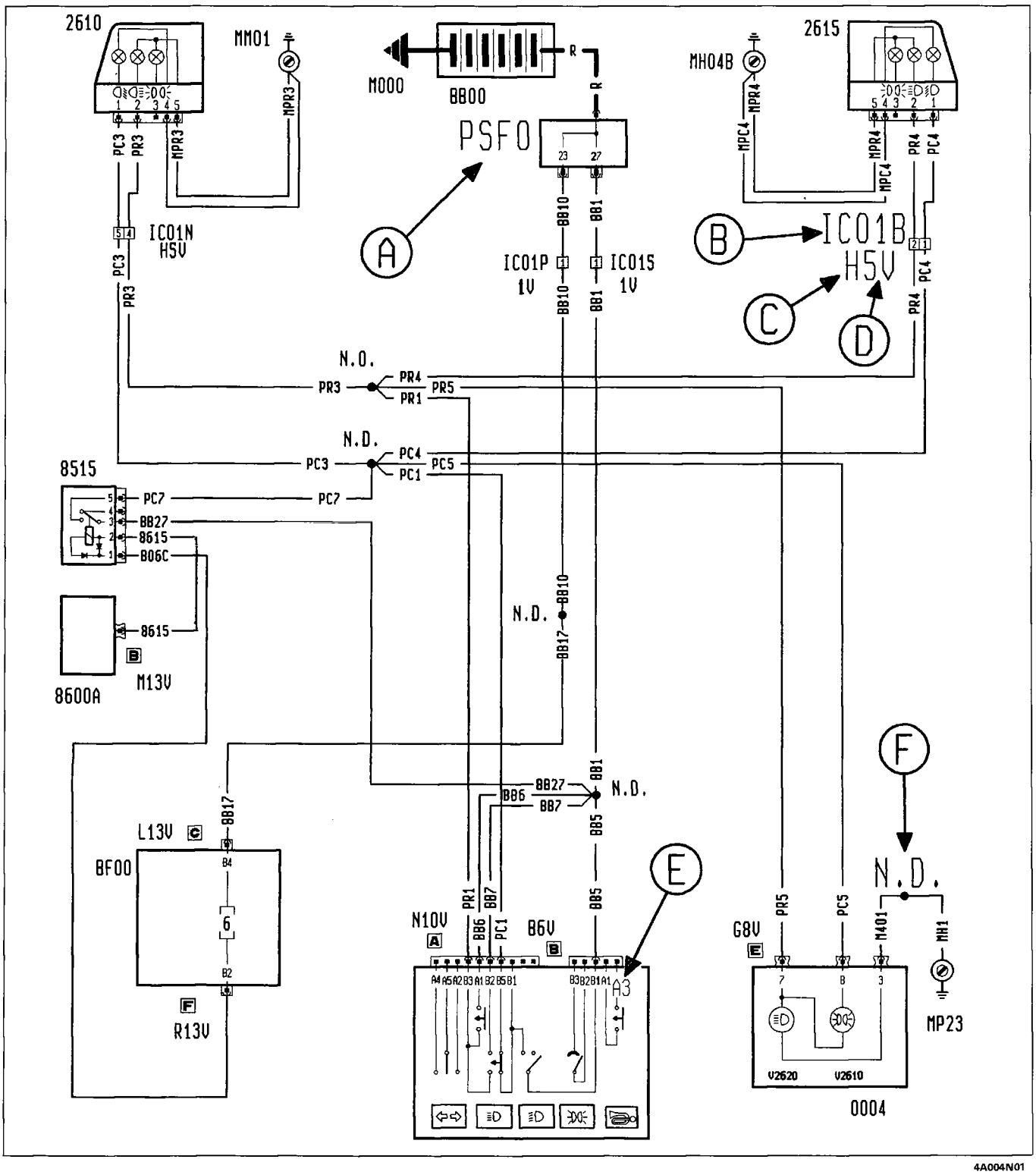

Engine oil temperature

Engine oil pressure gauge


Voltmeter

55.

Explanation for reading wiring diagram

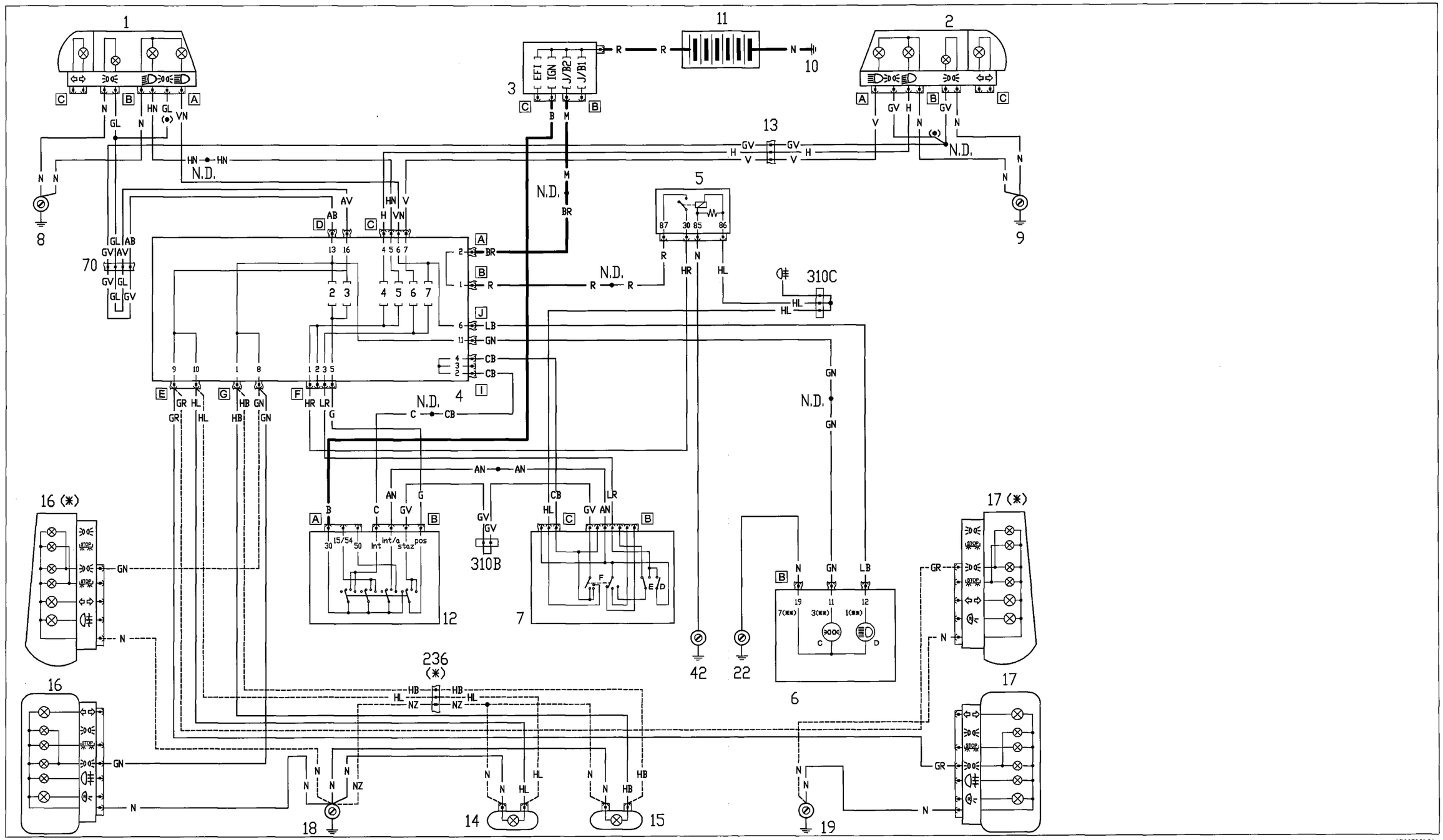


4A004N01

Key to references

A Component code
B Connector code
C Colour code
D Connection number of ways
E Connection number of ways
F Ultrasound welding taped in cable loom

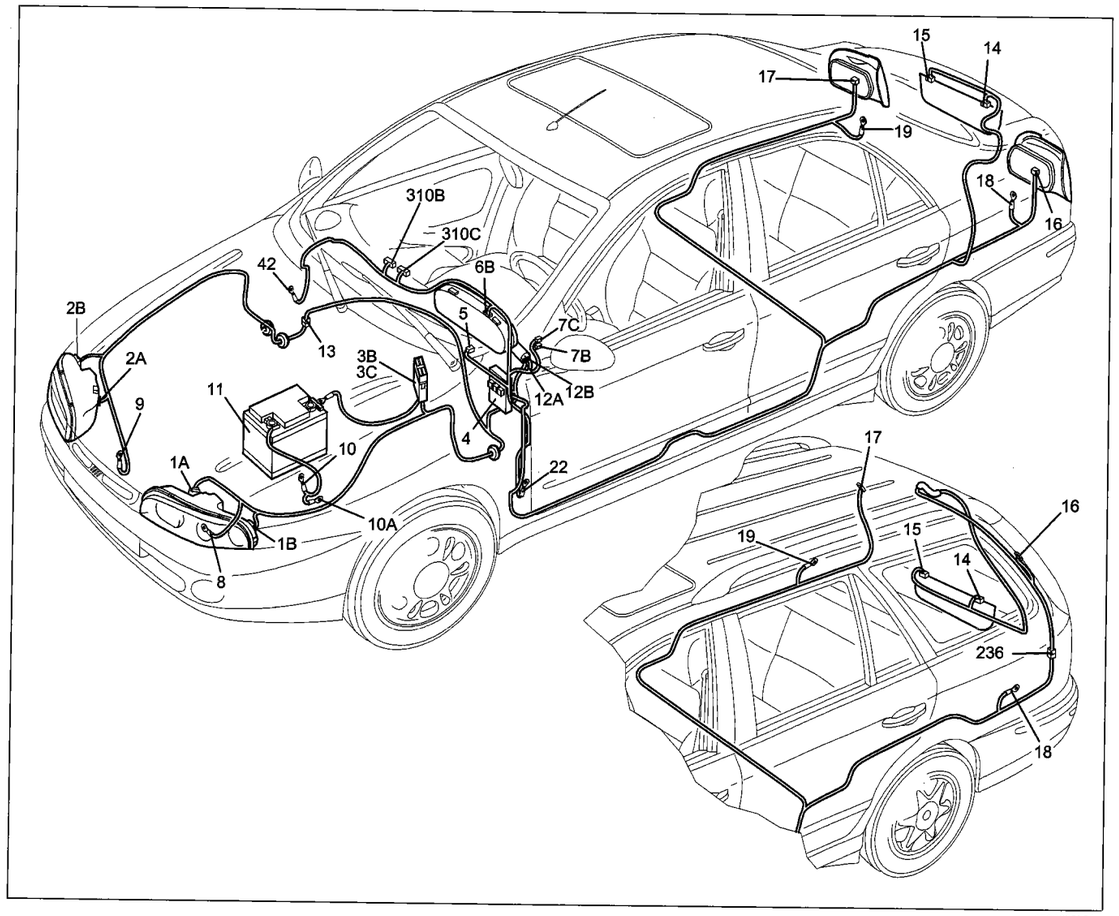
Side lights and warning light - Dipped headlamps - Main beam headlamps and warning light -Number plate lights (polyelliptical headlamps)



* Variant for Marea Weekend

** Variant for C.A.

• Wire not connected



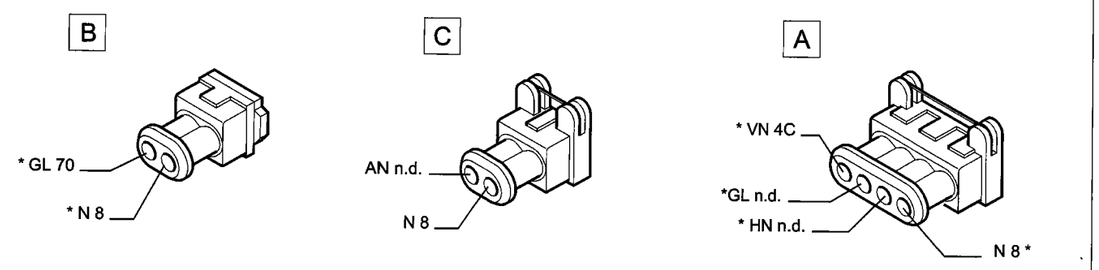
4F006ML01

Side lights and warning light - Dipped headlamps - Main beam headlamps and warning light -Number plate lights (Polyelhptical headlamps)

Component key

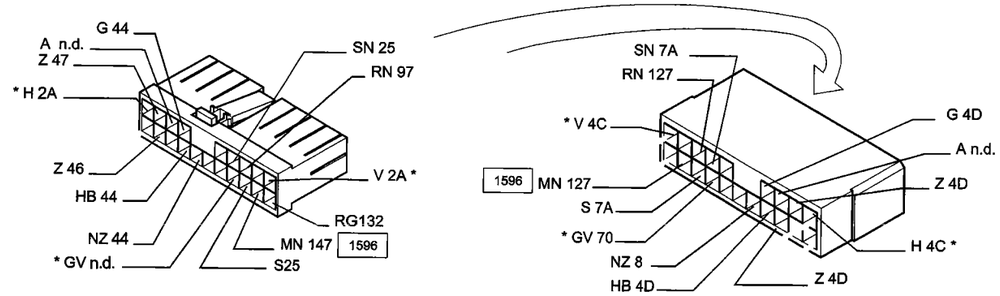
1 Left front light cluster
2 Right front light cluster
3 Power fusebox
4 Junction unit:
5 Dipped headlamps relay
6 Instrument panel
7 Stalk unit
8 Left front earth
9 Right front earth
10 Engine battery earth
11 Battery
12 Ignition switch
13 Connection between right/left front cables
14 Left number plate light bulb
15 Right number plate light bulb
16 Left rear light cluster
17 Right rear light cluster
18 Left rear earth
19 Right rear earth
2 Left facia earth
42 Right facia earth
236 Connection between rear cables and tail-gate
310 Connection bridge

1 Left front light cluster



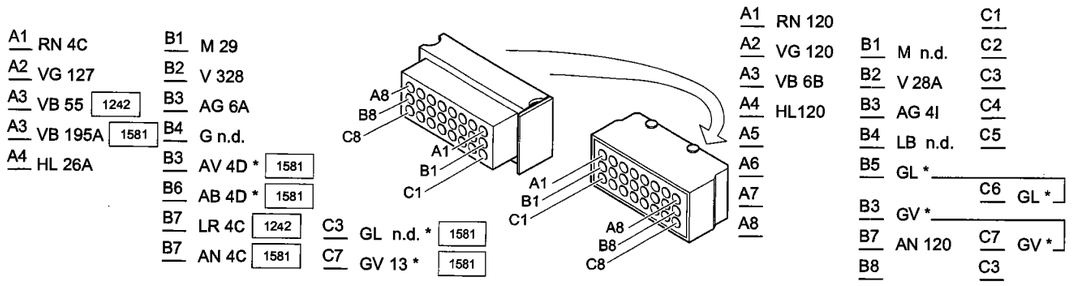
P4F808N02

13 Connection between right/left front cables



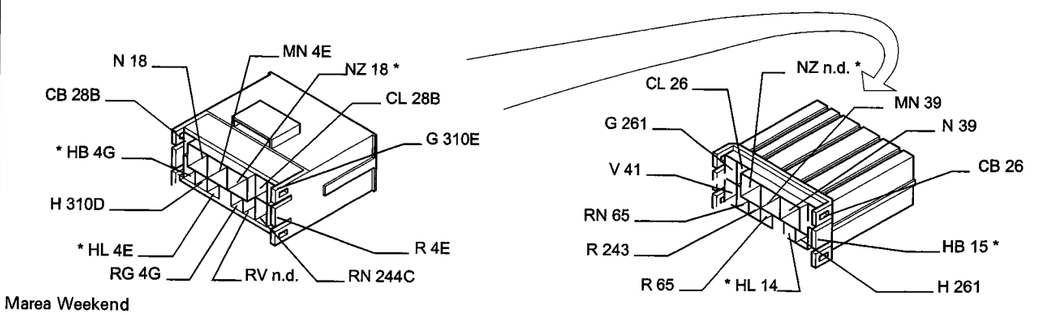
4F006ML03

70 Connection between dashborad/front cables



P4F808N04

236 Connection betwen rear lead and tail-gate

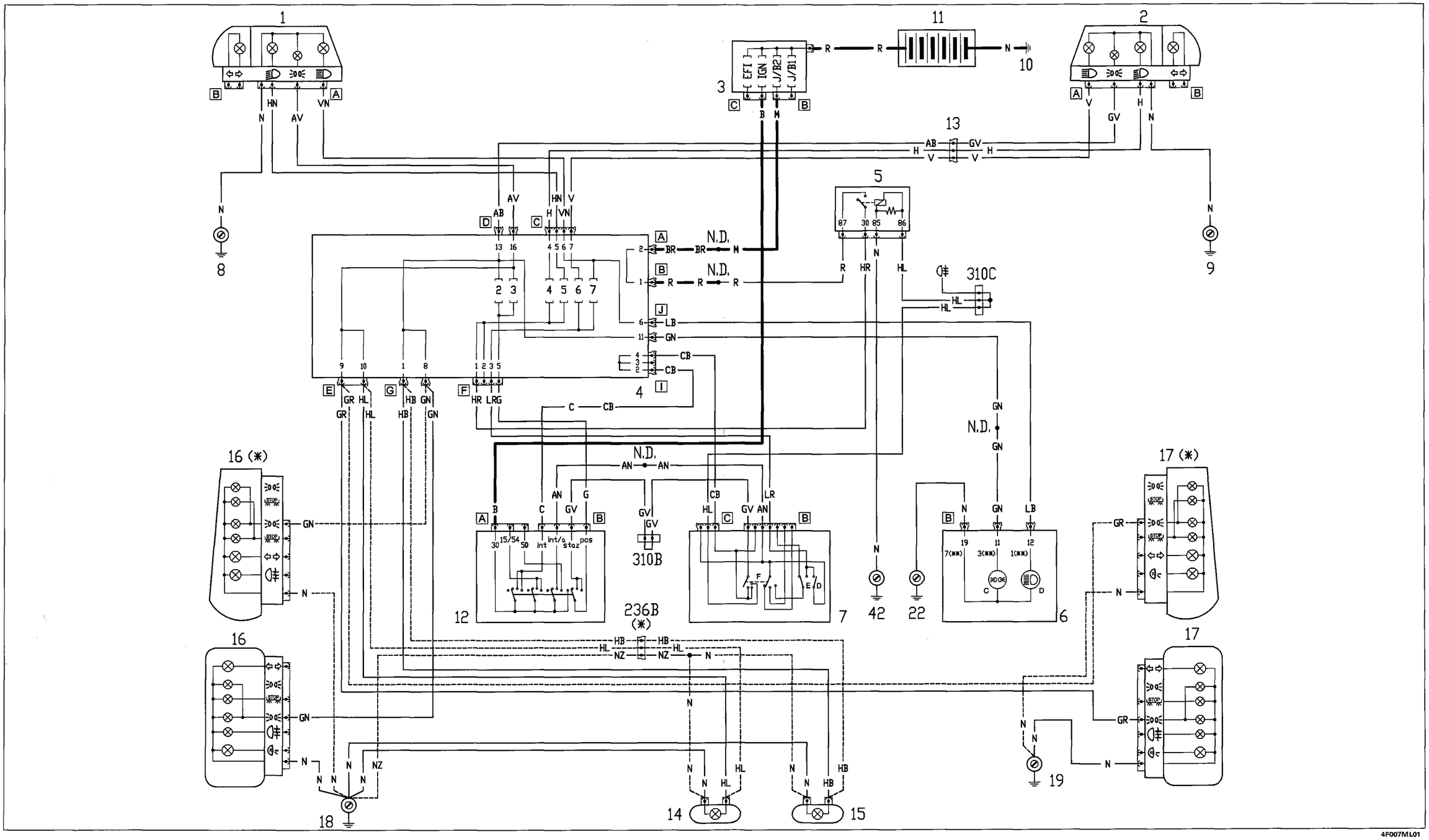


Marea Weekend

4F006ML05

(*) The cables involved in the wiring diagram are marked with an asterisk.

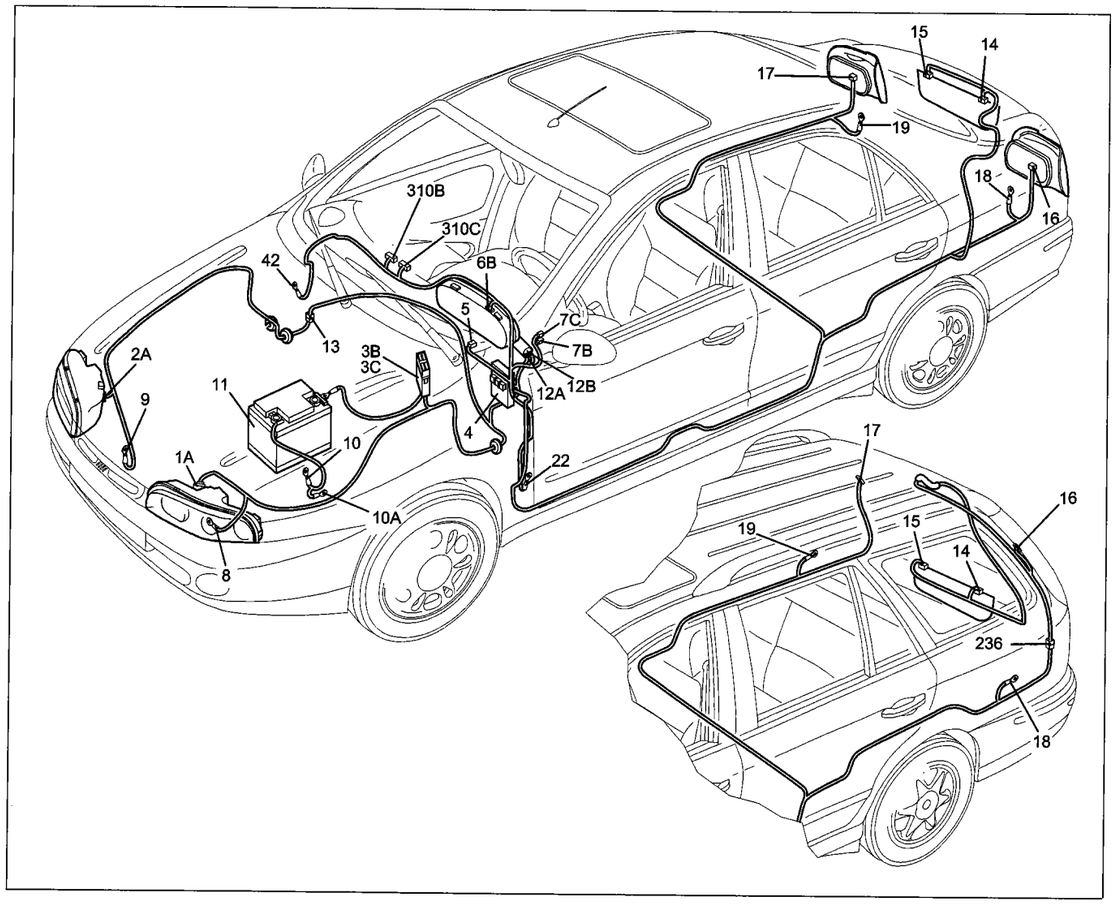
Side lights and warning light - Dipped headlamps - Main beam headlamps and warning light -Number plate lights (Reflector headlamps)



4F007ML01

* Variant for Marea Weekend

** Variant for C.A.



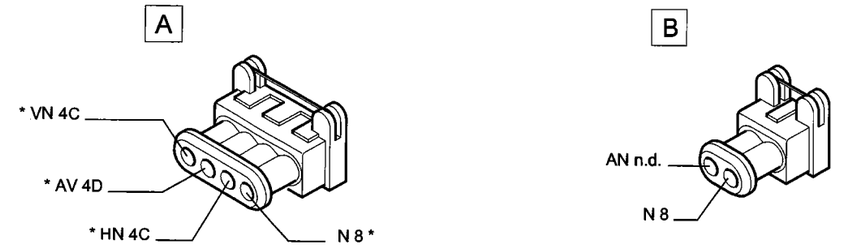
4F008ML01

Side lights and warning light - Dipped headlamps - Main beam headlamps and warning light -Number plate lights (Reflector headlamps)

Component key

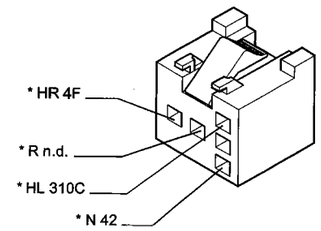
1 Left front light cluster
2 Right front light cluster
3 Power fusebox
4 Junction unit:
5 Dipped headlamps relay
6 Instrument panel
7 Stalk unit
8 Left front earth
9 Right front earth
10 Engine battery earth
11 Battery
12 Ignition switch
13 Connection between right/left front cables
14 Left number plate light bulb
15 Right number plate light bulb
16 Left rear light cluster
17 Right rear light cluster
18 Left rear earth
19 Right rear earth
22 Left facia earth
42 Right facia earth
236 Connection between rear cables and tail-gate
310 Connection bridge

1 Left front light cluster



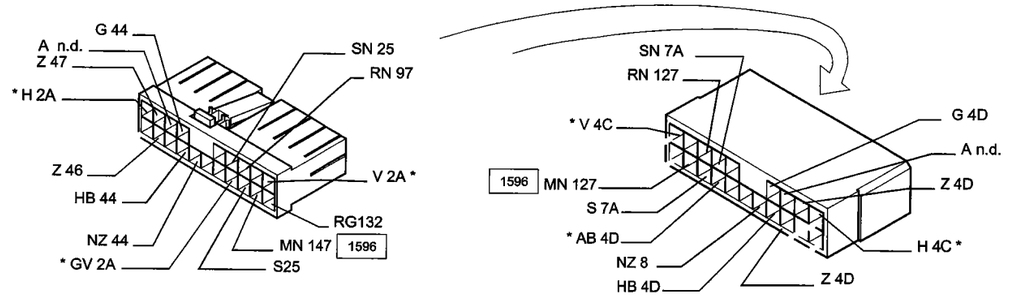
P4F810N02

5 Dipped headlamps relay feed



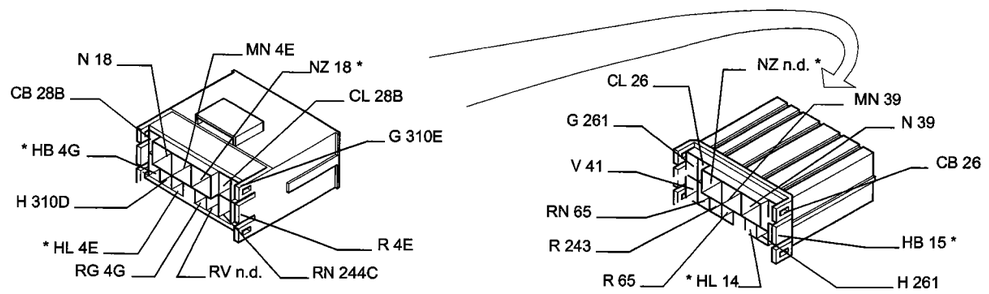
4F008ML03

13 Connection between right/left front cables



4F008ML04

236B Connection betwen rear lead and tail-gate

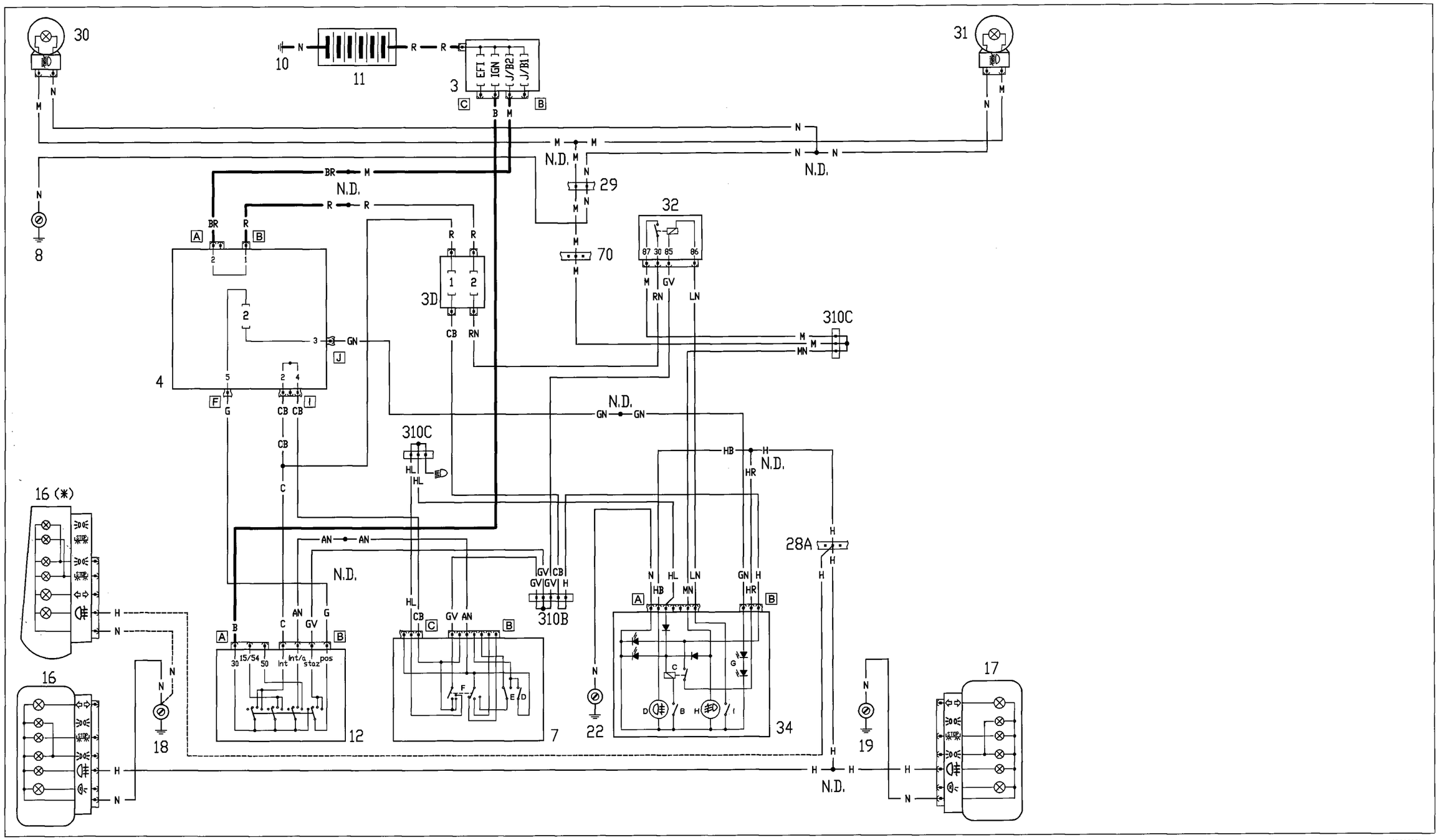


Marea Weekend

4F008ML05

(*) The cables involved in the wiring diagram are marked with an asterisk.

Fog lights - Rear fog lamps

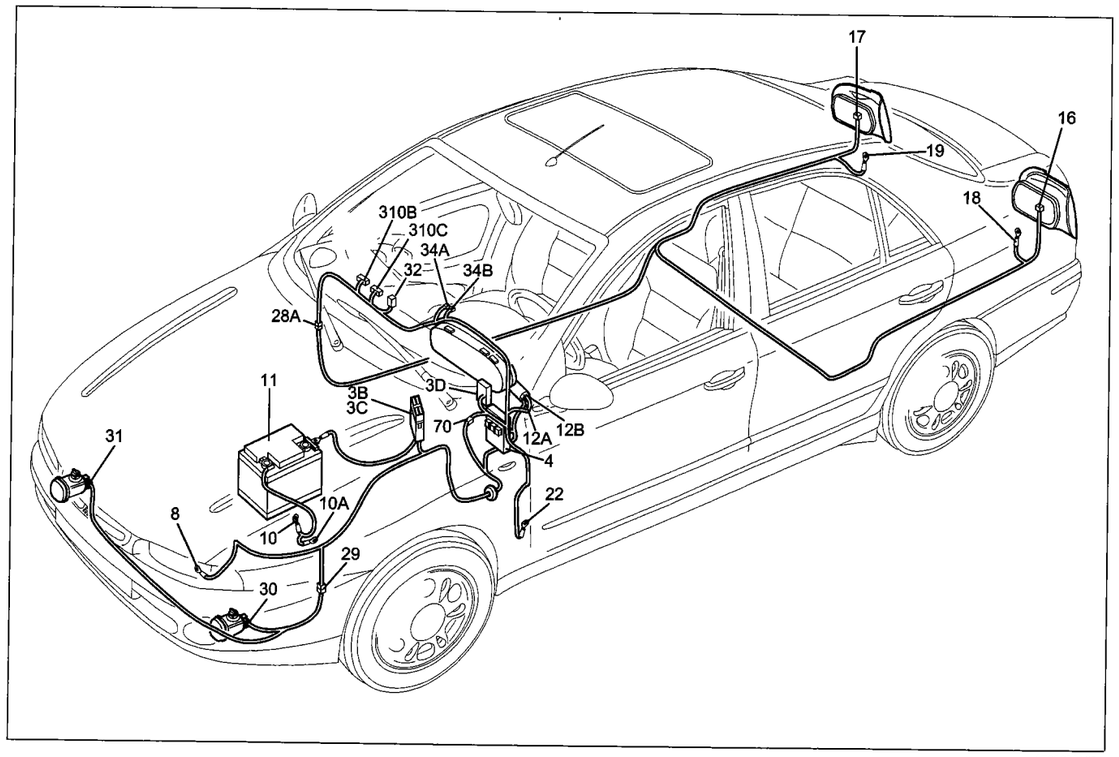


4F009M1L01

* Variant for Marea Weekend

** Variant for C.A.

55.



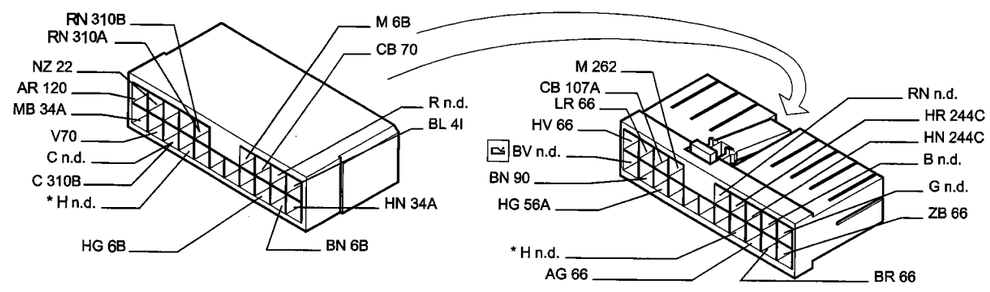
4F010ML01

Fog lights - Rear fog lamps

Component key

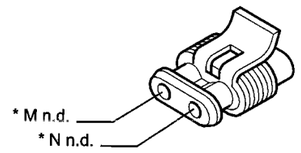
3 Power fusebox
4 Junction unit:
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
16 Left rear light cluster
17 Right rear light cluster
18 Left rear earth
19 Right rear earth
22 Left facia earth
28 Connection between facia/rear leads
29 Connection between front/fog lamp leads
30 Left foglamp
31 Right foglamp
32 Fog lights relay
34 Switch control unit
70 Connection between dashborad/front cables
310 Connection bridge

28A Facia/rear lead connection



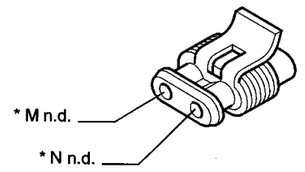
P4F812N06

30 Left fog light



4F010ML03

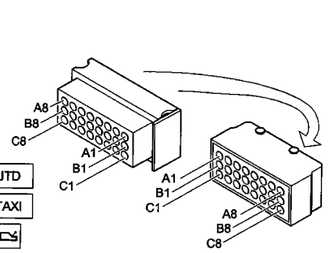
31 Right fog light



4F010ML04

70 Connection between dashborad/front cables

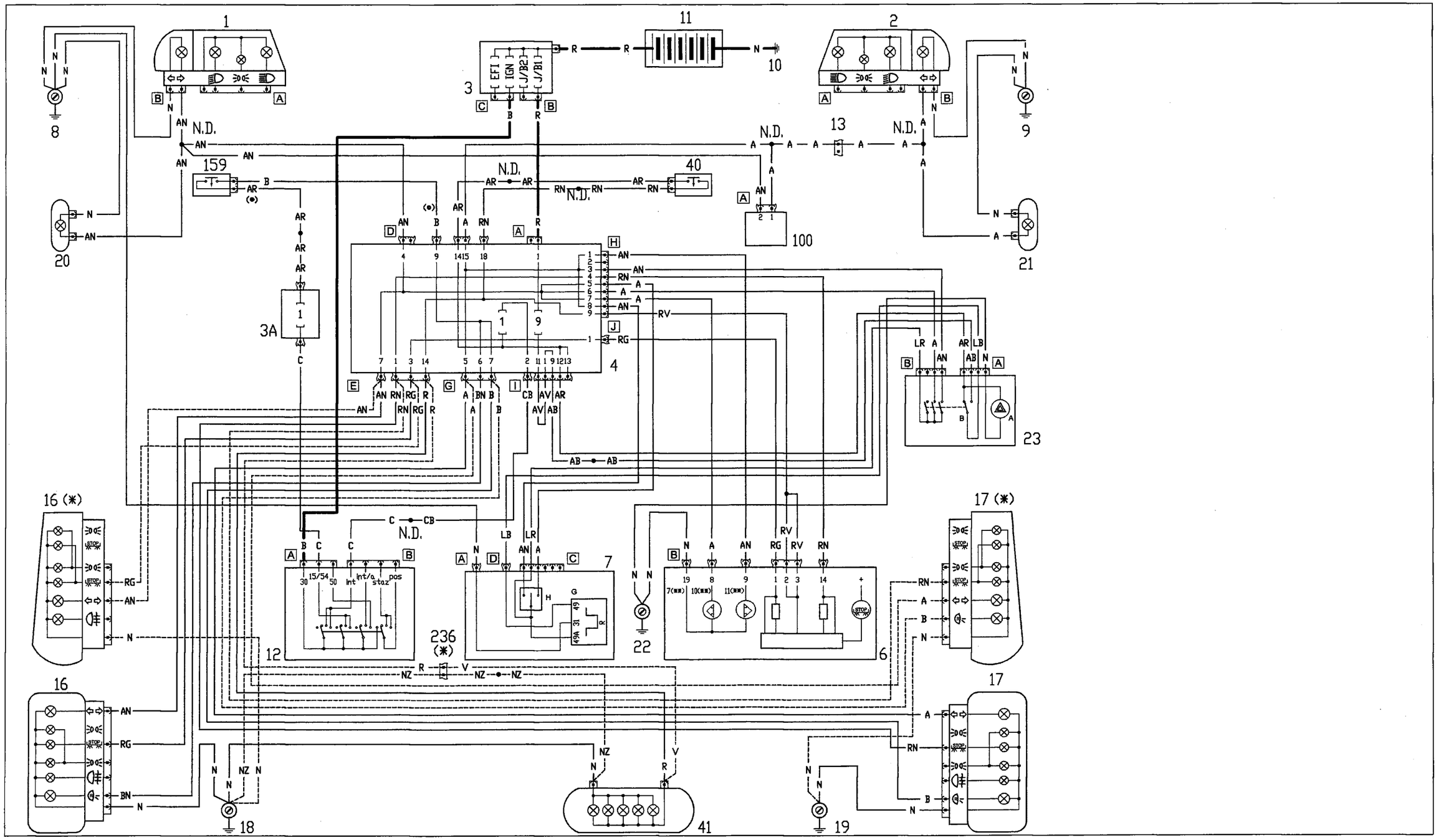
A1	RN 4C	B1	M 29 *	C1	AN 4C	A1	RN 120	B1	M 310C *	C1	AN 120
A2	VG 127	B2	V 328	C2	HR 100B	A2	VG 120	B2	V 28A	C2	HR 28B
A3	H 100B	B3	AG n.d.	C3	HN 100B	A3	H 6B	B3	AG 4I	C3	HN 28B
A4	HL 6A	B4	LN 100B	C4	HG 100B	A4	HL120	B4	AB 4I	C4	HG 28B
A5	CB 100A	B5	BN 375	C5	HV 100B	A5	CB 28A	B5	BN 120	C5	HV 28B
A6	S 100B	B6	B 375	C7	GV 335 JTD	A6	R n.d.	B6	B 117	C7	GV 6B JTD
A7	V 100A	B8	MN n.d.	C8	RB 307 TAXI	A7	A 34A	B7	AN 120	C8	RB 312 TAXI
A8	N 8			C8	GN 195A	A8	N 312	B8	RN 315	C8	GN 6B



4F010ML05

(*) The cables involved in the wiring diagram are marked with an asterisk.

Direction indicators and warning light (with alarm) - Hazard warning lights - Brake lights (with check) - Reversing lights



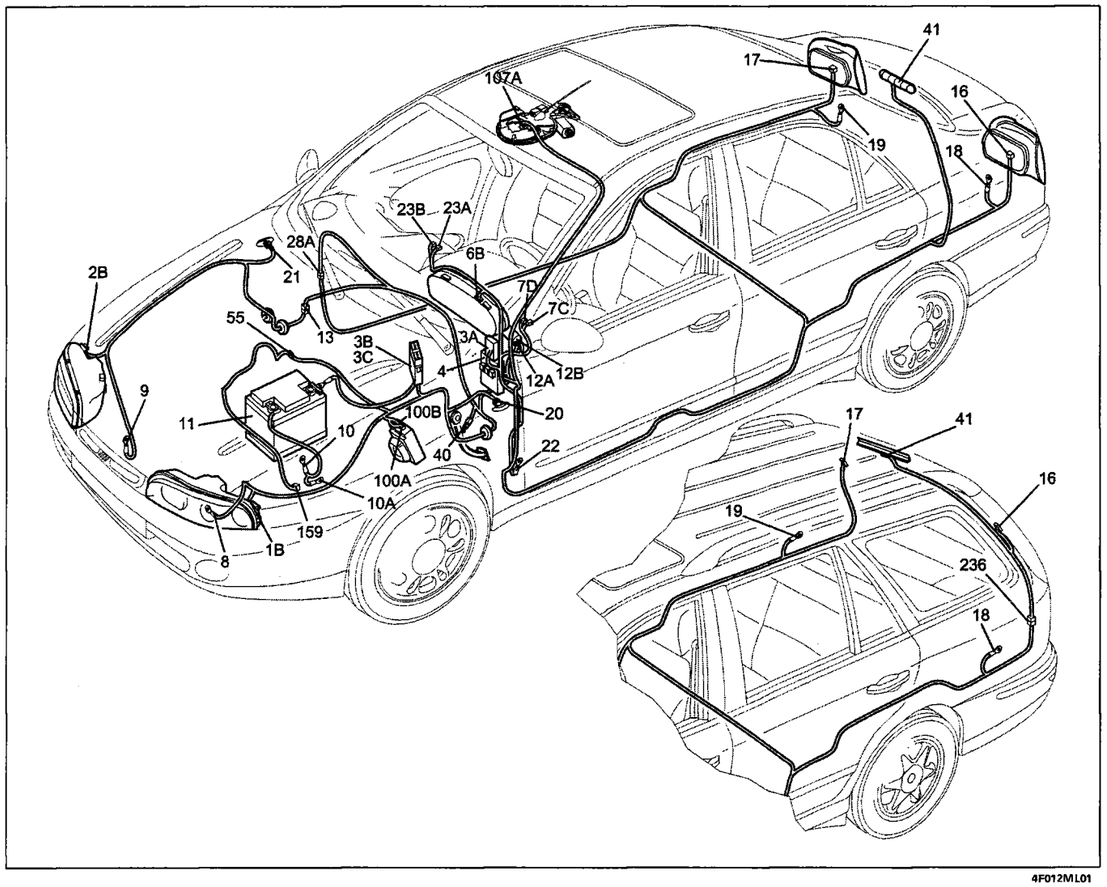
4F011ML01

* Variant for Marea Weekend

** Variant for A.T.

• Automatic transmission: see specific wiring diagram

55.



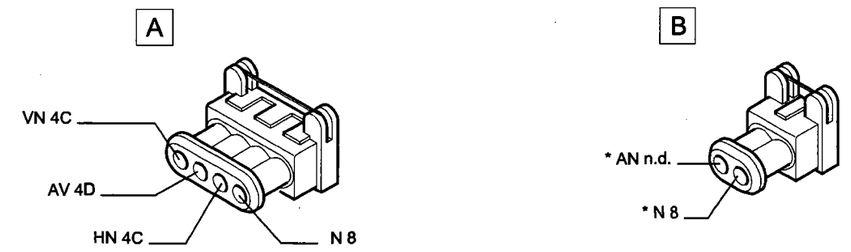
4F012ML01

Direction indicators and warning light (with alarm) - Hazard warning lights - Brake lights (with check) - Reversing lights

Component key

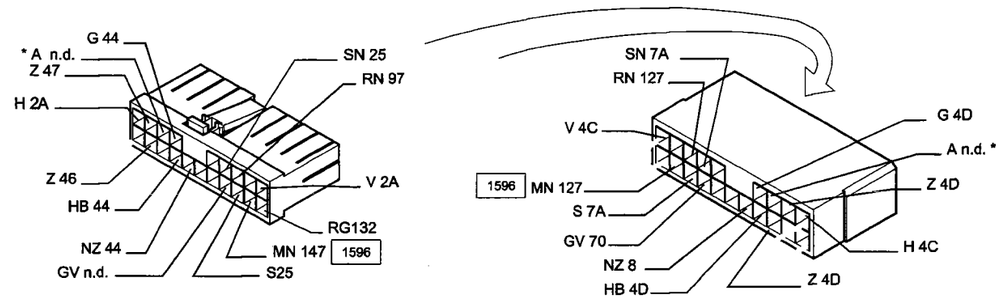
1 Left front light cluster
2 Right front light cluster
3 Power fusebox
4 Junction unit
6 Instrument panel
7 Stalk unit
8 Left front earth
9 Right front earth
10 Battery earth on engine
11 Battery
12 Ignition switch
13 Connection between right/left front cables
16 Left tail light cluster
17 Right tail light cluster
18 Left rear earth
19 Right rear earth
20 Left front side direction indicator
21 Right front side direction indicator
22 Left facia earth
23 Hazard warning light control switch unit
28 Connection between dashborad/rear cables
40 Brake lights control switch
41 Additional brake light
55 Connection between front/engine cables
100 Alarm electronic control unit
107 Door lock remote control receiver
159 Reversing lights control switch
236 Connection between rear cable and tail-gate
310 Connection shunt

1 Left front light cluster



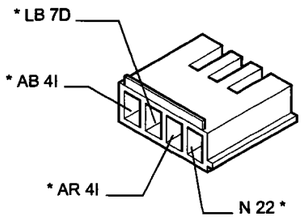
P4F818N02

13 Connection between right/left front cables



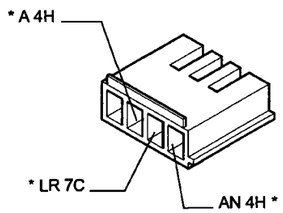
4F012ML03

23A Hazard warning lights switch unit



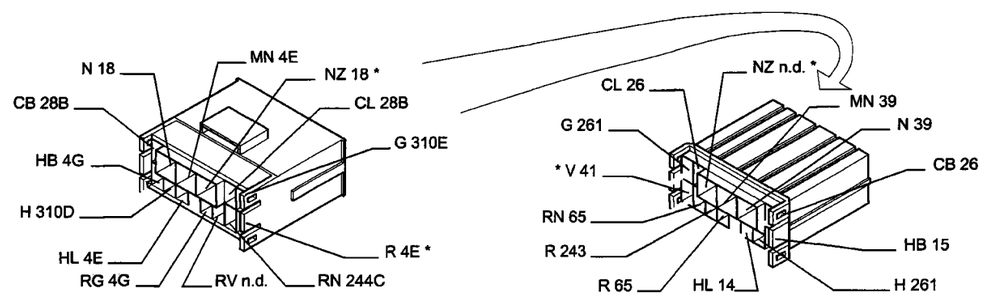
4F012ML04

23B Hazard warning lights switch unit



P4F818N05

236 Connection between rear cable and tail-gate

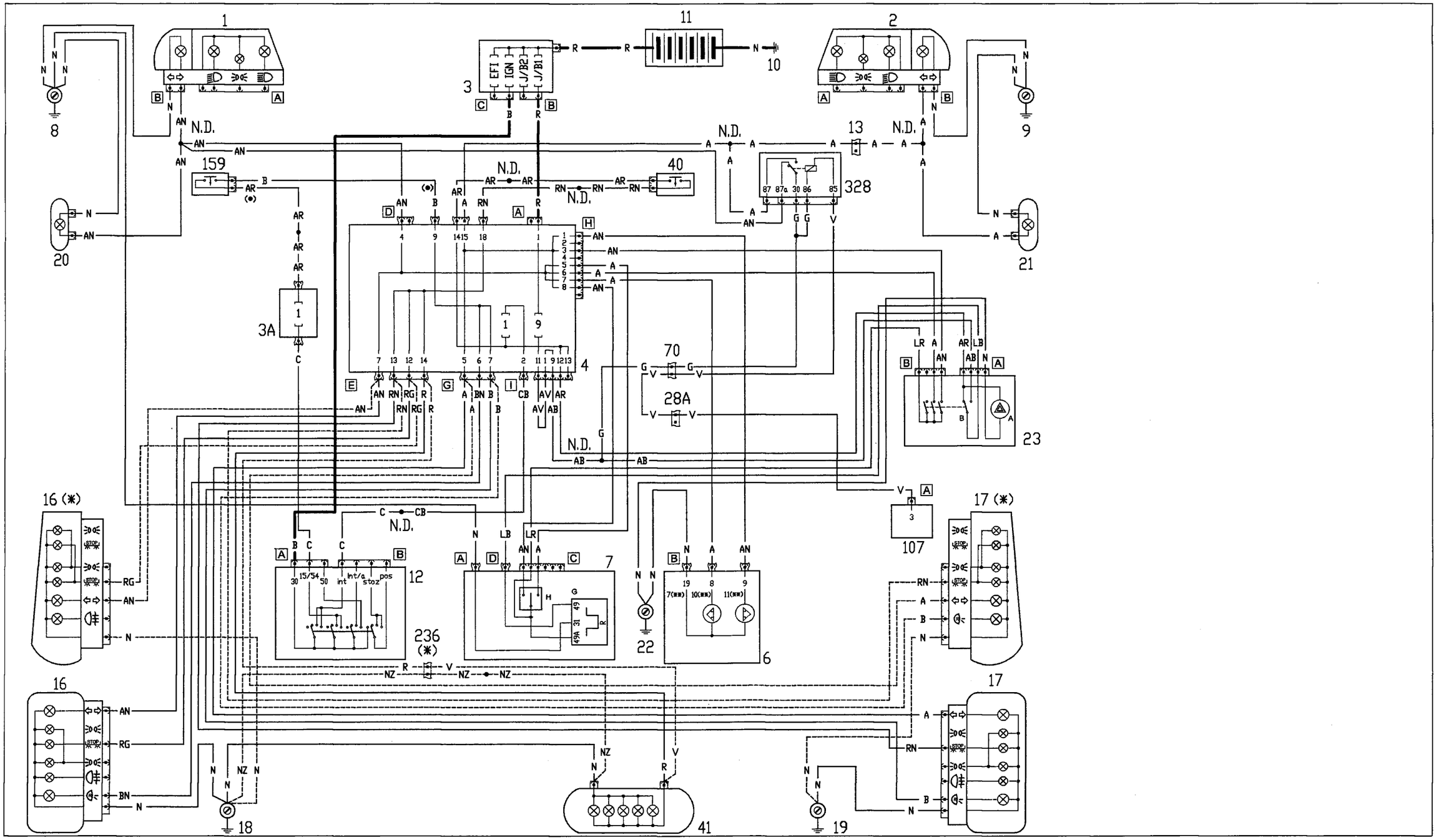


Marea Weekend

4F012ML06

*The cables concerned are marked in the wiring diagram with an asterisk

Direction indicators and warning light (without alarm) - Hazard warning lights - Brake lights (without check) - Reversing light

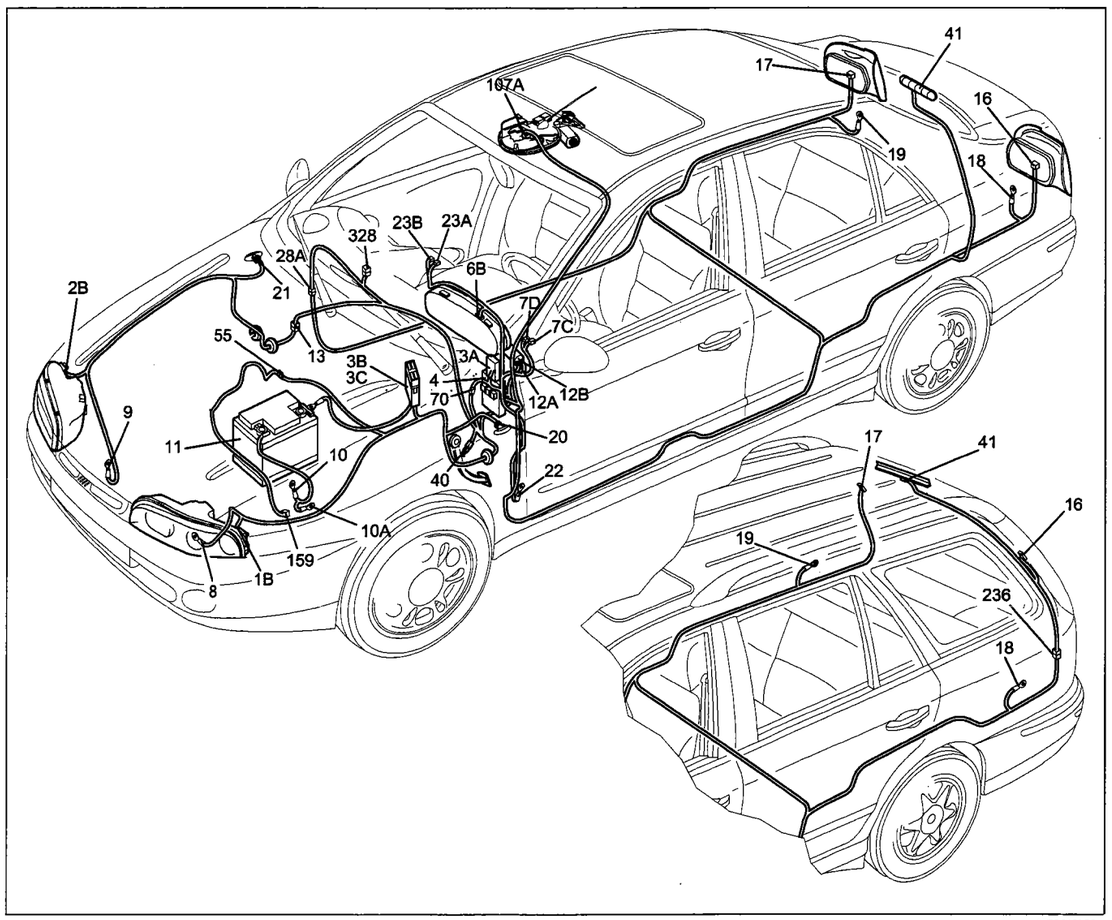


4F013ML02

* Variant for Marea Weekend

** Variant for A.T.

◆ Automatic transmission: see specific wiring diagram



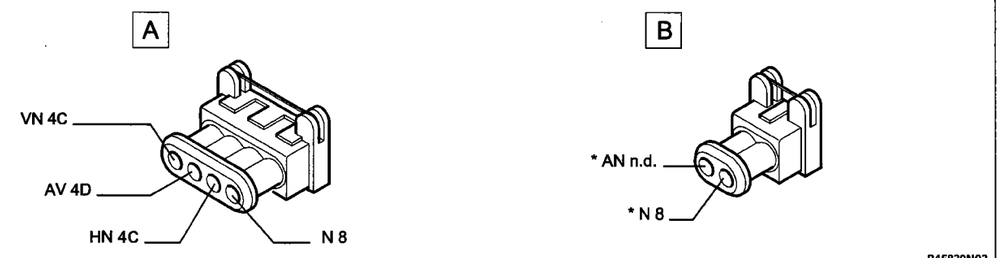
4F014ML01

Direction indicators and warning light (without alarm) - Hazard warning lights - Brake lights (without check) - Reversing light

Component key

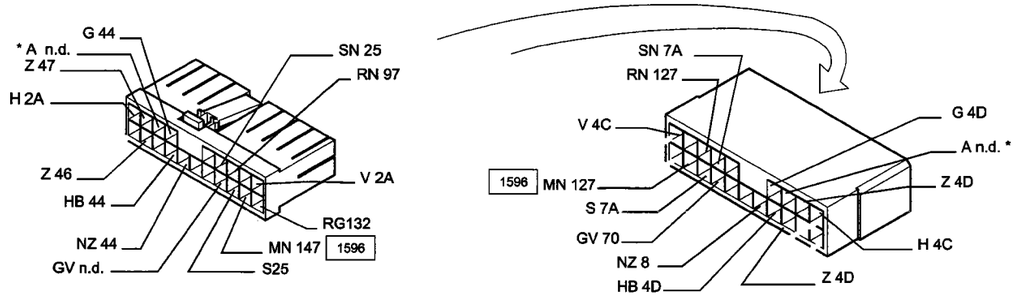
1 Left front light cluster
2 Right front light cluster
3 Power fusebox
4 Junction unit
6 Instrument panel
7 Stalk unit
8 Left front earth
9 Right front earth
10 Engine battery earth
11 Battery
12 Ignition switch
13 Connection between right/left front cables
16 Left tail light cluster
17 Right tail light cluster
18 Left rear earth
19 Right rear earth
20 Left front side direction indicator
21 Right front side direction indicator
22 Left facia earth
23 Hazard warning lights switch unit
28 Connection between dashboard/rear cables
40 Brake light control switch
41 Additional brake light
55 Connection between front/engine cables
70 Connection between dashboard/front cables
107 Door lock remote control receiver
159 Reversing lights control switch
236 Connection between rear cable and tail-gate
328 Hazard warning lights relay

1 Left front light cluster



P4F820N02

13 Connection between right/left front cables

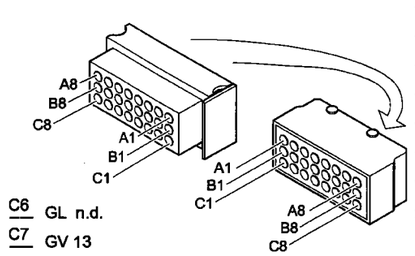


4F014ML03

70 Connection between dashborad/front cables

A1 RN 4C
A2 VG 127
A3 VB 195A
A4 HL 26A

B1 M 29
B2 V 328 *
B3 AG 6A
B4 G n.d. *
B5 AV 4D
B6 AB 4D
B7 LR 4C
B7 AN 4C



C6 GL n.d.
C7 GV 13

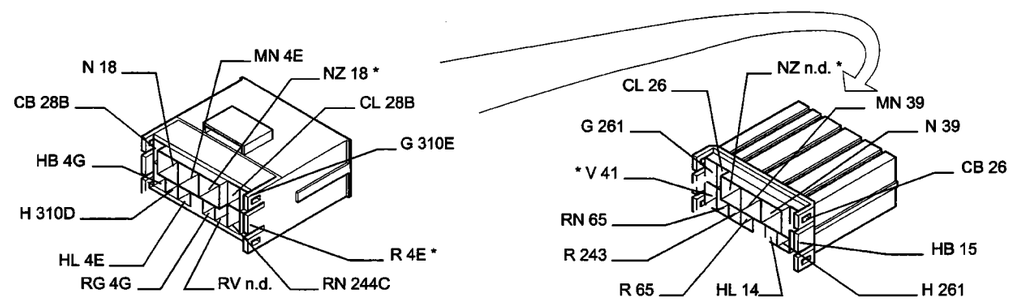
A1 RN 120
A2 VG 120
A3 VB 6B
A4 HL120
A5
A6
A7
A8

B1 M n.d.
B2 V 28A *
B3 AG 4I
B4 LB 310C *
B5 GL
B6 GV
B7 AN 120
B8

C1
C2
C3
C4
C5
C6 GL
C7 GV
C8

4F014ML04

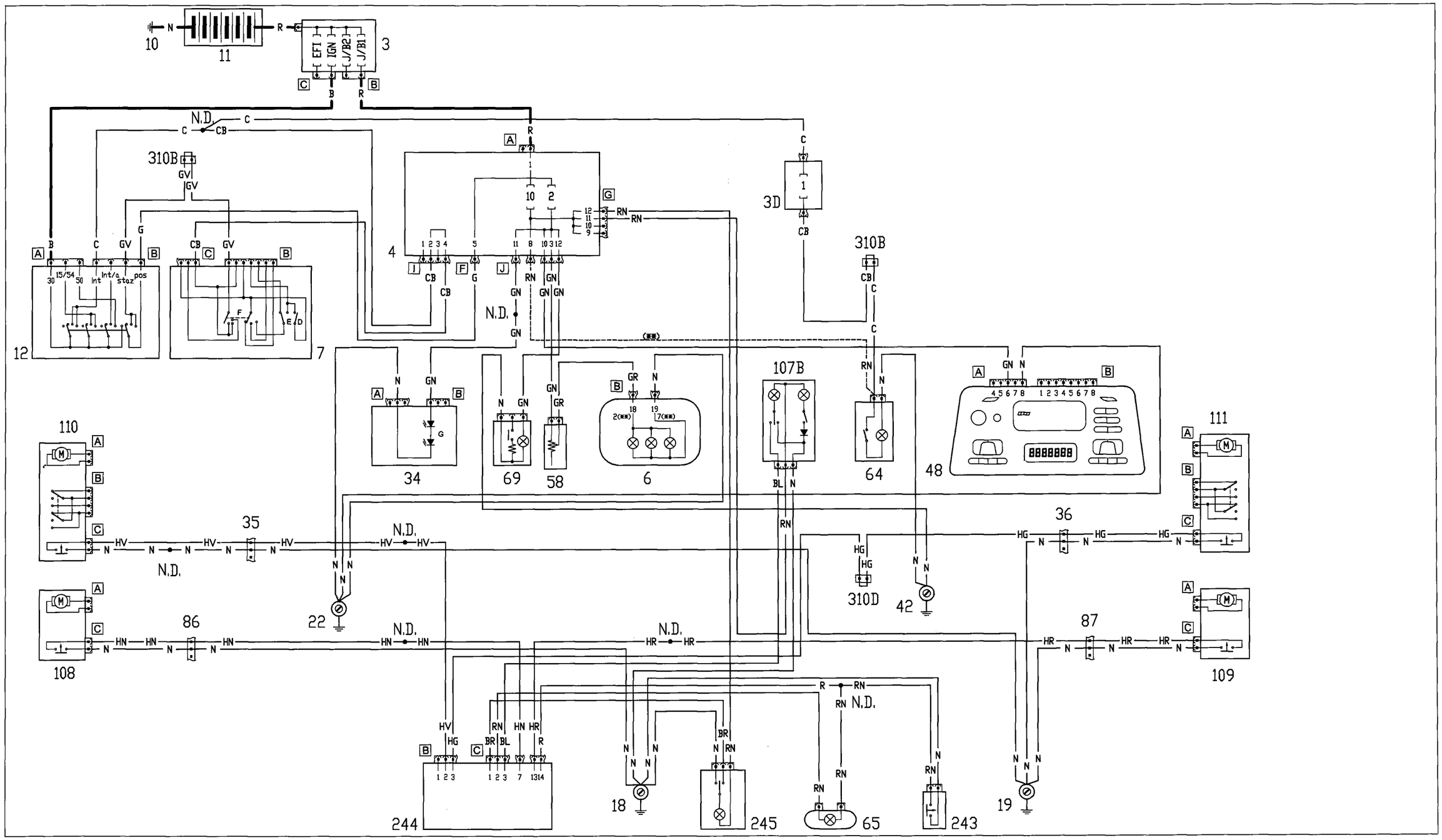
236 Connection between rear cable and tail-gate



4F014ML05

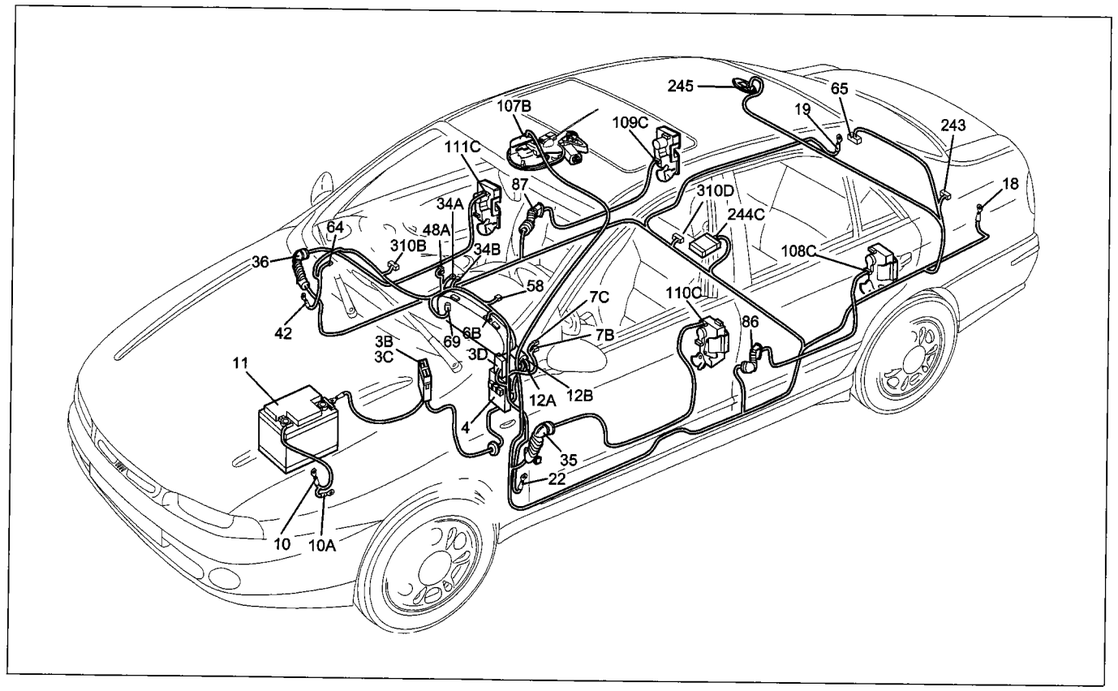
*The cables concerned are marked in the wiring diagram with an asterisk

Fiat Marea
Car interior lighting - Symbol lighting



4F016M1L01

** Variant for C.A.



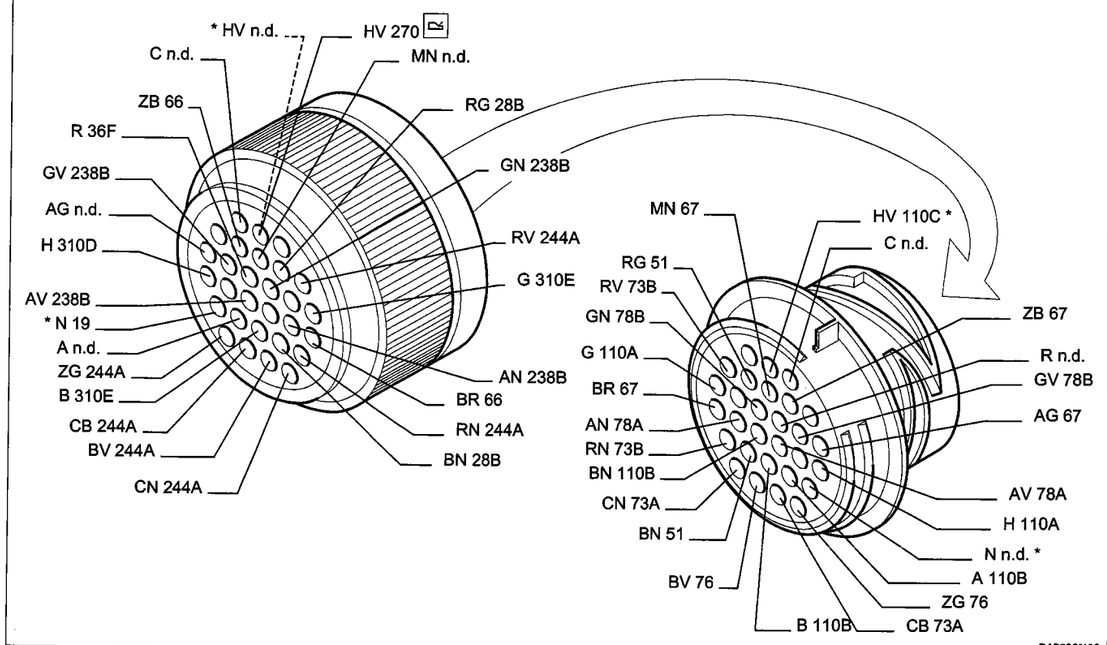
4F016MIL01

Fiat Marea
Car interior lighting - Symbol lighting

Component key

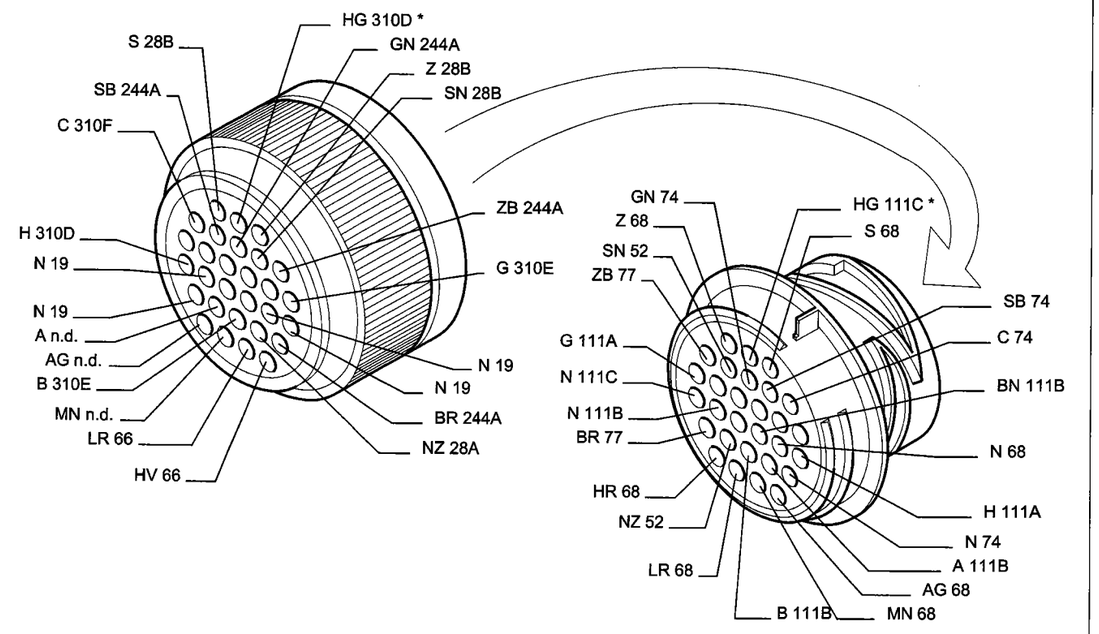
3 Power fusebox
4 Junction unit:
6 Instrument panel
7 Stalk unit
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
19 Right rear earth
22 Left facia earth
34 Switch control unit
35 Connection between dashboard/left front door cables
36 Connection between dashboard/right front door cables
42 Right facia earth
48 Radio receiver with clock
58 Control panel light dimmer
64 Glove compartment light bulb with built-in switch
65 Luggage compartment light
69 Cigar lighter
86 Connection between rear/left rear door cables
87 Connection between rear/right rear door cables
107 Door remote control receiver
108 Left rear door lock
109 Right rear door lock
110 Left front door lock
111 Right front door lock
243 Luggage compartment light button
244 Integrated services control system
245 Rear courtesy light
310 Connection bridge

35 Connection between dashboard/left front door cables



P4F822N02

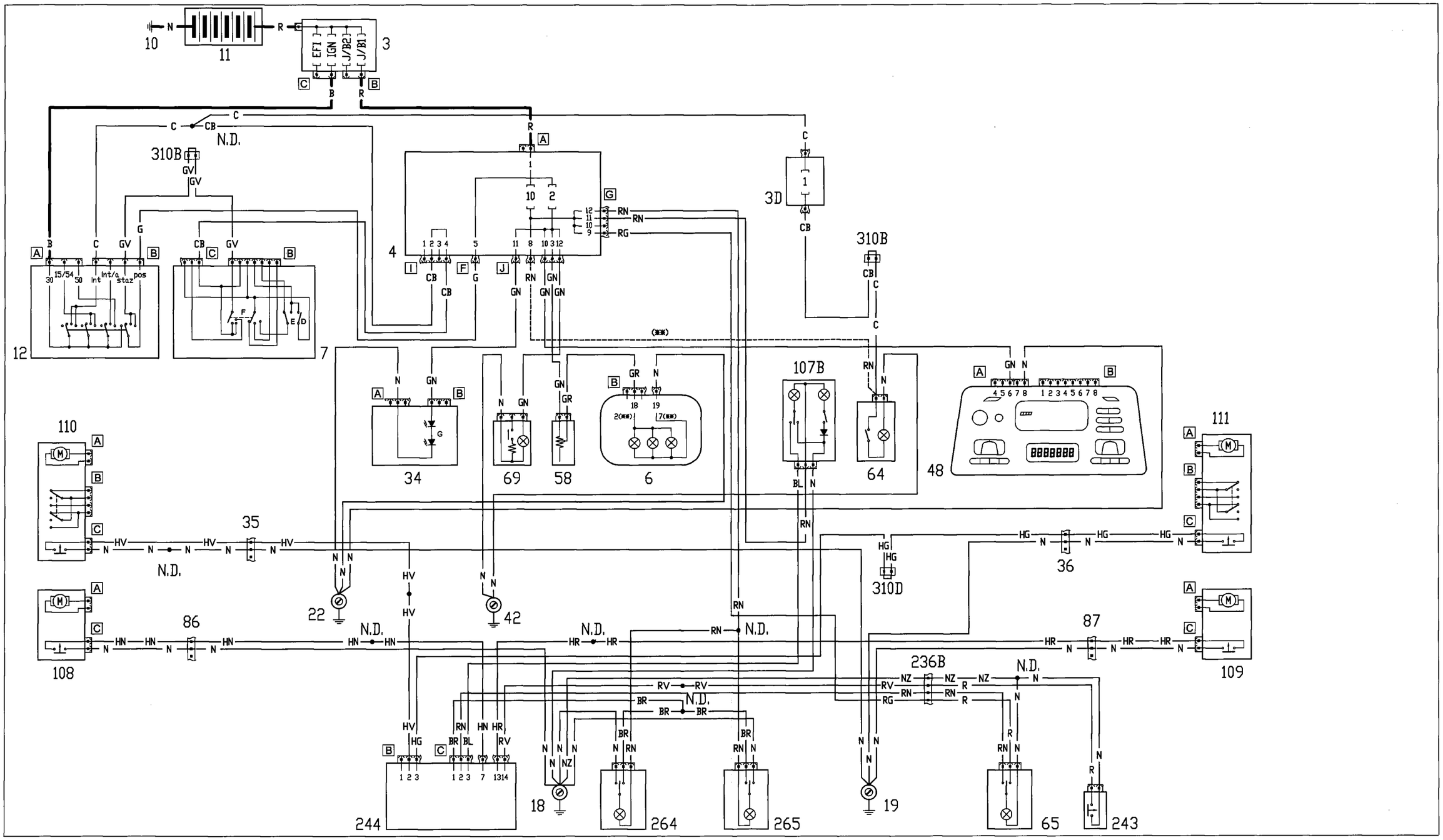
36 Connection between dashboard/right front door cables



P4F822N03

(*) The cables involved in the wiring diagram are marked with an asterisk.

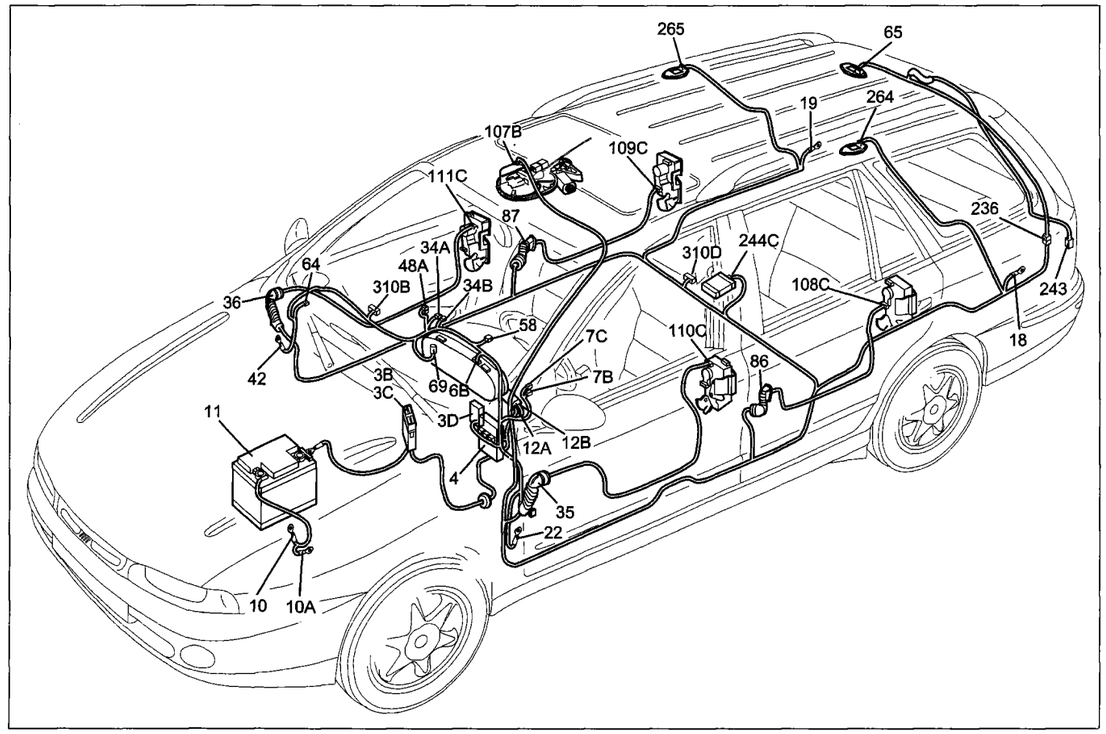
Fiat Marea Weekend
Car interior lighting - Symbol lighting



4F017ML01

** Variant for C.A.

55.



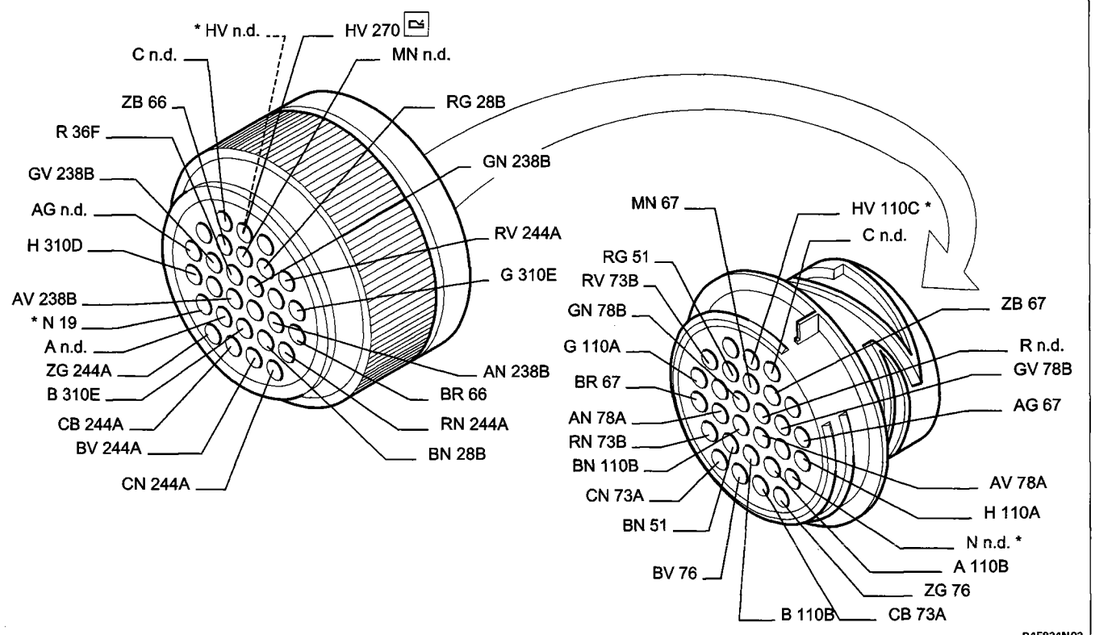
4F018MIL01

Fiat Marea Weekend
Car interior lighting - Symbol lighting

Component key

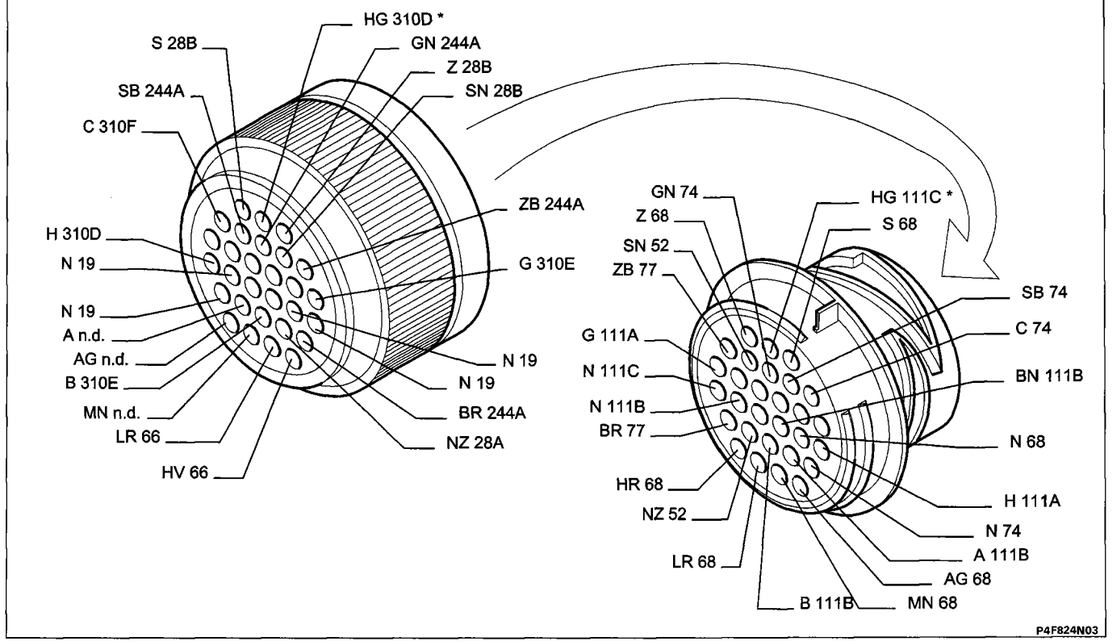
3 Power fusebox
4 Junction unit:
6 Instrument panel
7 Stalk unit
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
19 Right rear earth
22 Left facia earth
34 Switch control unit
35 Connection between dashboard/left front door cables
36 Connection between dashboard/right front door cables
42 Right facia earth
48 Radio receiver with clock
58 Control panel light dimmer
64 Glove compartment light bulb with built-in switch
65 Luggage compartment light
69 Cigar lighter
86 Connection between rear/left rear door cables
87 Connection between rear/right rear door cables
107 Door remote control receiver
108 Left rear door lock
109 Right rear door lock
110 Left front door lock
111 Right front door lock
236 Connection between rear cables and tailgate
243 Luggage compartment light button
244 Integrated services control system
264 Left rear car interior courtesy light
265 Right rear car interior courtesy light
310 Connection bridge

35 Connection between dashboard/left front door cables



P4F824N02

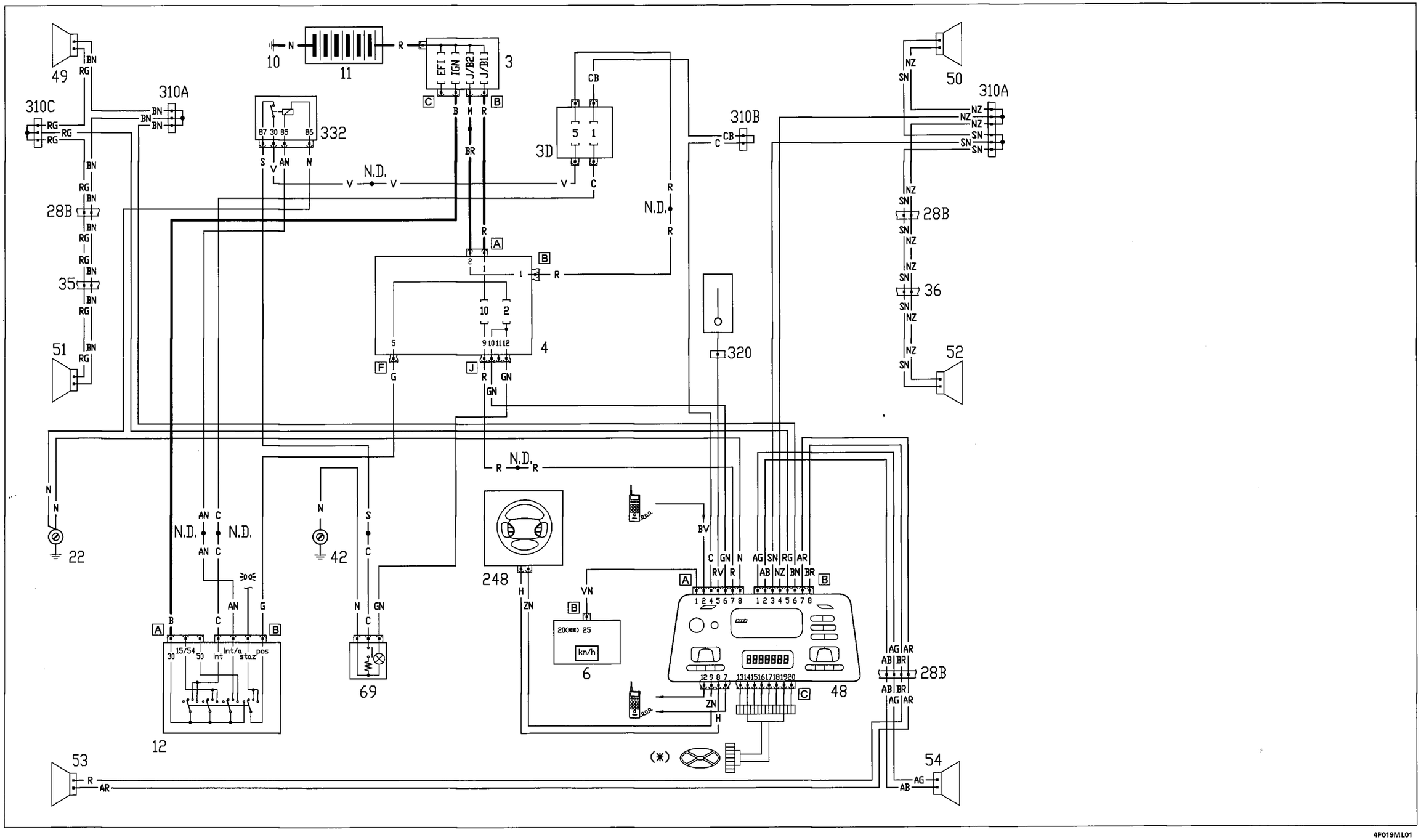
36 Connection between dashboard/right front door cables



P4F824N03

(*) The cables involved in the wiring diagram are marked with an asterisk.

Radio system - Cigar lighter

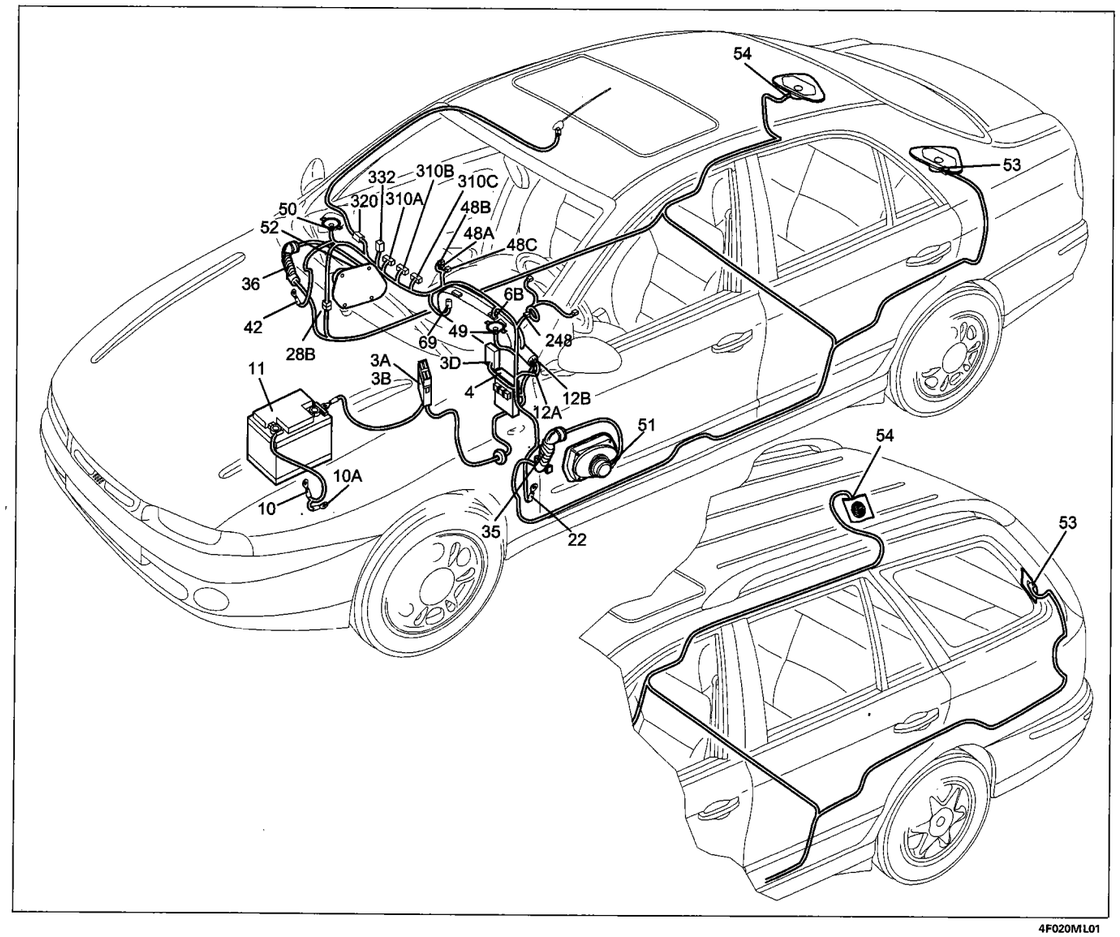


4F019ML01

* Preparation for CD

** Variant for C.A.

55.



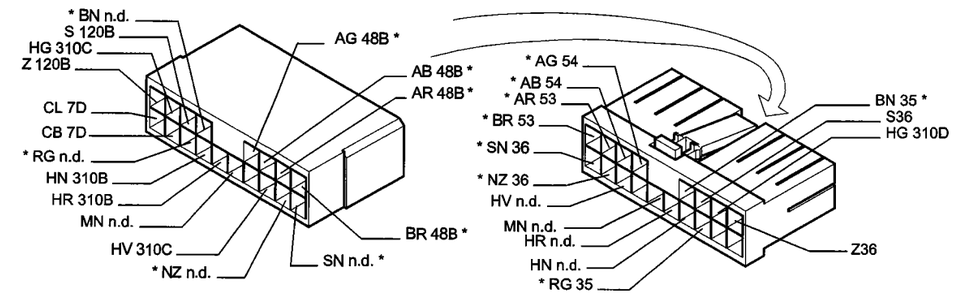
4F020ML01

Radio system – Cigar ligher

Component key

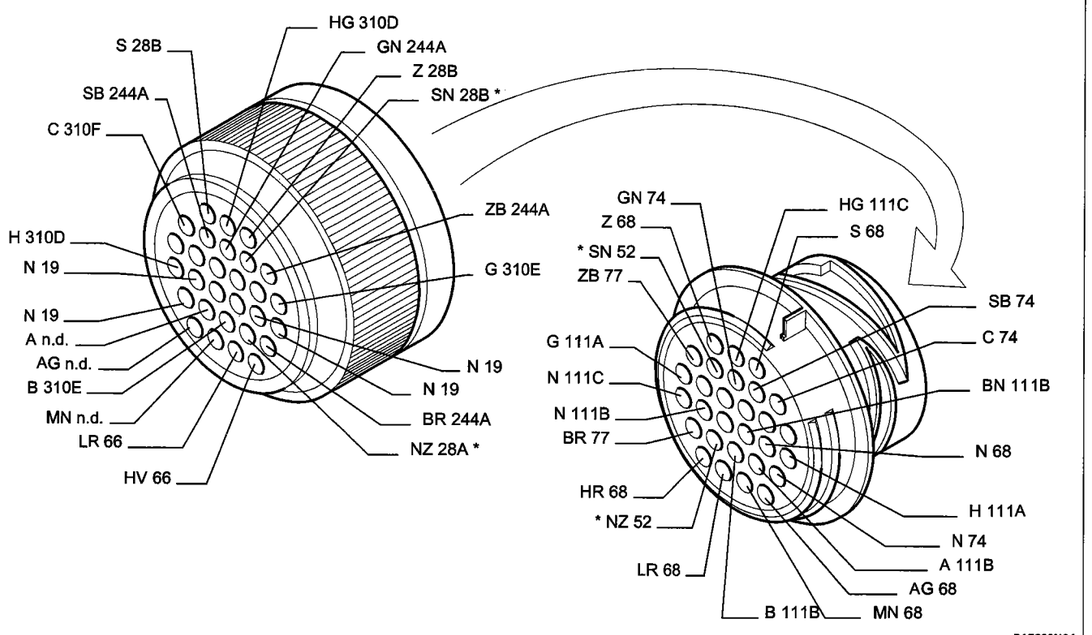
3 Power fusebox
4 Junction unit:
6 Instrument panel
10 Engine battery earth
11 Battery
12 Ignition switch
22 Left facia earth
28 Connection between facia/rear cables
35 Connection between dashboard/left front door cables
36 Connection between dashboard/right front door cables
42 Right facia earth
48 Radio receiver with clock
49 Left front tweeter speaker
50 Right front tweeter speaker
51 Speaker in left front door
52 Speaker in right front door
53 Left rear speaker
54 Right rear speaker
69 Cigar lighter
248 Radio controls on steering wheel
310 Connection bridge
320 Aerial power supply
321 Connection for TELEPASS

28B Facia/rear lead connection



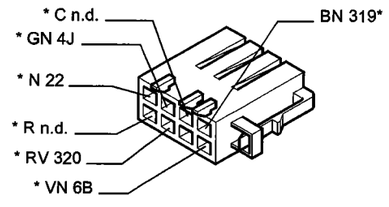
P4F826N02

36 Connection between dashboard/right front door cables



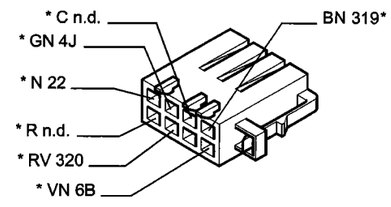
P4F826N04

48A Radio receiver with clock



4F020ML04

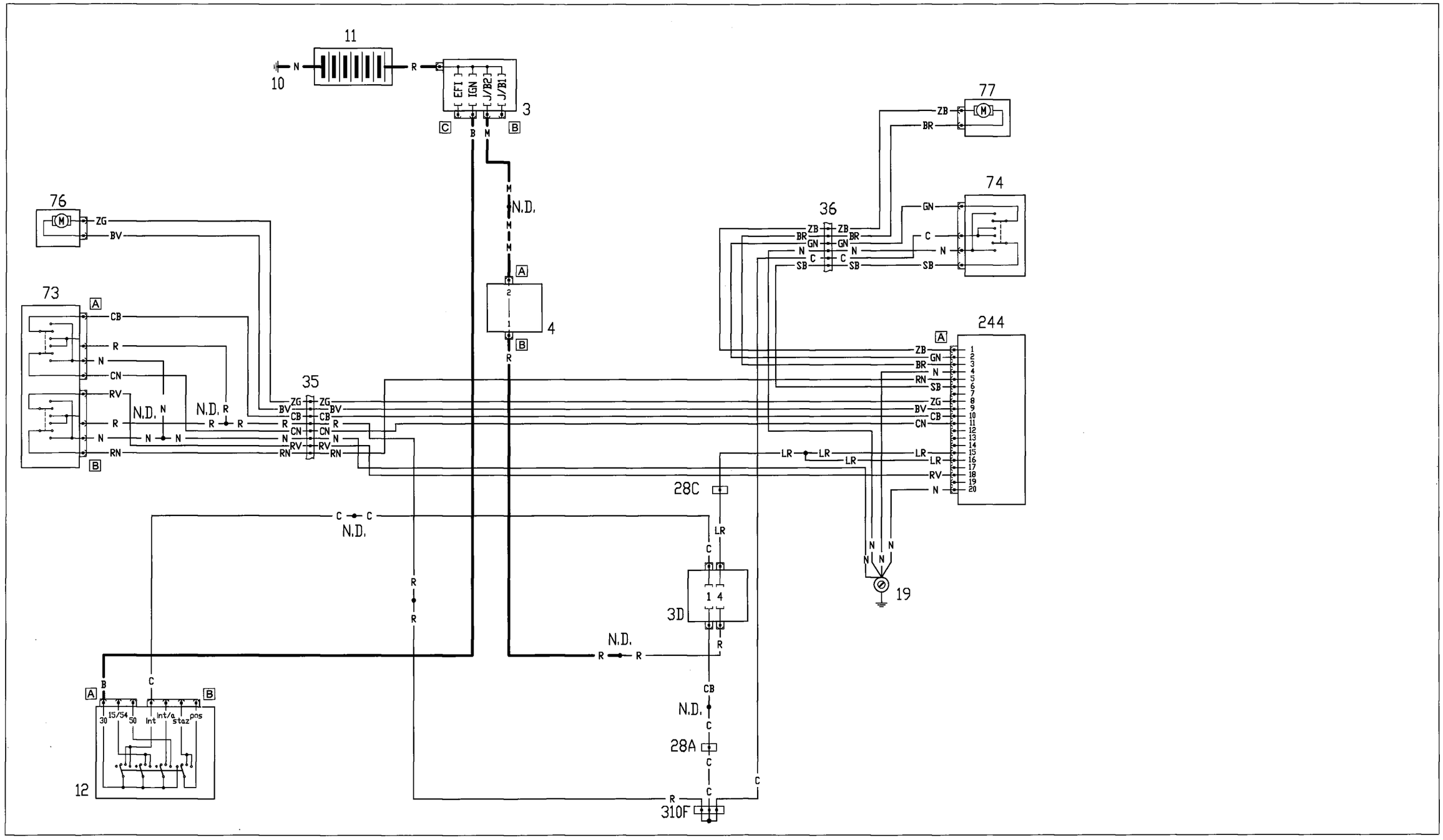
48B Radio receiver with clock



4F020ML05

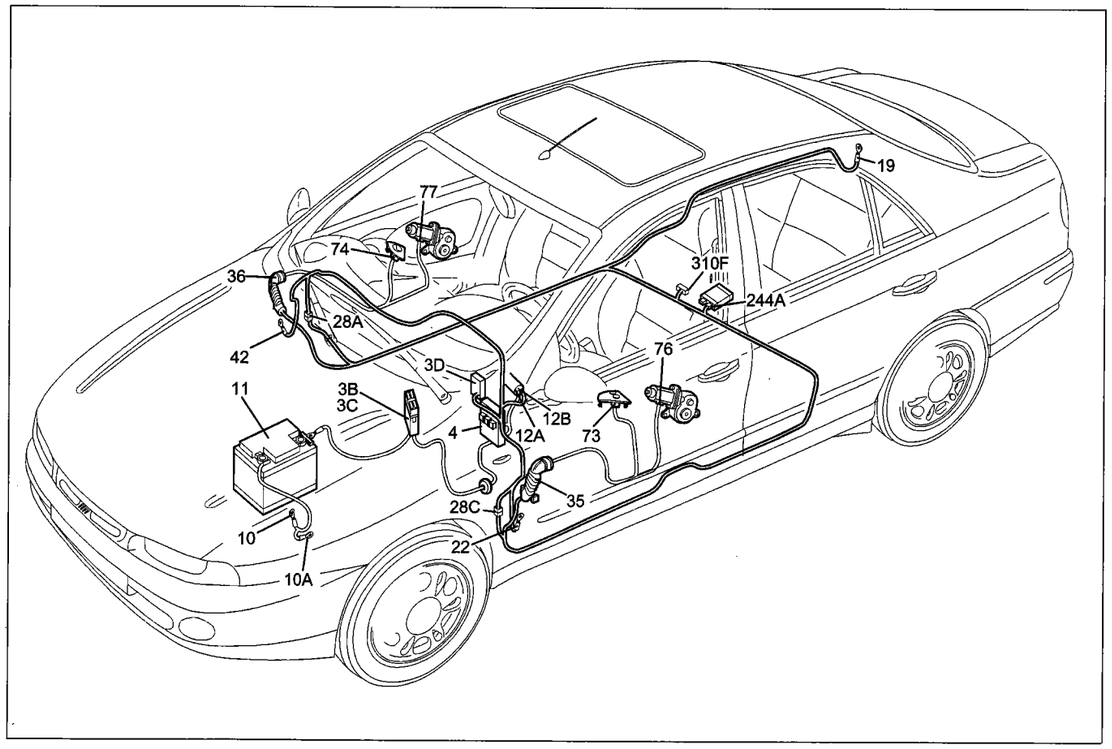
(*) The cables involved in the wiring diagram are marked with an asterisk.

Electric front windows



4F021ML01

55.



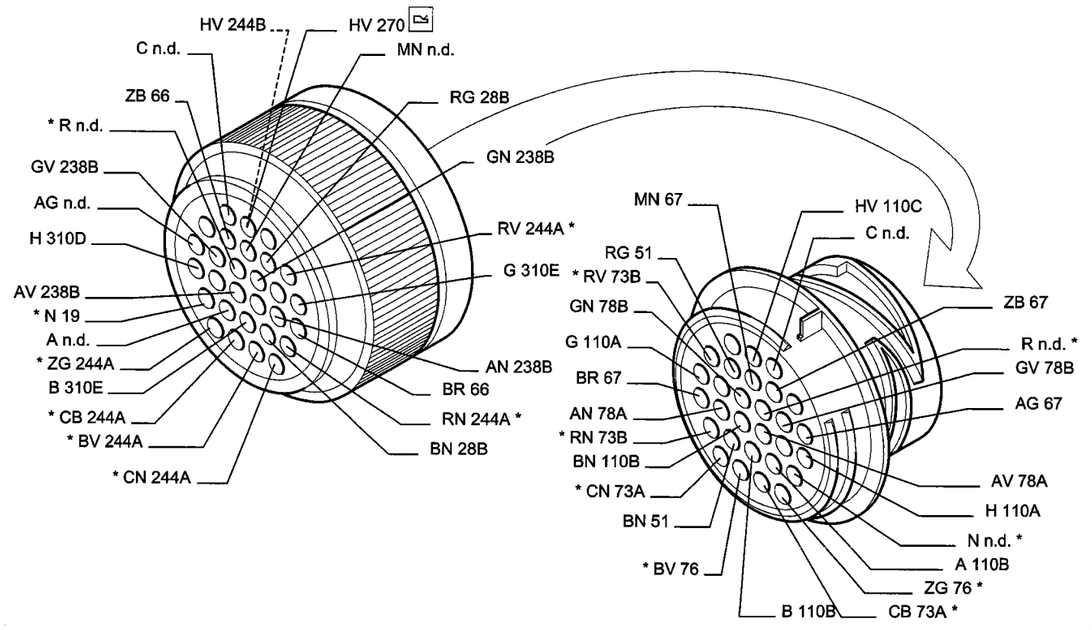
P4F830N01

Electric front windows

Component key

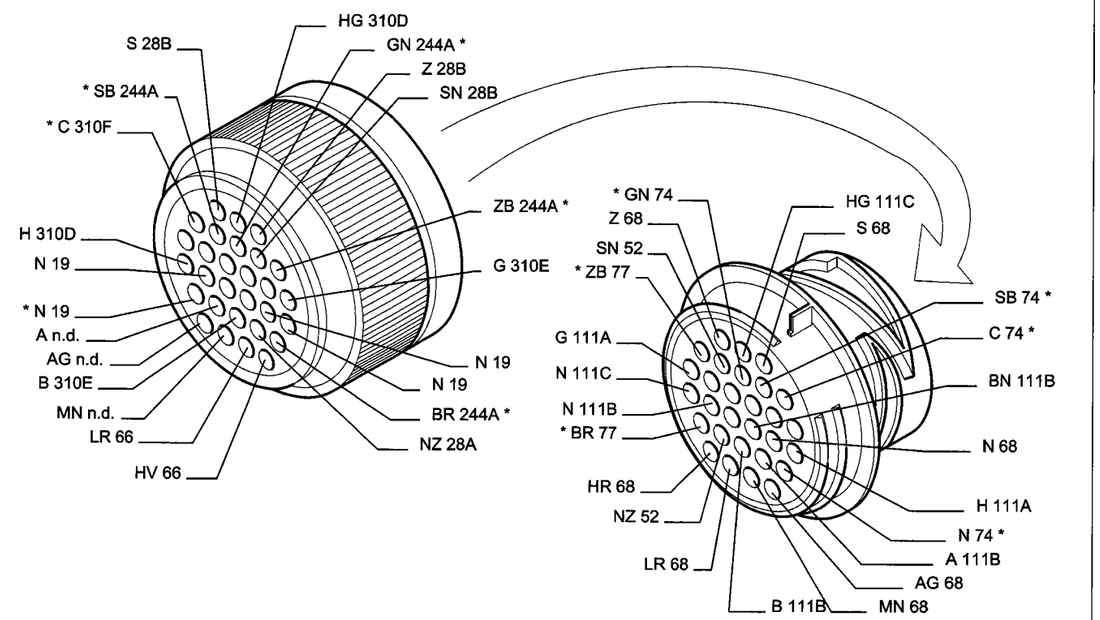
3 Power fusebox
4 Junction unit:
10 Engine battery earth
11 Battery
12 Ignition switch
19 Right rear earth
22 Left facia earth
28 Connection between facia/rear cables
35 Connection between dashboard/left front door cables
36 Connection between dashboard/right front door cables
42 Right facia earth
73 Pushbutton unit for front electric windows on left arm-rest
74 Pushbutton unit for right front electric windows on right arm-rest
76 Left front electric window motor
77 Left front electric window motor
244 Integrated services control system
310 Connection bridge

35 Connection between dashboard/left front door cables



P4F830N02

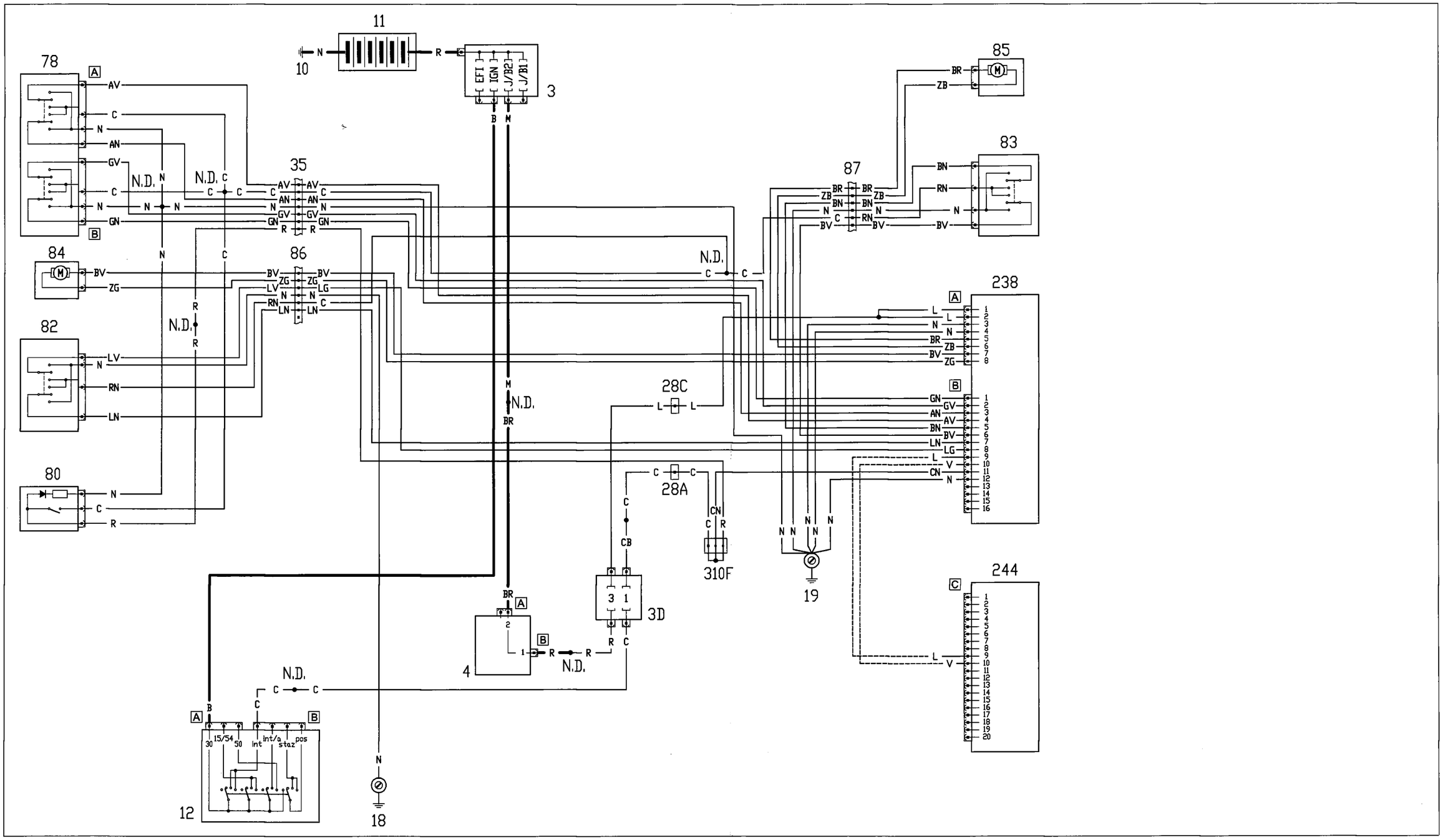
36 Connection between dashboard/right front door cables



P4F830N03

(*) The cables involved in the wiring diagram are marked with an asterisk.

Rear electric windows



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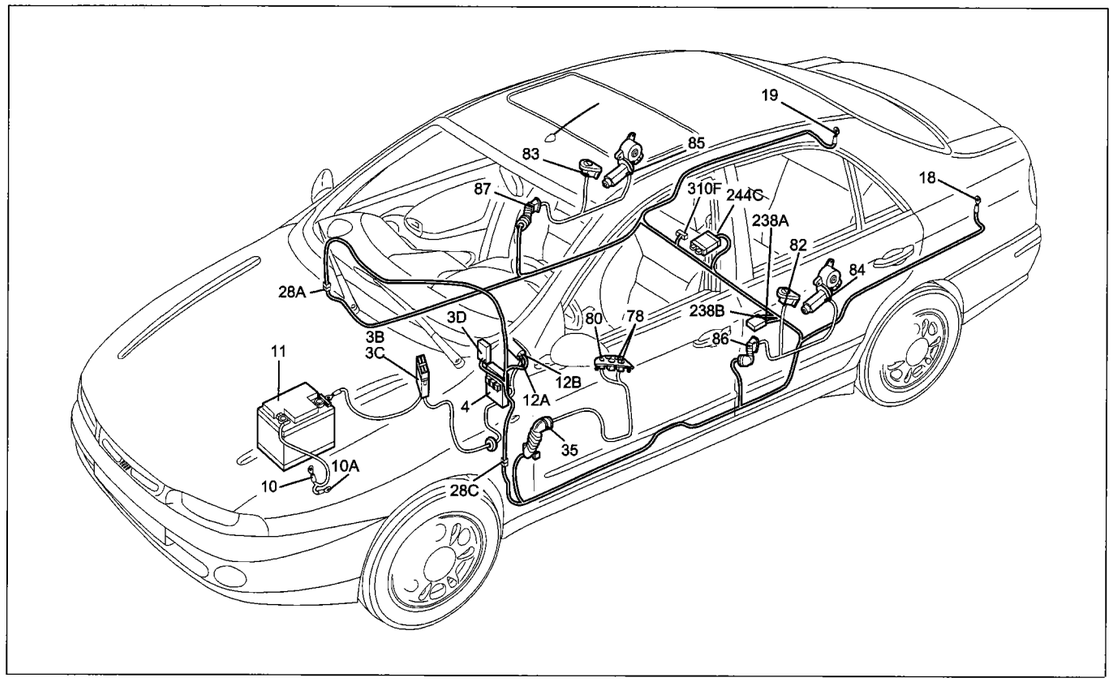


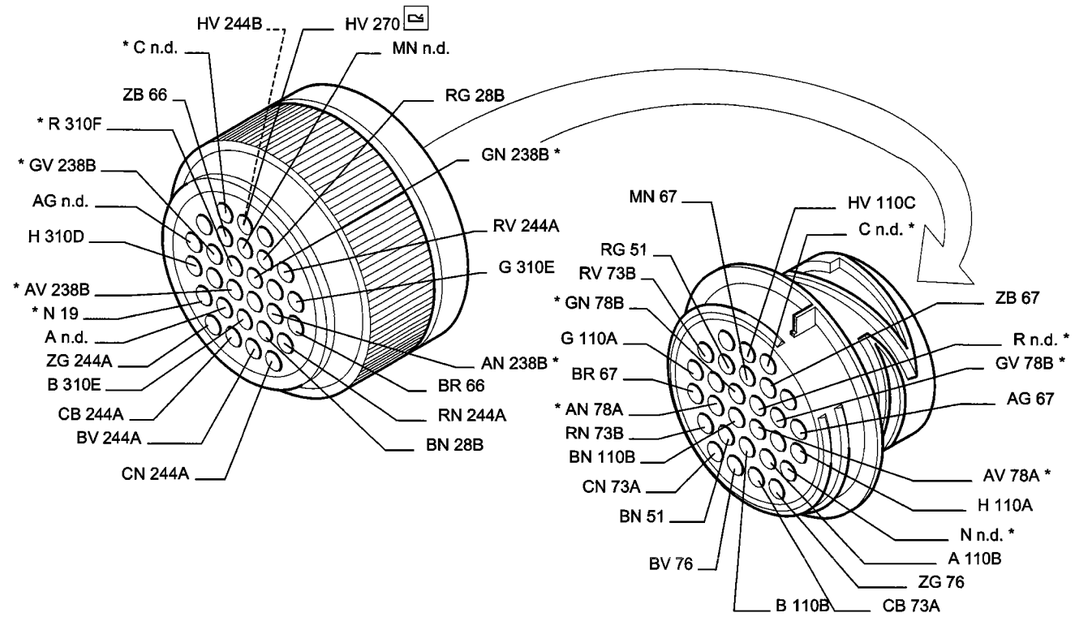
P4F830N01

Rear electric windows

Component key

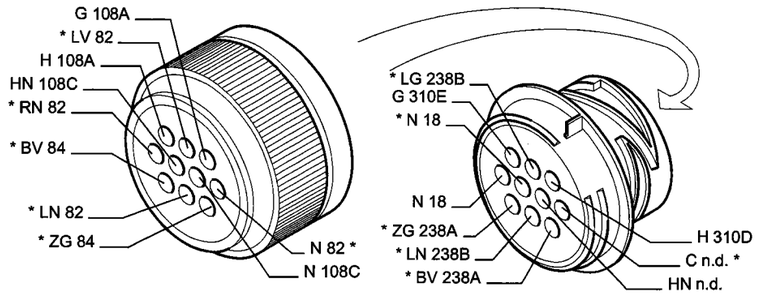
3 Power fusebox
4 Junction unit:
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
19 Right rear earth
28 Connection between facia/rear cables
35 Connection between dashboard/left front door cables
78 Pushbutton unit for rear electric windows on left frotn door
80 Rear electric window inhibition switch
82 Pushbutton unit for left rear electric windows on left front door
83 Pushbutton unit for right rear electric windows on right rear door
84 Left rear electric window motor
85 Right rear electric window motor
86 Connection between rear/left rear door cables
87 Connection between rear/right rear door cables
238 Rear electric windows control unit
244 Integrated services control system
310 Connection bridge

35 Connection between dashboard/left front door cables



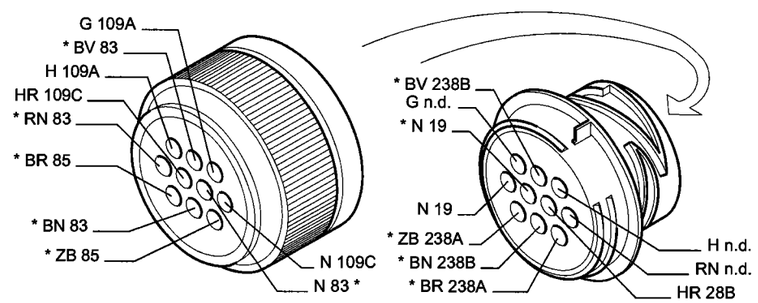
P4F832N03

86 Connection between rear/left rear door cables



P4F832N03

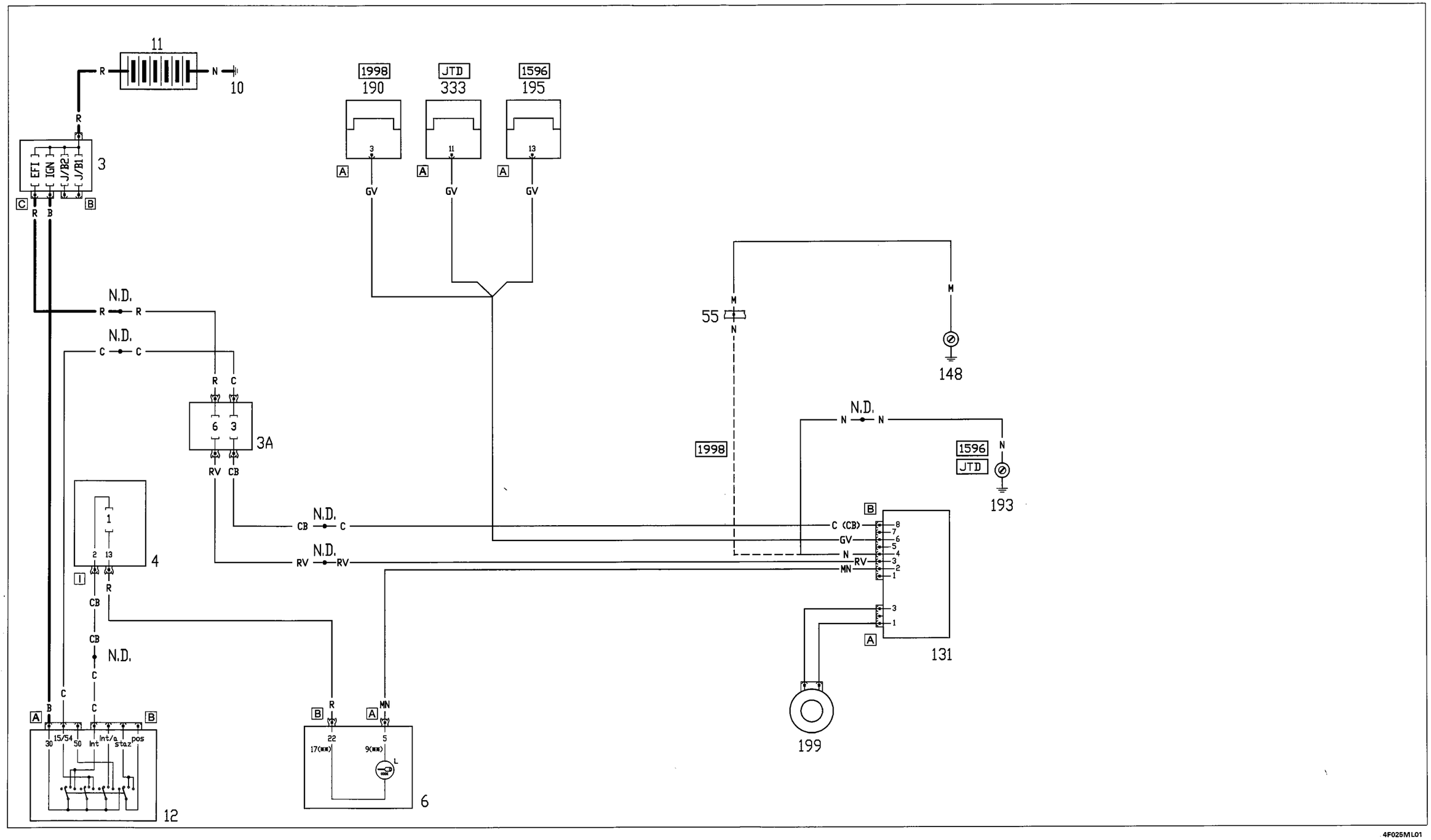
87 Connection between rear/right rear door leads



P4F832N04

(*) The cables involved in the wiring diagram are marked with an asterisk.

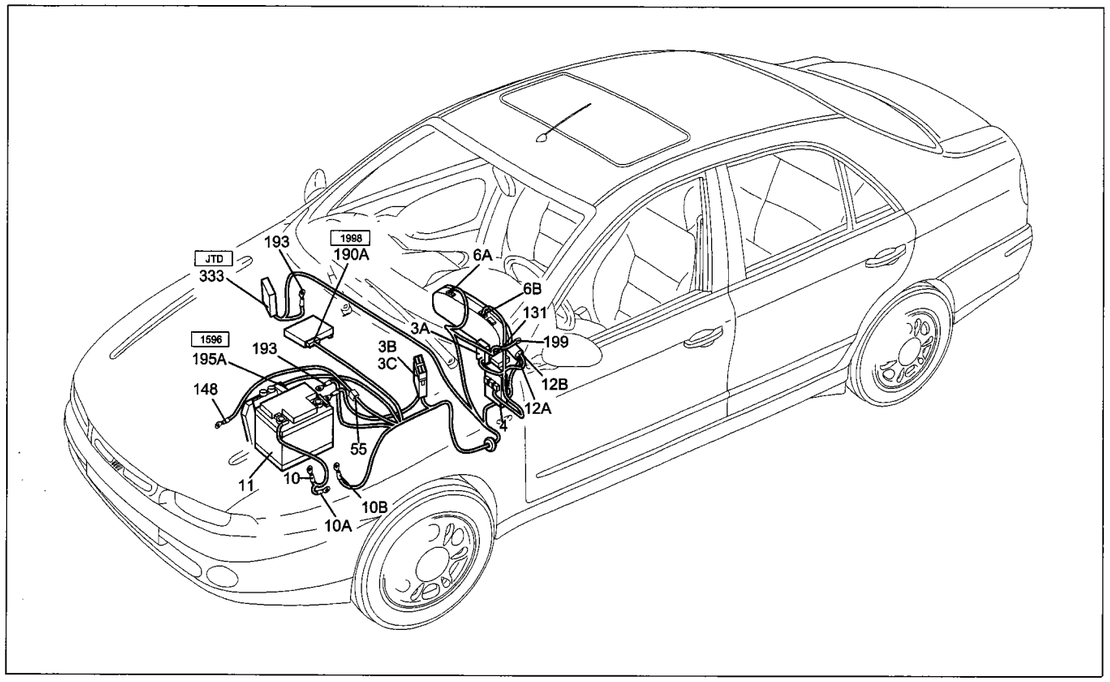
FIAT CODE and warning light



4F025MIL01

** Variant for C.A.

55.



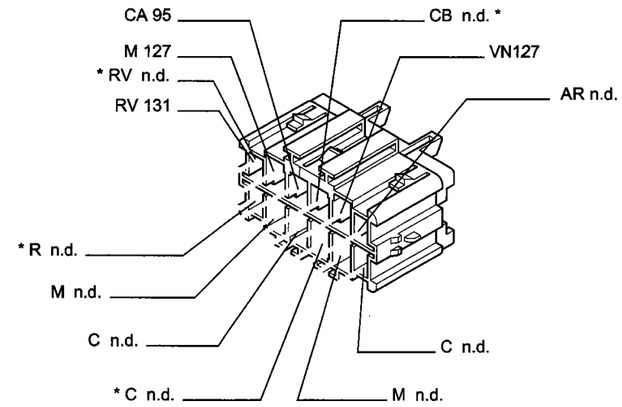
4F026ML01

Fiat **Code and warning light**

Component key

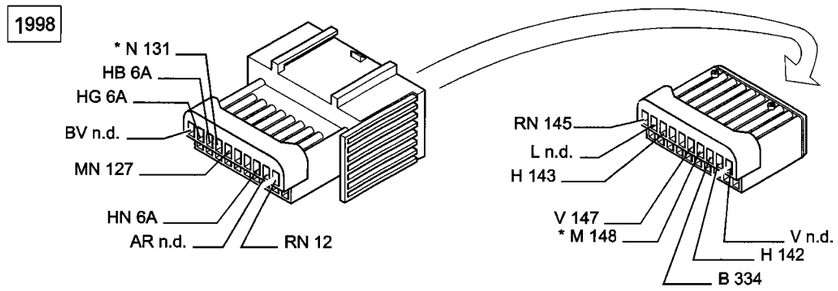
3 Power fusebox
4 Junction unit:
6 Instrument panel
10 Engine battery earth
11 Battery
12 Ignition switch
55 Front/engine lead connection
131 FIAT CODE electronic control unit
148 Earth for electronic injection
190 Injection/ignition electronic control unit (1998)
193 Earth for electronic injection
195 Ignition/injection control unit (1596)
199 FIAT CODE aerial
333 Injection control unit (JTD)

3A Power fusebox



P4F834N02

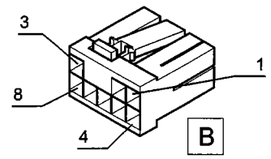
55 Connection between front/engine cables (1998)



4F026ML03

131 Fiat-CODE electronic control unit

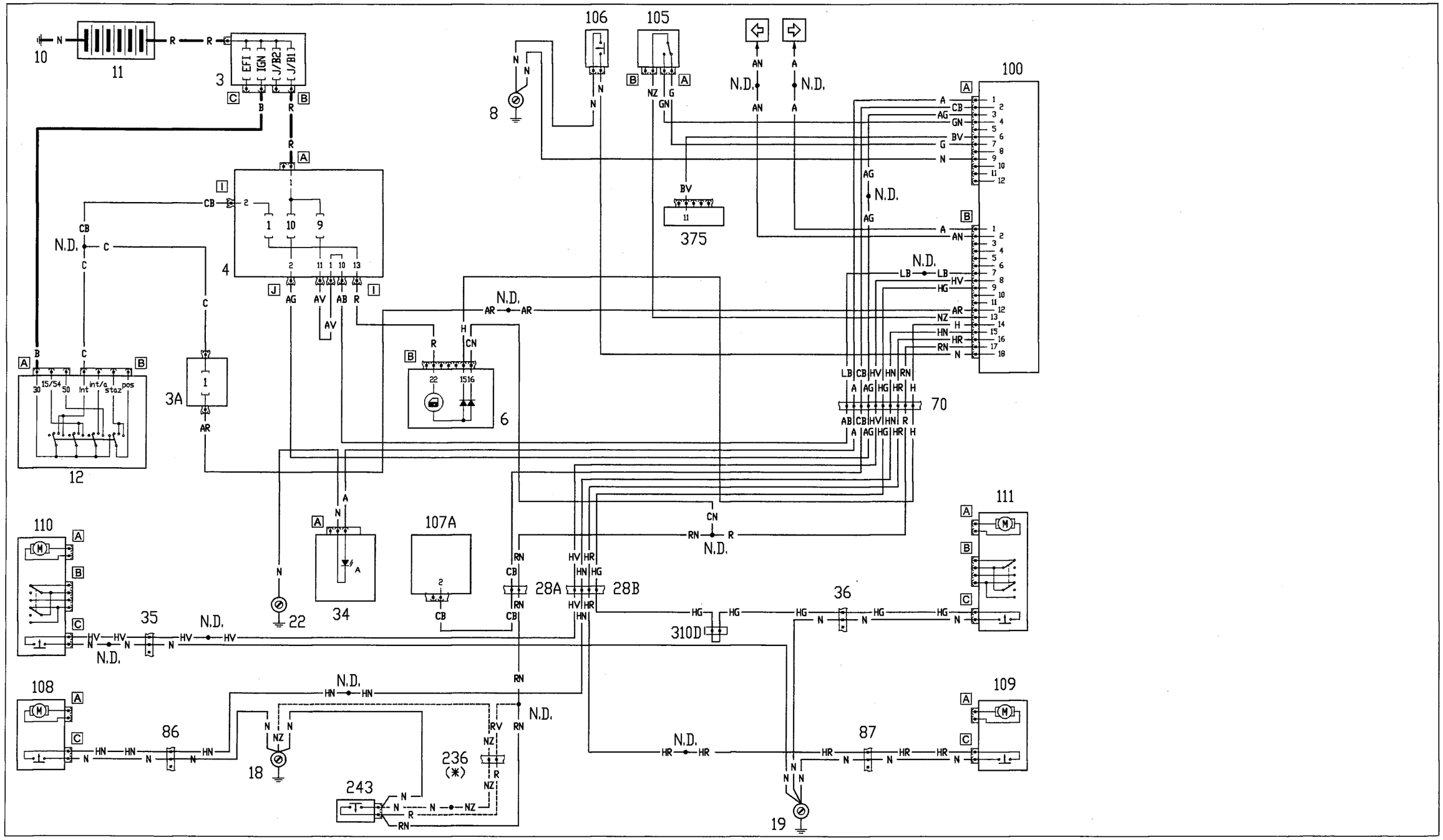
2 MN 6A *
3 RV n.d. *
4 N 55 * [1998] N 193 * [1596] [JTD]
6 GV 190A * [1998] G 333A * [JTD] GV 195A * [1596]
8 CB n.d. *



4F026ML04

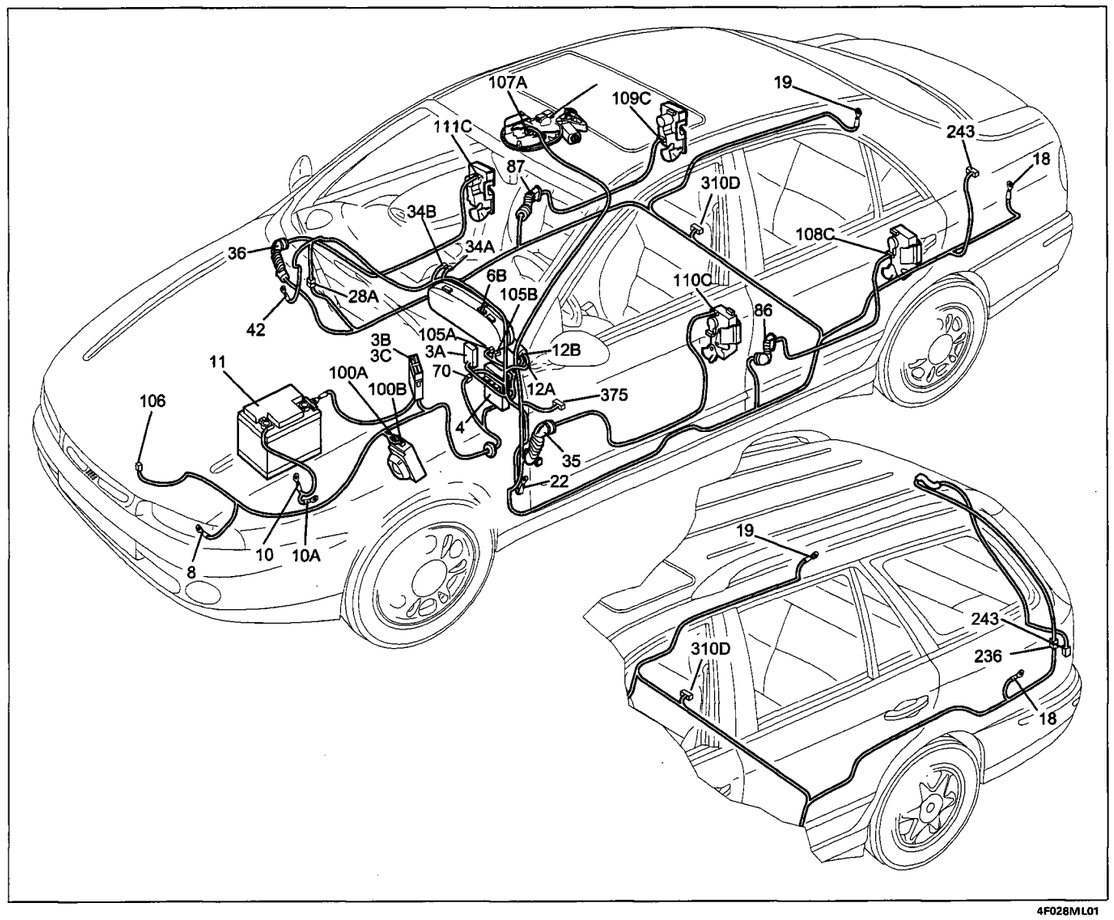
(*) The cables involved in the wiring diagram are marked with an asterisk.

Alarm device and door check



* Variant for Marea Weekend

55.



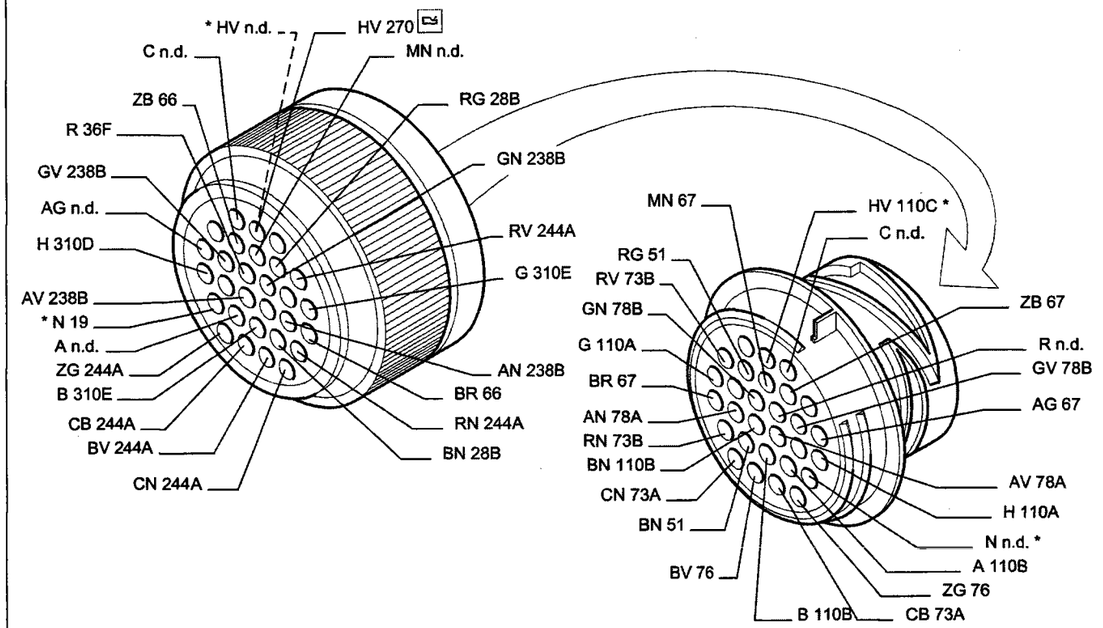
4F028ML01

Alarm device and door check

Component key

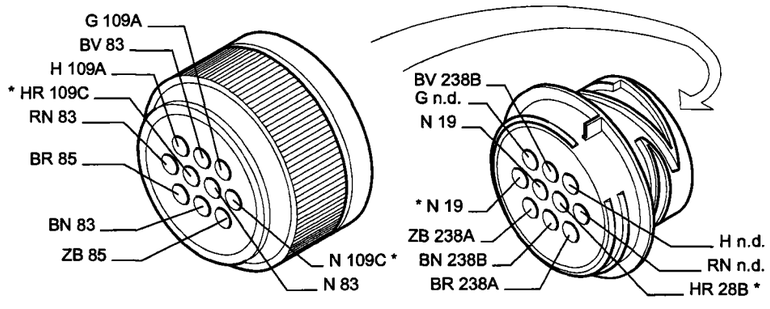
3 Power fusebox
4 Junction box
6 Instrument panel
8 Left front earth
10 Battery earth on engine
11 Battery
12 Ignition switch
18 Left rear earth
19 Right rear earth
22 Left facia earth
28 Connection between facia/rear leads
34 Switch control unit
35 Connection between dashboard/left front door cables
36 Connection between dashboard/right front door cables
42 Right dashborad earth
70 Connection between dashboard/front cables
86 Connection between rear/left rer door cables
87 Connection between rear/right rear door cables
100 Alarm electronic control unit
105 Alarm deactivation switch
106 Alarm switch on bonnet
107 Door lock remote control receiver
108 Left rear door lock
109 Right rear door lock
110 Left front door lock
111 Right front door lock
236 Connection between rear cable and tail-gate
243 Luggage compartment light control button
310 Connection shunt
375 Standard tester input

35 Connection between dashboard/left front door cables



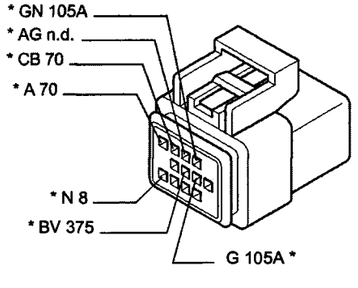
P4F383N03

87 Connection between rearl/right rear door cables



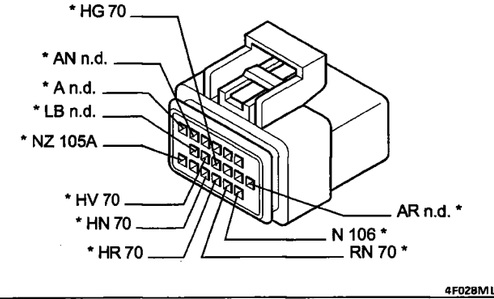
P4F838N03

100A Alarm electronic control unit



4F028ML04

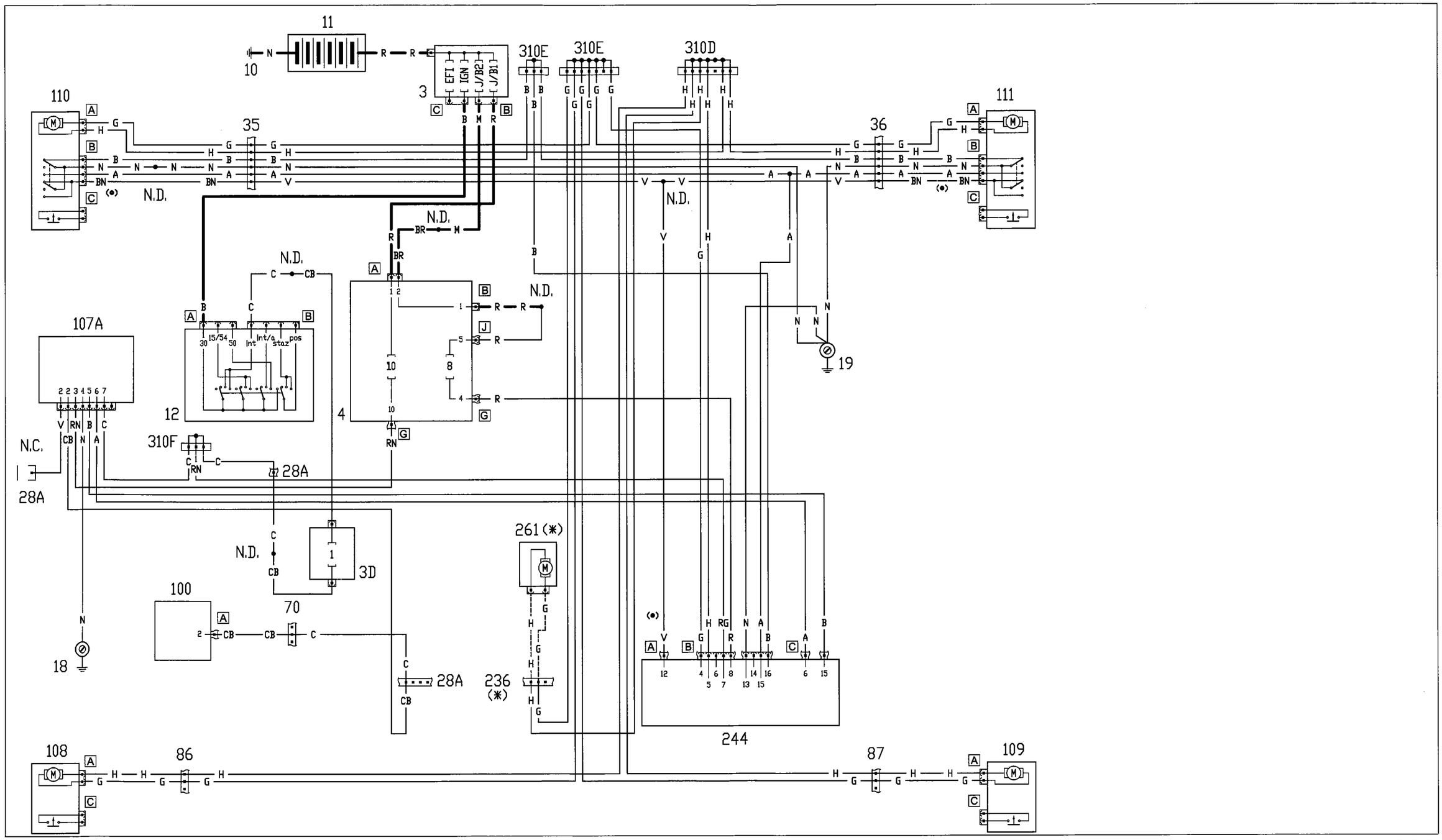
100B Alarm electronic control unit



4F028ML07

*The cables concerned are marked in the wiring diagram with an asterisk

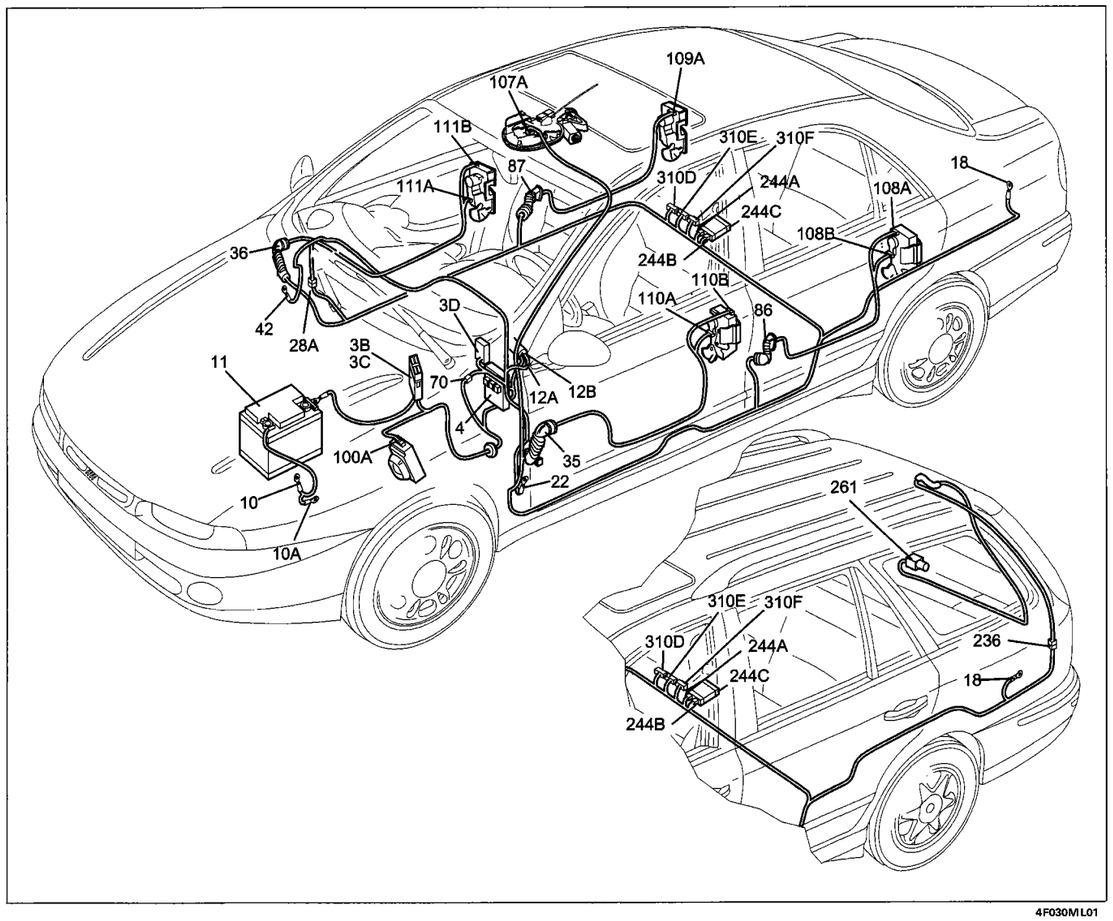
Central locking



* Variant for Marea Weekend

Only versions with automatic locking

55.



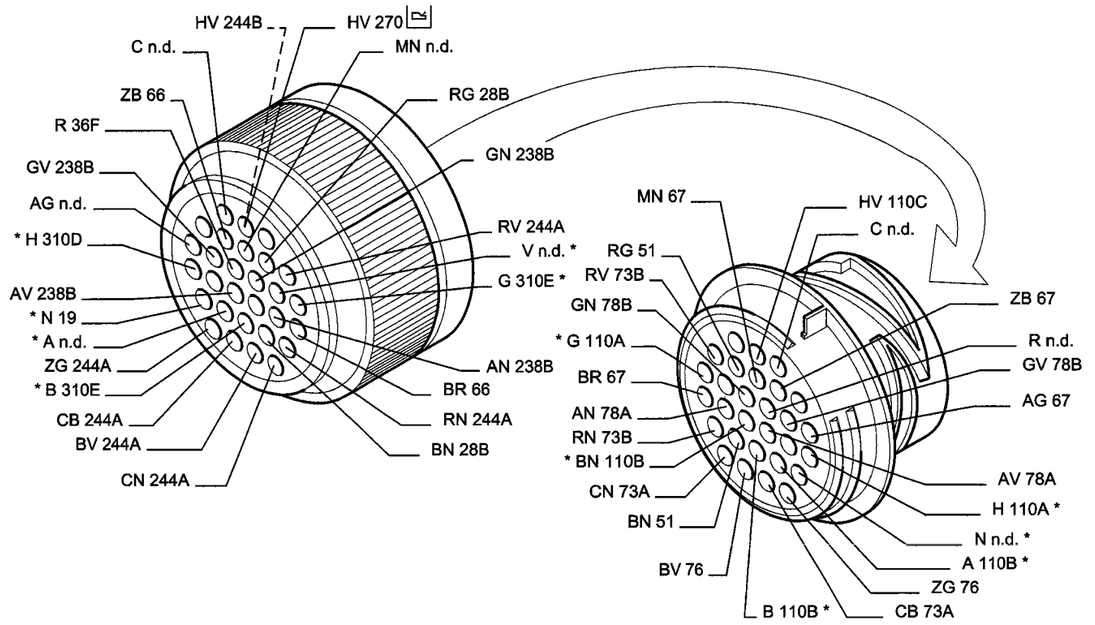
4F030M1L01

Central locking

Component key

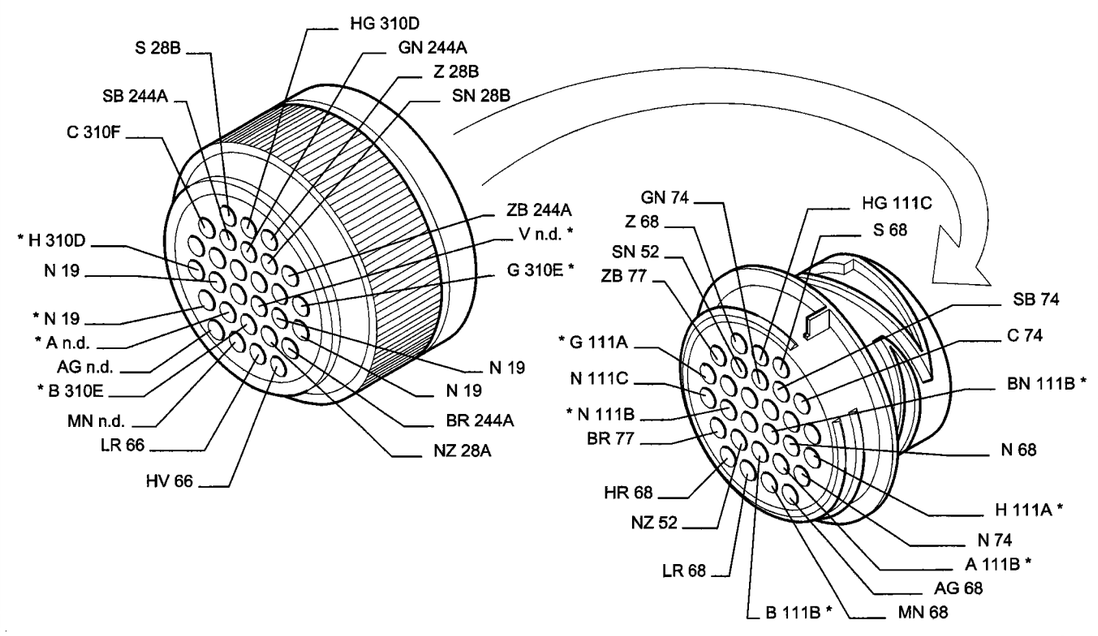
3 Power fusebox
4 Junction unit:
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
22 Left facia earth
28 Connection between facia/rear cables
35 Connection between dashboard/left front door cables
36 Connection between dashboard/right front door cables
42 Right facia earth
70 Connection between dashborad/front cables
86 Connection between rear/left rear door cables
87 Connection between rear/right rear door cables
100 Alarm electronic control unit
107 Door remote control receiver
108 Left rear door lock
109 Right rear door lock
110 Left front door lock
111 Right front door lock
236 Connection between rear cables and tailgate
244 Integrated services control system
261 Tailgate locking/unlocking actuator
310 Connection bridge

35 Connection between dashboard/left front door cables



P4F840N02

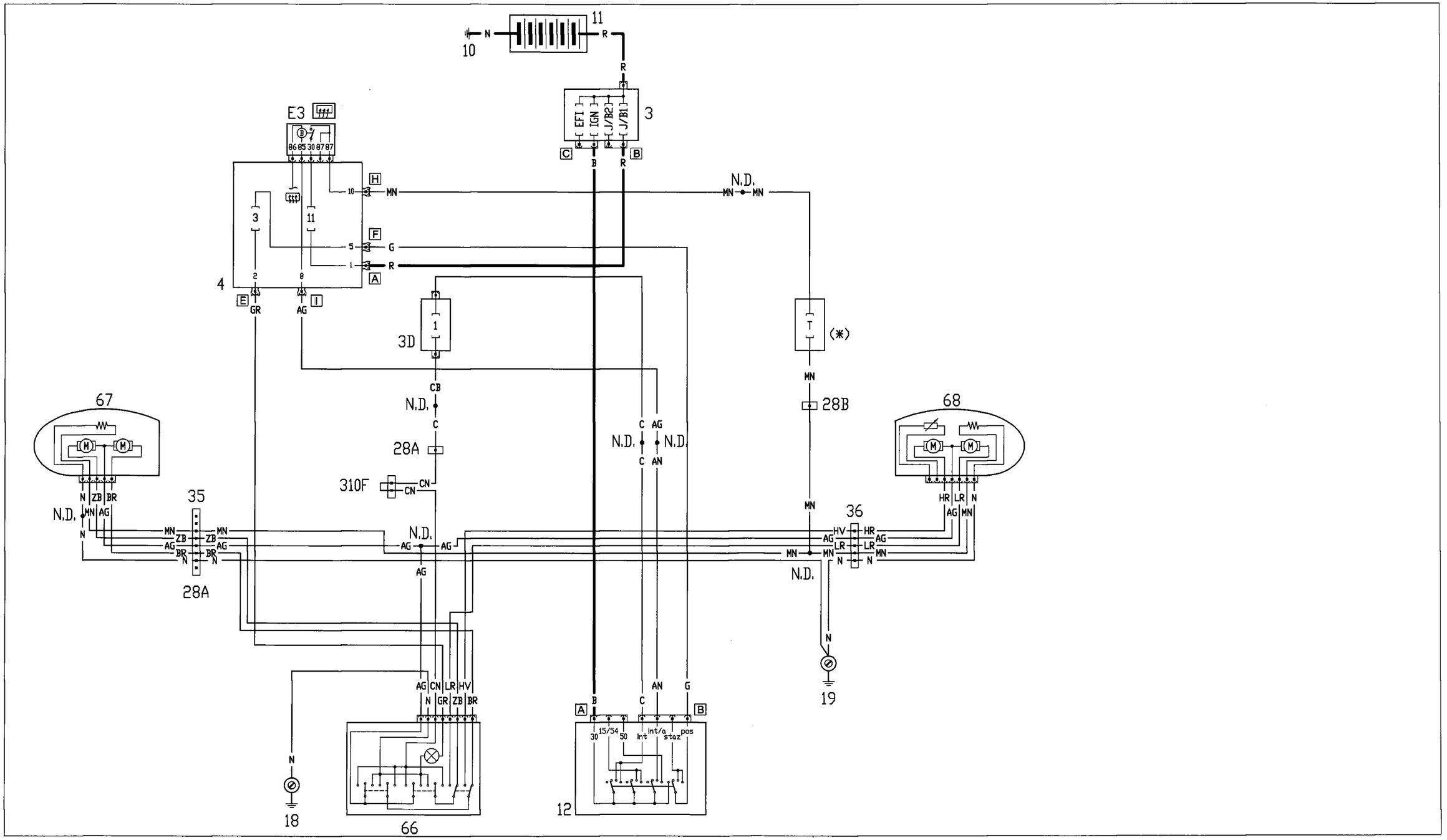
36 Connection between dashboard/right front door cables



P4F830N03

(*) The cables involved in the wiring diagram are marked with an asterisk.

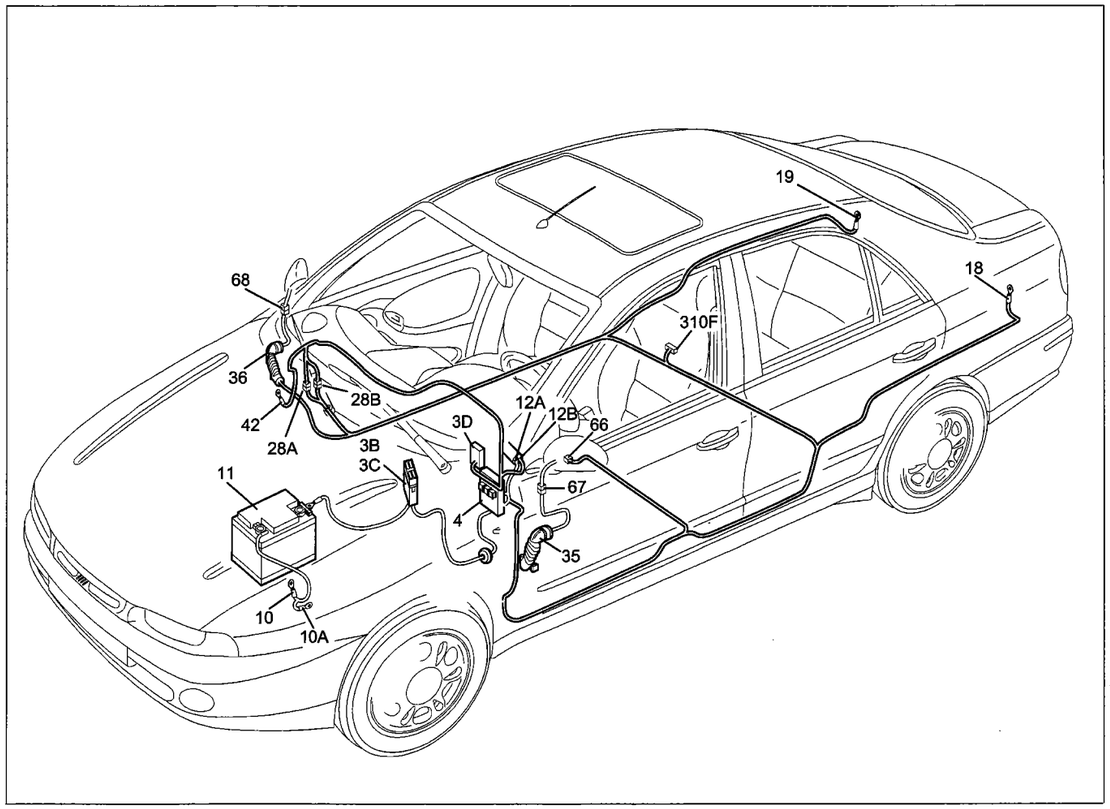
Electrically adjustable, heated rear view mirrors



4F031ML01

* Safety thermal contact: It opens in the case of overheating and is restored when the cable cools down.

55.



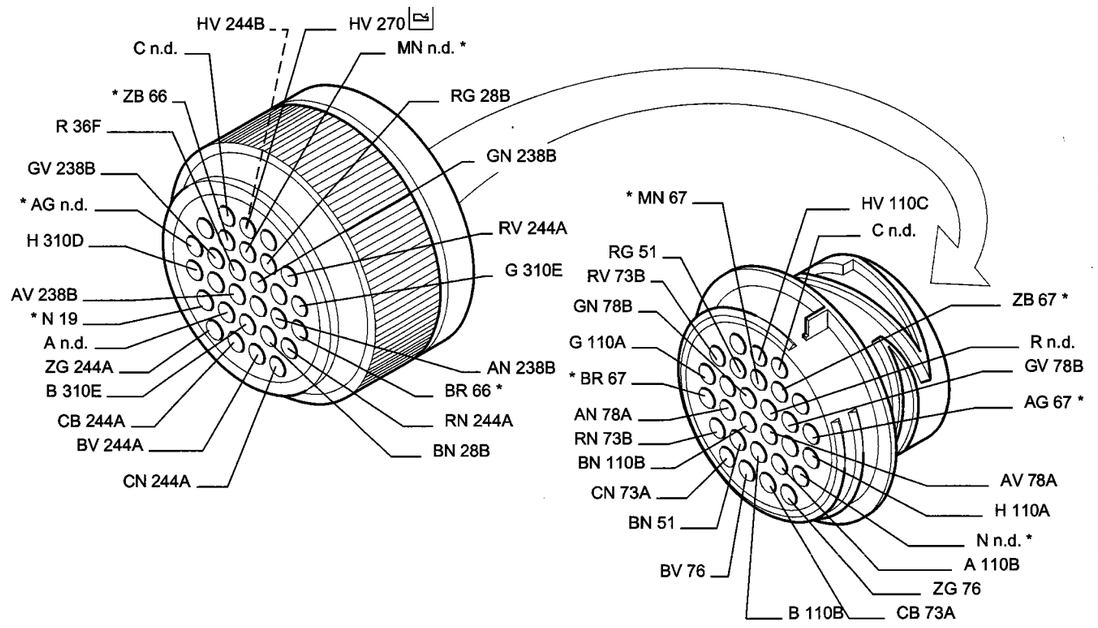
P4F842N01

Electrically-adjustable, heated door mirror

Component key

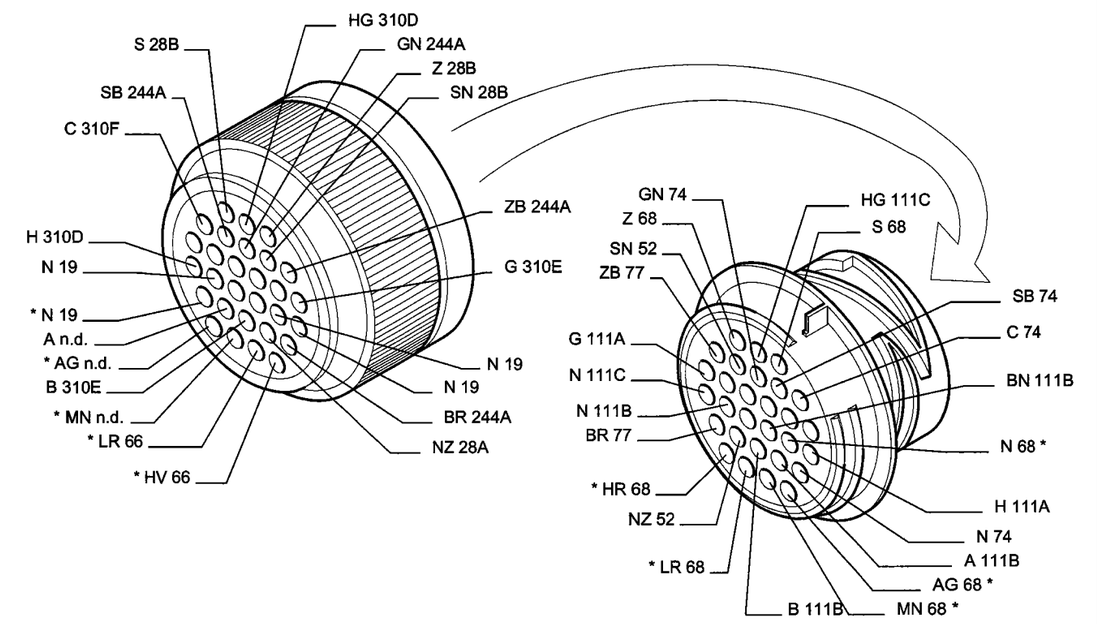
3 Direction indicator
4 Junction unit:
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
19 Right rear earth
28 Connection between facia/rear cables
35 Connection between dashboard/left front door cables
36 Connection between dashboard/right front door cables
42 Right facia earth
66 Control panel for electrically adjustable external rear view mirrors
67 Left door mirror
68 Right door mirror
310 Connection bridge

35 Connection between dashboard/left front door cables



P4F842N02

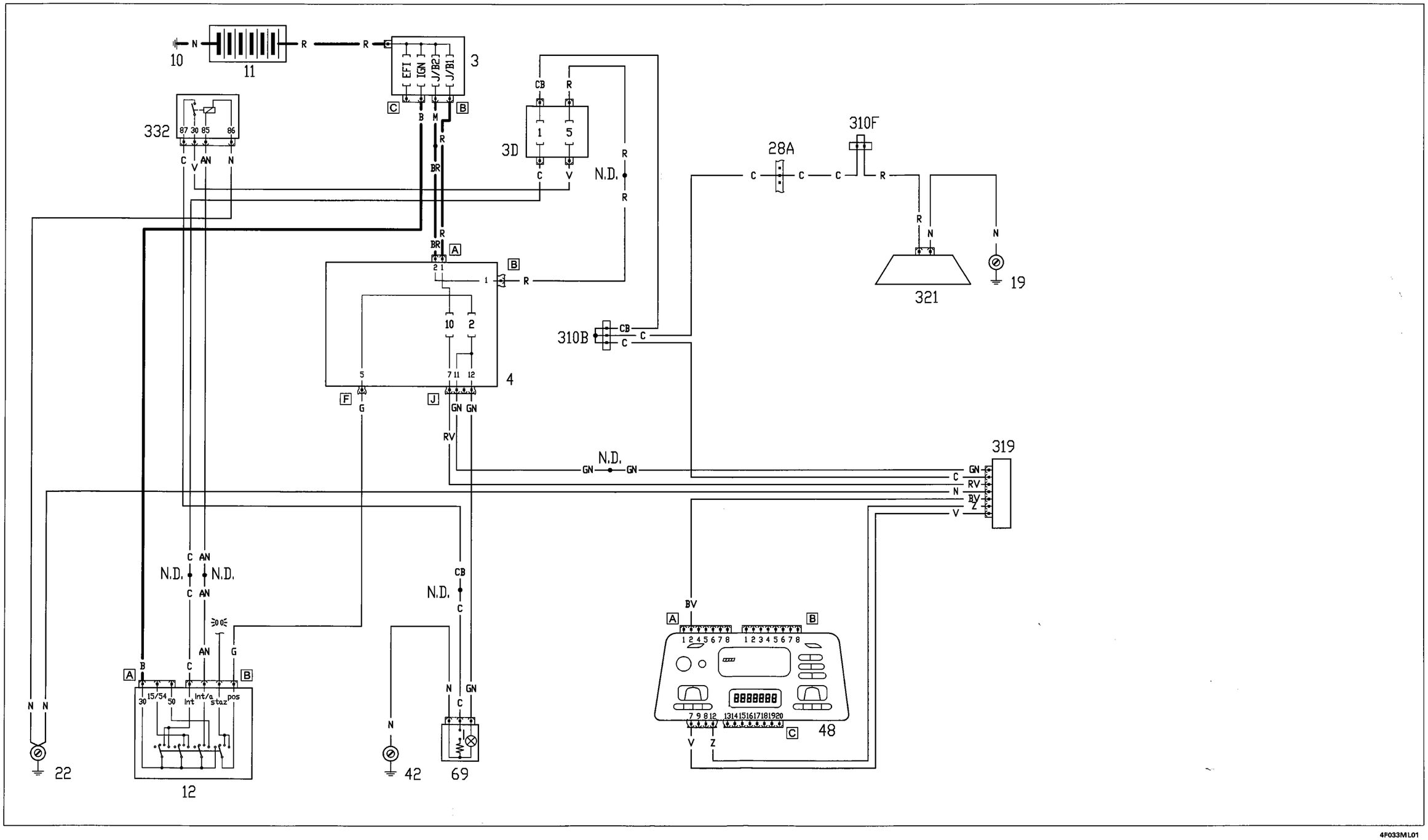
36 Connection between dashboard/right front door cables



P4F842N03

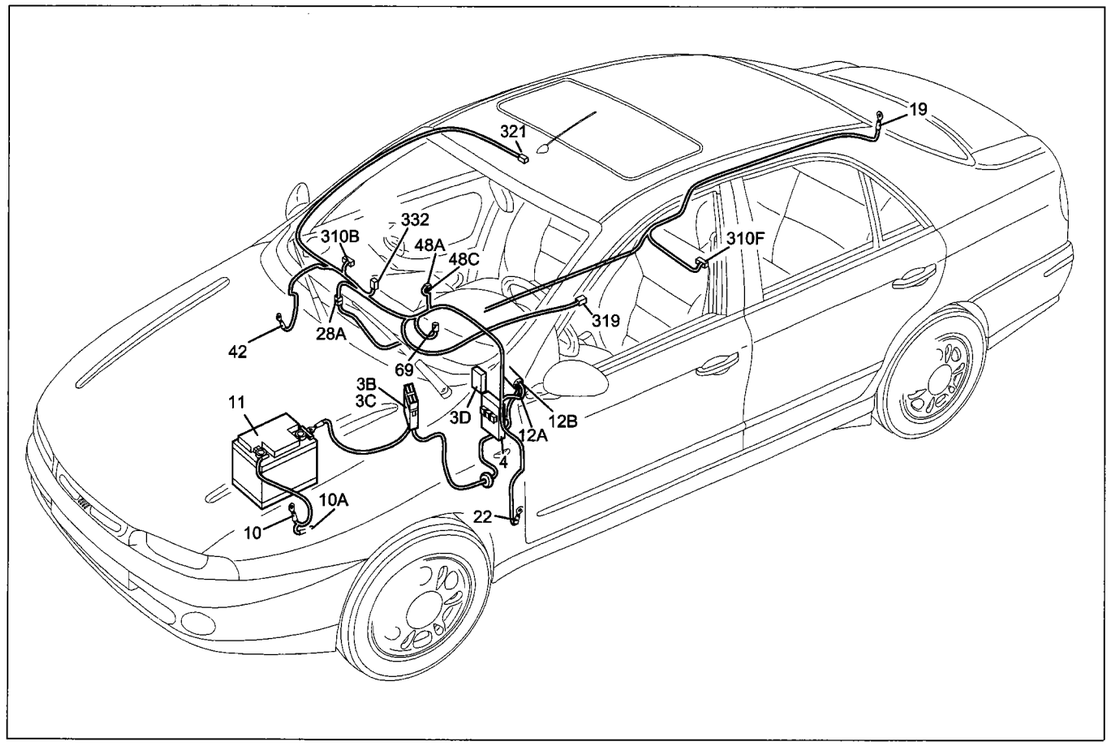
* The cables involved in the wiring diagram are marked with an asterisk.

Preparation for car phone and TELEPASS



4F033M1L01

55.



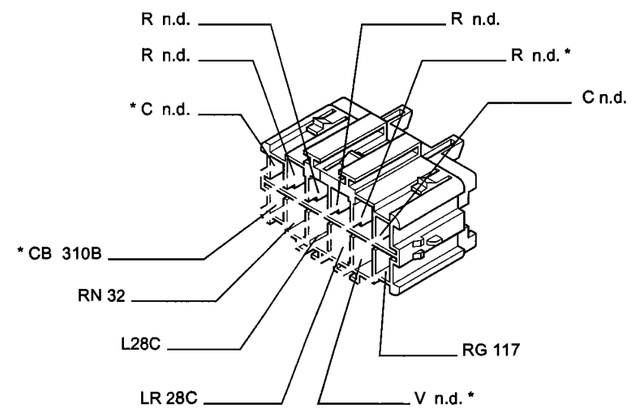
4F034ML01

Preparation for car phone and TELEPASS

Component key

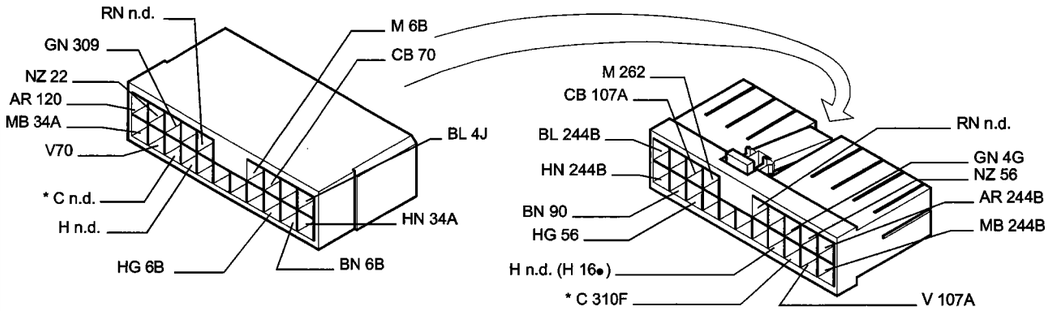
3 Power fusebox
4 Junction unit:
10 Engine battery earth
11 Battery
12 Ignition switch
19 Right rear earth
22 Left facia earth
28 Connection between facia/rear cables
42 Right facia earth
48 Radio receiver with clock
69 Cigar lighter
310 Connection bridge
319 Connection for car phone
321 Connection for TELEPASS
332 Ignition activated power relay

3D Power fusebox



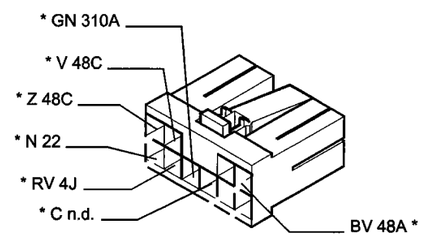
4F034ML02

28A Facia/rear lead connection



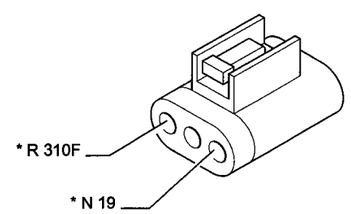
4F034ML03

319 Connection for car phone



P4F844N09

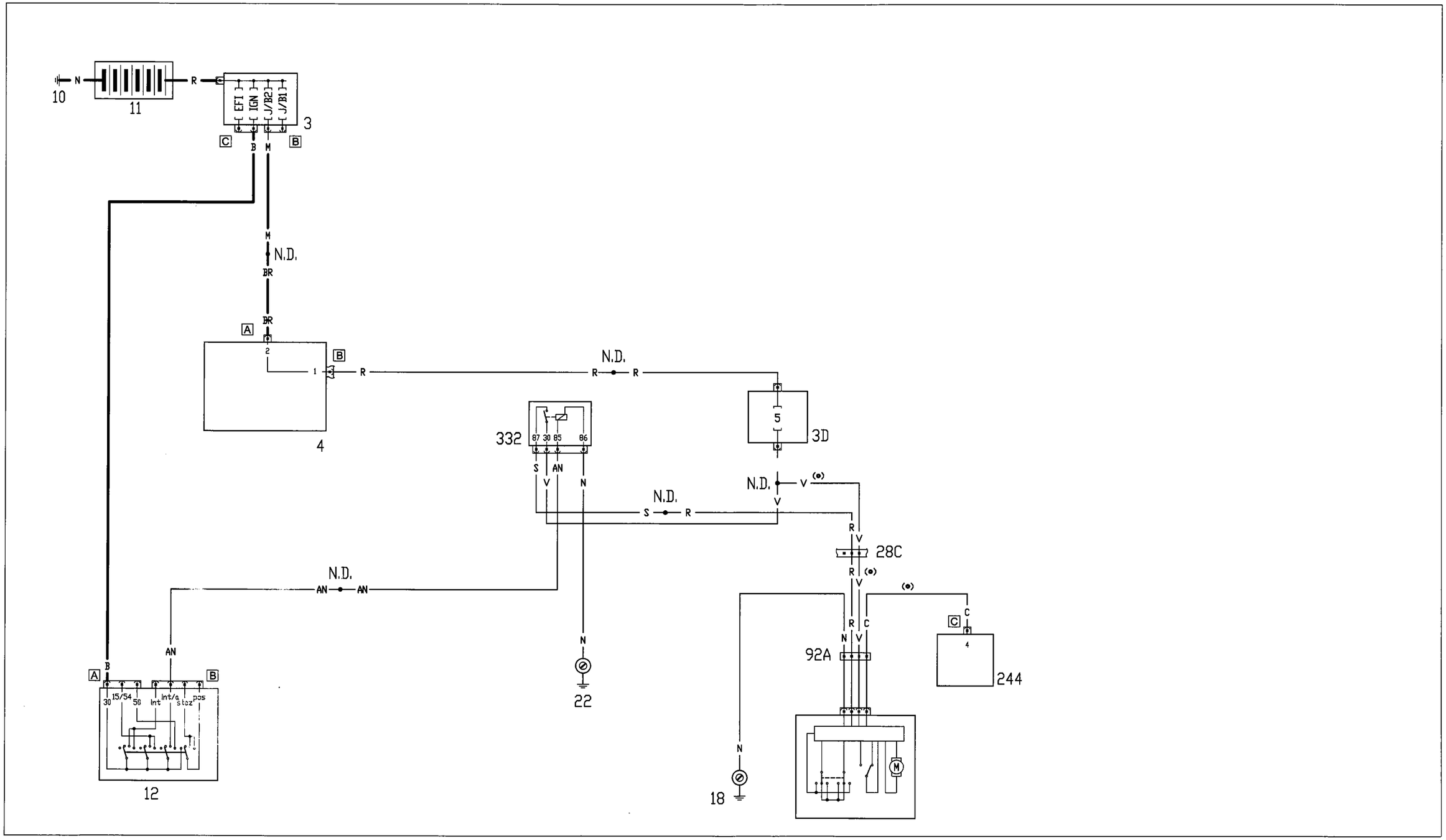
321 Connection for TELEPASS



P4F844N05

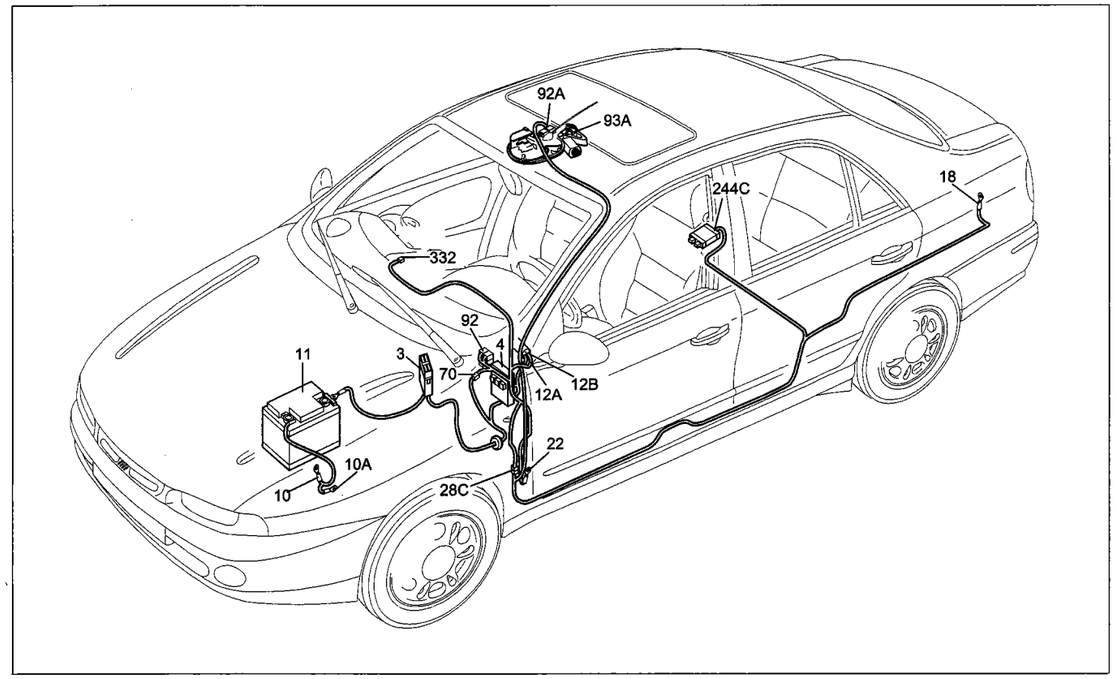
* The cables involved in the wiring diagram are marked with an asterisk.

Electric sun-roof



4F035ML01

(•) Only versions with automatic window closure



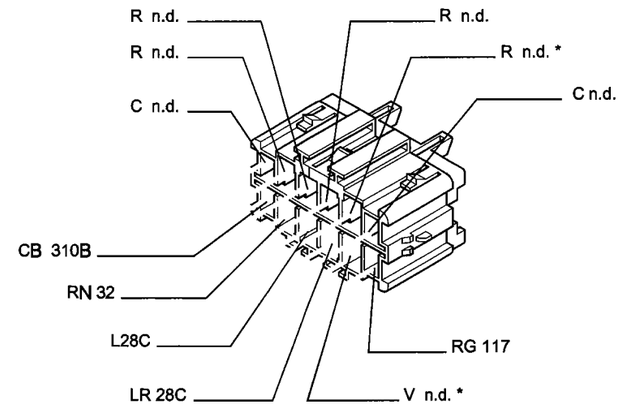
P4F846N01

Electric sun-roof

Component key

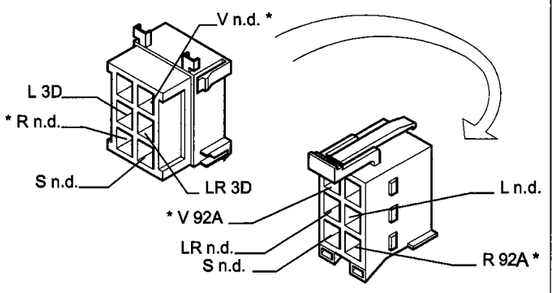
3 Direction indicator
4 Junction unit
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
22 Left facia earth
28 Connection between facia/rear cables
70 Connection between dashborad/front cables
92 Sun roof cables connection
93 Sun roof control unit
244 Integrated services control system
332 Ignition activated power relay

3D Power fusebox



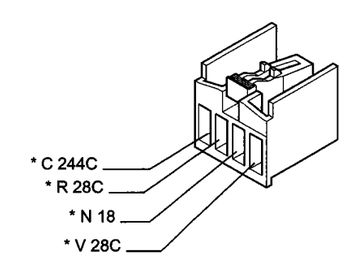
4F036ML02

28C Facia/rear lead connection



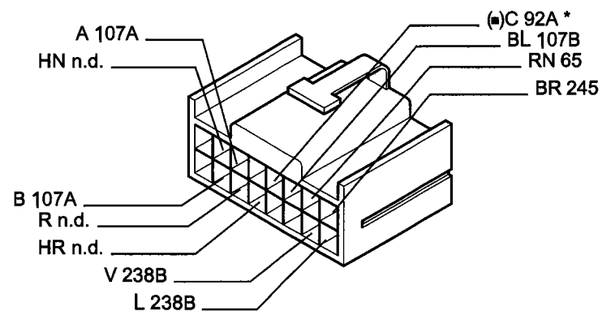
P4F846N03

92A Electric sun-roof lead connection



P4F846N04

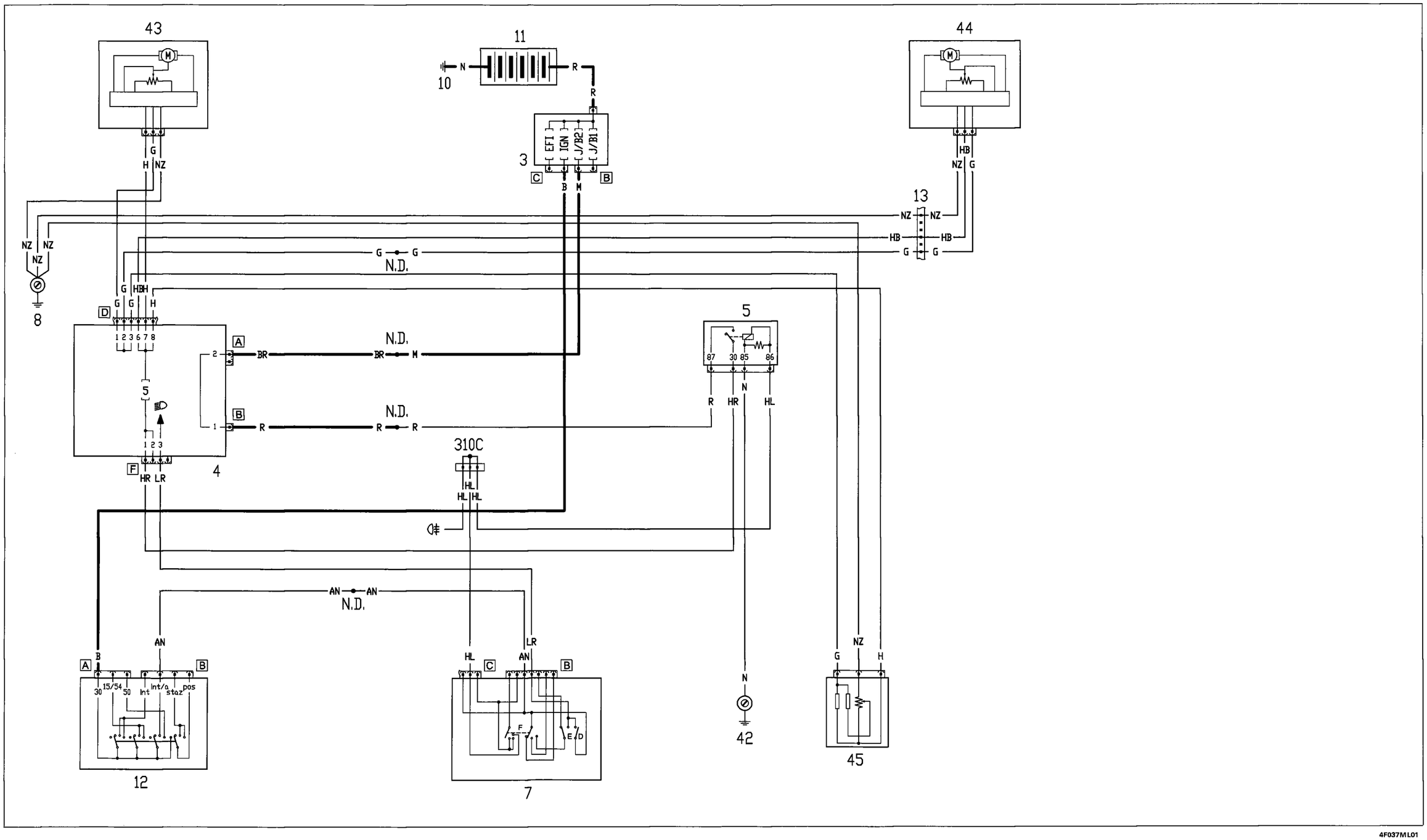
244C Integrated services control system



P4F846N05

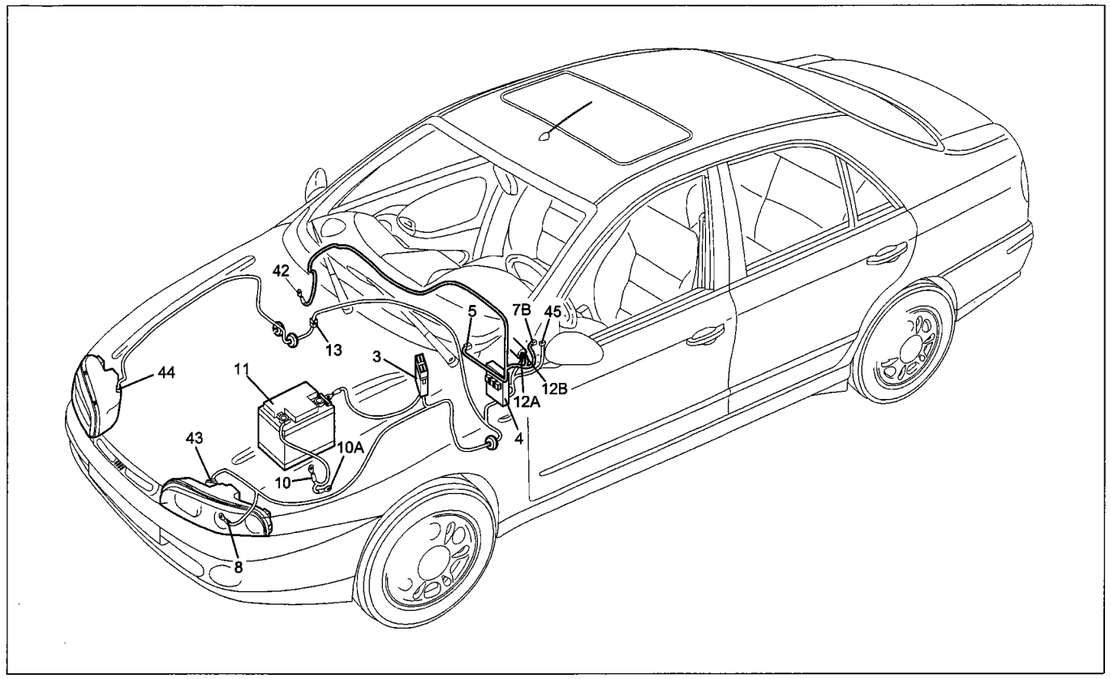
* The cables involved in the wiring diagram are marked with an asterisk.

Headlamp alignment corrector



4F037MLO1

55.



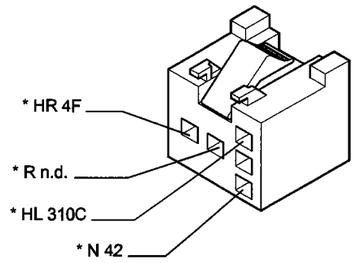
P4F848N01

Headlamp alignment corrector

Component key

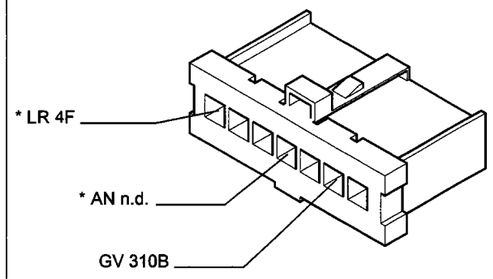
3 Direction indicator
4 Junction unit
5 Dipped headlamps relay
7 Stalk unit
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
13 Connection between right/left front cables
42 Right facia earth
43 Electric actuator for left headlamp alignment corrector
44 Electric actuator for right headlamp alignment corrector
45 Headlamp alignment control unit
310 Connection bridge

5 Dipped headlamps relay feed



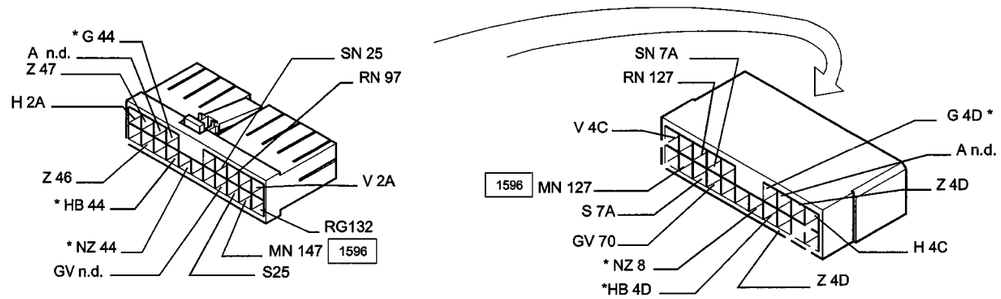
4F038ML02

7B Steering column switch unit



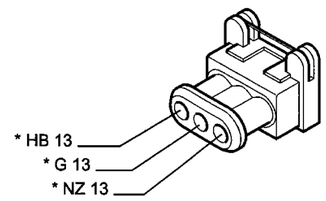
4F038ML03

13 Connection between right/left front cables



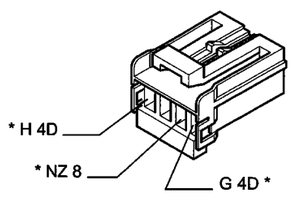
4F038ML04

44 Electric actuator for right headlamp alignment corrector



P4F848N05

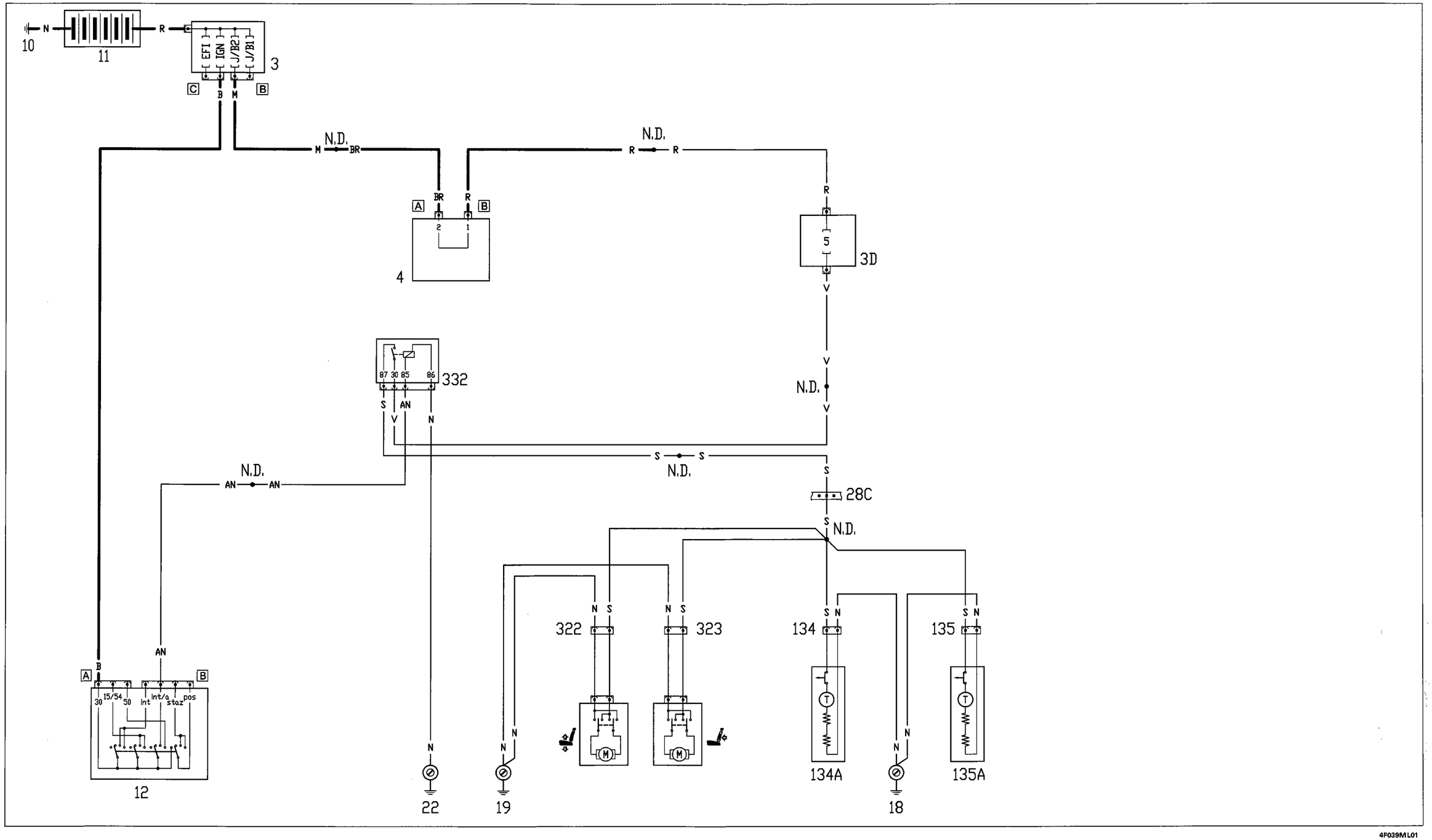
45 Headlamp alignment control unit



P4F848N06

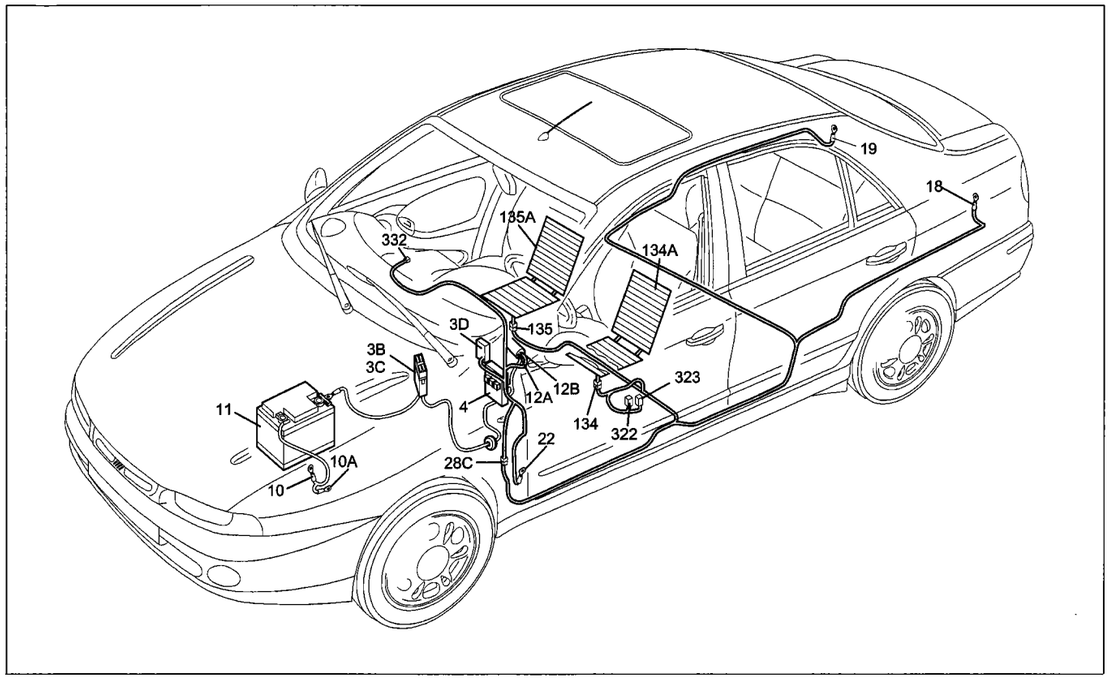
* The cables involved in the wiring diagram are marked with an asterisk.

Adjustable, heated front seats



4F039M1L01

55.



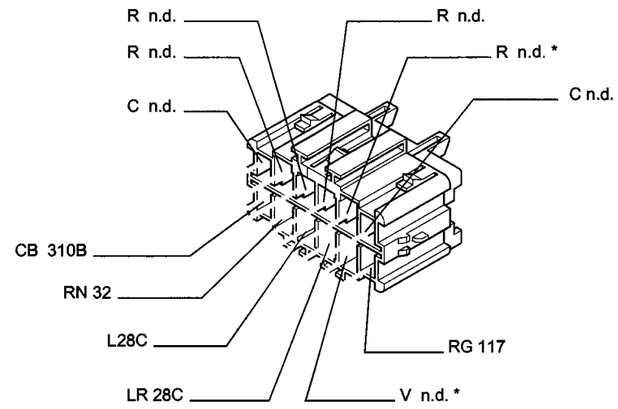
P4F850N01

Adjustable, heated front seats

Component key

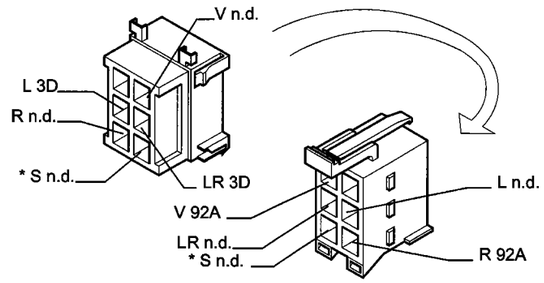
3 Direction indicator
4 Junction unit
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
19 Right rear earth
22 Left facia earth
28 Connection between facia/rear cables
134 Connection between rear/driver's heated seat cables
135 Connection between rear/passenger heated seat cables
322 Seat height adjustment connection
323 Seat lumbar adjustment connection
332 Ignition activated power relay

3D Power fusebox



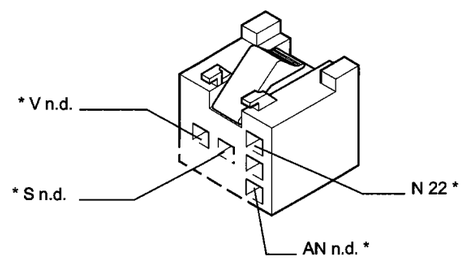
4F040M1L02

28C Facia/rear lead connection



P4F850N03

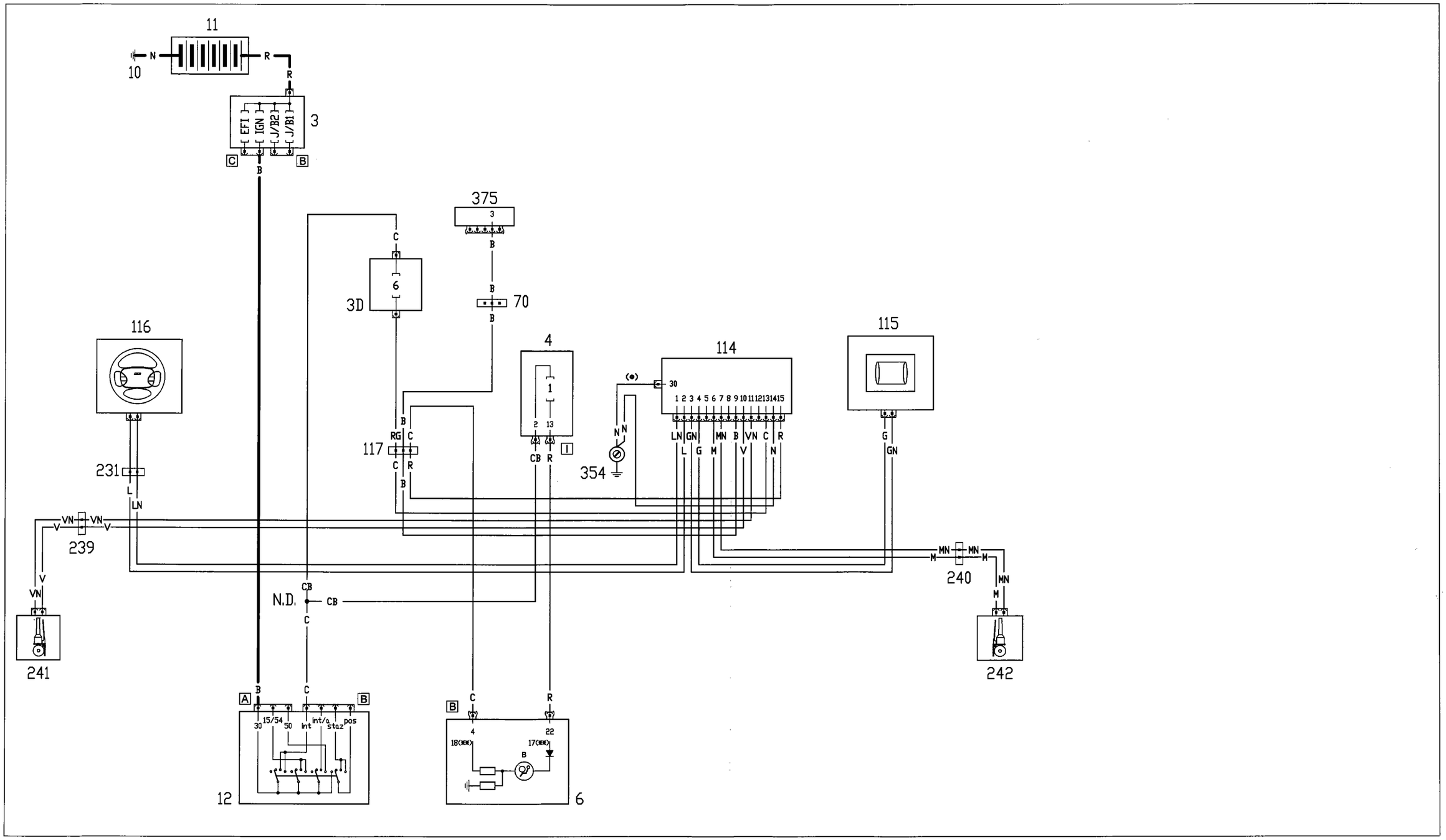
332 Ignition activated power relay.



P4F850N04

* The cables involved in the wiring diagram are marked with an asterisk.

Air Bag, pretensioners and failure warning light

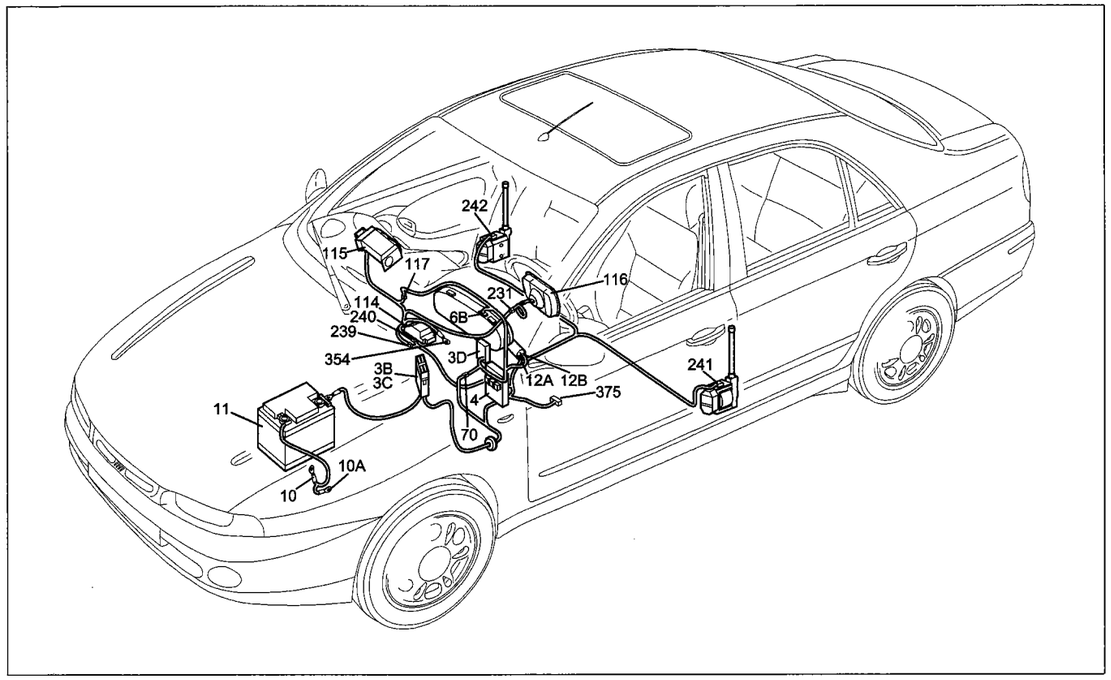


4F041ML01

** Variant for C.A.

(●) Where passenger Air Bag is fitted

55.



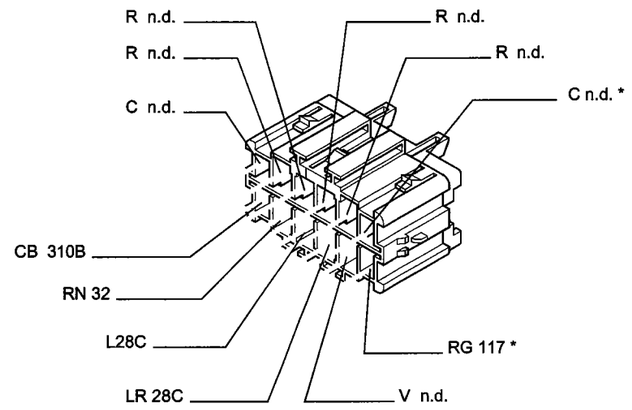
4F042ML01

Air Bag, pretensioners and failure warning light

Component key

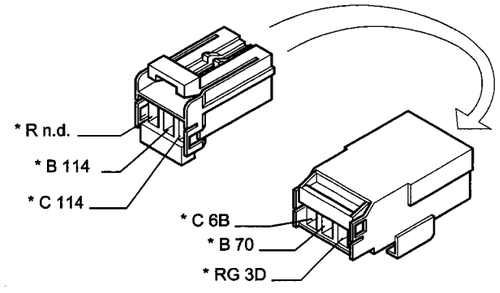
3 Power fusebox
4 Junction unit
6 Instrument panel
10 Engine battery earth
11 Battery
70 Connection between dashborad/front cables
114 Air bag electronic contol unit
115 Passenger's Air Bag
116 Driver's Air Bag
117 Airbag/facia lead connections
231 Clock spring connector
239 Air Bag/left pretensioner cables connection
240 Air Bag/right pretensioner cables connection
241 Left pretensioner
242 Right pretensioner
354 Air Bag earth
375 Standardized diagnostic socket

3D Power fusebox



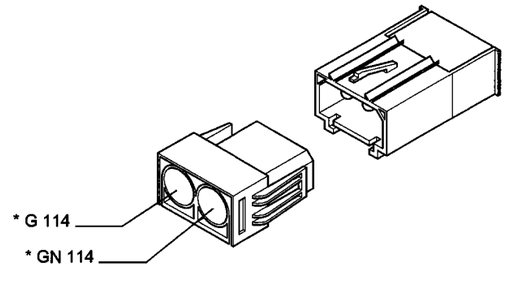
4F042ML02

117 Air Bag/facia cables connection



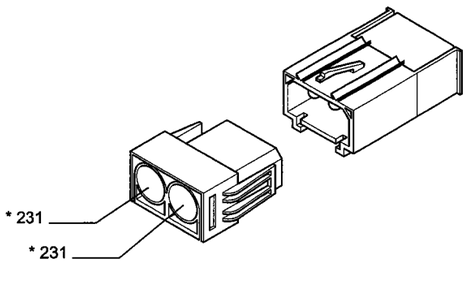
4F042ML03

115 Passenger Air Bag



P4F852N04

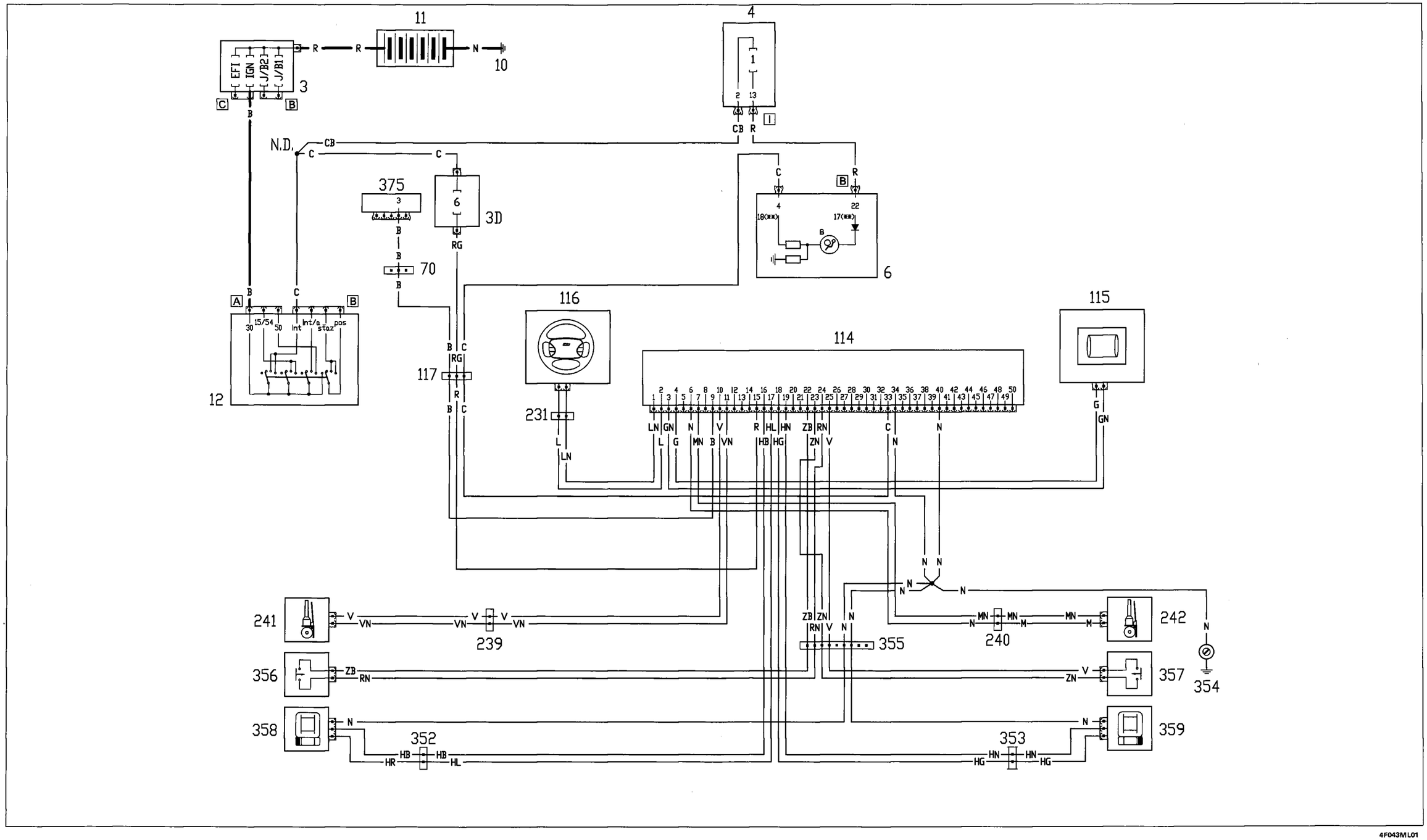
116 Driver's Air Bag



P4F852N05

* The cables involved in the wiring diagram are marked with an asterisk.

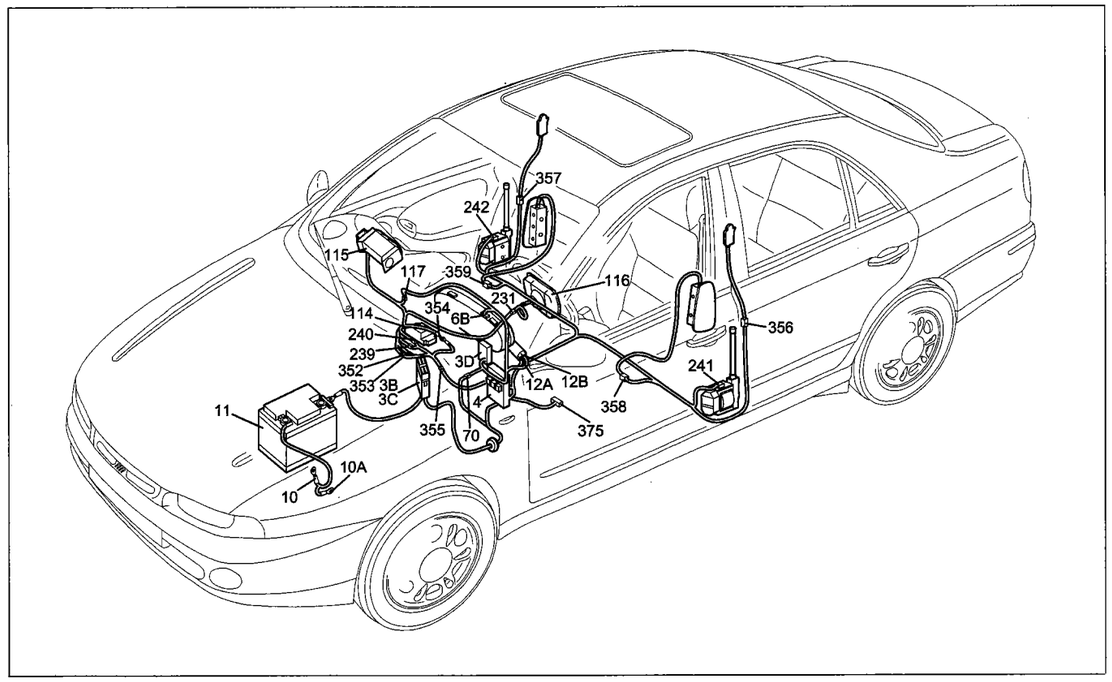
Air Bag with Side Bag and pretensioners and failure warning light



4F043M L01

** Variant for C.A.

55.



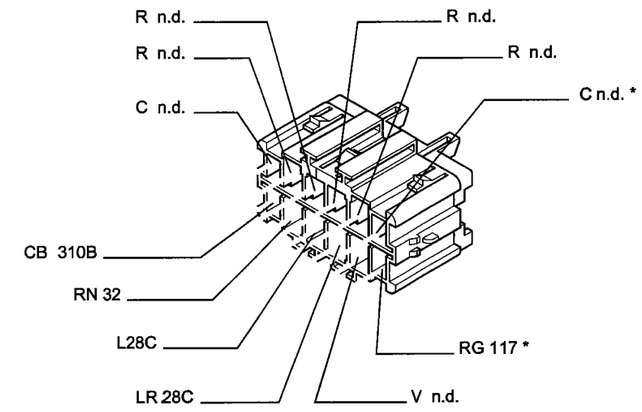
4F044ML01

Air Bag with Side Bag and pretensioners and failure warning light

Component key

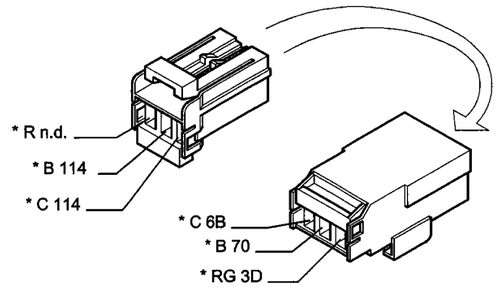
3 Power fusebox
4 Junction unit
6 Instrument panel
10 Engine battery earth
11 Battery
12 Ignition switch
70 Connection between dashboard/front cables
114 Air bag electronic contol unit
115 Passenger's Air Bag
116 Driver's Air Bag
117 Airbag/facia lead connections
231 Clock spring connector
239 Air Bag/left pretensioner cables connection
240 Air Bag/right pretensioner cables connection
241 Left pretensioner
242 Right pretensioner
352 Left side bag connection
353 Right side bag connection
354 Air Bag earth
355 Pretensioners connection
356 Left side bag sensor
357 Right side bag sensor
358 Left side bag
359 Right side bag
375 Standardized diagnostic socket

3D Power fusebox



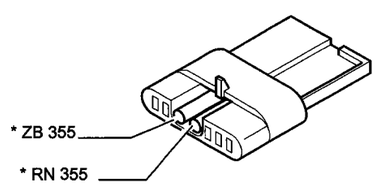
4F044ML02

117 Connection between Air Bag/dashboard cables



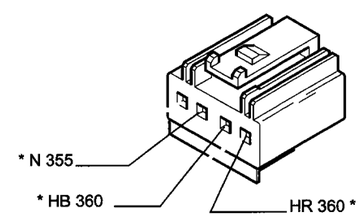
4F044ML03

356 Left side bag sensor



P4F854N04

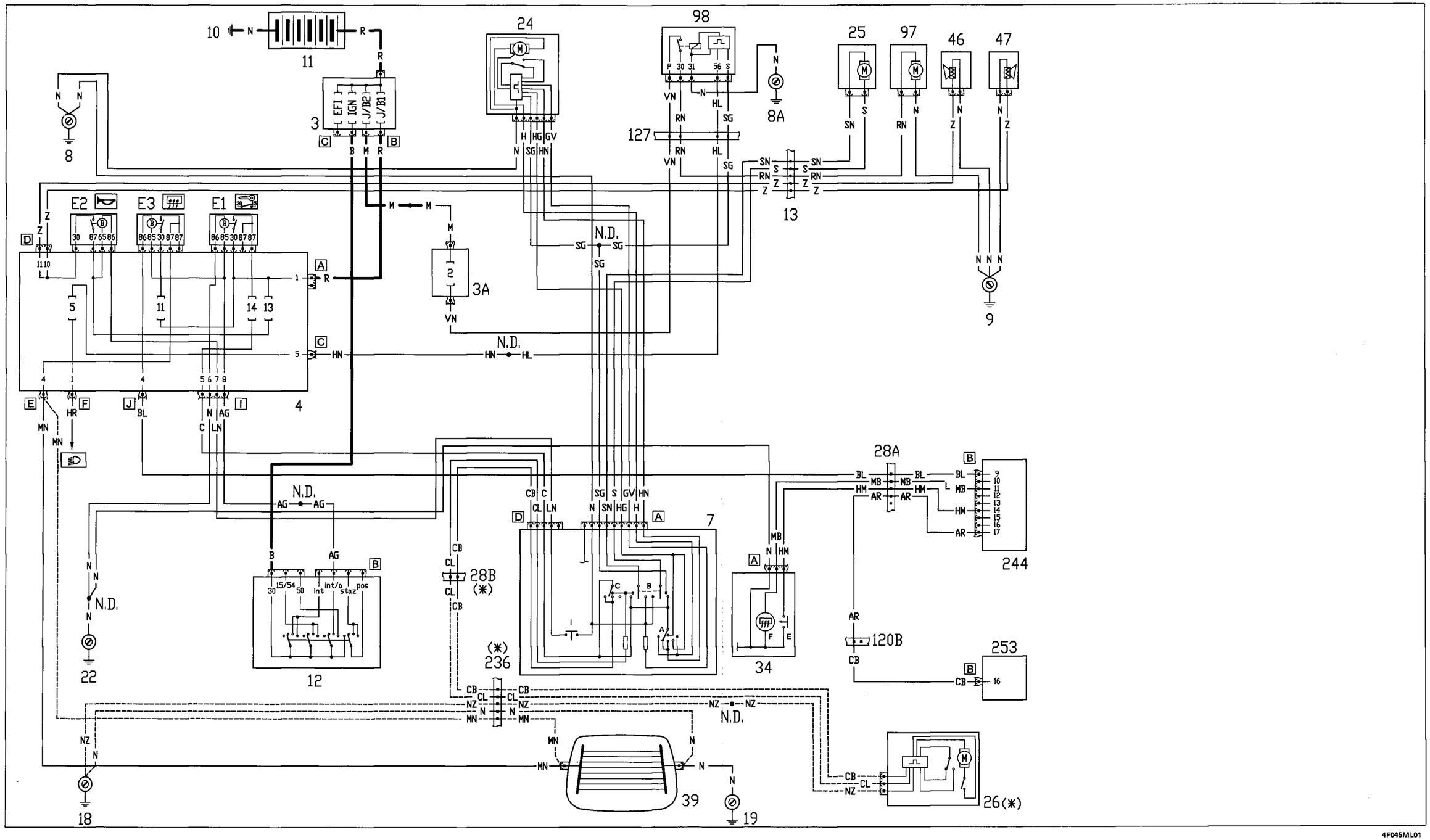
358 Left side bag



P4F854N05

* The cables involved in the wiring diagram are marked with an asterisk.

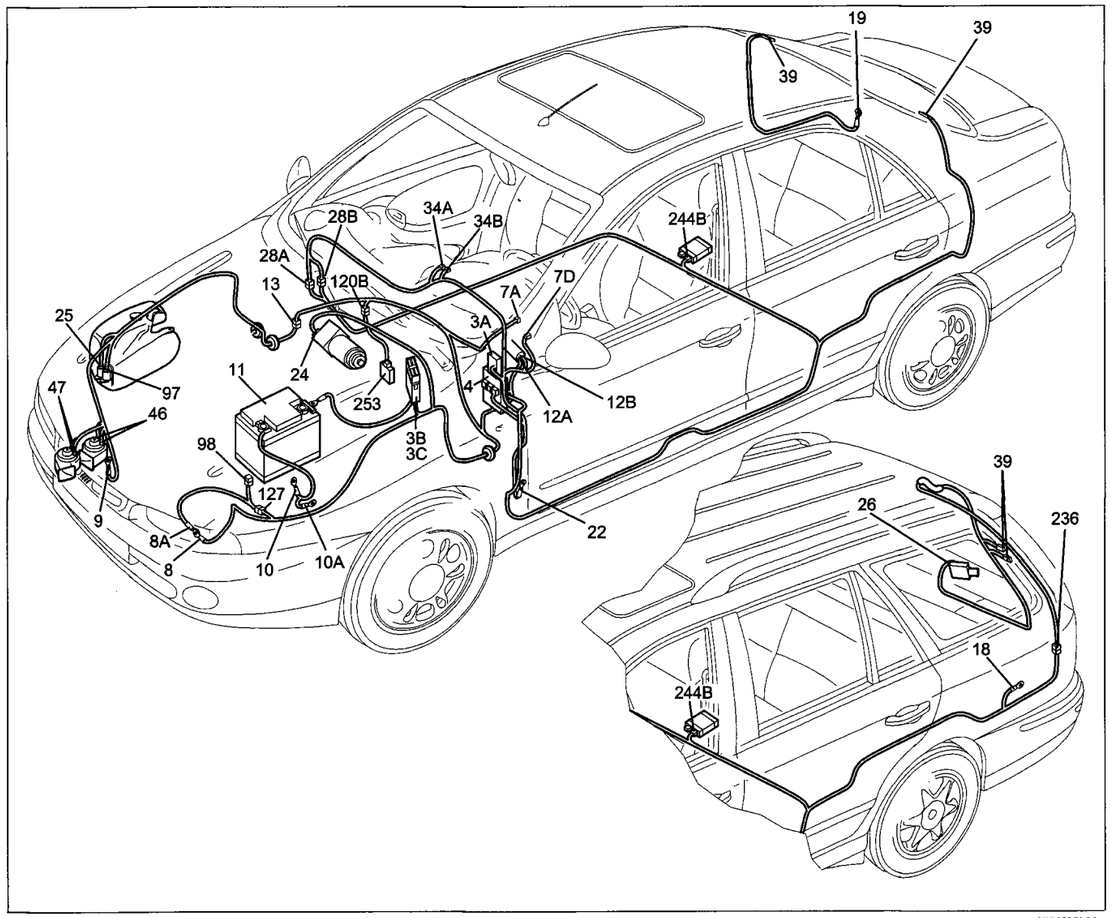
Windscreen wash/wipe - Rear wash/wipe - Horns - Heated rear window - Headlamp washers



4F045M L01

* Variants for Marea Weekend

55.



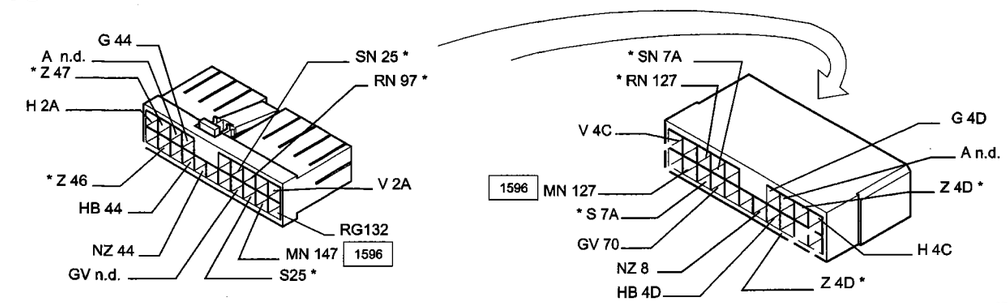
4F046ML01

Windscreen wash/wipe - **Rear** wash/wipe - **Horn** - **Heated rear window** - **Headlamp** washers

Component key

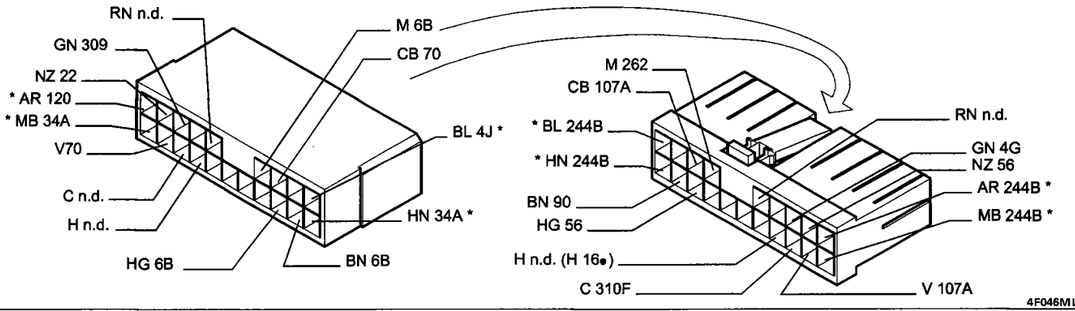
3 Power fusebox
4 Junction unit
7 Stalk unit
8 Left front earth
9 Right front earth
10 Engine battery earth
11 Battery
12 Ignition switch
13 Connection between right/left front cables
18 Left rear earth
19 Right rear earth
22 Left facia earth
24 Windscreen wiper motor
25 Front/rear washer pump
26 Rear wiper motor
28 Connection between facia/rear cables
34 Switch control unit
39 Heated rear window
46 Left low tone horn
47 Right high tone horn
97 Headlamp washer pump
98 Headlamp washer intermittence
120 Connection for air conditioning unit cables
127 Connection between front left cable/cable on relay holder bracket
236 Connection between rear cables and tail-gate
244 Integrated services control system
253 Air conditioner control unit

13 Connection between right/left front cables



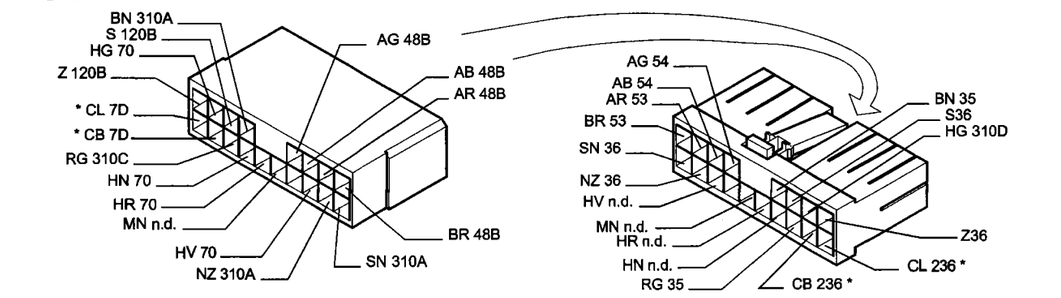
4F046ML02

28A Facia/rear lead connection



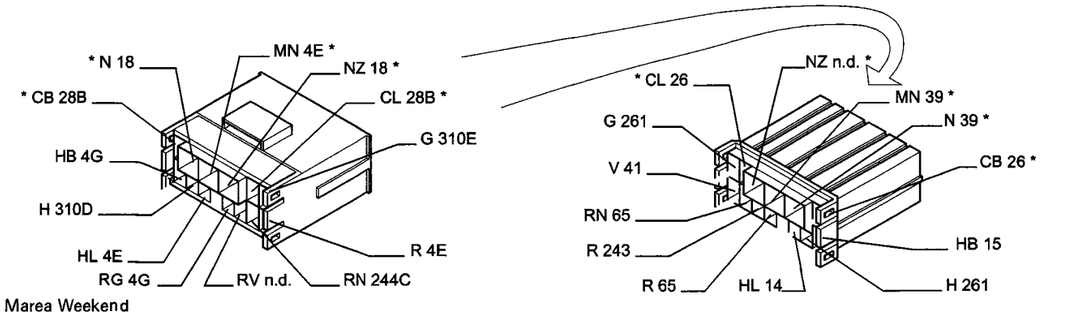
4F046ML03

28B Facia/rear lead connection



4F046ML04

236 Connection betwen rear lead and tail-gate

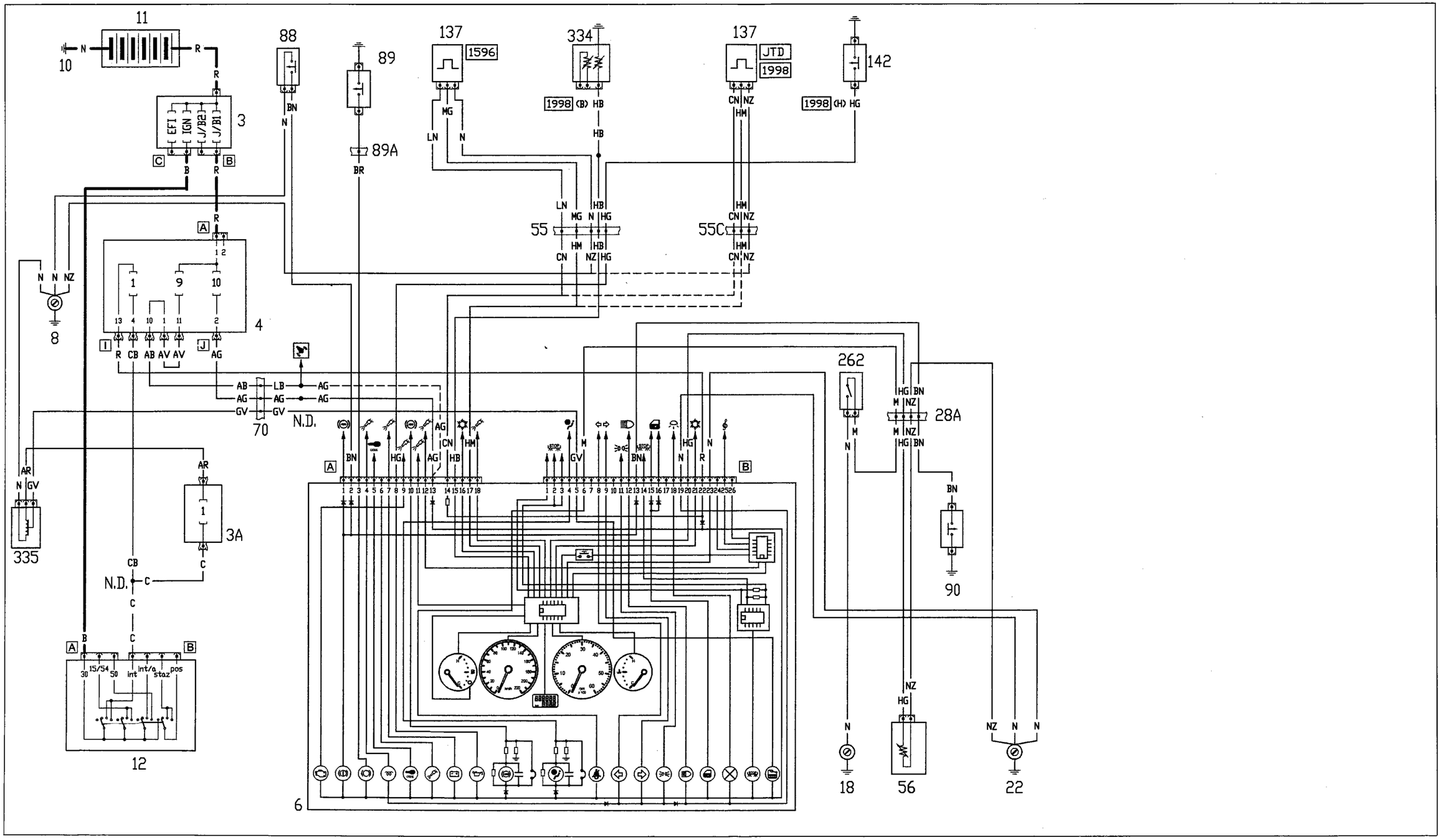


Marea Weekend

4F046ML05

* The cables involved in the wiring diagram are marked with an asterisk.

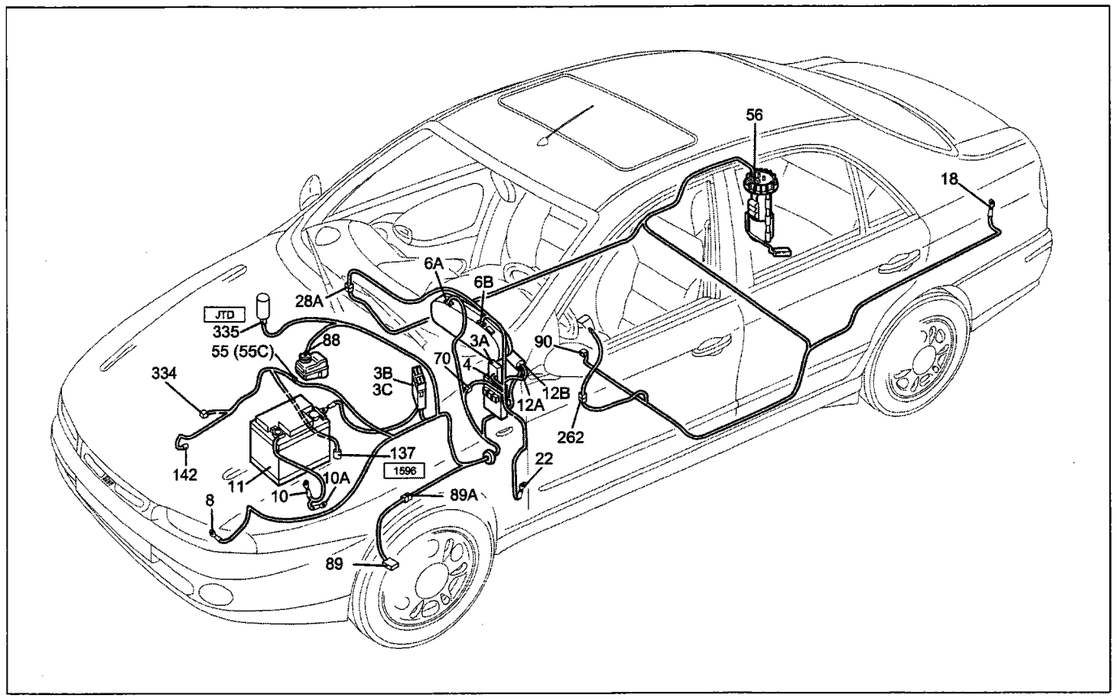
Instrument panel connections



4F047ML02

A.T. version: see specific wiring diagram

– – – Variant from January 2001



4F048M1L01

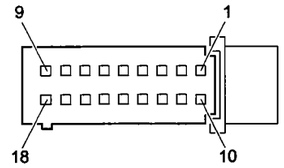
Instrument panel connections

Component key

3 Power fusebox
4 Junction unit
6 Instrument panel
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
22 Left facia earth
28 Connection between facia/rear cables
55 Connection between front/engine cables
56 Fuel level gauge control unit
70 Connection between facia/front leads
88 Insufficient brake fluid level sensor
89 Left brake pad wear sensor
90 Switch indicating handbrake applied
137 Vehicle speed sensor
142 Switch indicating insufficient engine oil pressure
262 Seat belt warning light switch
334 Engine temperature twin sender unit
335 Sensor for detecting water in diesel filter

55.

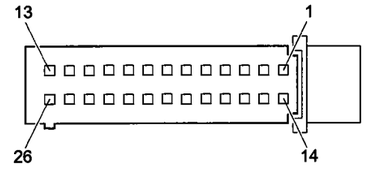
6A Instrument panel



1	BV 95		12	VB 333A	JTD
2	BN 88 *		12	VB 190A	1998
3	BR 89A *		12	VB 195A	1596
4	CL 333A	JTD	13	AG n.d. *	
5	MN 131B		14	CN 55 *	1596
6	LN 333A	JTD	14	CN 55C *	1998 JTD
7	HN 55		15	HB 55	
8	HG 55 *		16	HL 70	
9	LN 190A	1998	17	HM 55 *	1596
9	LN 195A	1596	17	HM 55C *	1998 JTD
10	RV 95		18	L 190A	1998
11	GN 195A	1596	18	L n.d.	JTD
11	GN 190A	1998	18	L 195A	1581

4F048M1L02

6B Instrument panel

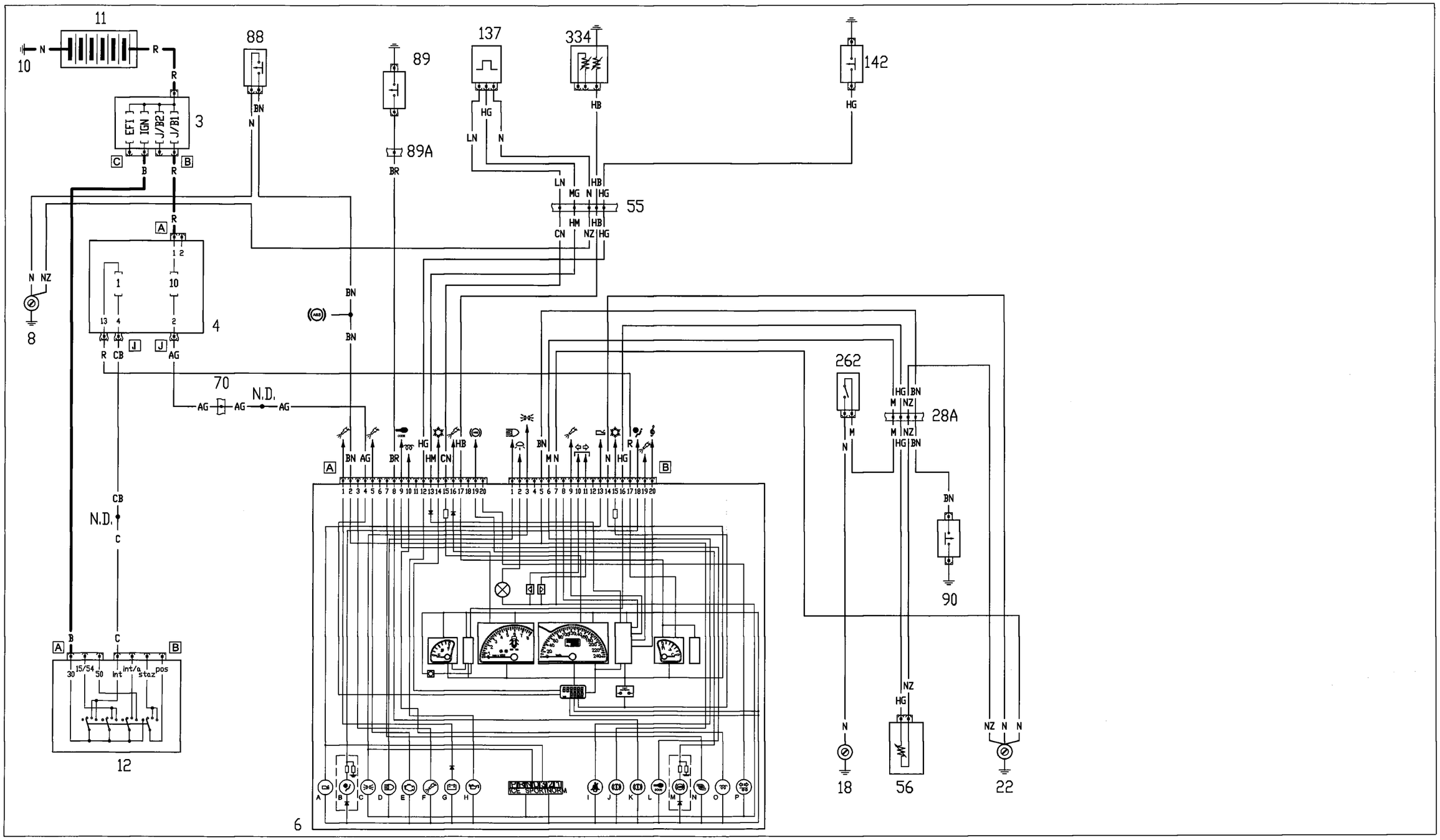


1	RG 4J		15	H 70	
2	RV n.d.		16	CN n.d.	
3	RV n.d.		18	GR 58	
4	C 117		19	N 22 *	
5	GV 70 *	JTD	20	HG 28A *	
6	M 28A *		21	GL 34A	
8	A 4H		22	R 4I *	
9	AN 4H		23	N 22 *	
11	GN n.d.		25	VN 48A	
12	LB 4J		26	HM 309	
13	BN 28A *				
14	RN 4H				

4F048M1L03

*The cables concerned are marked in the wiring diagram with an asterisk

instrument panel connections (C.A. version)



4F049ML01

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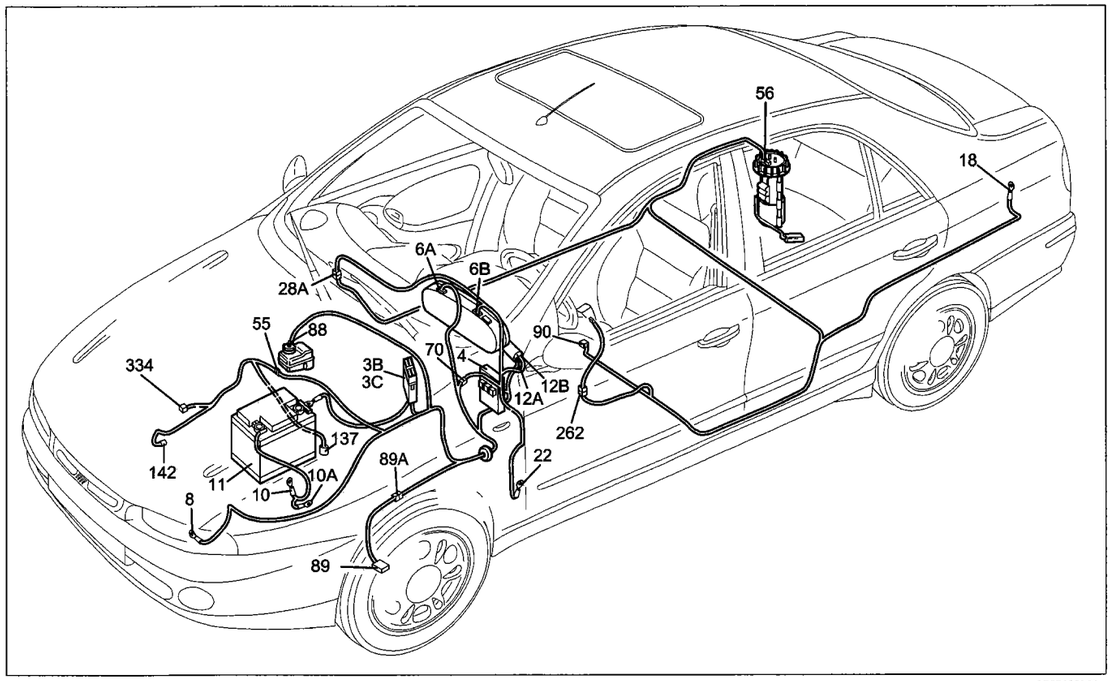


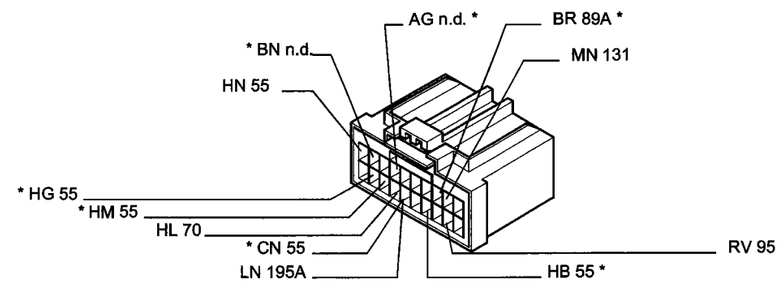
4F050ML01

Instrument panel connections (C.A. version)

Component key

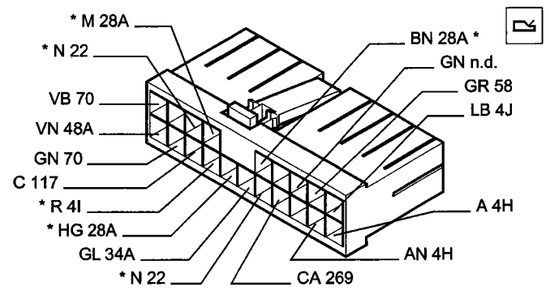
3 Direction indicator
4 Junction unit
6 Instrument panel
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
18 Left rear earth
22 Left facia earth
28 Connection between facia/rear cables
55 Connection between front/engine cables
56 Fuel level gauge control unit
70 Connection between dashborad/front cables
88 Insufficient brake fluid level sensor
89 Left brake pad wear sensor
90 Switch signalling handbrake applied
137 Vehicle speed sensor
142 Switch signalling insufficient engine oil pressure
262 Seat belt warning light switch
334 Dual engine temperature sending unit

6A Instrument panel



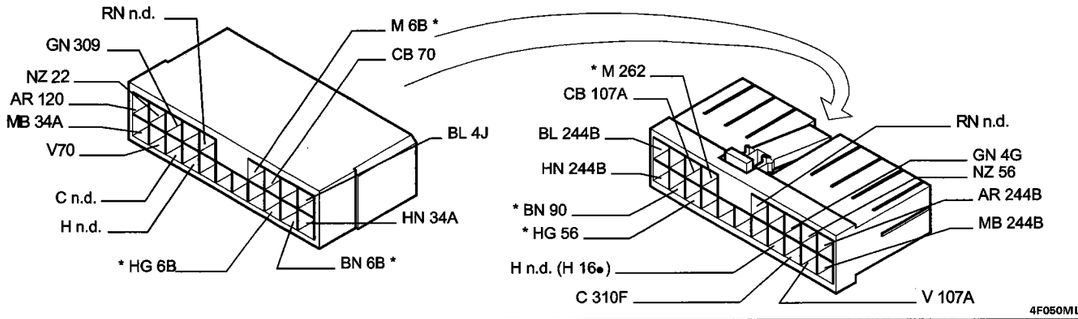
4F050ML02

6B Instrument panel



4F050ML03

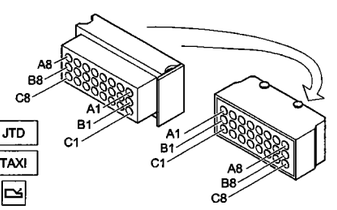
28A Facia/rear lead connection



4F050ML04

70 Connection between dashborad/front cables

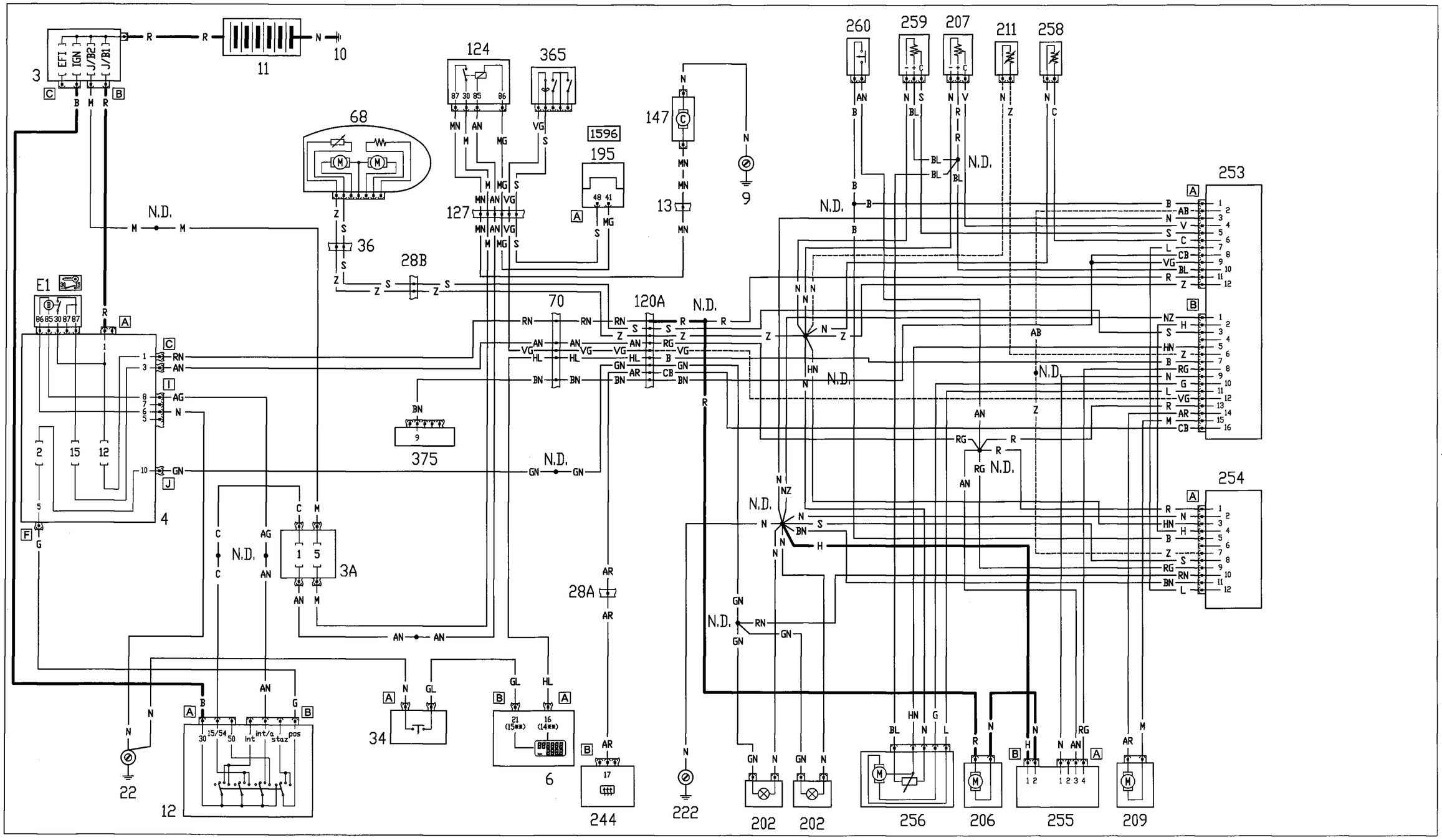
A1	RN 4C	B1	M 29	C1	AN 4C	A1	RN 120	B1	M 310C	C1	AN 120
A2	VG 127	B2	V 328	C2	HR 100B	A2	VG 120	B2	V 28A	C2	HR 28B
A3	H 100B	B3	AG n.d. *	C3	HN 100B	A3	H 6B	B3	AG 4I *	C3	HN 28B
A4	HL 6A	B4	LN 100B	C4	HG 100B	A4	HL120	B4	AB 4I	C4	HG 28B
A5	CB 100A	B5	BN 375	C5	HV 100B	A5	CB 28A	B5	BN 120	C5	HV 28B
A6	S 100B	B6	B 375	C7	GV 335 JTD	A6	R n.d.	B6	B 117	C7	GV 6B JTD
A7	V 100A	B8	MN n.d.	C8	RB 307 TAXI	A7	A 34A	B7	AN 120	C8	RB 312 TAXI
A8	N 8			C8	GN 195A	A8	N 312	B8	RN 315	C8	GN 6B



4F050ML05

* The cables involved in the wiring diagram are marked with an asterisk.

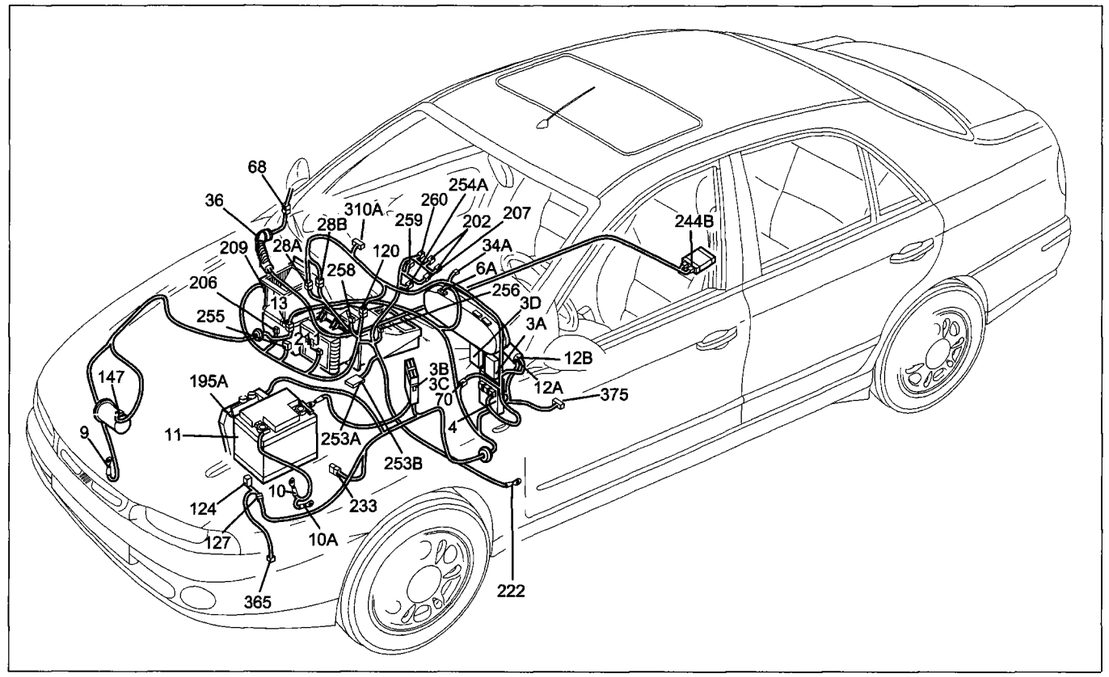
Climate control system/heater with thermostatic adjustment (1596)



4F051ML01

** Variants for C.A.

55.



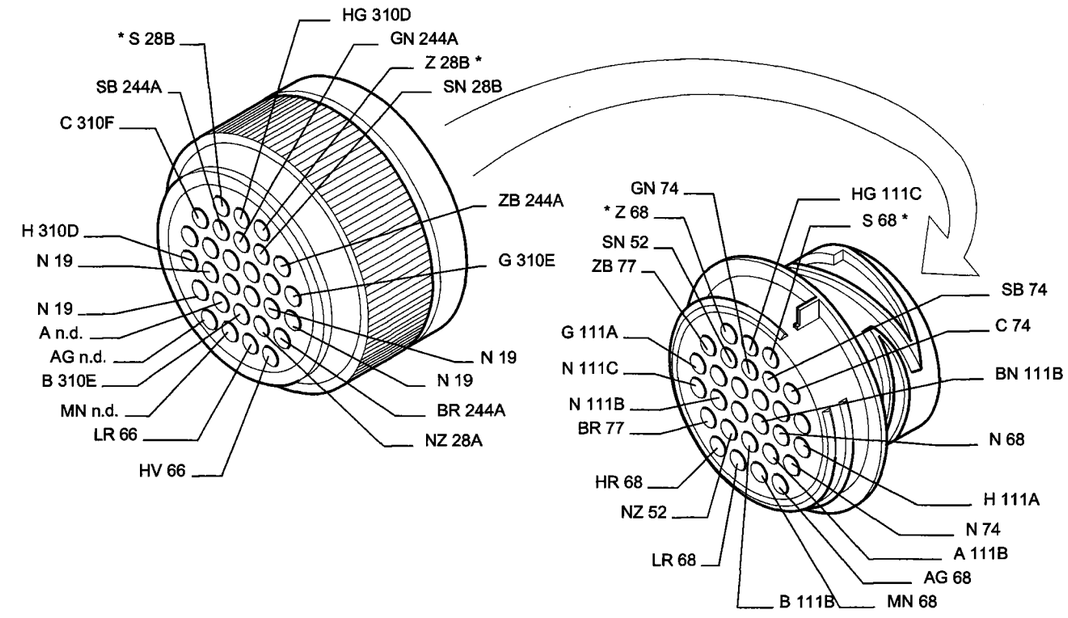
4F052MIL01

Climate control system/heater with thermostatic adjustment (1596)

Component key

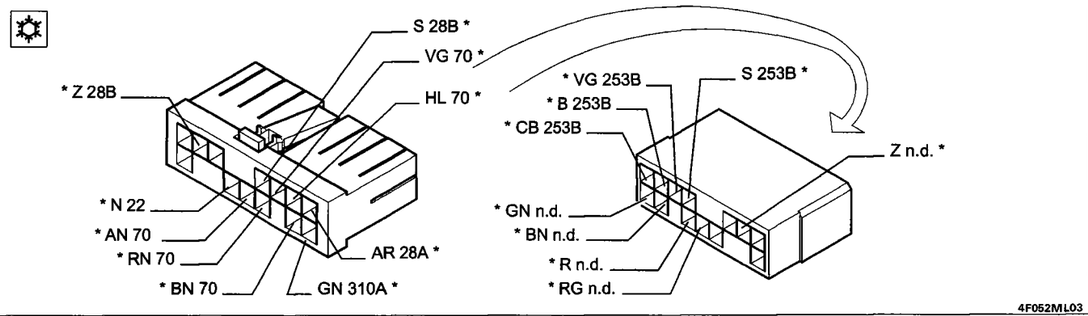
3 Power fusebox
4 Junction unit
6 Instrument panel
9 Right front earth
10 Engine battery earth
11 Battery
12 Ignition switch
13 Connection between right/left front cables
28 Connection between facia/rear cables
34 Switch control unit
36 Connection between dashboard/right front door cables
68 Right door mirror
70 Connection between dashborad/front cables
120 Connection for air conditioning unit cables
124 Air condiitoning compressor control relay
127 Connection between front left cable/cable on relay holder bracket
147 Air conditioner compressor
195 Ignition/injection control unit (1596)
202 Heater/air conditioner unit control symbol lighting bulbs
206 Climate control system fan
207 Fan speed adjustment switch
209 Air intake flap control actuator
211 Frost sensor
222 Earth for air conditioning system
233 Thermal switch on engine coolant pump
244 Integrated services control system
253 Air conditioner control unit
254 Climate control system controls with interior temperature sensor
255 Electronic speed variator for climate control fan
256 Air mixing control actuator
258 Treated air temperature sensor
259 Required temperature adjustment solenoid
260 MAX-DEF microswitch
365 4-stage pressure switch
375 Standardized diagnostic socket

36 Connection between dashboard/right front door cables



P4F870N02

120 Connection for air conditioning unit cables

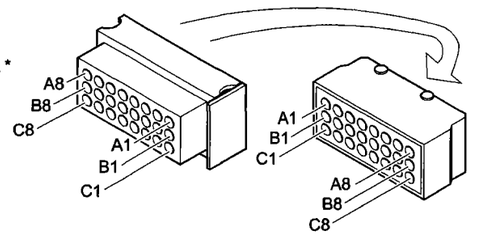


4F052MIL03

127 Connection between front left cable/cable on relay holder bracket

1596

A2	RN 13	B2	AN n.d. *	A2	RN 98
A4	AB 195A	B3	MG 195A *	A4	AV 123
A5	AG 195A	B4	S 195A *	A5	AG 122
A6	M 3A *	B5	VN 3A	A6	M 124 *
A7	MN 13 *	B6	B 195A	A7	MN 124 *
A8	C n.d.	B7	VG 70 *	A8	C n.d.
		C2	BN 195A		
		C3	HL n.d.		
		C4	SG n.d.		

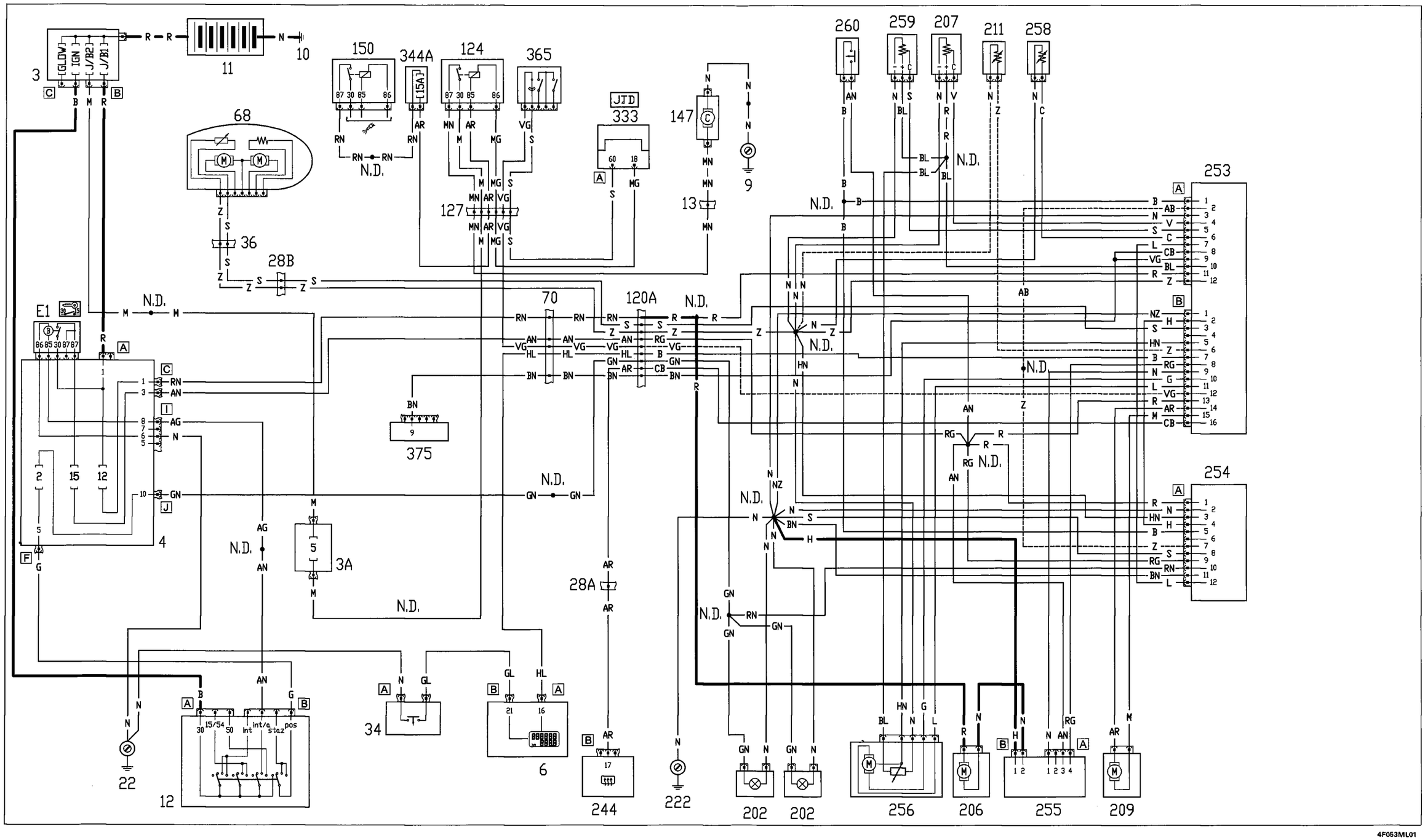


B2	AN 124 *	C2	BN 365
B3	MG 124 *	C3	HL 98
B4	S 365 *	C4	SG 98
B5	VN 98		
B6	B 365		
B7	VG 365 *		

4F052MIL04

* The cables involved in the wiring diagram are marked with an asterisk.

Climate control system/heater with thermostatic adjustment (1910 JTD)



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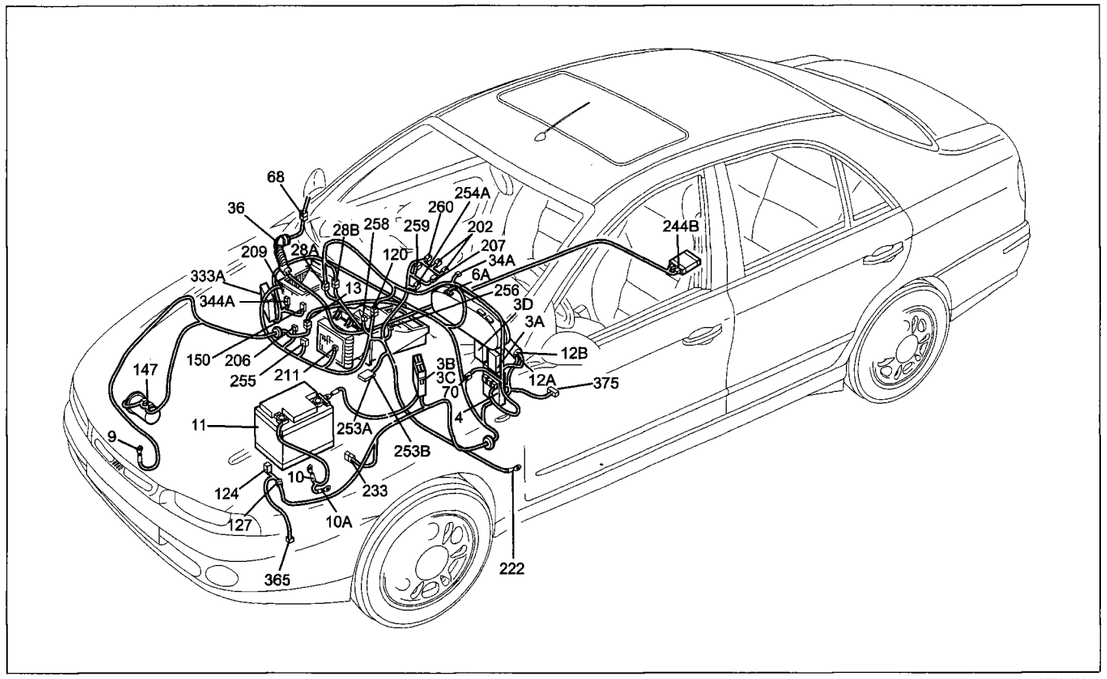


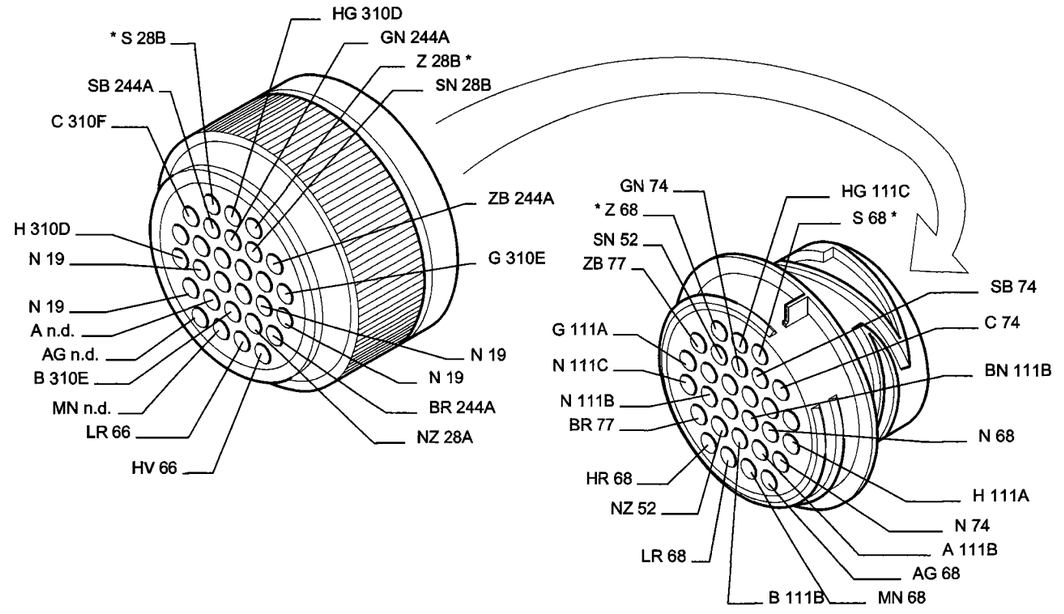
4F054ML01

Climate control system/heater with thermostatic adjustment (1910 JTD)

Component key

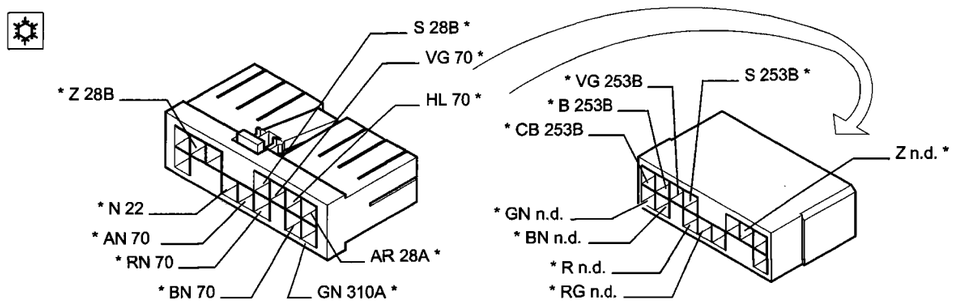
3 Power fusebox
4 Junction unit
6 Instrument panel
9 Right front earth
10 Engine battery earth
11 Battery
12 Ignition switch
13 Connection between right/left front cables
28 Connection between facia/rear cables
34 Switch control unit
36 Connection between dashboard/right front door cables
68 Right door mirror
70 Connection between dashborad/front cables
120 Connection for air conditioning unit cables
124 Air condiitoning compressor control relay
127 Connection between front left cable/cable on relay holder bracket
147 Air conditioner compressor
150 I.E. system relay feed
202 Heater/air conditioner unit control symbol lighting bulbs
206 Climate control system fan
207 Fan speed adjustment switch
209 Air intake flap control actuator
211 Frost sensor
233 Thermal relay on engine coolant pump
244 Integrated services control system
253 Air conditioner control unit
254 Climate control system controls with interior temperature sensor
255 Electronic speed variator for climate control fan
256 Air mixing control actuator
258 Treated air temperature sensor
259 Required temperature adjustment solenoid
260 MAX-DEF microswitch
333 Injection control unit (JTD)
334B I.E. protective fuse (JTD)
365 4-stage pressure switch
375 Standardized diagnostic socket

36 Connection between dashboard/right front door cables



P4F864N02

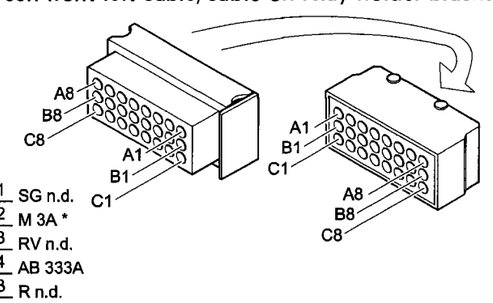
120 Connection for air conditioning unit cables



4F054ML03

127 Connection between front left cable/cable on relay holder bracket

JTD



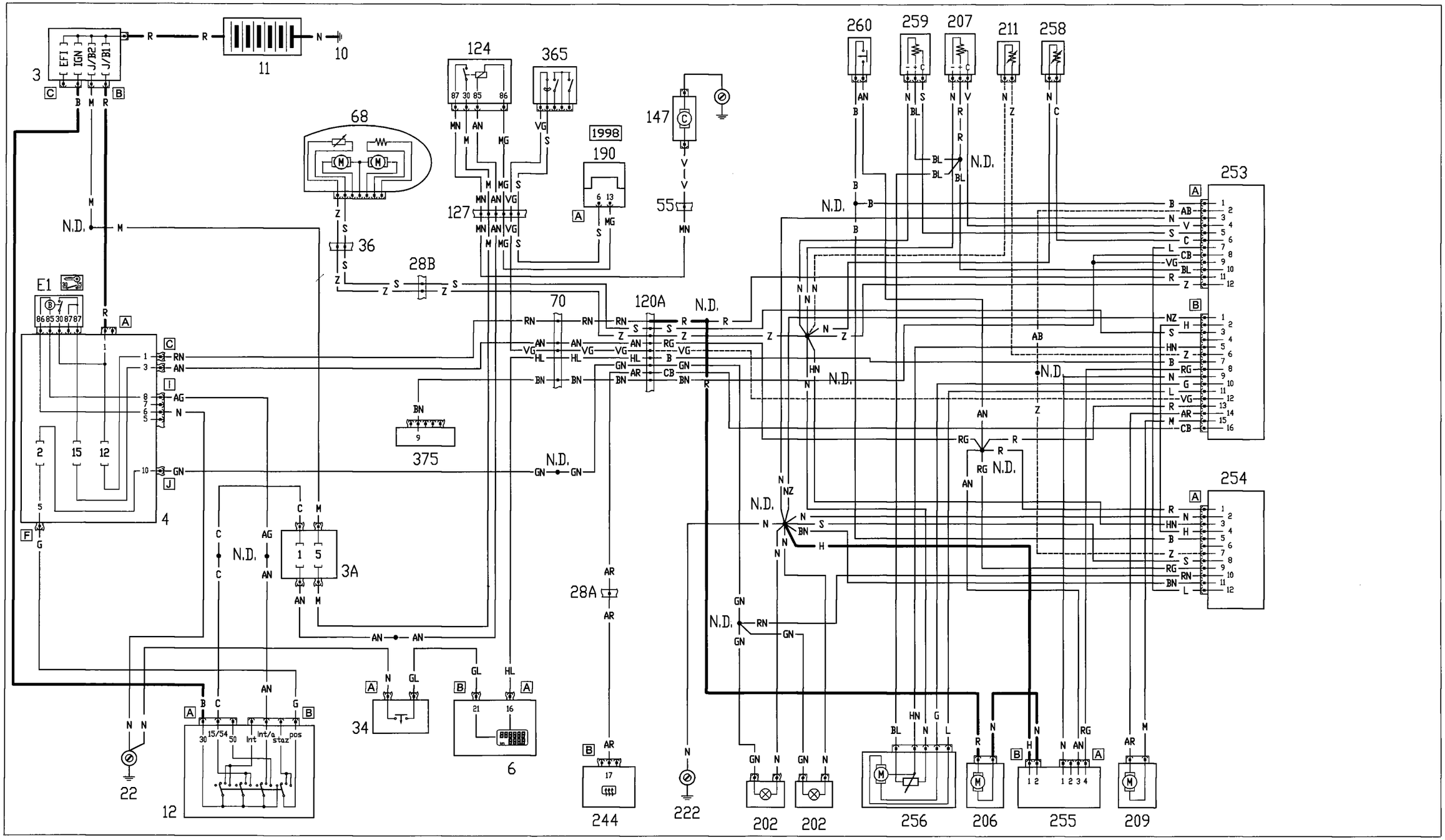
A1	BR n.d.	B1	RN 13	C1	SG n.d.	A1	BR 303
A2	MN 13 *	B2	HL n.d.	C2	M 3A *	A2	MN 124 *
A3	AR n.d.	B3	S 333A *	C3	RV n.d.	A3	AR 124
A4	MG 333A *	B4	B 333A	C4	AB 333A	A4	MG 124 *
A5	GN 55	B5	VG 70 *	C8	R n.d.	A5	GN 304
A5	AR n.d. *	B6	N 8			A6	HN 304 *
A7	AG 333A	B7	BN 333A			A7	AG 122
A8	RG 289	B8	VN 3A			A8	RG 304
						B1	RN 98
						B2	HL 98
						B3	S 365 *

B4	B 365		
B5	VG 365 *		
B6	N 365		
B7	BN 365		
B8	VN 98		
C1	SG 98		
C2	M 124 *		
C3	C n.d.		
C4	AB n.d.		
C8	R 152		

4F054ML04

* The cables involved in the wiring diagram are marked with an asterisk.

Climate control unit/heater with thermostatic control (1998)



4F055MIL01

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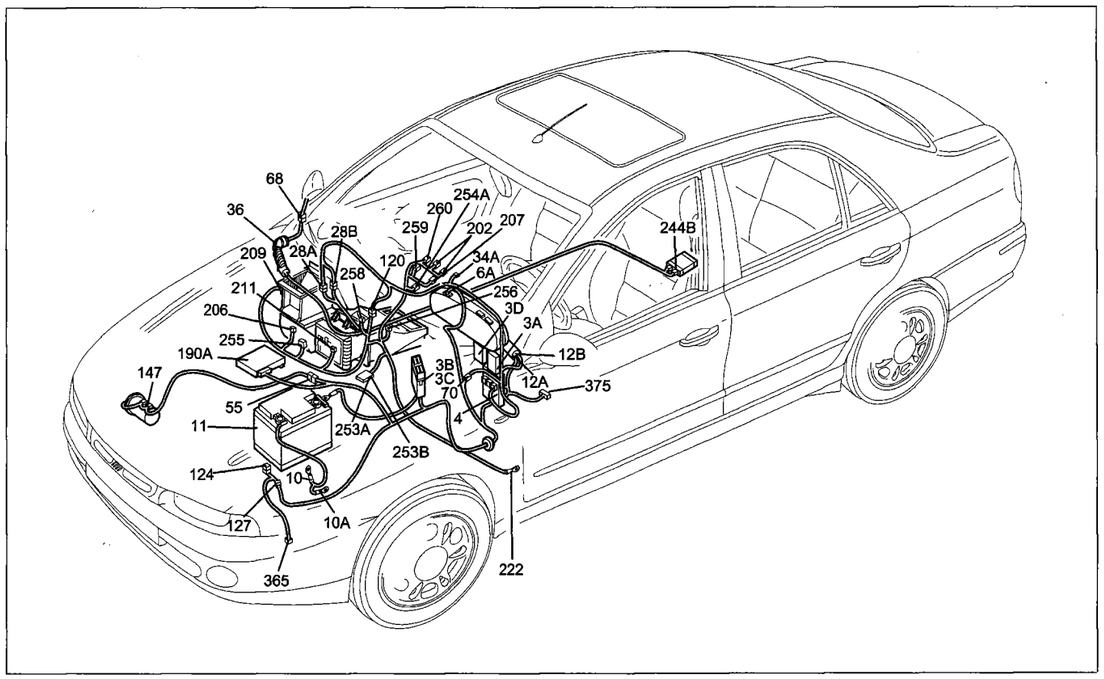


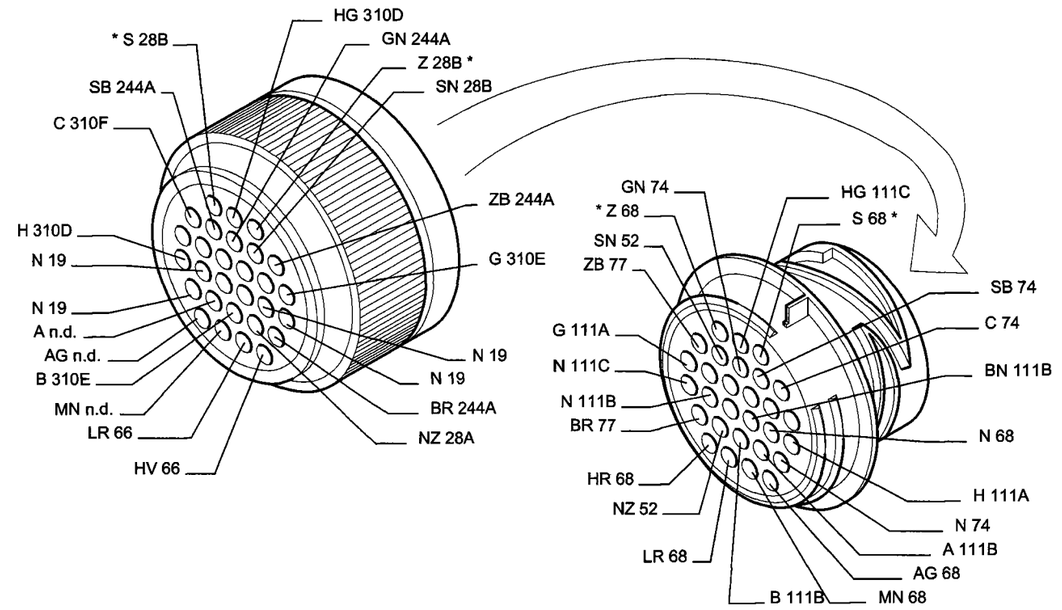
4F056ML01

Climate control unit/heater with thermostatic control (1998)

Component key

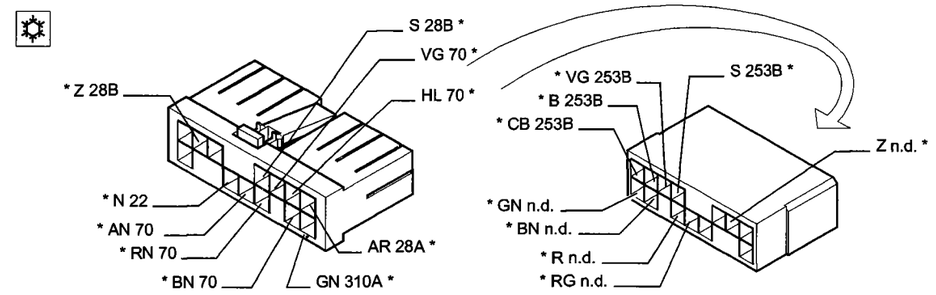
3 Power fusebox
4 Junction unit
6 Instrument panel
10 Engine battery earth
11 Battery
12 Ignition switch
28 Connection between facia/rear cables
34 Switch control unit
36 Connection between dashboard/right front door cables
55 Connection between front/engine cables
68 Right door mirror
70 Connection between dashborad/front cables
120 Connection for air conditioning unit cables
124 Air condiitoning compressor control relay
127 Connection between front left cable/cable on relay holder bracket
147 Air conditioner compressor
190 Injection/ignition electronic control unit (1998)
202 Heater/air conditioner unit control symbol lighting bulbs
206 Climate control system fan
207 Fan speed adjustment selector
209 Air intake flap control actuator
211 Frost sensor
222 Earth for air conditioning system
244 Integrated services control system
253 Air conditioner control unit
254 Climate control system controls with interior temperature sensor
255 Electronic speed variator for climate control fan
256 Air mixing control actuator
258 Treated air temperature sensor
259 Required temperature adjustment solenoid
260 MAX-DEF microswitch
365 4-stage pressure switch
375 Standardized diagnostic socket

36 Connection between dashboard/right front door cables



P4FB62N02

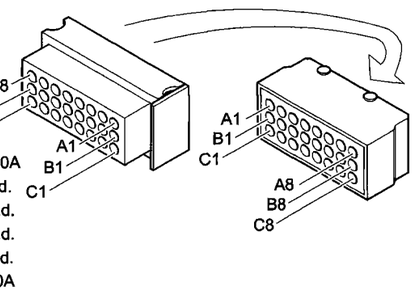
120 Connection for air conditioning unit cables



4F056ML03

127 Connection between front left cable/cable on relay holder bracket

1998



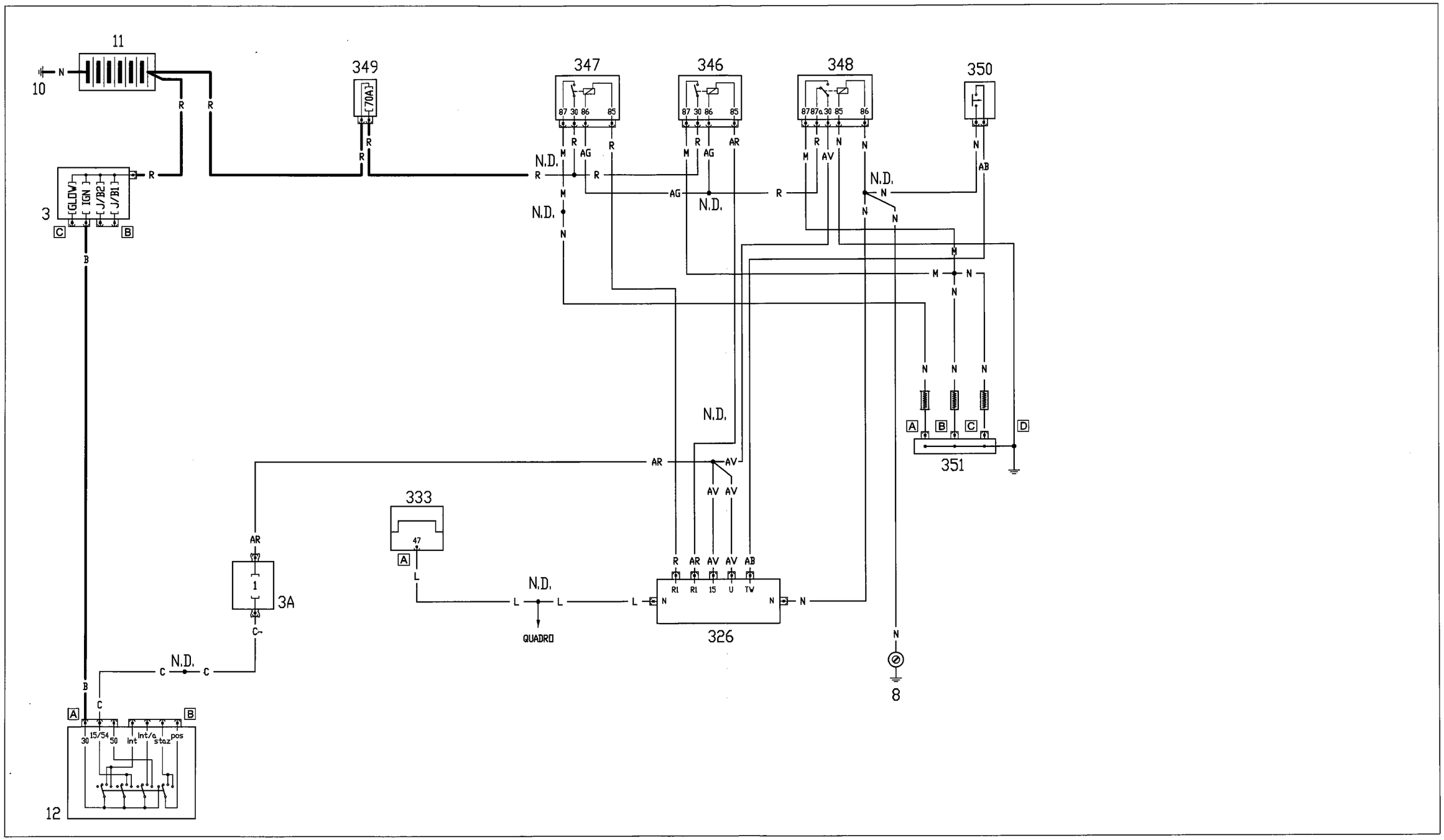
A1	R n.d.	B1	MB 4C	C2	BN190A	A1	R n.d.
A2	RN 13	B2	AN n.d. *	C3	HL n.d.	A2	RN 98
A3	BG 190A	B3	MG 190A *	C4	SG n.d.	A3	BV 151
A4	AB 190A	B4	S 190A *	C5	HR n.d.	A4	AB 123
A5	AG 190A	B5	VN 3A	C6	AR n.d.	A5	AG 122
A6	M 3A *	B6	B 190A	C7	G 190A	A6	M 124 *
A7	MN 55 *	B7	VG 70 *			A7	MN 124 *
A8	C n.d.	B8	R n.d.			A8	C n.d.
						B1	MB 151
						B2	AN 124 *
						B3	MG 124 *

B4	S 365 *		
B5	VN 98		
B6	B 365		
B7	VG 365 *		
B8	R 150		
C2	BN 365		
C3	HL 98		
C4	SG 98		
C5	HR 152A		
C6	AR 152B		
C7	G 150		

4F056ML04

* The cables involved in the wiring diagram are marked with an asterisk.

Additional heater (JTD)



4F057M L01

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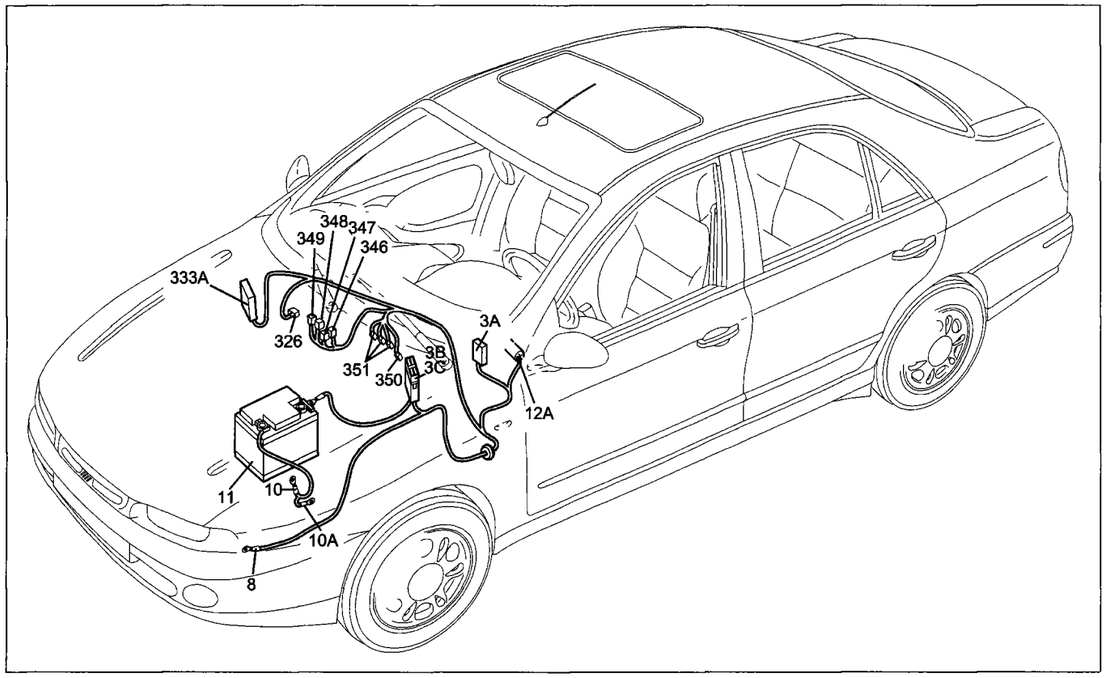


4F058ML01

Additional heater (JTD)

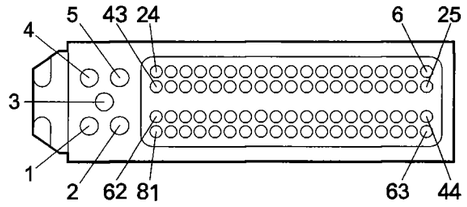
Component key

3 Power fusebox
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
326 Additional heater control unit
333 Injection control unit (JTD)
346 Additional heater relay
347 Additional heater relay
348 Additional heater remote control switch
349 Additional heater protective fuse
350 Additional heater sensor
351 Additional heater spark plug

55 Front/engine lead connection

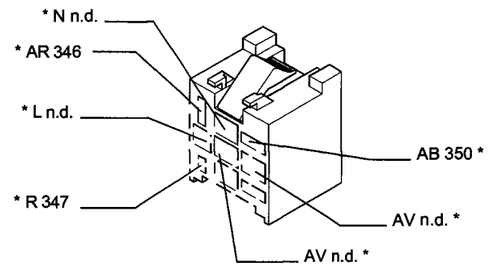
JTD

1	N n.d.	16	BV 55	48	BR 375	76	ZB 291
2	N n.d.	17	CR 377	49	VB 6A	77	GN 291
3	N n.d.	18	MG 127	51	BN 127	78	ZN 291
4	R n.d.	19	AB 127	52	B 127	79	A 291
5	RN n.d.	20	AG 127	58	CB n.d.	80	MB 291
11	GV 131	21	LN 6A	59	LR n.d.	81	AN 291
13	SB 150	22	RV 201B	60	S 127		
14	CL 6A	24	SN 151	61	BL 292		
15	BG 55	47	L n.d. *	62	NZ 201B		



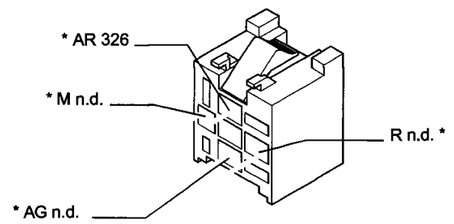
4F058ML02

326 Additional heater control unit



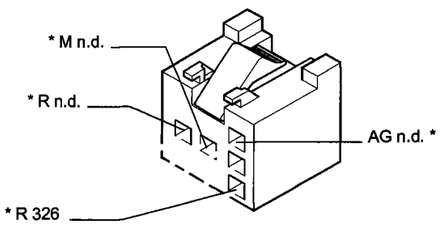
4F058ML03

346 Additional heater relay



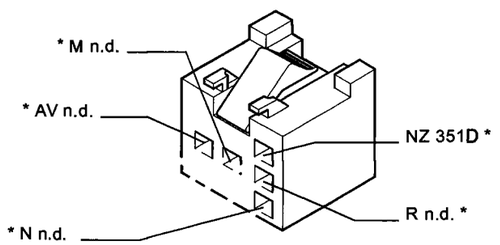
4F058ML04

347 Additional heater relay



4F058ML05

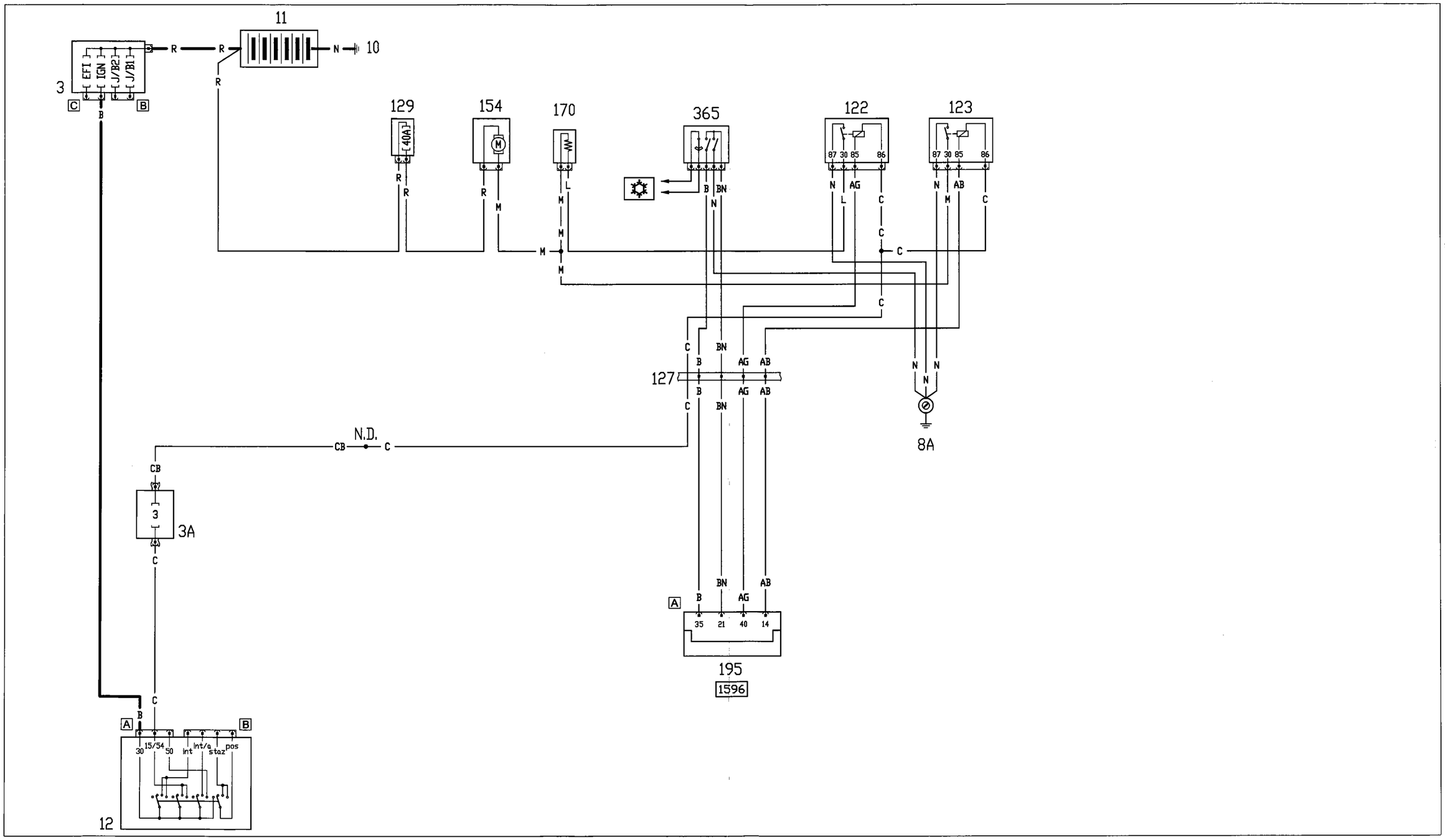
348 Additional heater remote control swictch



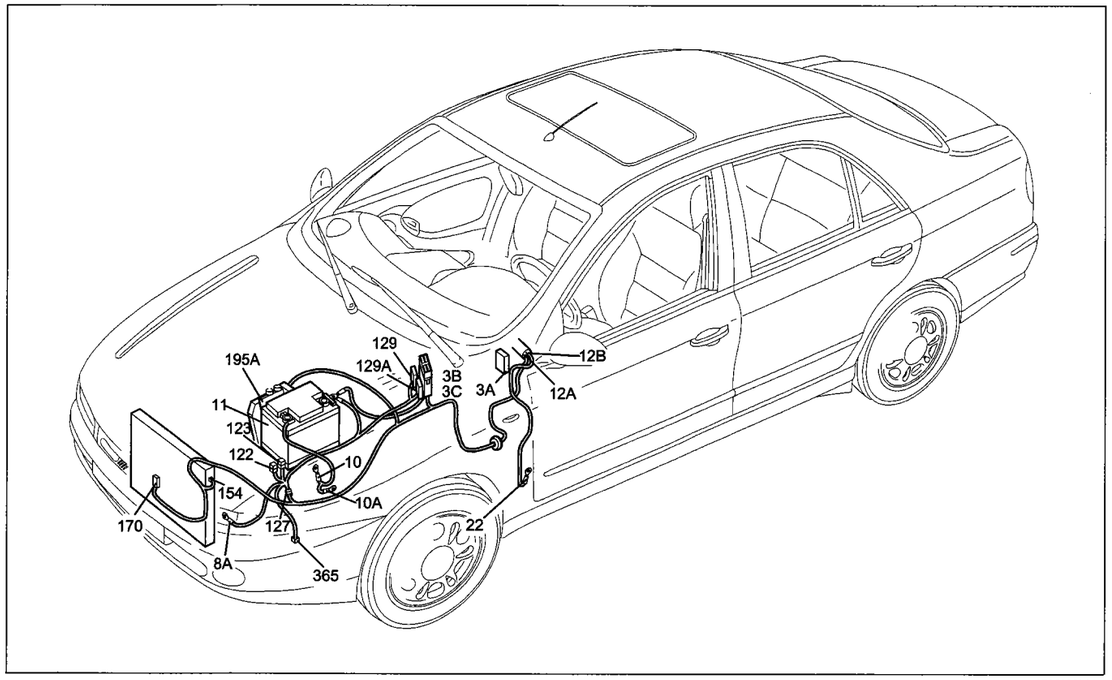
4F058ML06

* The cables involved in the wiring diagram are marked with an asterisk.

Version with climate control
Engine cooling (1596)



4F059ML01



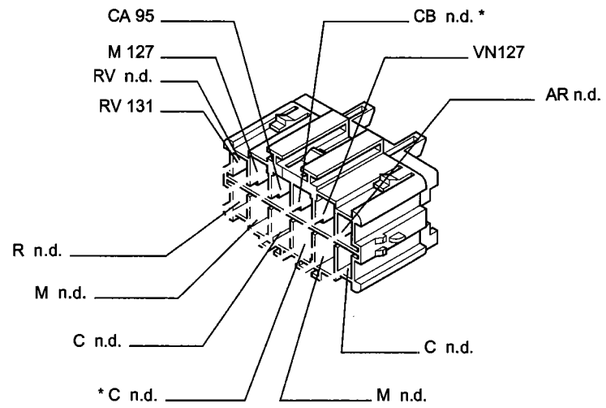
4F060ML01

Version with climate control
Engine cooling (1596)

Component key

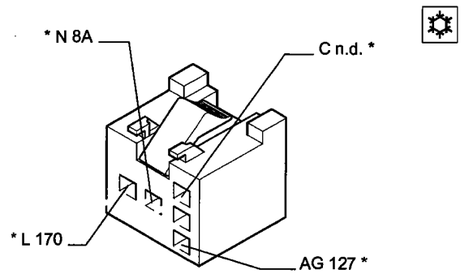
3 Power fusebox
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
122 Engine cooling fan low speed relay feed
123 Engine cooling fan high speed relay feed
127 Connection between left front cable/cable on relay holder bracket
129 Engine cooling fan protection power fuse
154 Engine cooling fan
170 Resistance for engine cooling fan
195 Injection/ignition electronic control unit (1596)
365 4-stage pressure switch

3A Power fusebox



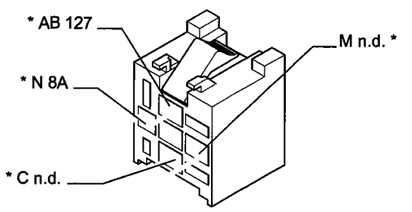
P4F886N02

122 Engine cooling fan low speed relay



4F060ML03

123 Engine cooling fan high speed relay

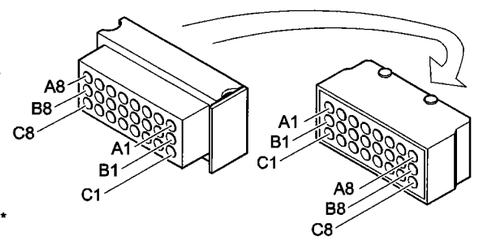


4F060ML04

127 Connection between front left cable/cable on relay holder bracket

1596

A2	RN 13	B2	AN n.d.	A8	RN 98
A4	AB 195A *	B8	MG 195A	A4	AV 123 *
A5	AG 195A *	B4	S 195A	A5	AG 122 *
A6	M 3A	B5	VN 3A	A8	M 124
A7	MN 13	B6	B 195A *	A7	MN 124
A8	C n.d. *	B7	VG 70	A8	C n.d. *
		C2	BN 195A *		
		C3	HL n.d.		
		C4	SG n.d.		

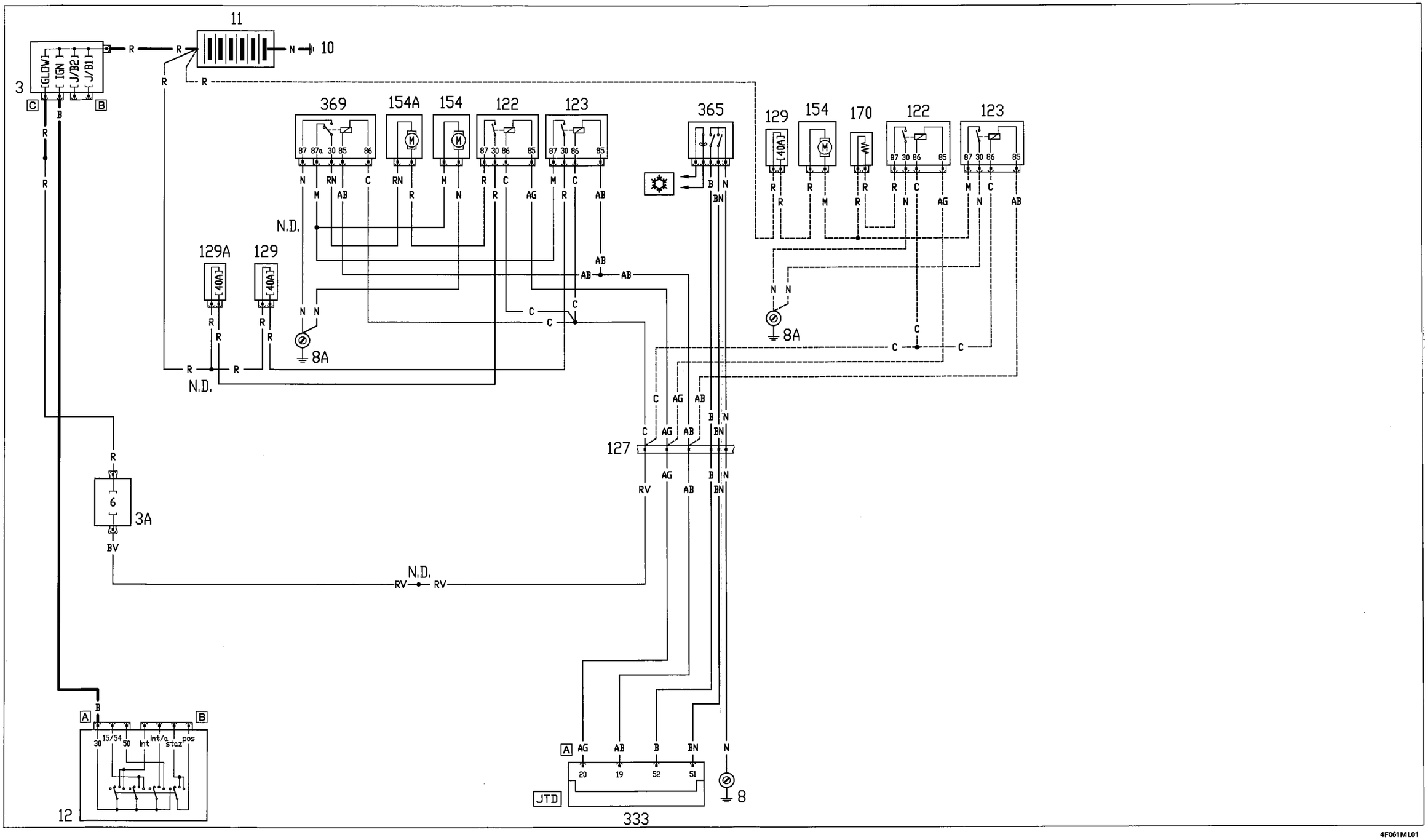


B2	AN 124
B3	MG 124
B4	S 365
B5	VN 98
B6	B 365 *
B7	VG 365
C2	BN 365 *
C3	HL 98
C4	SG 98

4F060ML05

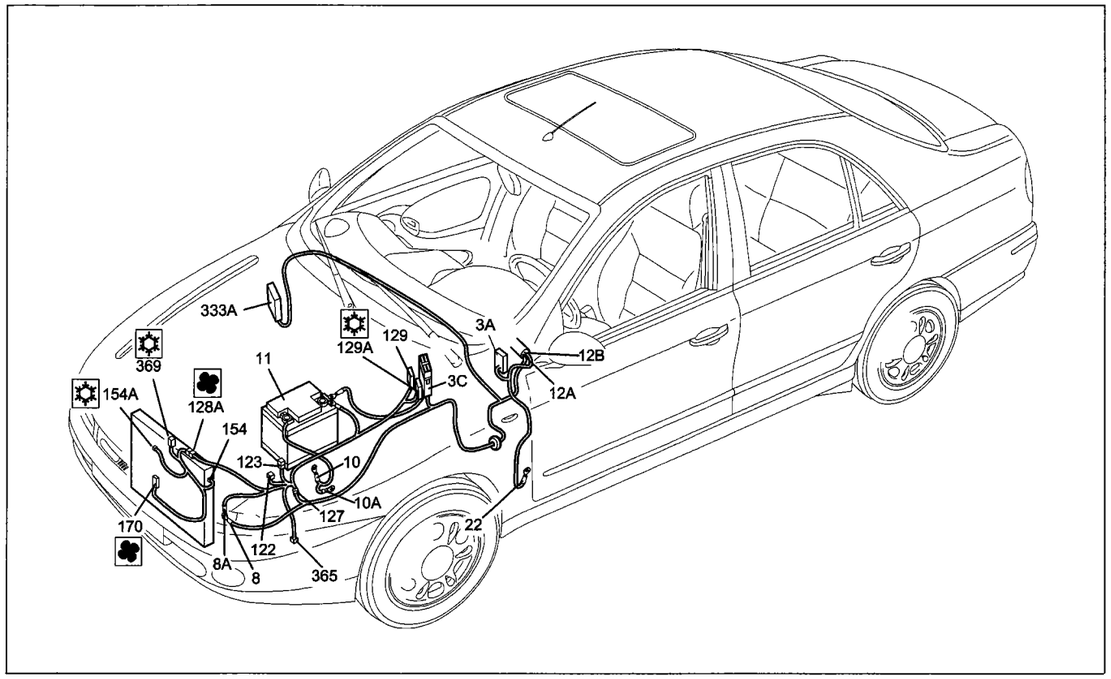
* The cables involved in the wiring diagram are marked with an asterisk.

Engine cooling (1910 JTD)



4F061ML01

--- Version without air conditioning



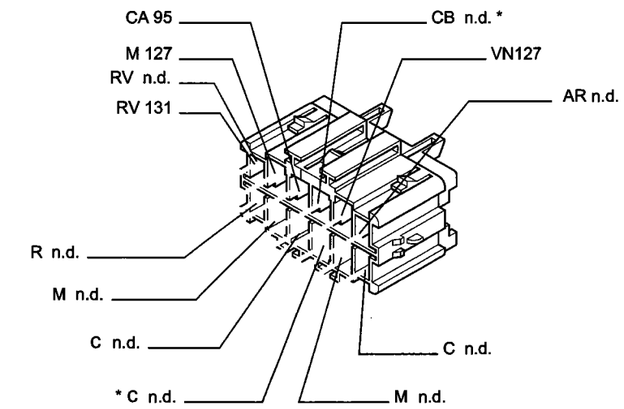
4F062ML01

Engine cooling (1910 JTD)

Component key

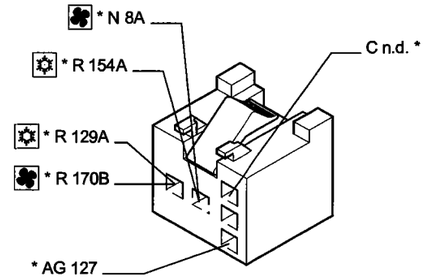
3 Power fusebox
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
22 Left facia earth
122 Engine cooling fan low speed relay feed
123 Engine cooling fan high speed relay feed
127 Connection between front left cable/cable on relay holder bracket
128 Connection between front/radiator cables
129 Engine cooling fan protective power fuse
154 Engine cooling fan
170 Resistance for engine cooling fan
333 Injection control unit (JTD)
365 Pressostato a 4 livelli
369 Engine cooling fan remote control switch

3A Power fusebox



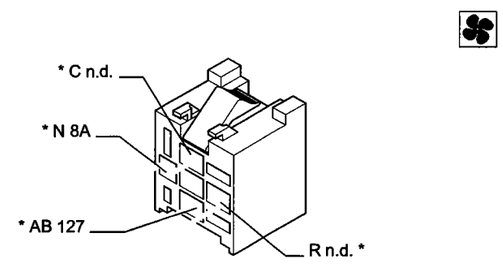
P4F882N02

122 Engine cooling fan low speed relay



4F062ML03

123 Engine cooling fan high speed relay



4F062ML04

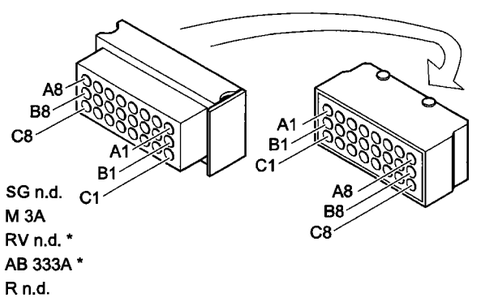
127 Connection between front left cable/cable on relay holder bracket

JTD

A1 BR n.d.
A2 MN 13
A3 AR n.d.
A4 MG 333A
A5 GN 55
A3 AR n.d.
A7 AG 333A *
A3 RG 289

B1 RN 13
B3 HL n.d.
B3 S 333A
B4 B 333A *
B5 VG 70
B6 N 8 *
B7 BN 333A *
BB VN 3A

C1 SG n.d.
C2 M 3A
C3 RV n.d. *
C4 AB 333A *
C8 R n.d.



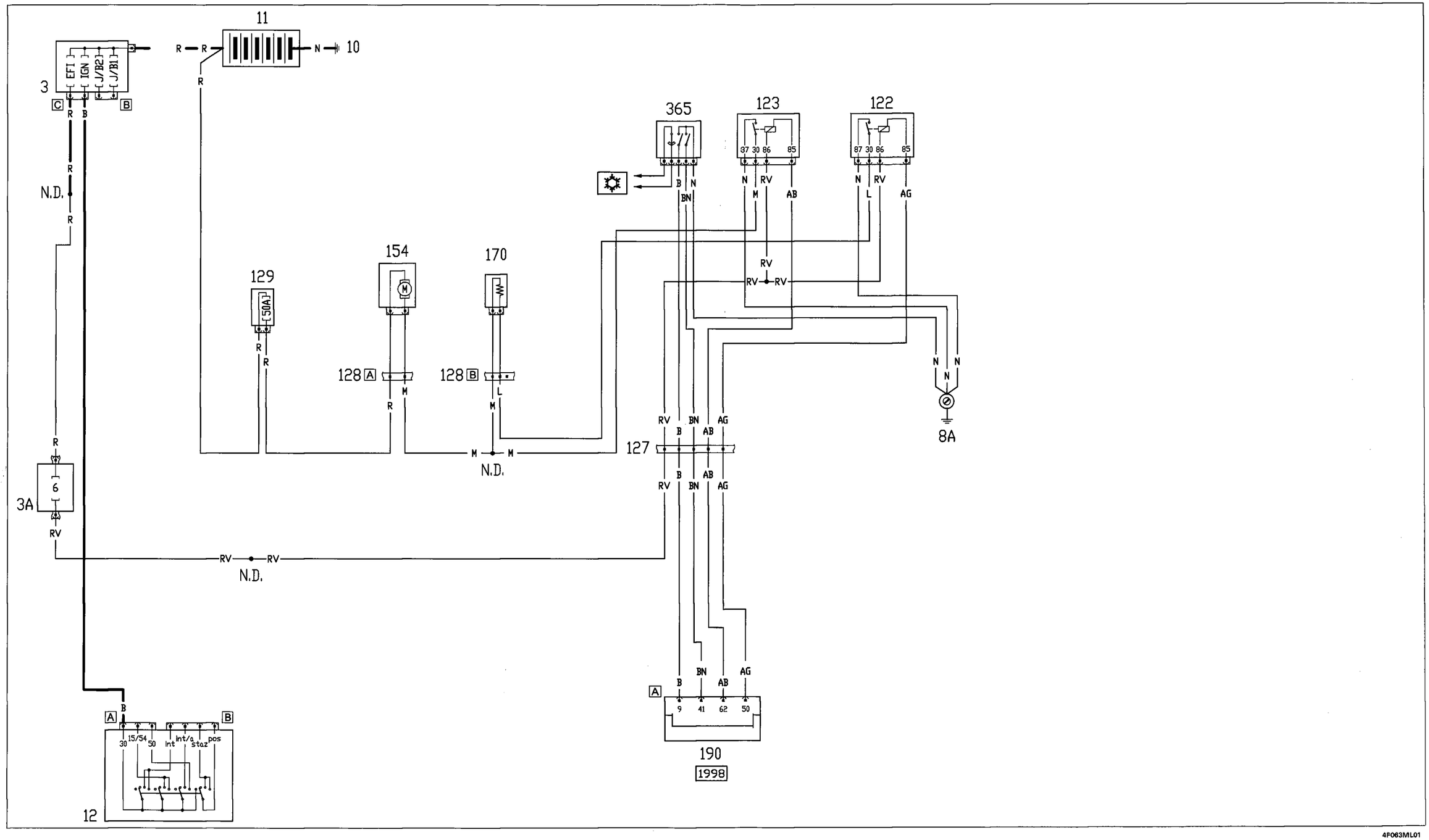
A1 BR 303
A3 MN 124
A3 AR 124
A4 MG 124
A5 GN 304
A3 HN 304
A7 AG 122 *
A3 RG 304
B1 RN 98
B2 HL 98
B3 S 365

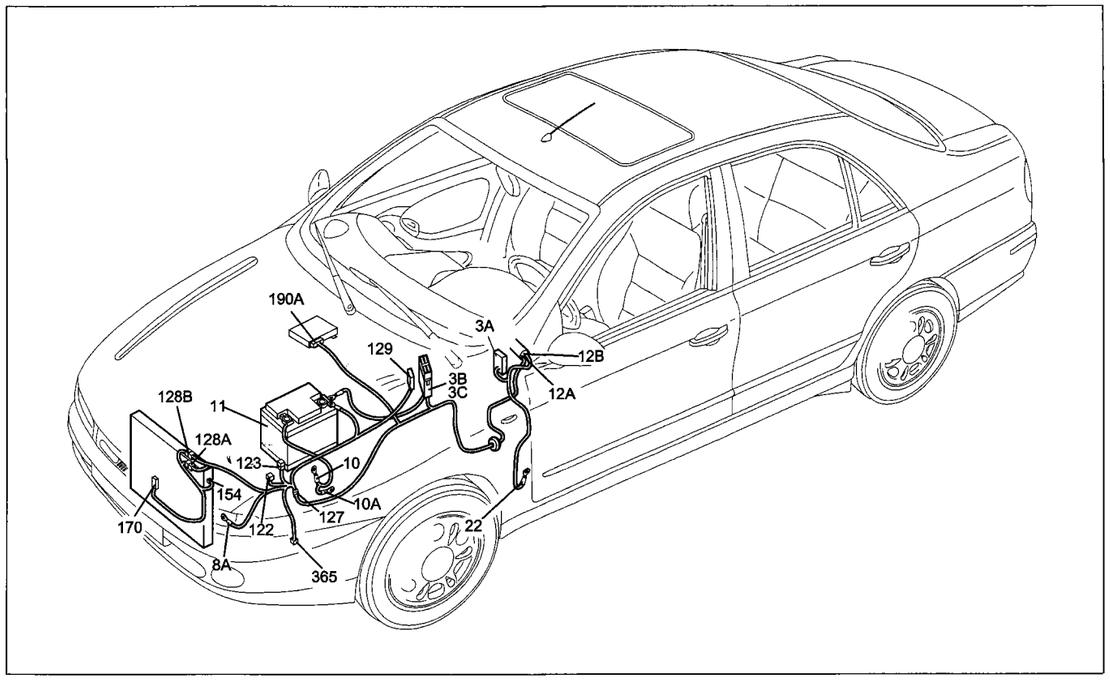
B4 B 365 *
B3 VG 365
B6 N 365 *
B7 BN 365 *
B8 VN 98
C1 SG 98
C2 M 124
C3 C n.d. *
C4 AB n.d. *
C8 R 152

4F062ML05

* The cables involved in the wiring diagram are marked with an asterisk.

Version with climate control
Engine cooling (1998 engine)





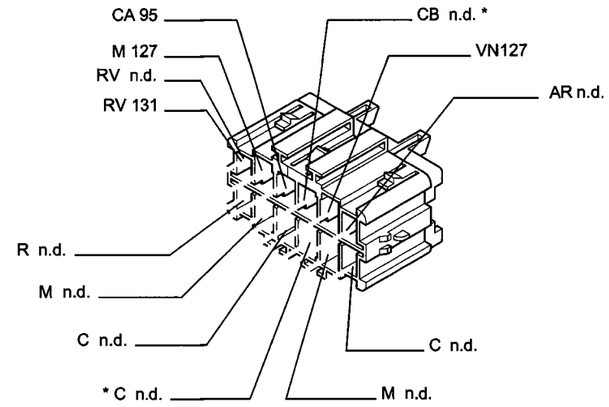
4F064ML01

Version with climate control
Engine cooling (1998 engine)

Component key

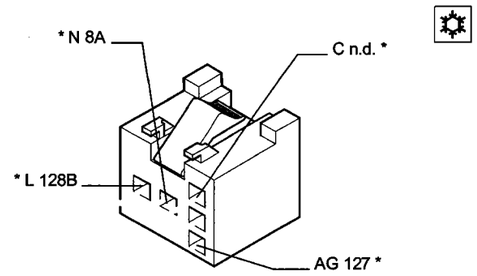
3 Power fusebox
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
22 Left facia earth
122 Engine cooling fan low speed relay feed
123 Engine cooling fan high speed relay feed
127 Connection between front left cable/cable on relay holder bracket
129 Engine cooling fan protection power fuse
154 Engine cooling fan
170 Resistance for engine cooling fan
190 Injection/ignition electronic control unit (1998)
365 4-stage pressure switch

3A Power fusebox



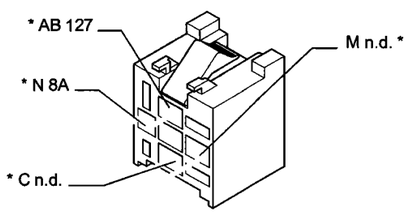
4F878N02

122 Engine cooling fan low speed relay



4F064ML03

123 Engine cooling fan high speed relay

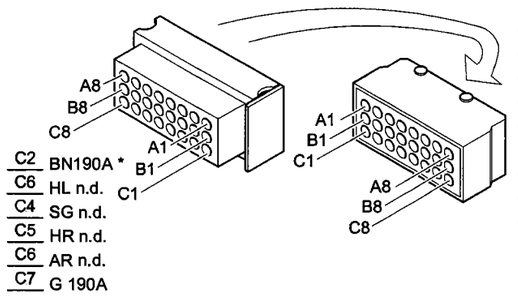


4F064ML04

127 Connection between front left cable/cable on relay holder bracket

1998

A1	R n.d.	B1	MB 4C	C2	BN190A *
A2	RN 13	B2	AN n.d.	C6	HL n.d.
A6	BG 190A	B3	MG 190A	C4	SG n.d.
A4	AB 190A *	B4	S 190A	C5	HR n.d.
A6	AG 190A *	B5	VN 3A	C6	AR n.d.
A6	M 3A	B6	B 190A *	C7	G 190A
A7	MN 55	B7	VG 70		
A6	C n.d. *	B8	R n.d.		

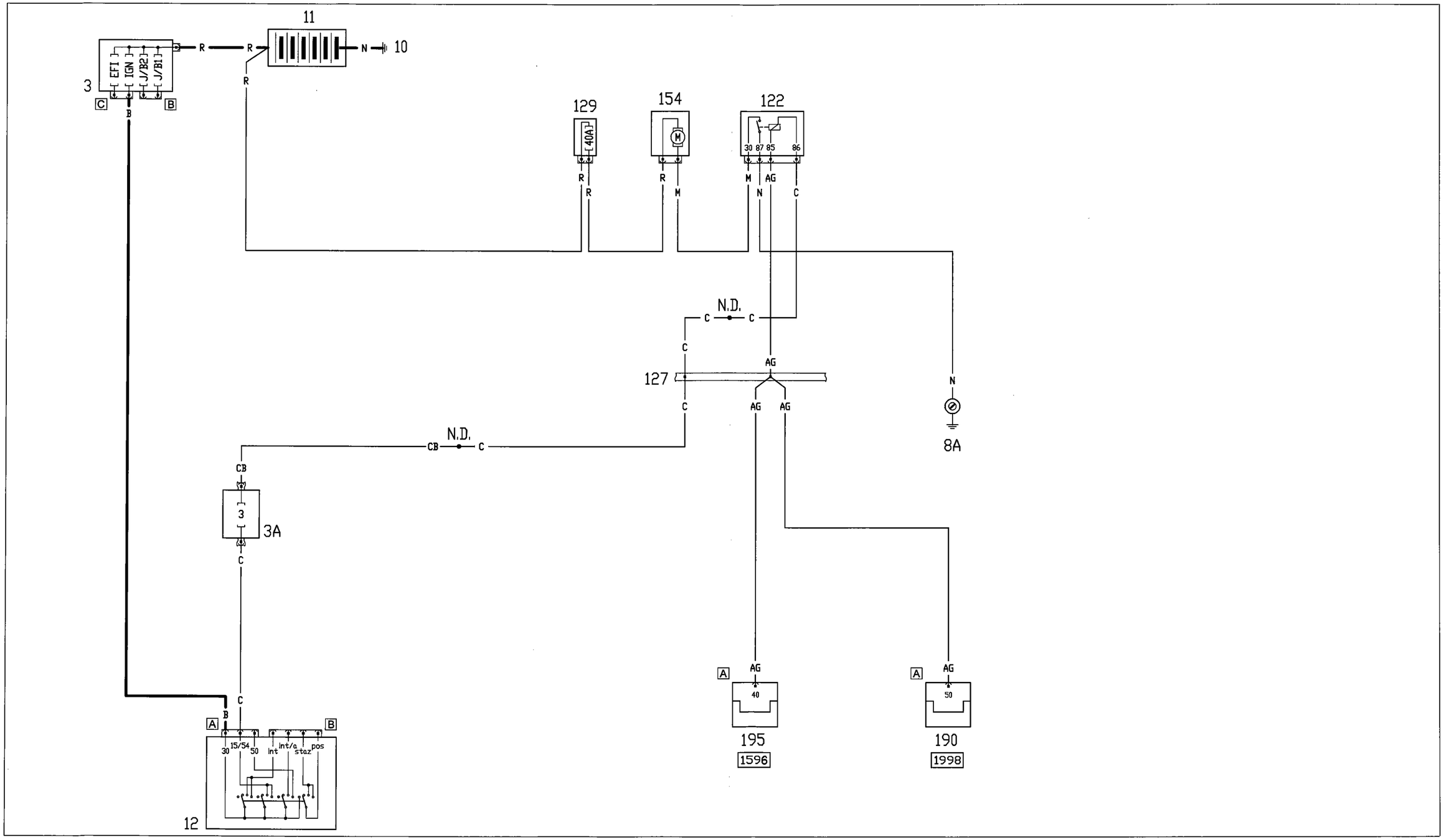


A1	R n.d.	B4	S 365 ✡		
A2	RN 98	B5	VN 98		
A3	BV 151	B6	B 365 * ✡		
A4	AB 123 * ✡	B7	VG 365 ✡		
A5	AG 122 *	B8	R 150		
A6	M 124 ✡	C2	BN 365 *		
A7	MN 124 ✡	C3	HL 98		
A8	C n.d. *	C4	SG 98		
B1	MB 151	C5	HR 152A		
B2	AN 124 ✡	C6	AR 152B		
B3	MG 124 ✡	C7	G 150		

4F064ML05

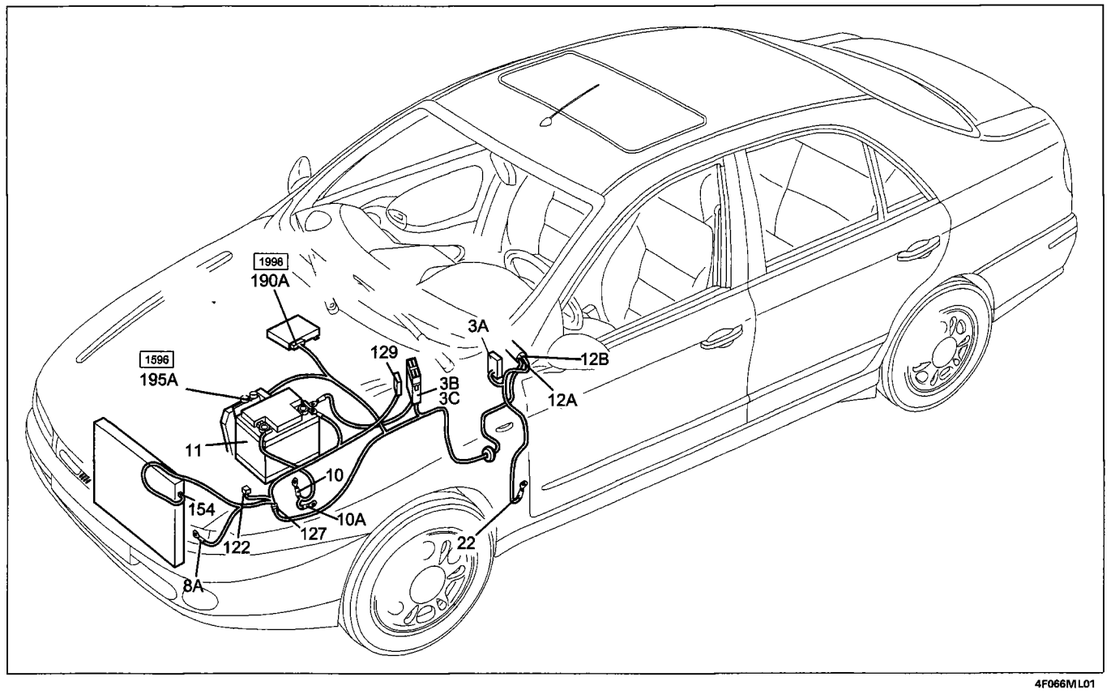
* The cables involved in the wiring diagram are marked with an asterisk.

Version without climate control
Engine cooling (petrol engine)



4F065ML01

55.



4F066ML01

Version without climate control
Engine cooling (petrol engine)

Component key

3 Power fusebox
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
122 Engine cooling fan low speed relay
127 Connection between front left cable/cable on relay holder bracket
129 Engine cooling fan protection power fuse
154 Engine cooling fan
190 Injection/ignition electronic control unit (1998)
195 Ignition/ injection control unit (1596)

127 Connection between front left cable/cable on relay holder bracket

1998

A1	R n.d.	B1	MB 4C	C2	BN190A	A1	R n.d.
A2	RN 13	B2	AN n.d.	C3	HL n.d.	A2	RN 98
A3	BG 190A	B3	MG 190A	C4	SG n.d.	A3	BV 151
A4	AB 190A	B4	S 190A	C5	HR n.d.	A4	AB 123 ✡
A5	AG 190A *	B5	VN 3A	C6	AR n.d.	A5	AG 122 *
A6	M 3A	B6	B 190A	C7	G 190A	A6	M 124 ✡
A7	MN 55	B7	VG 70			A7	MN 124 ✡
A8	C n.d. *	B8	R n.d.			A8	C n.d. *
						B1	MB 151
						B2	AN 124 ✡
						B3	MG 124 ✡

B4	S 365 ✡		
B5	VN 98		
B6	B 365 ✡		
B7	VG 365 ✡		
B8	R 150		
C2	BN 365		
C3	HL 98		
C4	SG 98		
C5	HR 152A		
C6	AR 152B		
C7	G 150		

4F066ML03

127 Connection between front left cable/cable on relay holder bracket

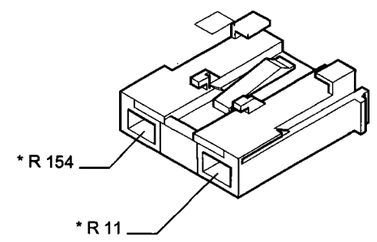
1596

A2	RN 13	B2	AN n.d.	A2	RN 98
A4	AB 195A	B3	MG 195A	A4	AV 123 ✡
A5	AG 195A *	B4	S 195A	A5	AG 122 *
A6	M 3A	B5	VN 3A	A6	M 124 ✡
A7	MN 13	B6	B 195A	A7	MN 124 ✡
A8	C n.d. *	B7	VG 70	A8	C n.d. *
		C2	BN 195A		
		C3	HL n.d.		
		C4	SG n.d.		

B2	AN 124 ✡		
B3	MG 124 ✡		
B4	S 365 ✡		
B5	VN 98		
B6	B 365 ✡		
B7	VG 365 ✡		
C2	BN 365 ✡		
C3	HL 98		
C4	SG 98		

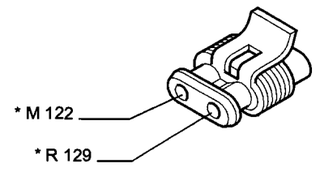
4F066ML04

129 Power fuse protecting engine coling fan ✡



4F066ML05

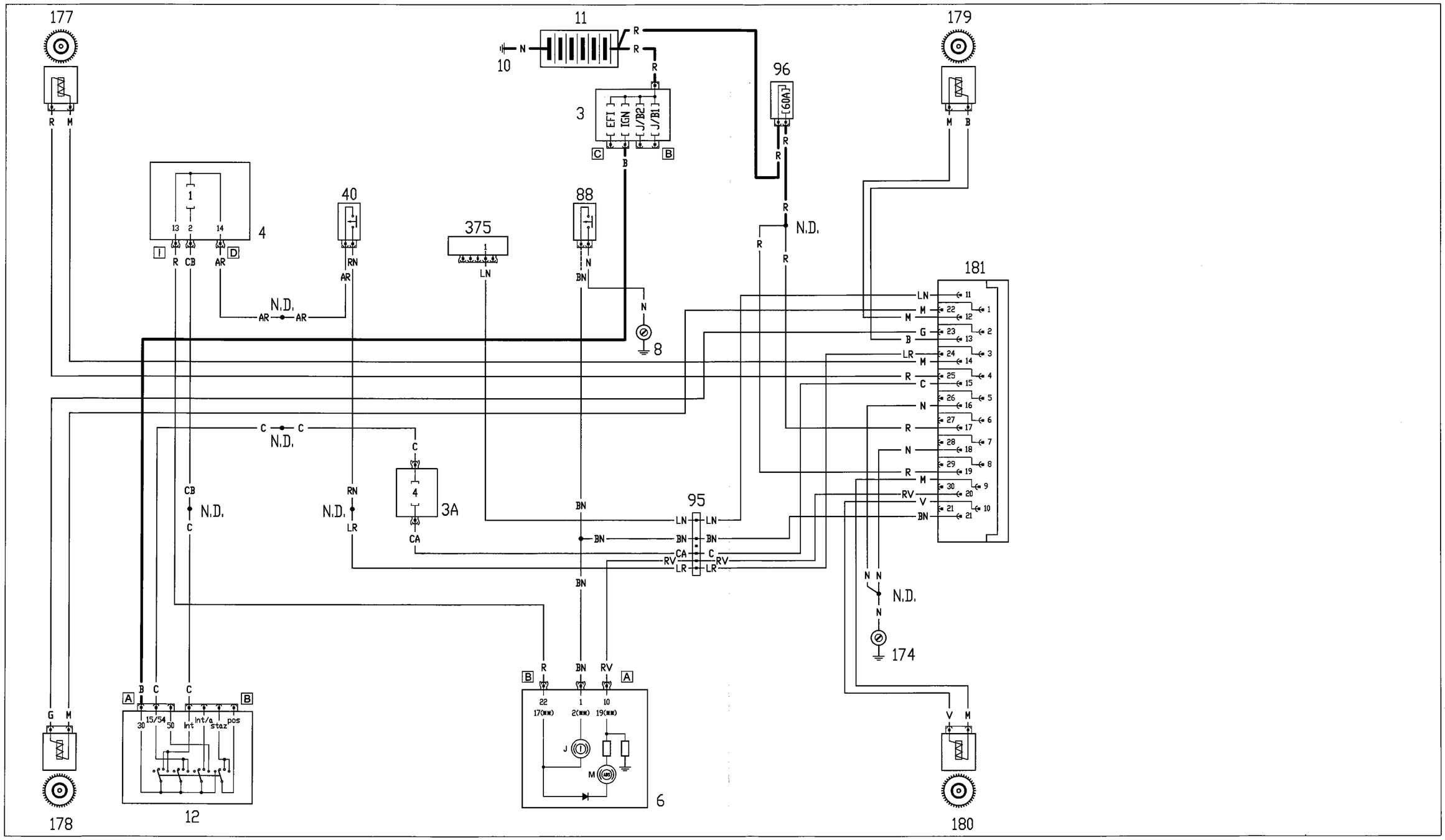
154 Engine cooling fan ✡



4F066ML06

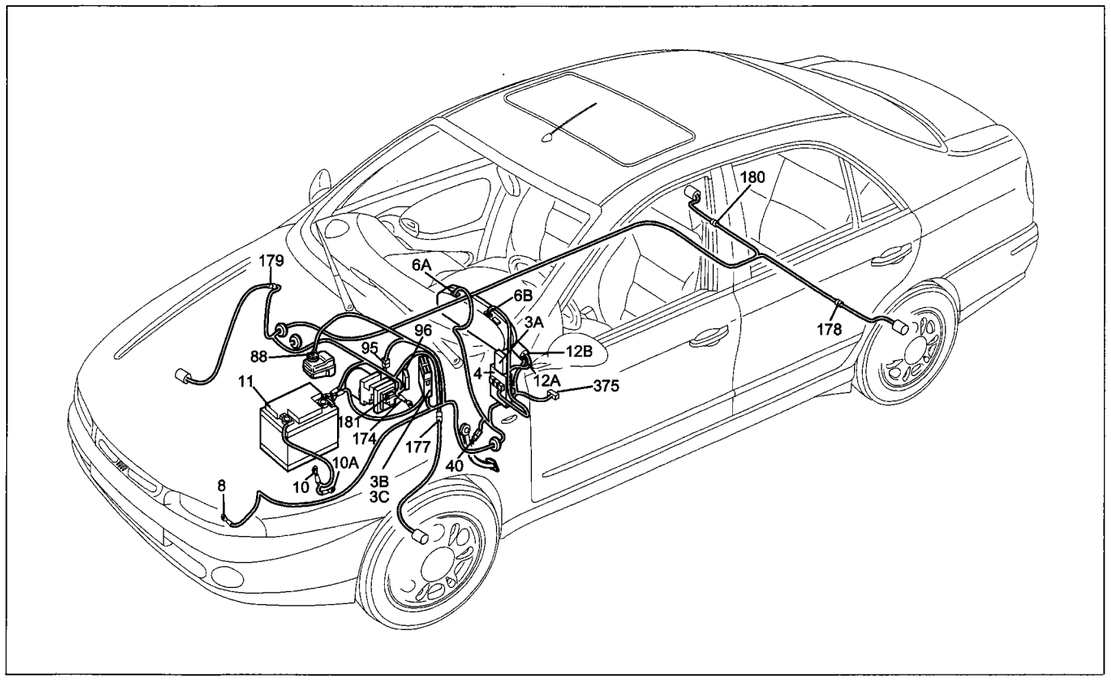
* The cables involved in the wiring diagram are marked with an asterisk.

Anti-locking braking system (ABS) and failure warning light



4F067ML01

** Variants for C.A.



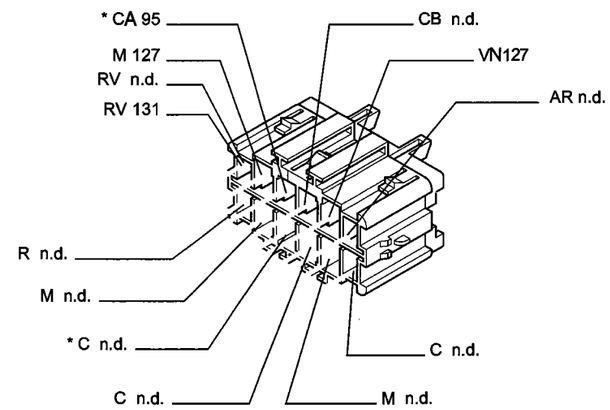
4F068ML01

Anti-locking braking system (ABS) and failure warning light

Component key

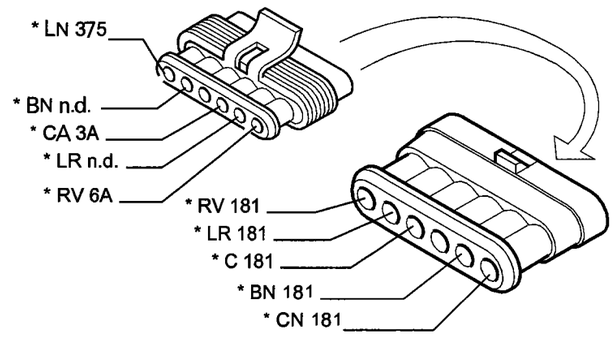
3 Power fusebox
4 Junction unit:
6 Instrument panel
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
40 Brake lights control switch
88 Insufficient brake fluid level sensor
95 Connection between front cables/anti-lock brakes A.B.S.
96 60A fuse protecting anti-lock brakes (A.B.S.)
174 Power earth for A.B.S.
176 Diagnostic socket for A.B.S.
177 Sensor on left front wheel (A.B.S.)
178 Sensor on left rear wheel (A.B.S.)
179 Sensor on right front wheel (A.B.S.)
180 Sensor on right rear wheel (A.B.S.)
181 Electro-hydraulic control unit
375 Standardized diagnostic socket

3A Power fusebox



P4F892N02

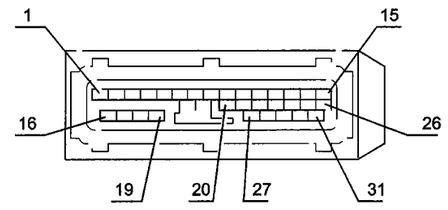
95 Connection between front cables/anti-lock brakes A.B.S. leads



4F068ML03

181 A.B.S. hydraulic control unit

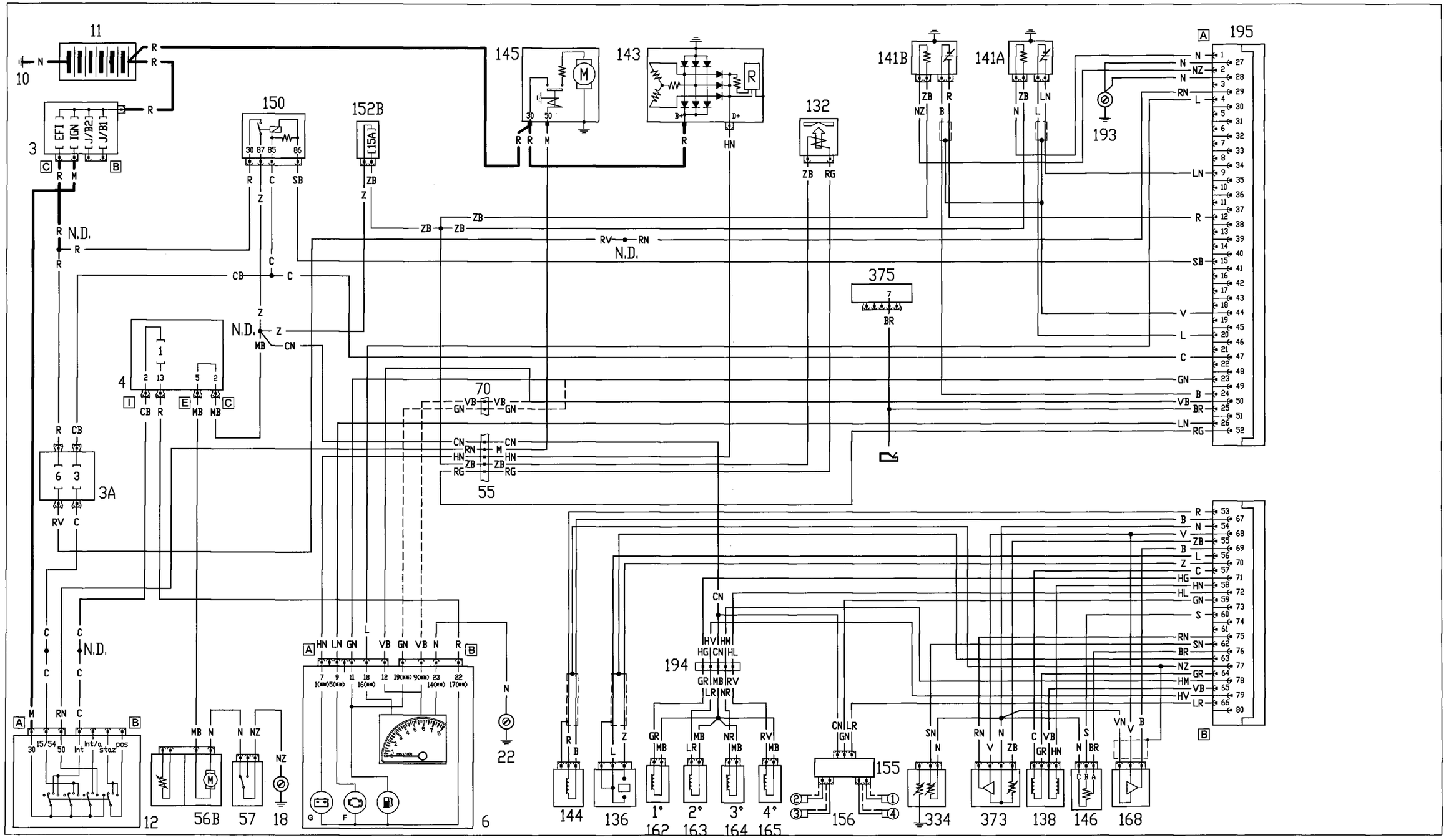
9	M 180 *	18	N n.d. *
10	V 180 *	19	R n.d. *
11	LN 95	20	RV 95 *
12	M 179 *	21	BN 95 *
13	B 179 *	22	M 178 *
14	M 177 *	23	G 178 *
15	C 95 *	24	LR 95 *
16	N n.d. *	25	R 177 *
17	R n.d. *		



4F068ML04

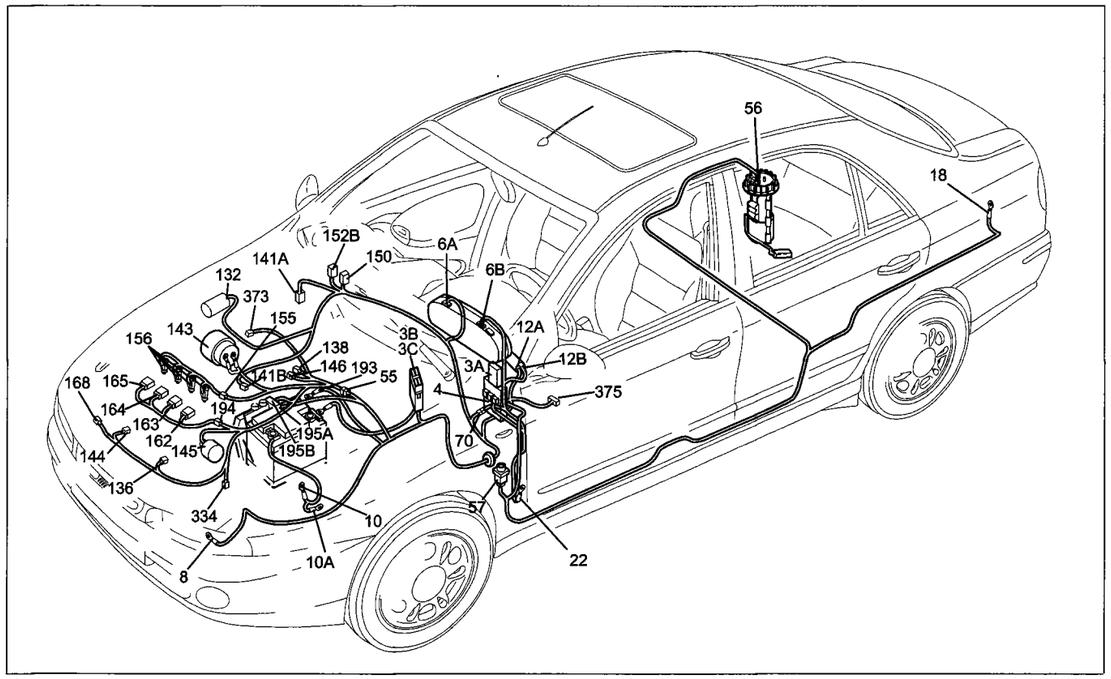
* The cables involved in the wiring diagram are marked with an asterisk.

Starting - Electronic ignition and injection - Recharging and warning light - Insufficient engine oil pressure warning light - Injection system failure warning light - Rev counter (1596)



4F069ML01

** Variants for C.A.



4F070ML01

Starting - Electronic ignition and injection - Recharging and warning light - Insufficient engine oil pressure warning light - Injection system failure warning light - Rev counter (1596)

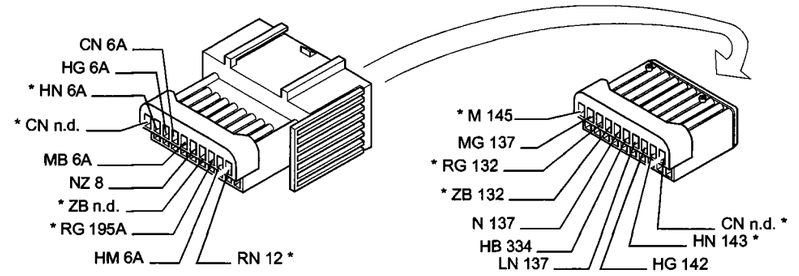
Component key

3 Power fusebox
4 Junction unit:
6 Instrument panel
8 Left front earth
10 Engine battery earth
12 Ignition switch
18 Left rear earth
2 Left facia earth
55 Front/engine lead connection
56 Fuel level gauge control unit
57 Inertia switch
70 Connection between dashborad/front cables
132 Petrol vapour cut out solenoid valve
136 Knock sensor
138 Idle adjustment actuator
141A Heated Lambda sensor (upstream of cat.)
141B Heated Lambda sensor (downstream of cat.)
143 Alternator
144 Rpm and TDC sensor
145 Starter motor
146 Potentiometer on throttle valve
150 Injection system relay feed
152 Fuse protecting injection system
155 Ignition coil unit
156 Spark plugs
162 Injector (1st)
163 Injector (2nd)
164 Injector (3rd)
165 Injector (4th)
168 Timing sensor
193 Earth for electronic injection
194 Injection lead/injector braid connection
195 Ignition/ injection control unit (1596)
334 Dual engine temperature sender unit
373 Air pressure and temperature sensor
375 Standardized diagnostic socket

55.

55 Front/engine lead connection

1596

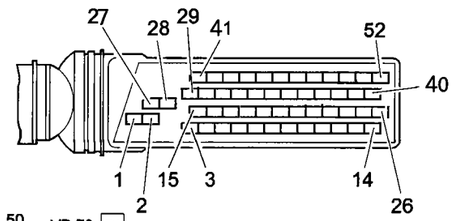


4F070ML02

195A Injection/ignition electronic control unit (1596)

1596

1	N 141A *	20	L 141A *	29	RN n.d. *	50	VB 70 ⊵
2	NZ 141B *	21	BN 127	35	B 127	50	VB 6A *
4	L 6A *	23	GN 6A *	36	LR 252 ⊵	52	RG 55 *
5	V 252 ⊵	23	GN 70 ⊵	40	AG 127		
9	LN 141A *	24	B 141B *	41	MG 127		
12	R 141B *	25	BR n.d. ⊵	44	V n.d. *		
13	GV 131	25	BR 375 *	46	BG 268 ⊵		
14	AB 127	26	LN 6A *	47	C n.d. *		
15	SB 150 *	27	N 193 *	48	S 127		
16	GN 252 ⊵	28	N 193 *	49	NZ 252 ⊵		

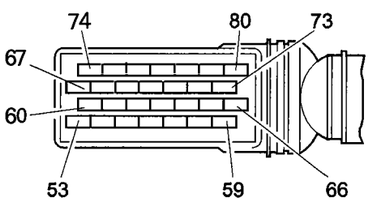


4F070ML03

195B Injection/ignition electronic control unit (1596)

1596

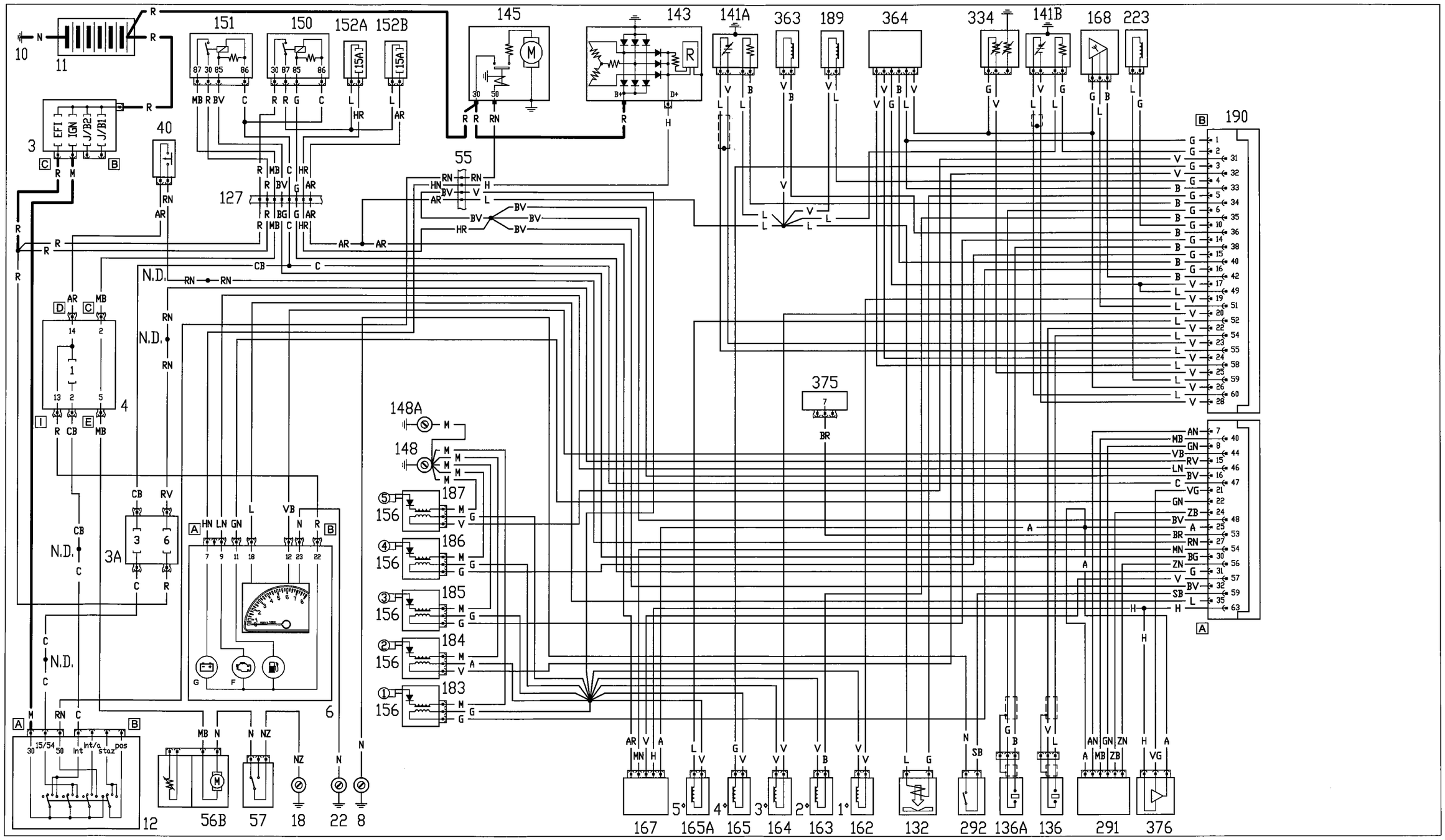
53	R 144 *	65	VB 138 *	77	NZ n.d. *
54	N n.d. *	66	LR 155 *	78	HM 194 *
55	ZB 278 *	67	B 144 *	79	HV 194 *
56	L 136 *	68	V 278 *		
57	C 138 *	69	B 168 *		
58	HN 138 *	70	Z 136 *		
59	GN 155 *	71	HG 194 *		
60	S 146 *	72	HL 194 *		
62	SN 339 *	75	RN 278 *		
64	GR 138 *	76	BR 146 *		



4F070ML04

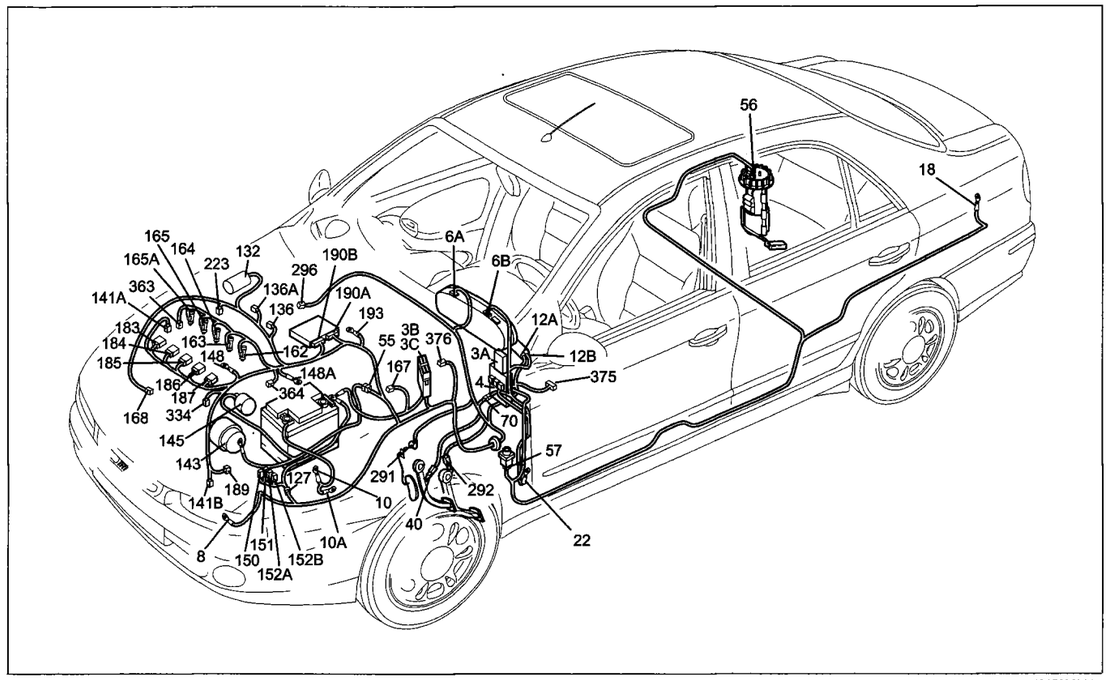
* The cables involved in the wiring diagram are marked with an asterisk.

Starting - Electronic ignition and injection - Recharging and warning light - Insufficient engine oil pressure warning light- Injection system failure warning ilight - Rev counter (1998)



4F071ML01

55.



4F072ML01

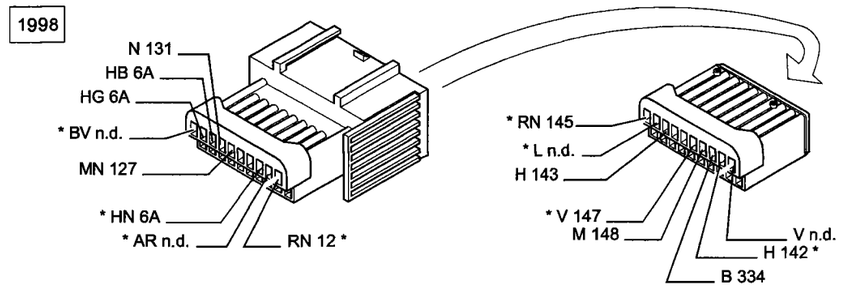
Starting - Electronic ignition and injection - Recharging and warning light - Insufficient engine oil pressure warning light- Injection system failure warning ilight - Rev counter (1998)

Component key

3 Power fusebox
4 Junction unit
6 Instrument panel
8 Left front earth
10 Engine battery earth
12 Ignition switch
18 Left rear earth
22 Left facia earth
40 Brake lights control switch
55 Connection between front/engine cables
57 Inertia switch
70 Connection between dashborad/front cables
68 Right door mirror
70 Connection between dashborad/front cables
127 Connection between front left cable/cable on relay holder bracket
132 Petrol vapour cut out solenoid valve
136 Knock sensor
141A Heated Lambda sensor (upstream of cat.)
141B Heated Lambda sensor (downstream of cat.)
143 Alternator
145 Starter motor
148 Earth for electronic injection
150 Injection system relay feed
151 Relay feed for Lambda sensor, electric fuel pump, injectors
152 Fuse protecting injection system
162 Injector (1st)
163 Injector (2nd)
164 Injector (3rd)
165 Injector (4th)
167 Air flow meter
168 Timing sensor
184 Ignition coils (2nd)
185 Ignition coils (3rd)
186 Ignition coils (4th)
187 Ignition coils (5th) (1998)
189 Variable valve timing
193 I.E. control unit earth
223 Rpm sensors
291 Potentiometer on accelerator pedal
292 Clutch pedal switch
296 Accelerator control lever potentiometer
334 Dual engine temperature sender unit
363 Variable valve timing actuator (998)
364 Motorized throttle body
375 Standardized diagnostic socket
376 Acceleration sensor

55 Front/engine lead connection

1998

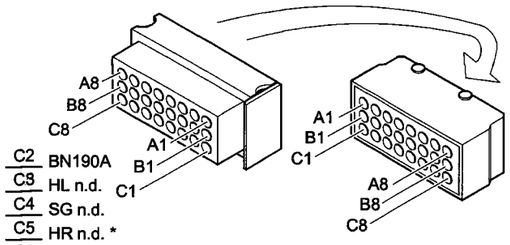


4F072ML02

127 Connection between front left cable/cable on relay holder bracket

1998

A1	R n.d. *	B1	MB 4C *	C2	BN190A	A1	R n.d. *
A2	RN 13	B2	AN n.d.	C3	HL n.d.	A2	RN 98
A3	BG 190A *	B3	MG 190A	C4	SG n.d.	A3	BV 151 *
A4	AB 190A	B4	S 190A	C5	HR n.d. *	A4	AB 123
A5	AG 190A	B5	VN 3A	C6	AR n.d. *	A5	AG 122
A6	M 3A	B6	B 190A	C7	G 190A	A6	M 124
A7	MN 55	B7	VG 70			A7	MN 124
A8	C n.d. *	B8	R n.d.			A8	C n.d. *
						B1	MB 151 *
						B2	AN 124
						B3	MG 124
						B4	S 365
						B5	VN 98
						B6	B 365
						B7	VG 365
						B8	R 150
						C2	BN 365
						C3	HL 98
						C4	SG 98
						C5	HR 152A *
						C6	AR 152B *
						C7	G 150 *

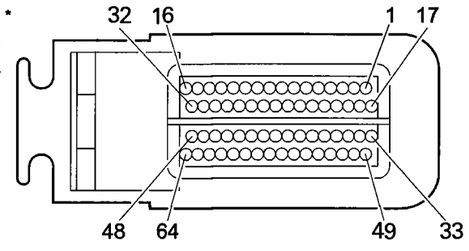


4F072ML03

190A Injection/ignition electronic control unit (1998)

1998

3	GV 131	22	GN 6A	41	BN 127	57	V 167 *
6	S 127	24	ZB 291 *	44	VB 6A *	59	SB 292 *
7	AN 291 *	25	A n.d *	46	LN 6A *	62	AB 127
8	GN 291 *	27	RN n.d. *	47	C n.d *	63	H 167 *
9	B 127	30	BG 127 *	48	BV n.d *		
13	MG 127	31	G 127 *	50	AG 127		
15	RV n.d. *	32	BV n.d *	53	BR 375 *		
16	BV n.d *	35	L 6A *	54	MN 167 *		
21	VG 376	40	HB 291 *	56	ZN 291 *		

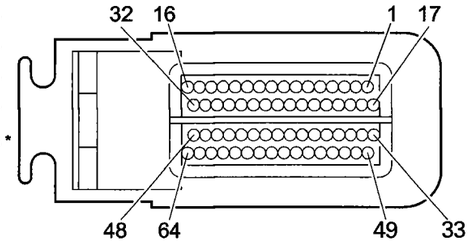


4F072ML04

190B Injection/ignition electronic control unit (1998)

1998

1	G n.d. *	17	V n.d. *	32	V 184 *	52	L 165A *
2	G 141B *	19	V 162 *	33	B n.d. *	54	L 136 *
3	G 165 *	20	V 164 *	34	B 141A *	55	L 141 *
4	G 189 *	22	V 136 *	35	B 163 *	58	L 364 *
5	G 132 *	23	V 141A *	36	B 363 *	59	L 223 *
6	G 136A *	24	V 364 *	38	B 136A *.	60	L 141B *
10	G 223 *	25	V 334 *	40	B 364 *		
14	G 185 *	26	V n.d. *	42	B 168 *		
15	G 186 *	28	V 141B *	49	L n.d. *		
16	G 183 *	31	V 187 *	51	L 168 *		

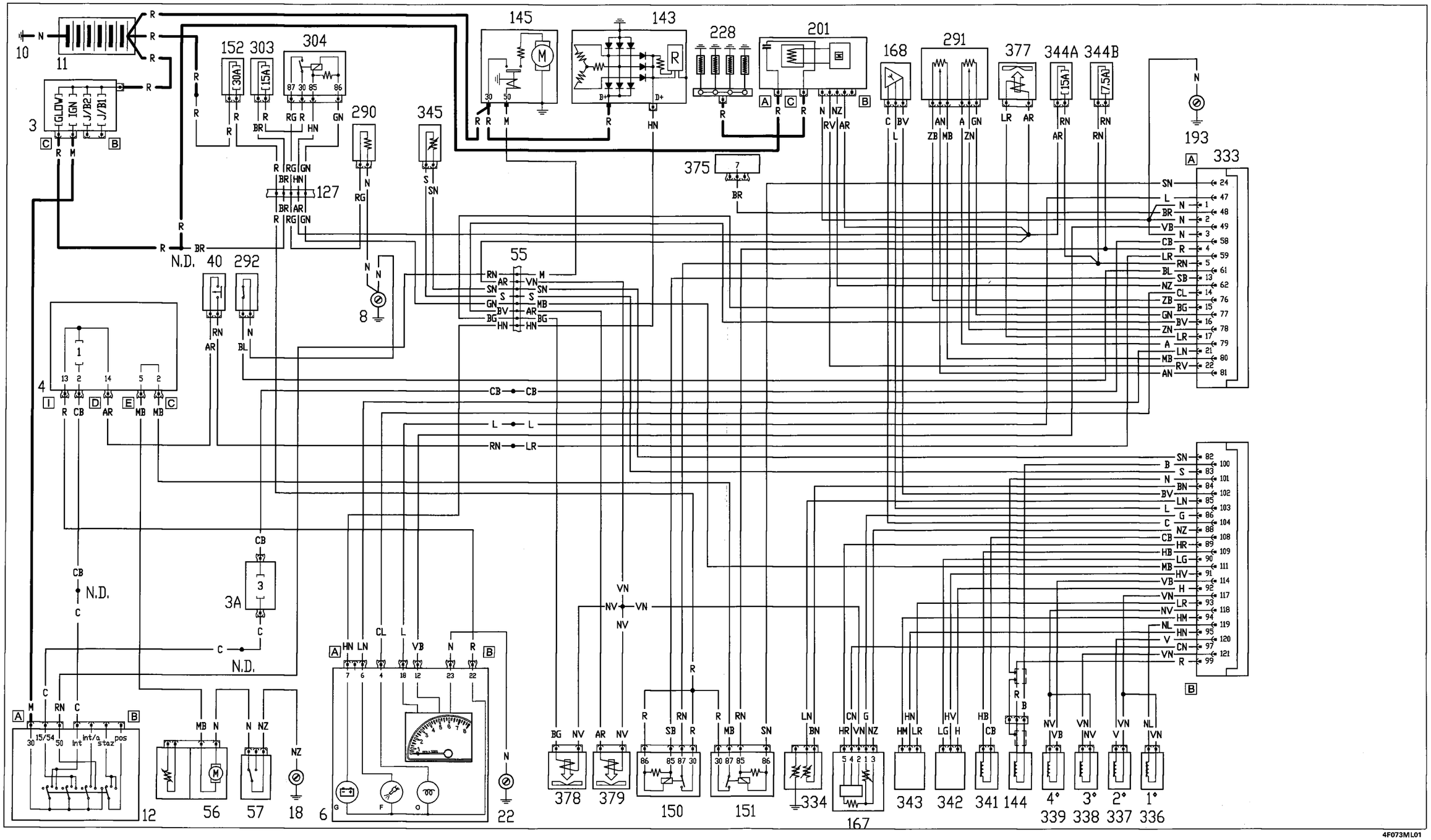


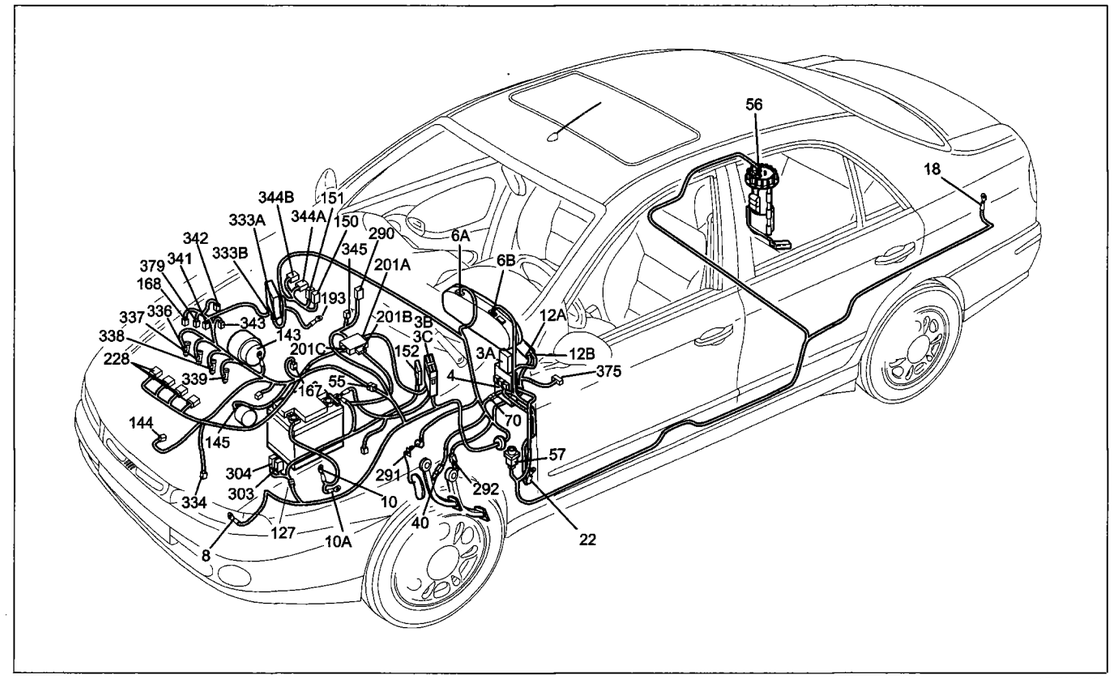
4F072ML05

* The cables involved in the wiring diagram are marked with an asterisk.

55.

Starting - Electronic injection - Recharging and warning light - Low engine oil pressure warning light - Heater plugs warning light - Injection system failure warning light - Fuel preheating (1910 JTD)





4F074ML01

Starting - Electronic injection - Recharging and warning light - Low engine oil pressure warning light - Heater plugs warning light - Injection system failure warning light - Fuel preheating (1910 JTD)

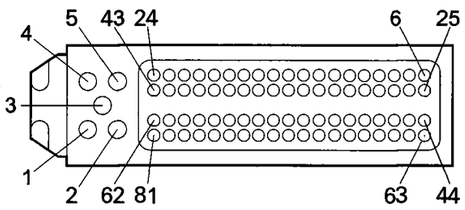
Component key

3 Power fusebox
4 Junction unit
6 Instrument panel
8 Left front earth
10 Engine battery earth
12 Ignition switch
18 Left rear earth
22 Left facia earth
40 Brake lights control switch
55 Front/engine lead connection
56 Fuel level gauge control unit
57 Inertia switch
70 Connection between dashborad/front cables
127 Connection between front left cable/cable on relay holder bracket
143 Alternator
144 Rpm and TDC sensor
145 Starter motor
150 Injection system relay feed
151 Relay feed for Lambda sensor, electric fuel pump, injectors
152 Fuse protecting injection system
167 Air flow meter (debimeter)
168 Timing sensor
193 I.E. control unit earth
201 Heater plugs control unit
228 Heater plugs (TD)
289 Thermal contact (PCT)
290 Heater coil (PCT)
291 Potentiometer on accelerator pedal
292 Clutch pedal switch
303 Diesel preheating protection fuse
304 Diesel preheating protection relay
333 Injection control unit (JTD)
334 Dual engine temperature sender unit
336 Injector 1 cyl (JTD)
337 Injector 2. cyl (JTD)
338 Injector 3. cyl (JTD)
339 Injector 4. cyl (JTD)
341 Fuel pressure regulator (JTD)
342 Fuel pressure sensor (JTD)
343 Turbo pressure sensor (JTD)
344 I.E. protective fuse (JTD)
334B I.E. protective fuse (JTD)
345 Fuel temperature sensor (JTD)
375 Standardized diagnostic socket
377 Variable geometry solenoid valve
378 Throttle adjustment solenoid valve
379 EGR solenoid valve

55.

333A Injection control unit (JTD)

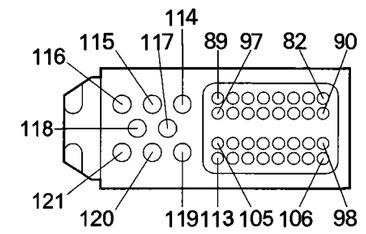
JTD	1	N n.d. *	16	BV 55 *	48	BR 375	76	ZB 291 *
	2	N n.d. *	17	CR 377 *	49	VB 6A *	77	GN 291 *
	3	N n.d. *	18	MG 127	51	BN 127	78	ZN 291 *
	4	R n.d. *	19	AB 127	52	B 127	79	A 291 *
	5	RN n.d. *	20	AG 127	58	CB n.d. *	80	MB 291 *
	11	GV 131	21	LN 6A	59	LR n.d. *	81	AN 291 *
	13	SB 150	22	RV 201B *	60	S 127		
	14	CL 6A	24	SN 151 *	61	BL 292 *		
	15	BG 55 *	47	L n.d. *	62	NZ 201B *		



4F074ML02

333B Injection control unit (JTD)

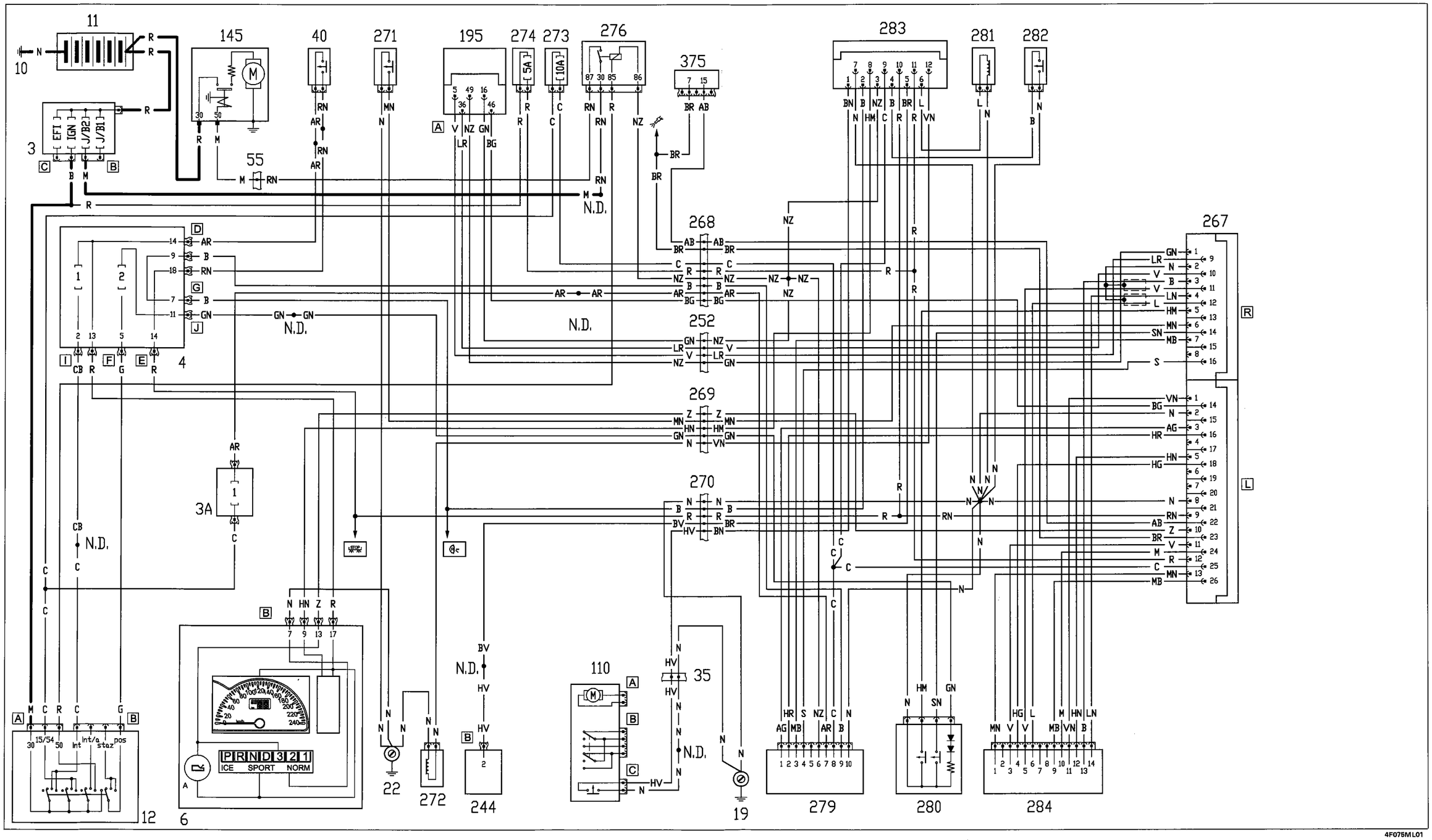
JTD	82	SN 55 *	92	H 342 *	103	L 168 *	120	V 337 *
	83	S 55 *	93	LR 343 *	104	C 168 *	121	MV 338 *
	84	BN 334 *	94	HM 343 *	108	CB 341 *		
	85	LN 334 *	95	HN 343 *	109	HB 341 *		
	86	G 167 *	97	CN 167 *	111	MB 55 *		
	88	NZ 167 *	99	R 144 *	114	VB 339 *		
	89	HR 167 *	100	B 144 *	117	VN n.d. *		
	90	LG 342 *	101	N 144 *	118	NV n.d. *		
	91	HV 342 *	102	BV 168 *	119	NL 336 *		



4F074ML03

* The cables involved in the wiring diagram are marked with an asterisk.

Automatic transmission – System failure warning light (1596 c.a.)



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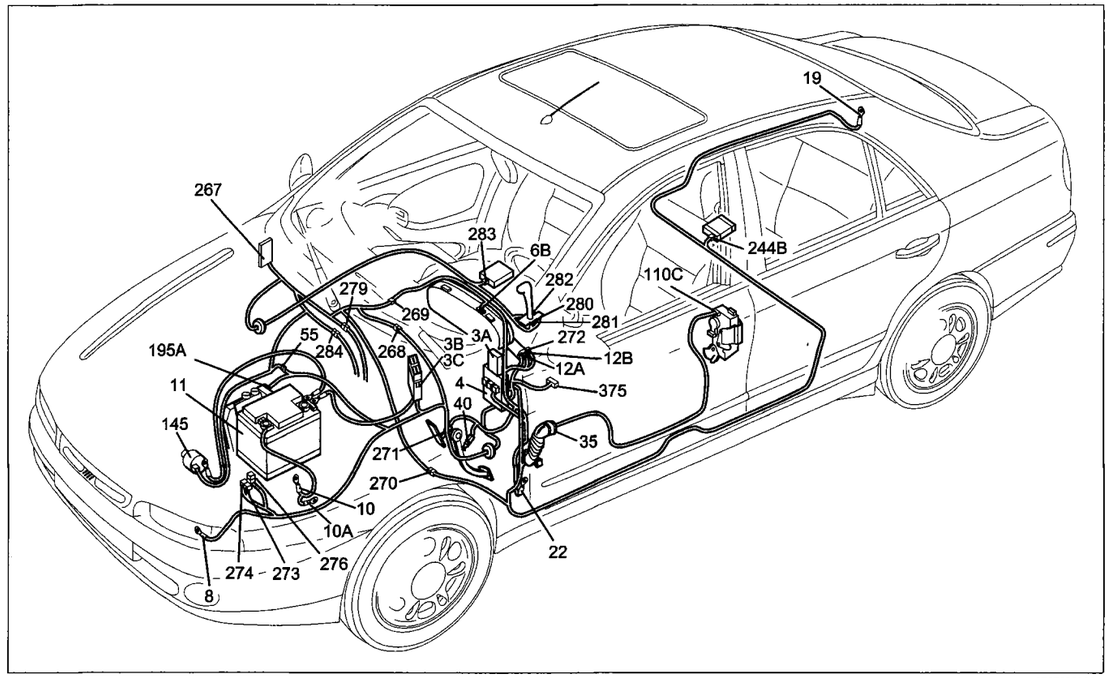


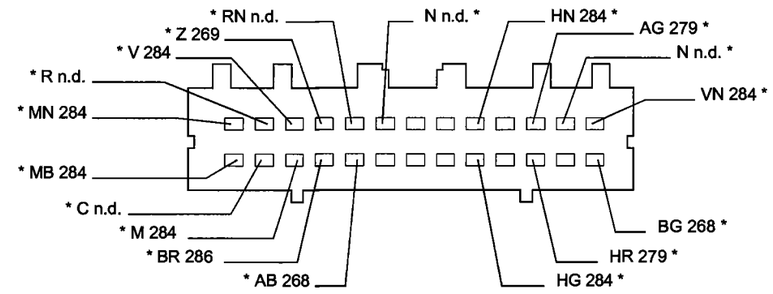
4F076ML01

Automatic transmission – System failure warning light (1596 c.a.)

Component key

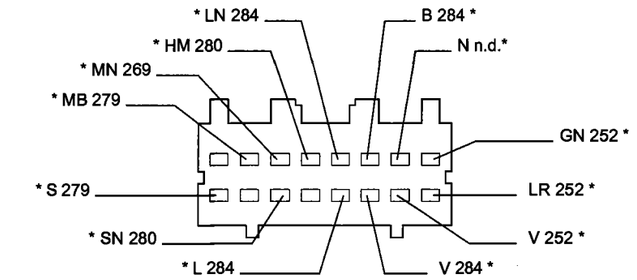
3 Power fusebox
4 Junction unit
6 Instrument panel
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
19 Right rear earth
22 Left facia earth
35 Connection between dashboard/left front door cables
40 Brake lights control switch
55 Connection between front/engine cables
110 Left front door lock
145 Starter motor
195 Ignition/injection control unit (1596)
244 Integrated services control system
267 Automatic transmission control unit
268 Connection between automatic transmission/front cables
269 Connection between automatic transmission/dashboard cables
270 Connection between automatic transmission/rear cables
271 Kick-down switch
272 Ignition switch solenoid
273 Automatic transmission system protective fuse
274 Automatic transmission system protective fuse
276 Starting enablement relay
279 Automatic transmission gear selector
280 ICE/SPORT selector for automatic transmission
281 Shift Lock solenoid
282 Additional PARK cut out for automatic transmission
283 Safety control unit for automatic transmission
284 Automatic transmission connection on gearbox
375 Standardized diagnostic socket

267L Automatic transmission control unit



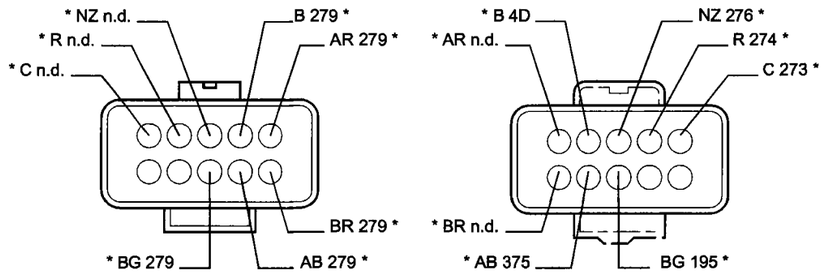
4F076ML02

267R Automatic transmission control unit



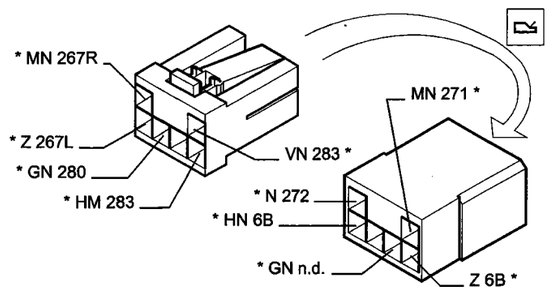
P4F910N03

268 Connection between automatic transmission/front cables



4F076ML04

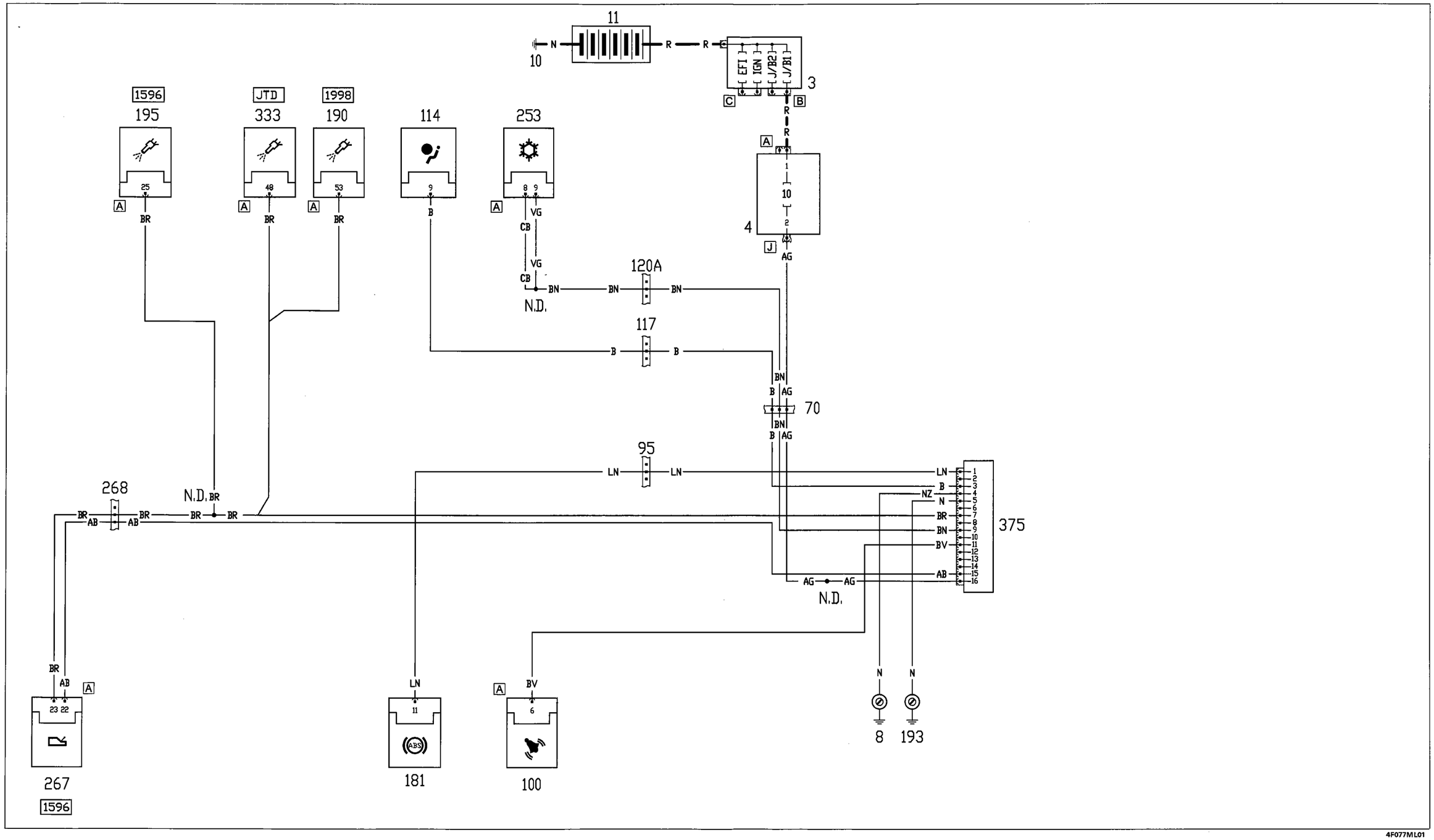
269 Connection between automatic transmission/dashboard cables



4F076ML05

* The cables involved in the wiring diagram are marked with an asterisk.

Standardized diagnostic socket connections



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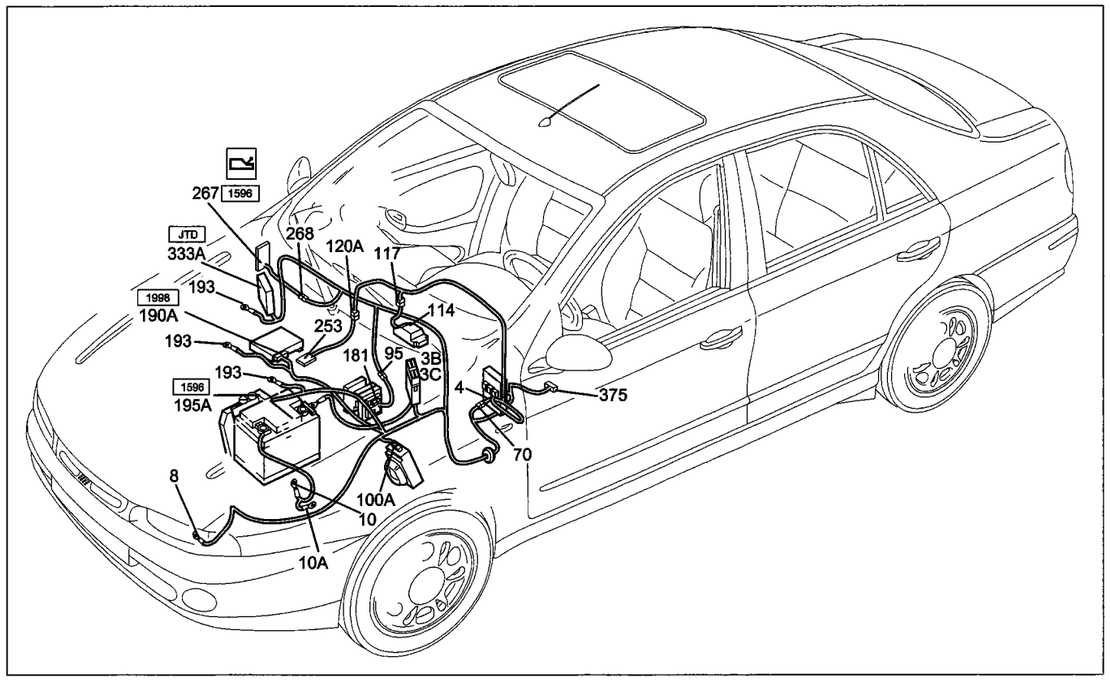


4F078ML01

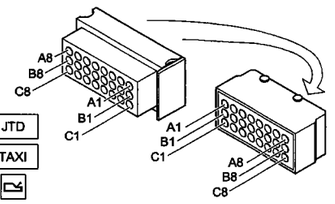
Standardized diagnostic socket connections

Component key

3 Power fusebox
4 Junction unit
8 Left front earth
10 Engine battery earth
11 Battery
70 Connection between dashborad/front cables
lock brakes A.B.S.
100 Alarm electronic control unit
114 Air bag electronic contol unit
117 Airbag/facia lead connections
120A Connection for air conditioning unit cables
181 A.B.S. electro-hydraulic control unit
190 Injection/ignition electronic control unit (1998)
193 I.E. control unti earth
195 Injection/ignition electronic control unit (1596)
253 Climate control system control unit
267 Automatic transmission control unit
268 Connection between automatic transmission/front cables
333 I.E. control unit (JTD)
375 Standardized diagnostic socket

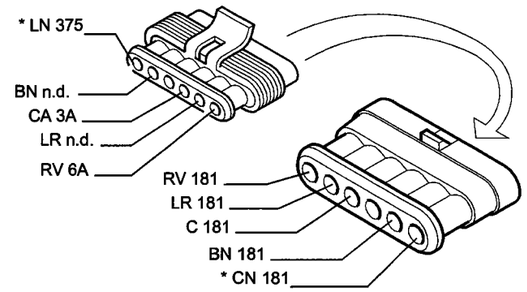
70 Connection between dashborad/front cables

A1	RN 4C	B1	M 29	C1	AN 4C	A1	RN 120	B1	M 310C	C1	AN 120
A2	VG 127	B2	V 328	C2	HR 100B	A2	VG 120	B2	V 28A	C2	HR 28B
A3	H 100B	B3	AG n.d. *	C3	HN 100B	A3	H 6B	B3	AG 4I *	C3	HN 28B
A4	HL 6A	B4	LN 100B	C4	HG 100B	A4	HL120	B4	AB 4I	C4	HG 28B
A5	CB 100A	B5	BN 375 *	C5	HV 100B	A5	CB 28A	B5	BN 120 *	C5	HV 28B
A6	S 100B	B6	B 375 *	C7	GV 335 JTD	A6	R n.d.	B6	B 117 *	C7	GV 6B JTD
A7	V 100A	B8	MN n.d.	C8	RB 307 TAXI	A7	A 34A	B7	AN 120	C8	RB 312 TAXI
A8	N 8			C8	GN 195A	A8	N 312	B8	RN 315	C8	GN 6B



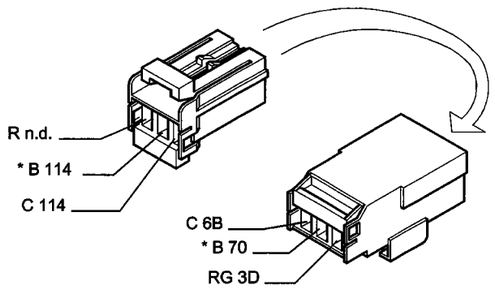
4F078ML02

95 Connection between front cables/anti-lock brakes A.B.S.



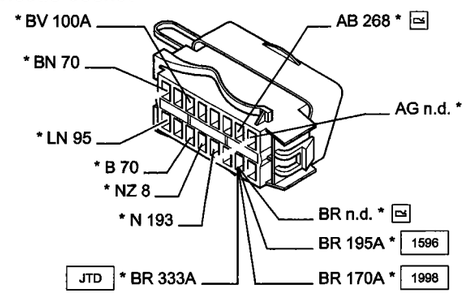
4F078ML03

117 Connection between Air Bag/dashboard cables



4F078ML04

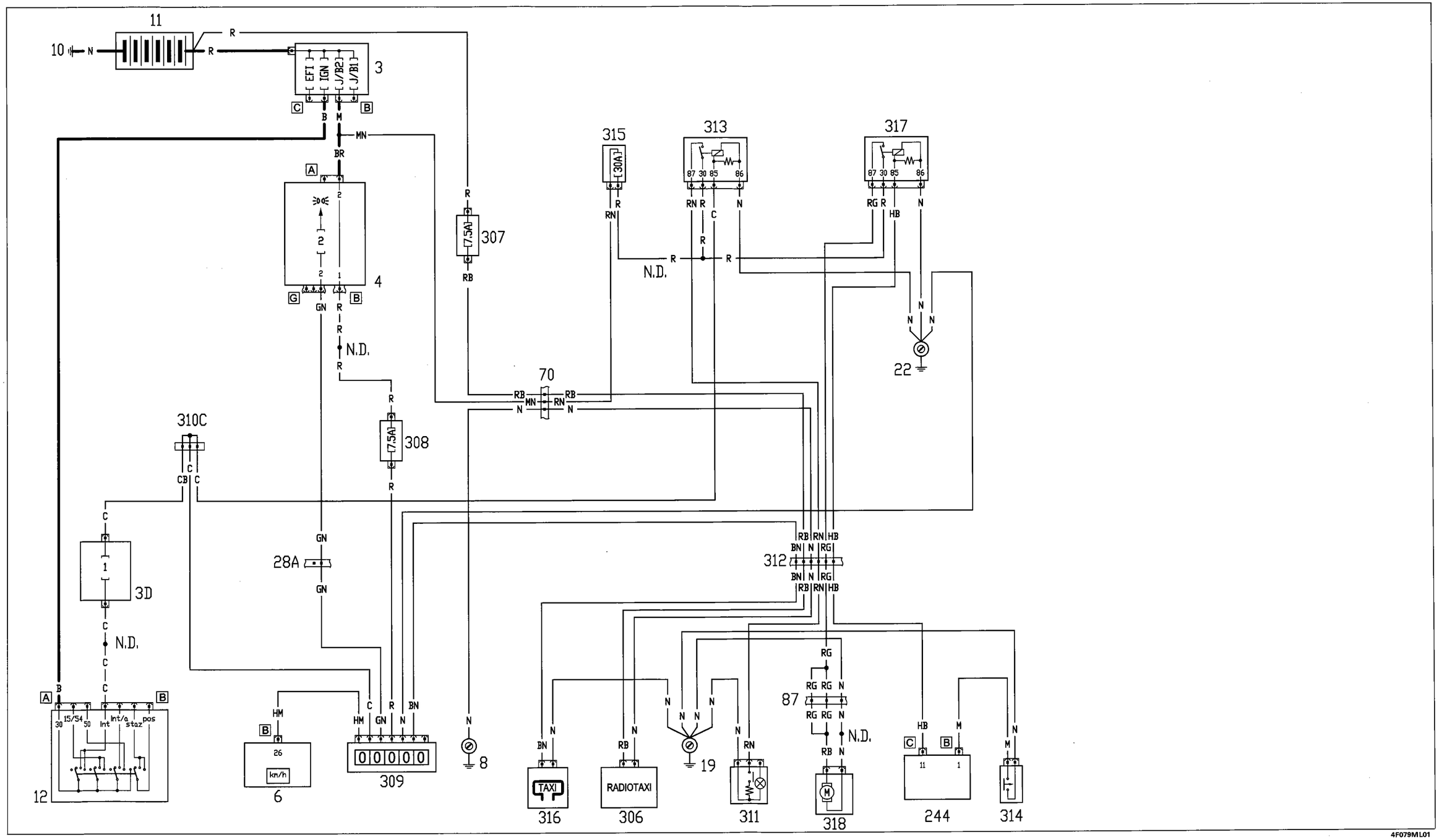
375 Standardized diagnostic socket



4F078ML05

* The cables involved in the wiring diagram are marked with an asterisk.

Preparation for TAXI



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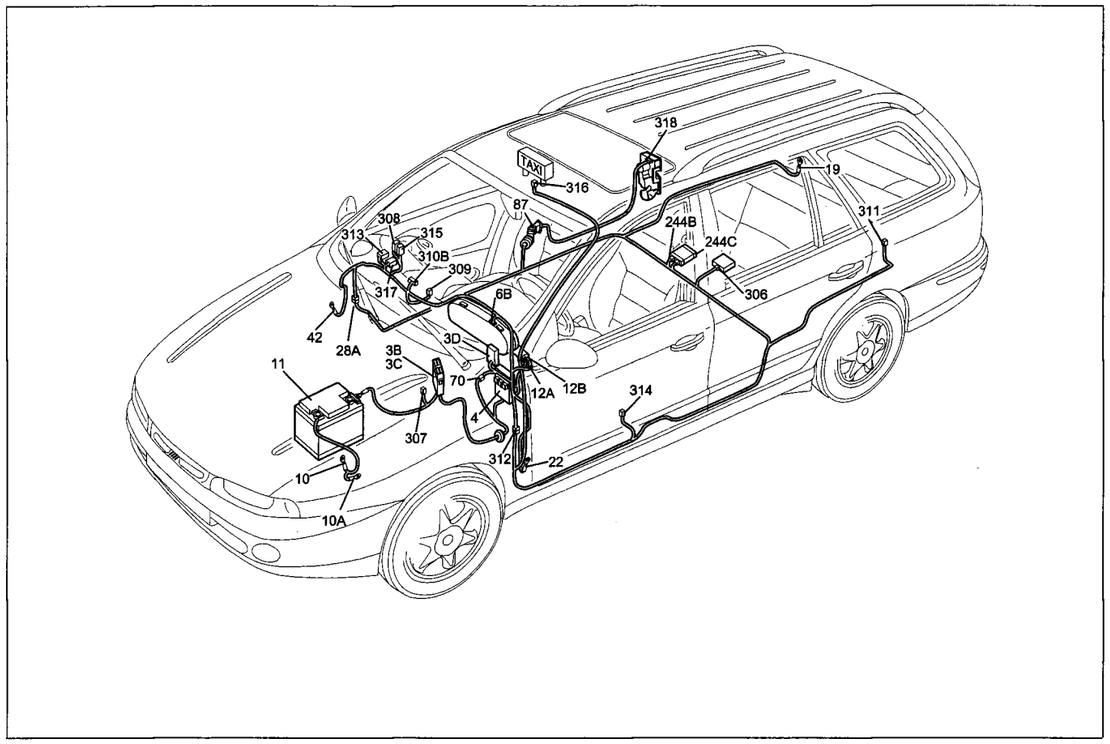
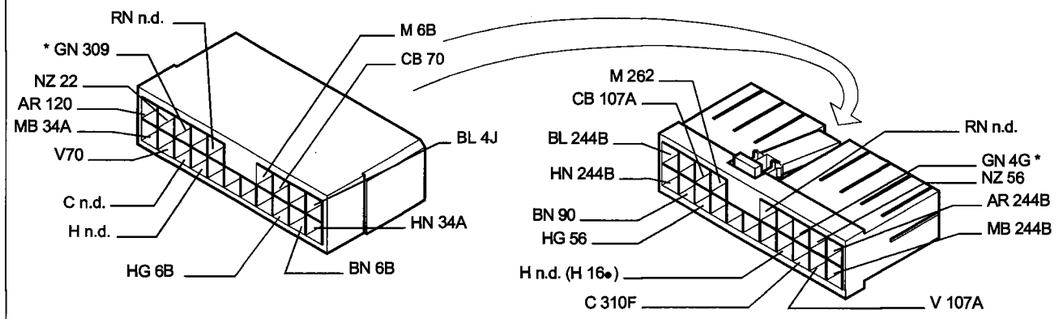


4F080M1L01

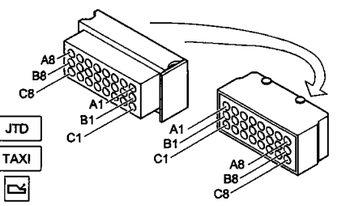
28A Facia/rear lead connection



4F080M1L02

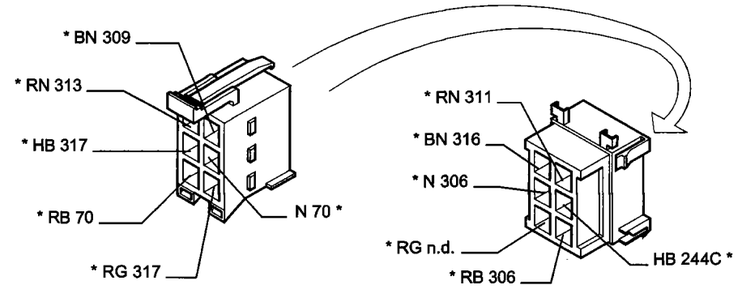
70 Connection between dashborad/front cables

A1	RN 4C	B1	M 29	C1	AN 4C	A1	RN 120	B1	M 310C	C1	AN 120
A2	VG 127	B2	V 328	C2	HR 100B	A2	VG 120	B2	V 28A	C2	HR 28B
A3	H 100B	B3	AG n.d.	C3	HN 100B	A3	H 6B	B3	AG 4I	C3	HN 28B
A4	HL 6A	B4	LN 100B	C4	HG 100B	A4	HL120	B4	AB 4I	C4	HG 28B
A5	CB 100A	B5	BN 375	C5	HV 100B	A5	CB 28A	B5	BN 120	C5	HV 28B
A6	S 100B	B6	B 375	C7	GV 335 JTD	A6	R n.d.	B6	B 117	C7	GV 6B JTD
A7	V 100A	B8	MN n.d. *	C8	RB 307 * TAXI	A7	A 34A	B7	AN 120	C8	RB 312 * TAXI
A8	N 8 *			C8	GN 195A	A8	N 312 *	B8	RN 315 *	C8	GN 6B



4F080M1L03

312 Connection between dashboard/rear cables for TAXI



4F080M1L04

* The cables involved in the wiring diagram are marked with an asterisk.

Preparation for TAXI

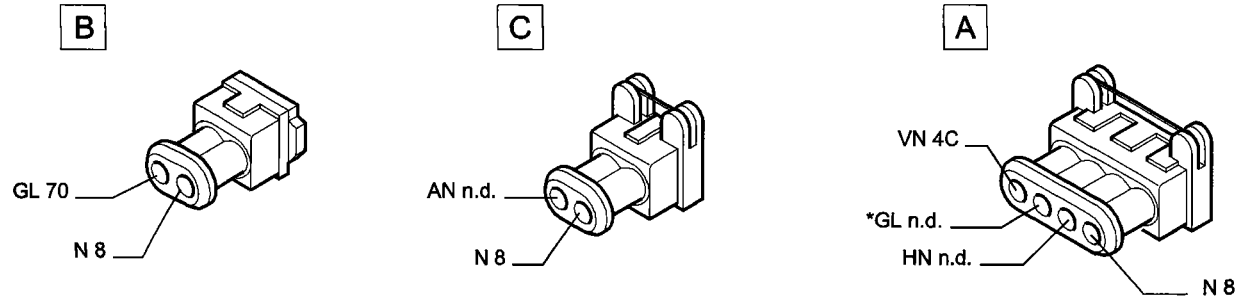
Component key

3 Power fusebox
4 Junction uni:
6 Instrument panel
8 Left front earth
10 Engine battery earth
11 Battery
12 Ignition switch
19 Right rear earth
22 Left facia earth
28 Connection between dashboard/rear cables
70 Connection between dashborad/front cables
244 Integrated services control system
306 Coupling for TAXI radio preparation
307 Taxi radio 7.5A protective fuse
308 Taxi meter 7.5A protective fuse
309 Preparation for taxi meter
310 Connection bridge
311 Current socket in luggage compartment
312 Coupling between rear cables and dashboard cables for TAXI
313 Relay for current socket in luggage compartment
314 Right rear door opening switch
315 30A protective fuse for current socket in luggage compartment
316 Preparation for TAXI sign light
317 Right rear door relay feed
318 Right rear door opening actuator

page

55.

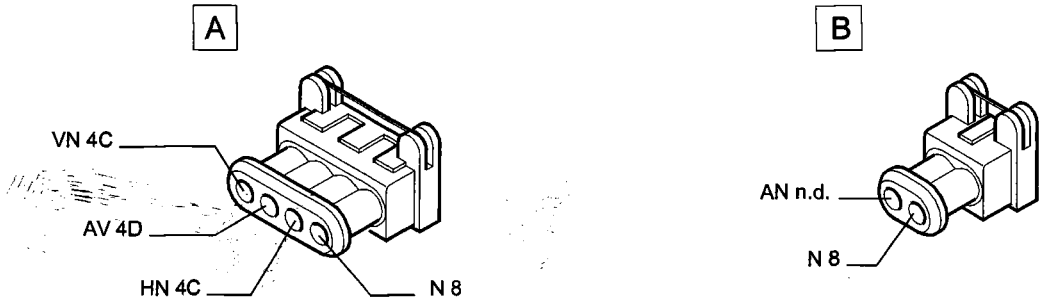
1 Left front light cluster



Polyelliptical headlamps (*) wire not connected

4F082ML01

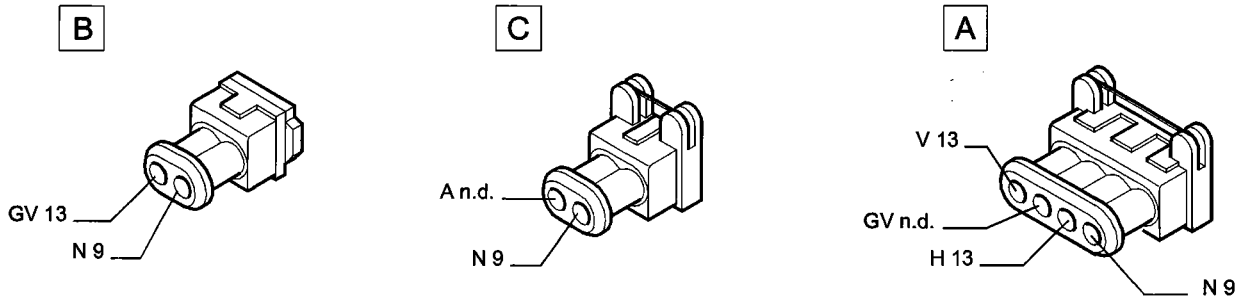
1 Left front light cluster



Reflector headlamps

4F082ML02

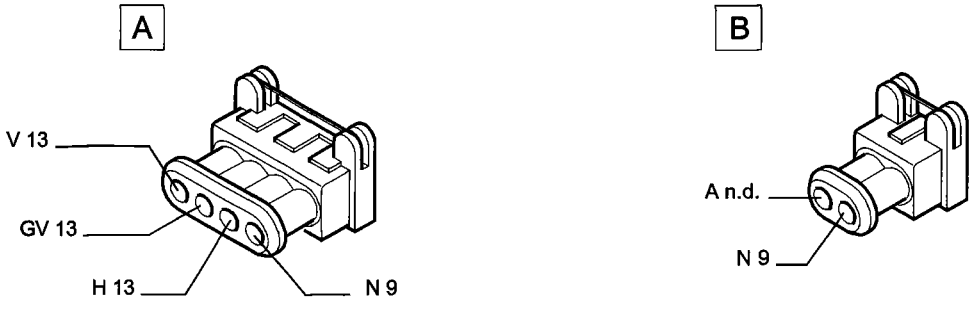
2 Right front light cluster



Polyelliptical headlamps

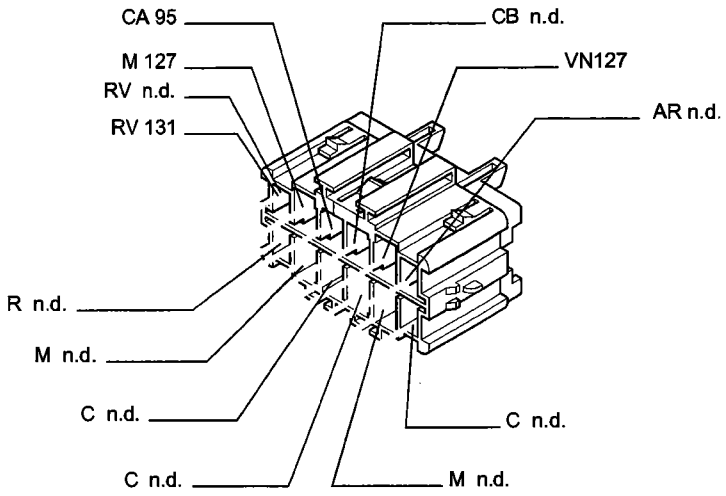
4F082ML03

2 Right front light cluster



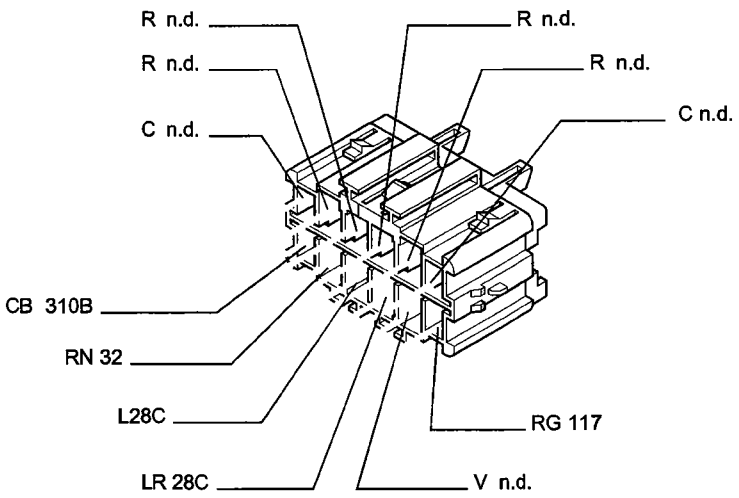
4F082ML04

3A Power fusebox



4F083ML01

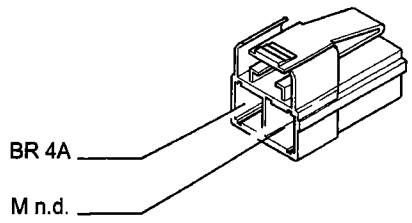
3D Power fusebox



4F083ML02

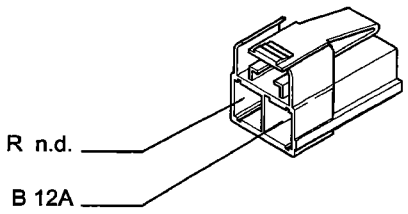
55.

3B Power fusebox



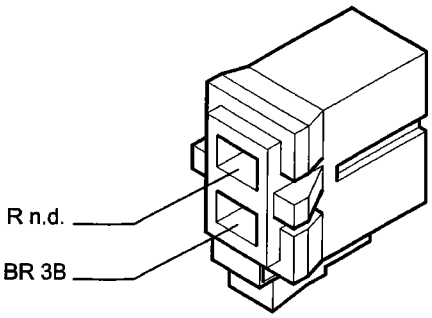
4F084ML01

3C Power fusebox



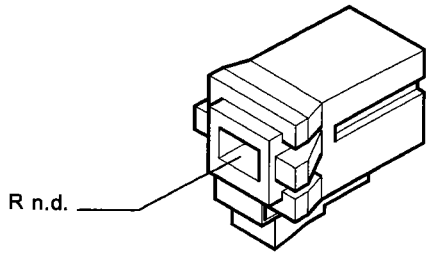
4F084ML02

4A Junction unit



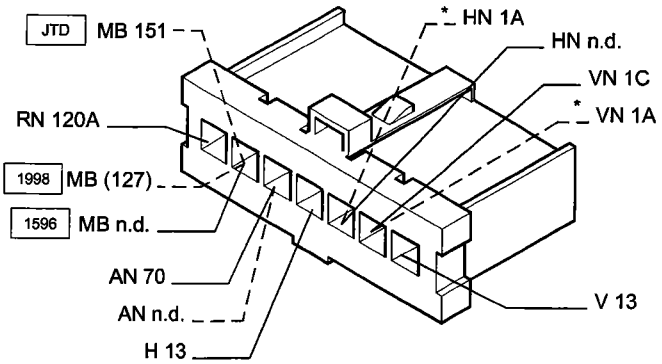
4F084ML03

4B Junction unit



4F084ML04

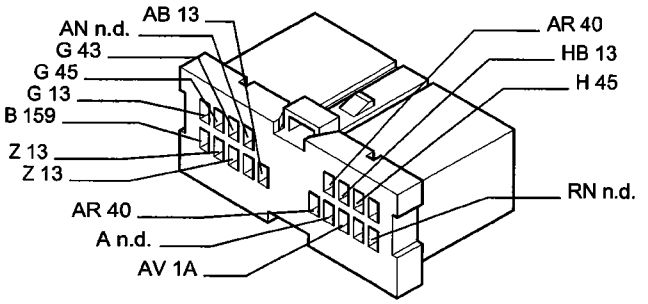
4C Junction unit



* Parabola headlamps

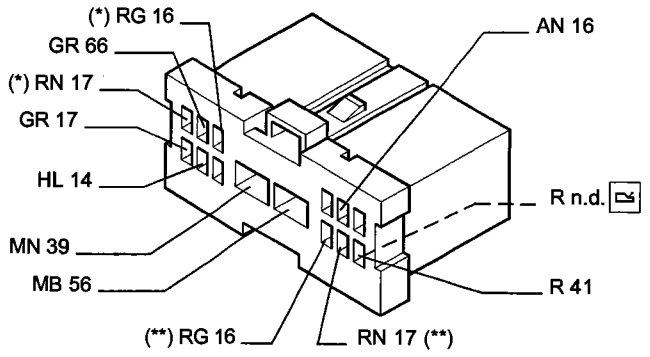
4F084ML05

4C Junction unit



4F084ML06

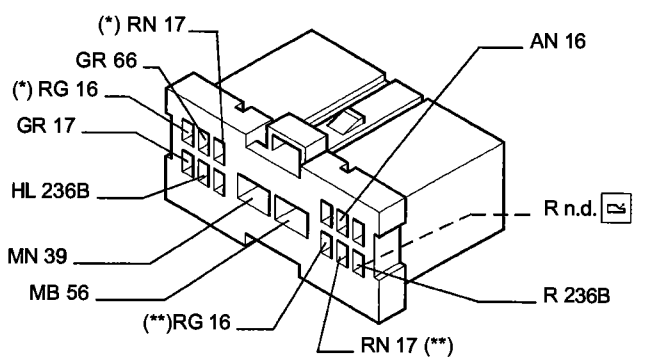
4E Junction unit



Marea (*) with Check (**) without Check

4F084ML09

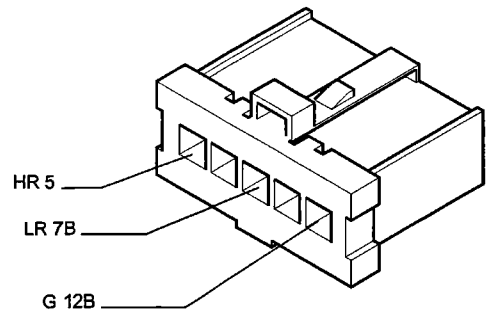
4E Junction unit



Marea Weekend (*) with Check (**) without Check

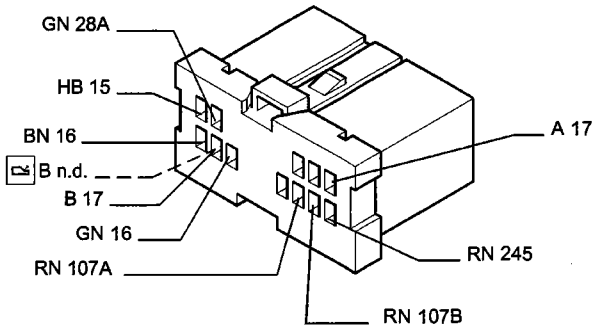
4F084ML10

4F Junction unit



4F085ML01

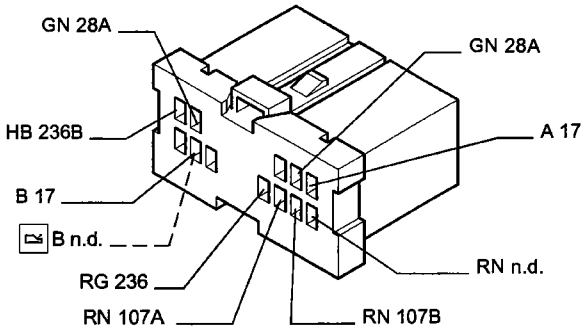
4G Junction unit



Marea

4F085ML02

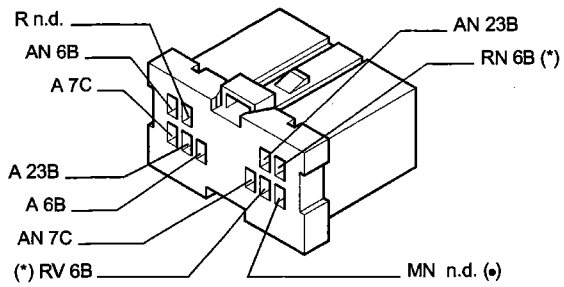
4G Junction unit



Marea Weekend

4F085ML03

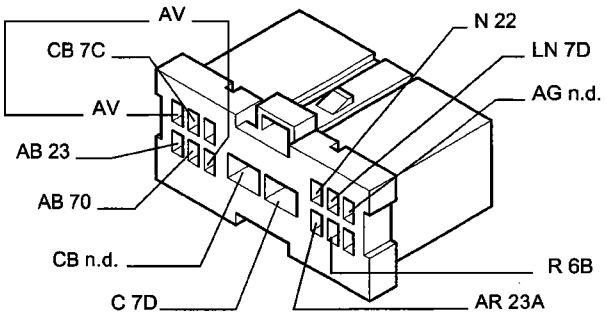
4H Junction unit



• Thermal fuse (*) only versions with Check

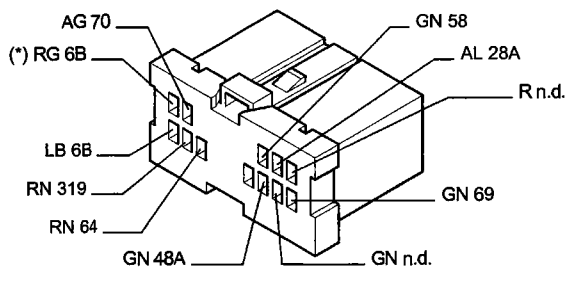
4F085ML08

4I Junction unit



4F085ML05

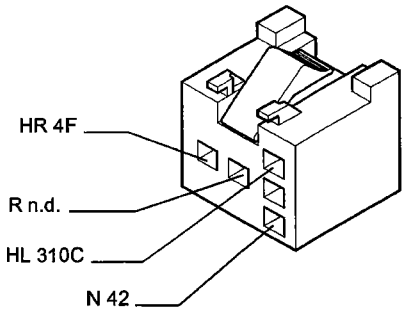
4J Junction unit



(*) only versions with Check

4F085ML09

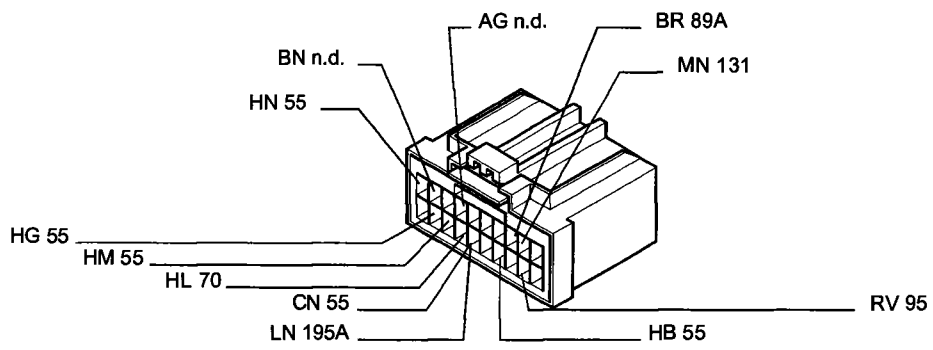
5 Dipped headlamp control relay



4F085ML07

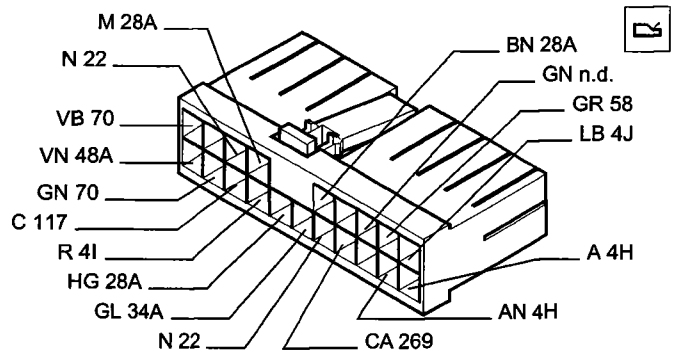
55.

6A Instrument panel



4F086ML01

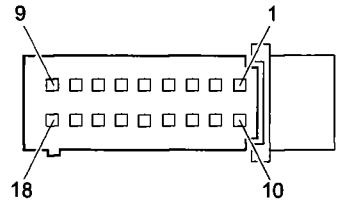
6B Instrument panel



4F086ML02

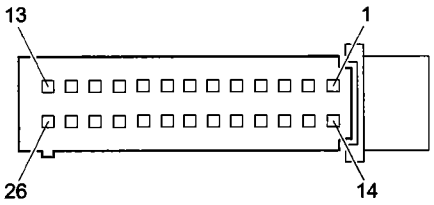
6A Instrument panel

1	BV 95		12	VB 333A	JTD
2	BN 88		12	VB 190A	1998
3	BR 89A		12	VB 195A	1596
4	CL 333A	JTD	13	AG n.d.	
5	MN 131B		14	CN 55	1596
6	LN 333A	JTD	14	CN 55C	1998 JTD
7	HN 55		15	HB 55	
8	HG 55		16	HL 70	
9	LN 190A	1998	17	HM 55	1596
9	LN 195A	1596	17	HM 55C	1998 JTD
10	RV 95		18	L 190A	1998
11	GN 195A	1596	18	L n.d.	JTD
11	GN 190A	1998	18	L 195A	1581



4F086ML03

6B Instrument panel

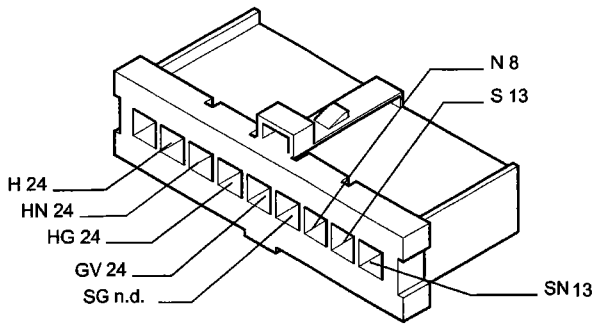


1	RG 4J (*)	15	H 70
2	RV n.d. (*)	16	CN n.d.
3	RV n.d. (*)	18	GR 58
4	C 117	19	N 22
5	GV 70 JTD	20	HG 28A
6	M 28A	21	GL 34A
8	A 4H	22	R 4I
9	AN 4H	23	N 22
11	GN n.d.	25	VN 48A
12	LB 4J	26	HM 309
13	BN 28A		
14	RN 4H (*)		

(*) only for versions with Check

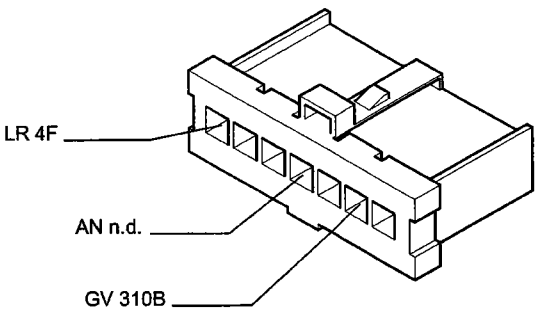
4F087ML07

7A Steering column switch unit



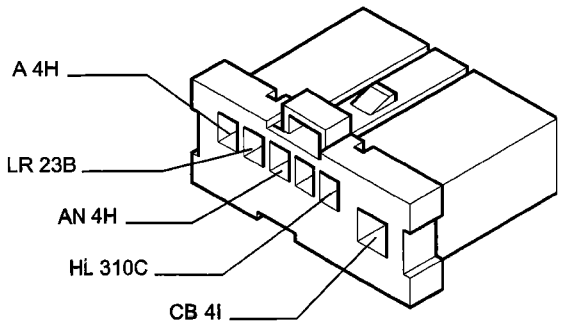
4F087ML02

7B Steering column switch unit



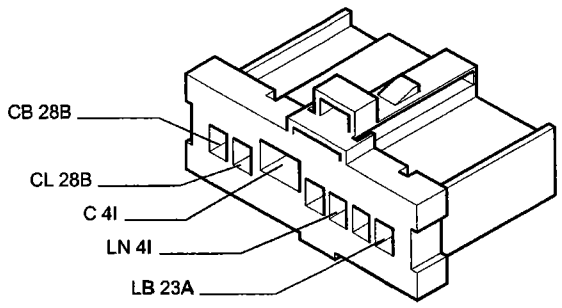
4F087ML03

7C Steering column switch unit



4F087ML04

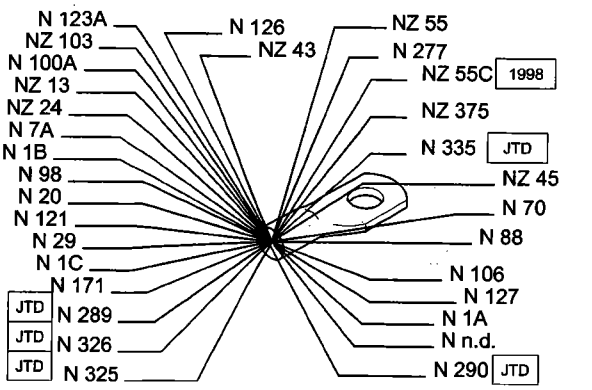
7D Steering column switch unit



4F087ML05

55.

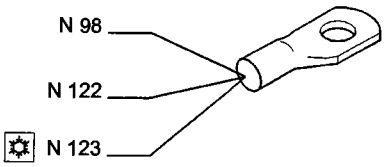
8 Left front earth



4F088ML01

8A Left front earth

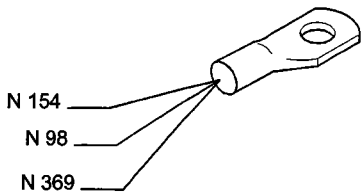
1596
1998



4F088ML02

8A Left front earth

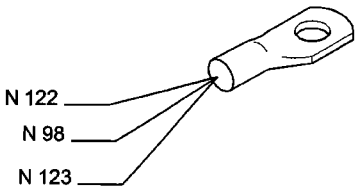
1910-JTD



4F088ML03

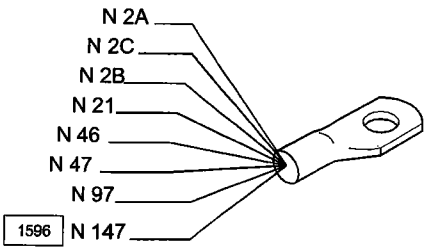
8A Left front earth

1910-JTD



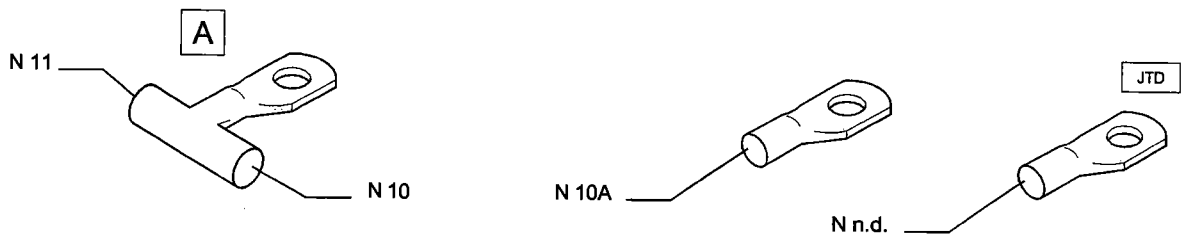
4F088ML04

9 Right front earth



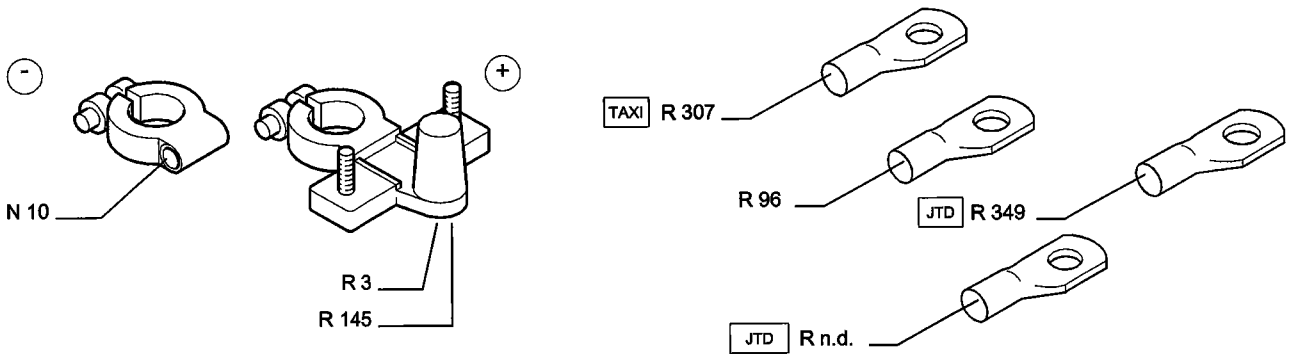
4F088ML05

10 Engine battery earth

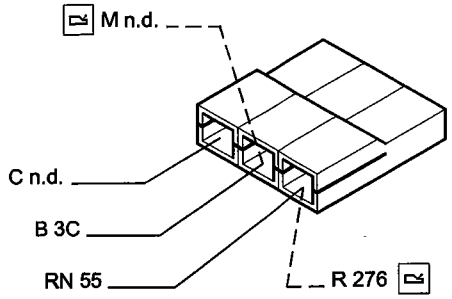


4F088ML06

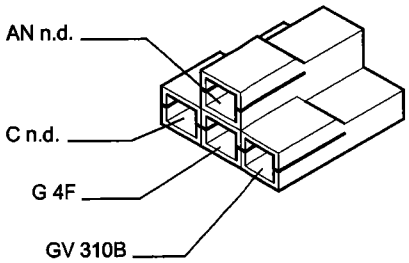
11 Battery



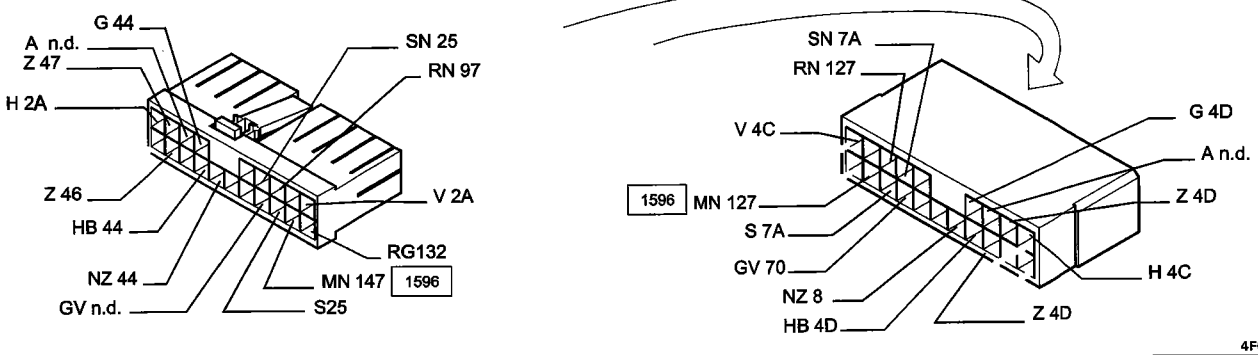
12A Ignition switch



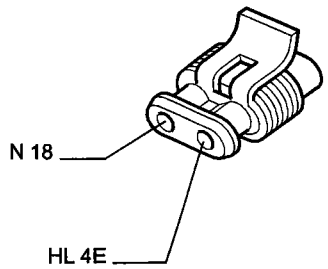
12B Ignition switch



13 Connection between right/left front cables



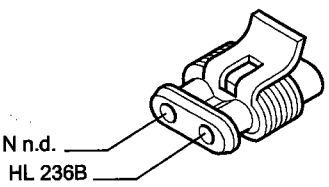
14 Left number plate light bulb



Marea

4F089ML05

14 Left number plate light bulb

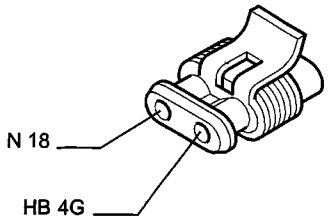


Marea Weekend

4F089ML06

55.

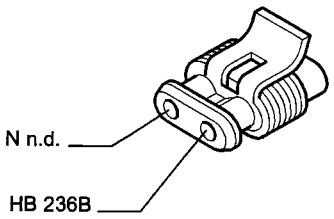
15 Right number plate light bulb



Marea

4F090ML01

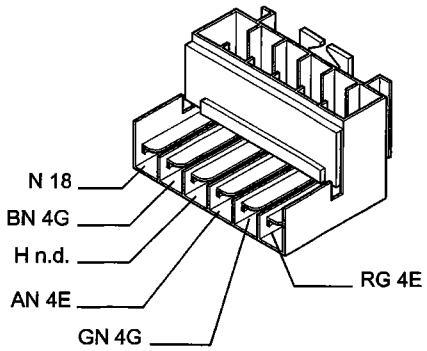
15 Right number plate light bulb



Marea Weekend

4F090ML02

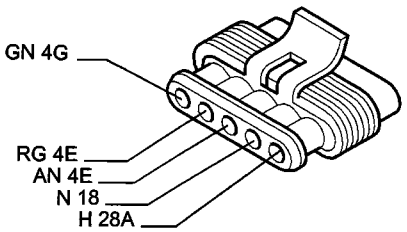
16 Left rear light cluster



Marea

4F090ML03

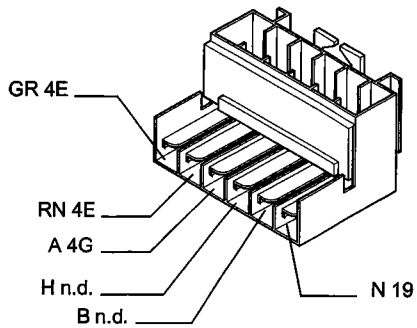
16 Left rear light cluster



Marea Weekend

4F090ML04

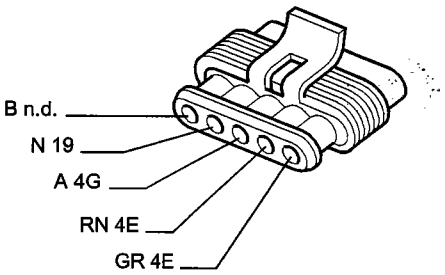
17 Right rear light cluster



Marea

4F090ML05

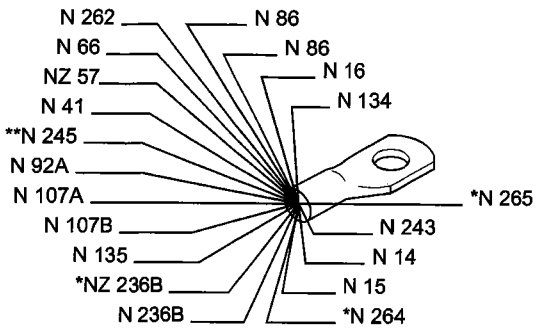
17 Right rear light cluster



Marea Weekend

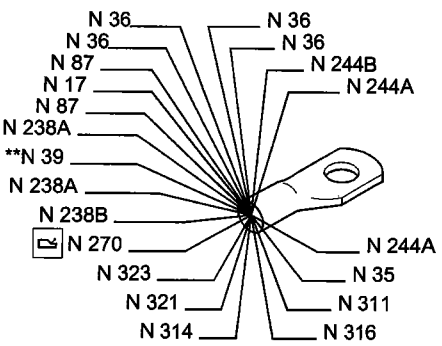
4F090ML06

18 Left rear earth



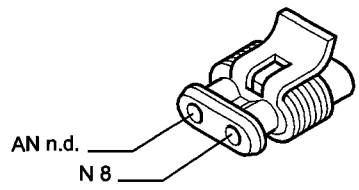
4F090ML07

19 Right rear earth



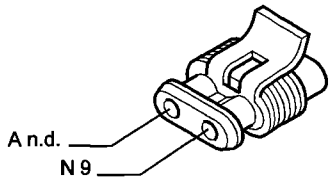
4F090ML08

20 Left front side direction indicator



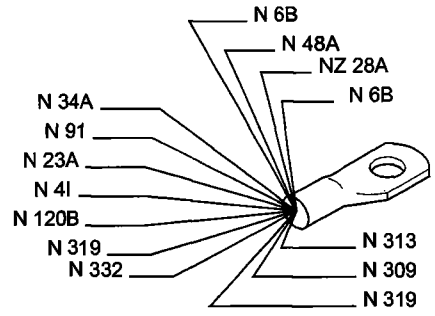
4F091ML01

21 Right front side direction indicator



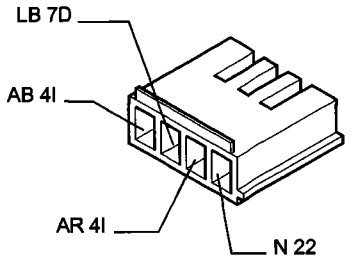
4F091ML02

22 Left facia earth



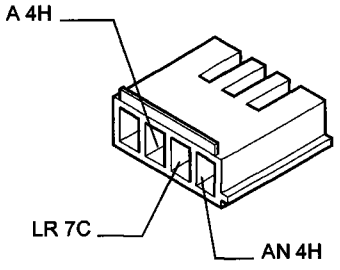
4F091ML03

23A Hazard warning lights switch unit



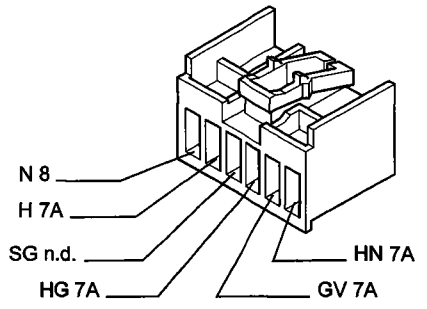
4F091ML04

23B Hazard warning lights switch unit



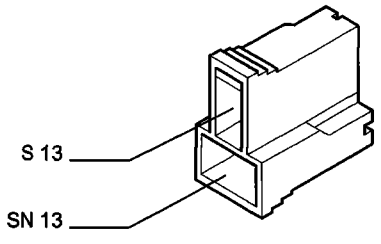
4F091ML05

24 Windscreen wiper motor



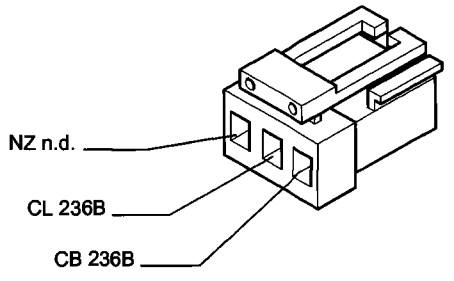
4F091ML06

25 Electric windscreen/rearscreen washer pump



4F091ML07

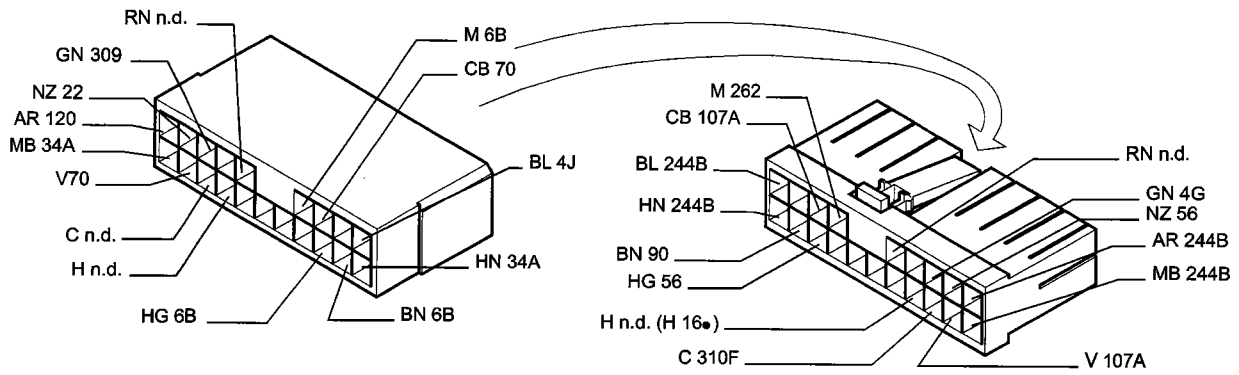
26 Windscreen wiper motor



4F091ML08

55.

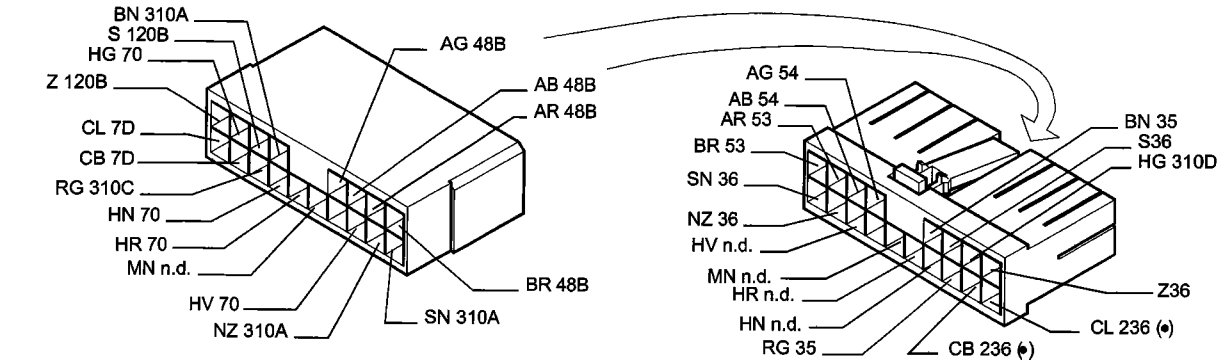
28A Facia/rear lead connection



• Marea Weekend

4F092ML01

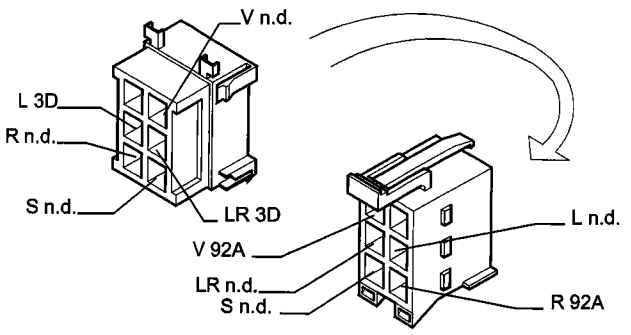
28B Facia/rear lead connection



• Marea Weekend

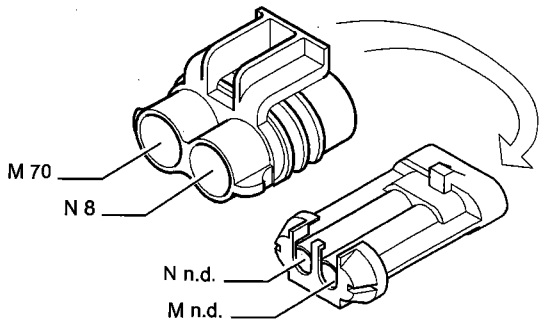
4F092ML02

28C Facia/rear lead connection



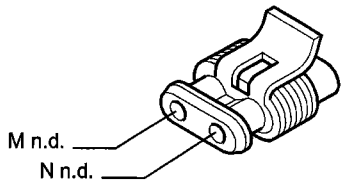
4F092ML03

29 Front/fog lamp lead connection



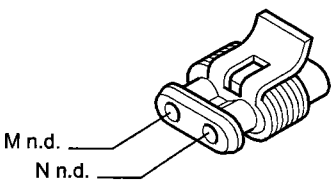
4F092ML04

30 Left fog light



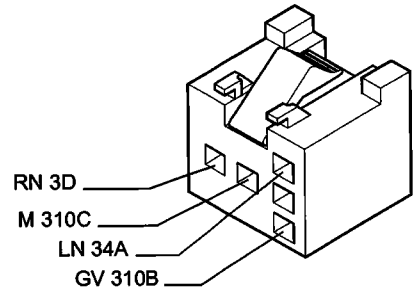
4F092ML05

31 Right fog light



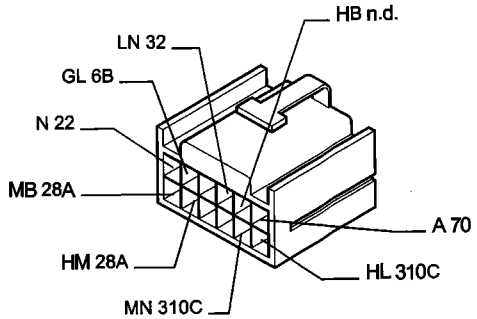
4F092ML06

32 Fog lamp control relay



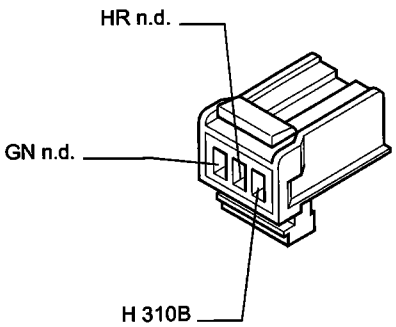
4F093ML01

34A Switch control panel



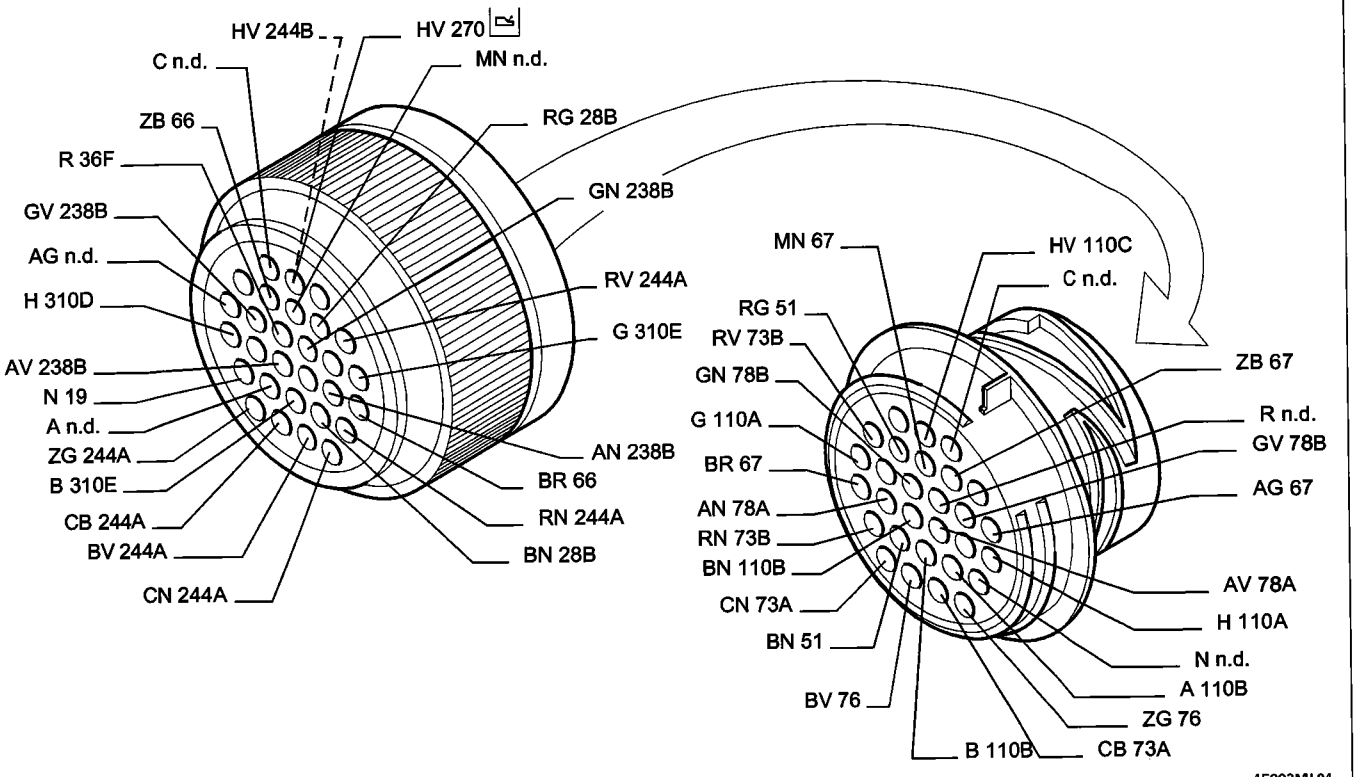
4F093ML02

34B Switch control panel



4F093ML03

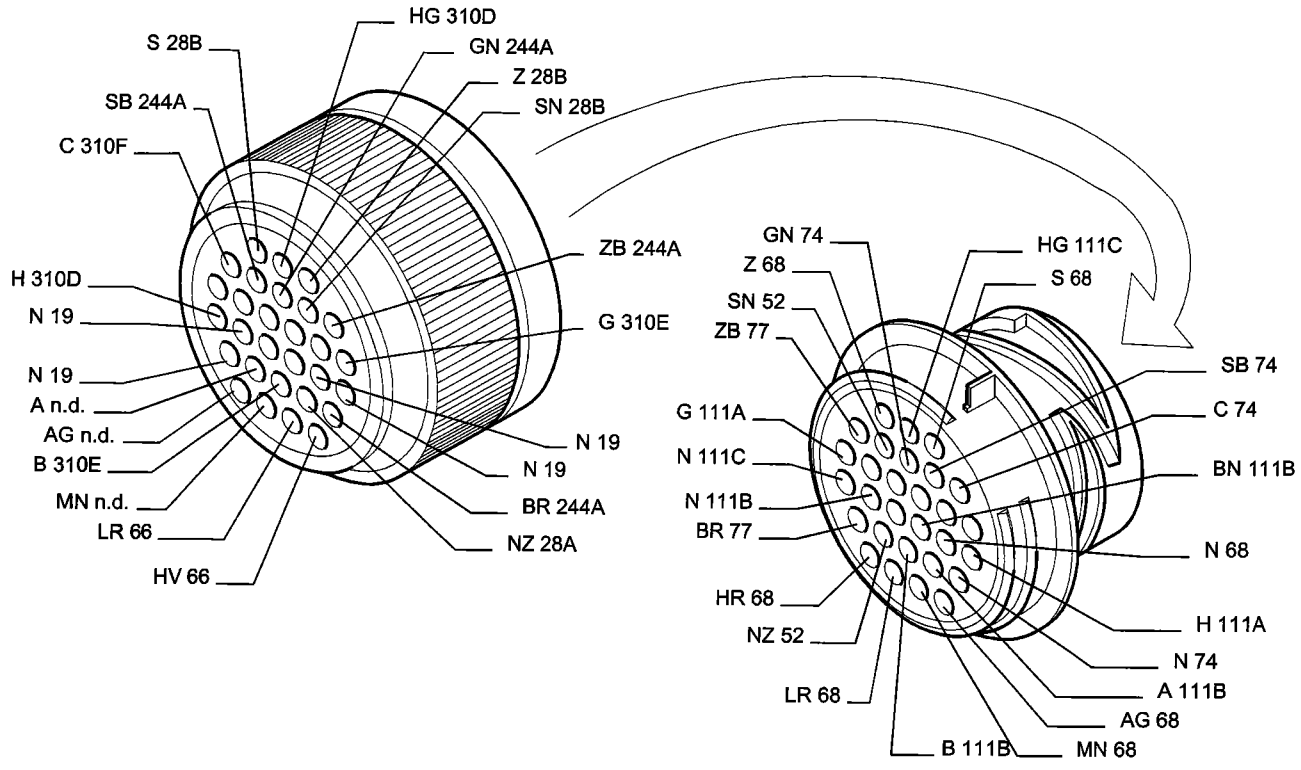
35 Connection between dashboard/left front door cables



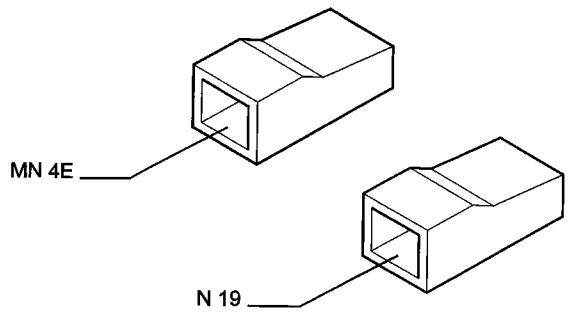
4F093ML04

55.

36 Connection between dashboard/right front door cables



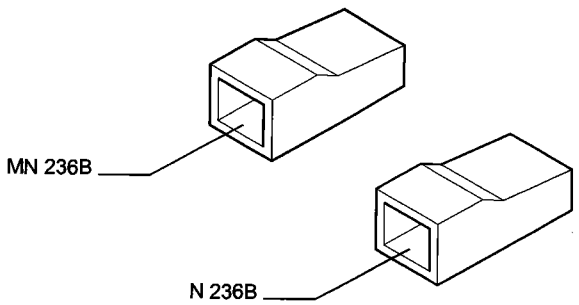
39 Heated rear windscreen



Marea

4F094ML02

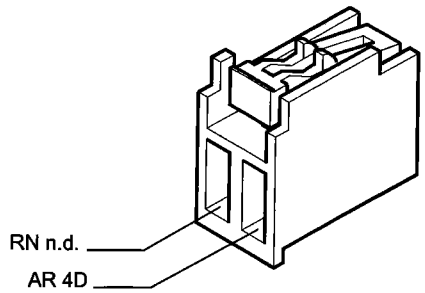
39 Heated rear windscreen



Marea Weekend

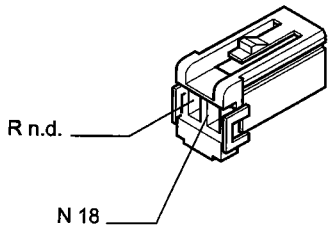
4F094ML03

40 Brake lights control switch



4F094ML04

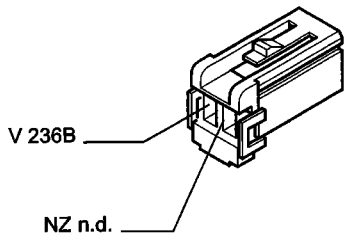
41 Additional brake light



Marea

4F094ML05

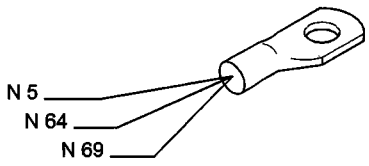
41 Additional brake light



Marea Weekend

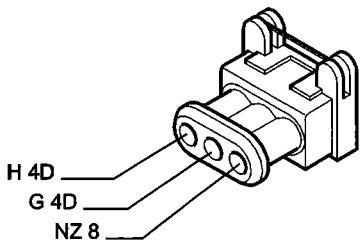
4F095ML01

42 Right dashborad earth



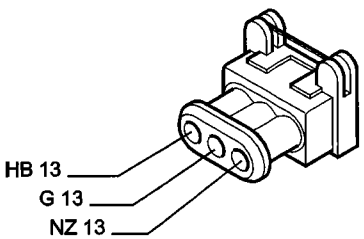
4F095ML02

43 Left headlamp alignment correction actuator



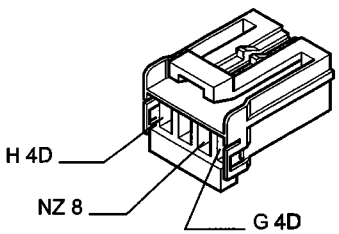
4F095ML03

44 Right headlamp alignment correction actuator



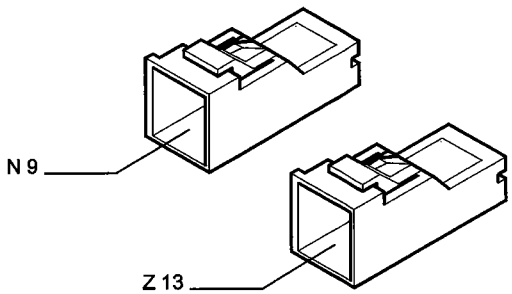
4F095ML04

45 Headlamp alignment control unit



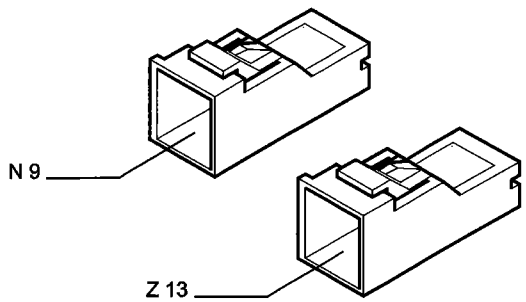
4F095ML05

46 Left low tone horn



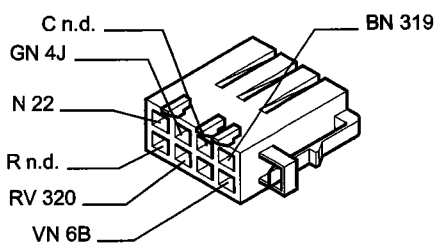
4F095ML06

47 Right high tone horn



4F095ML07

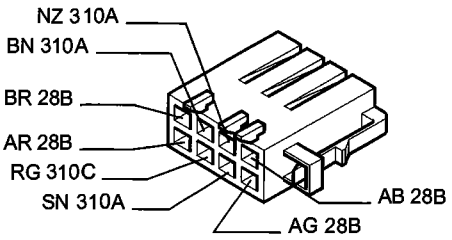
48A Radio receiver with clock



4F095ML08

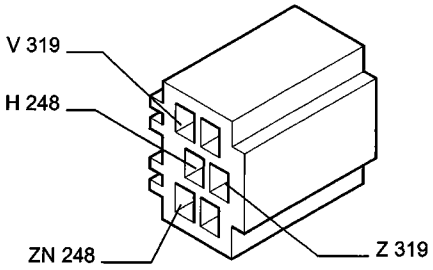
55.

48B Radio receiver with clock



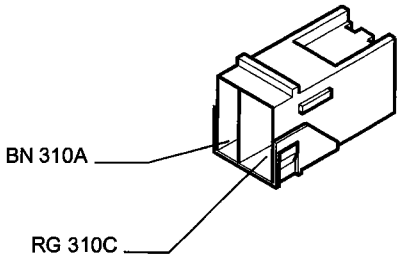
4F096ML01

48C Radio receiver with clock



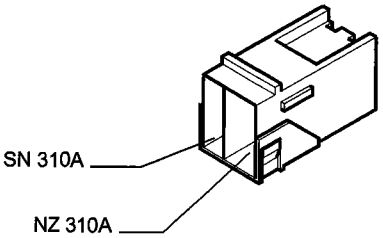
4F096ML02

49 Left front tweeter speaker



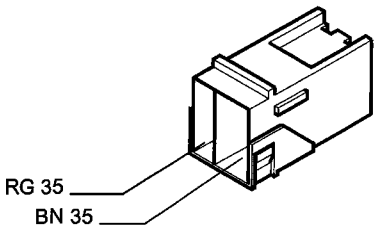
4F096ML03

50 Right front tweeter speaker



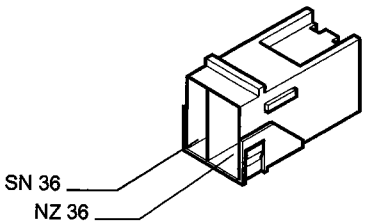
4F096ML04

51 Speaker in left front door



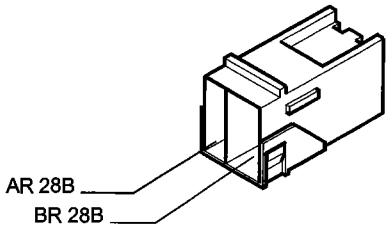
4F096ML05

52 Speaker in right front door



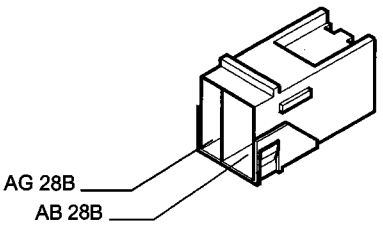
4F096ML06

53 Left rear speaker



4F096ML07

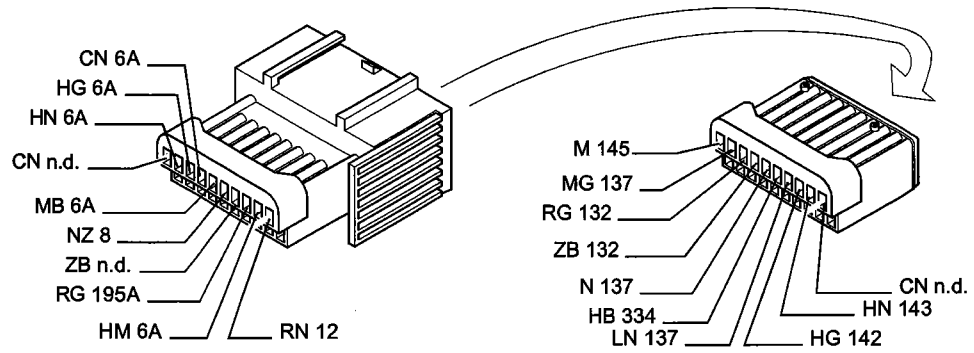
54 Right rear speaker



4F096ML08

55 Connection between front/engine cables

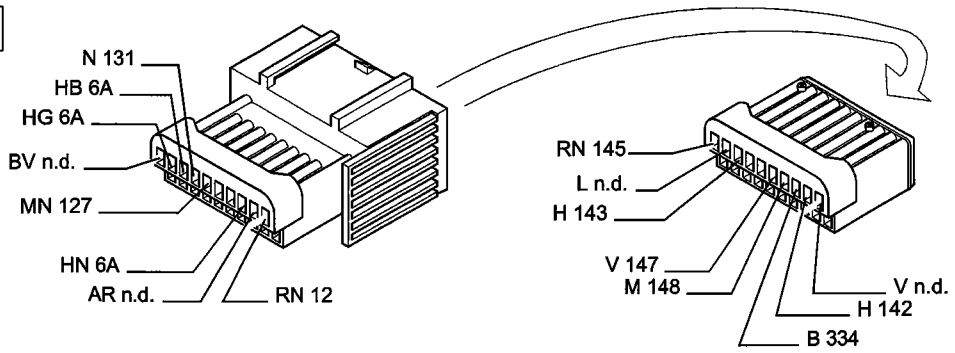
1596



4F097ML01

55 Connection between front/engine cables

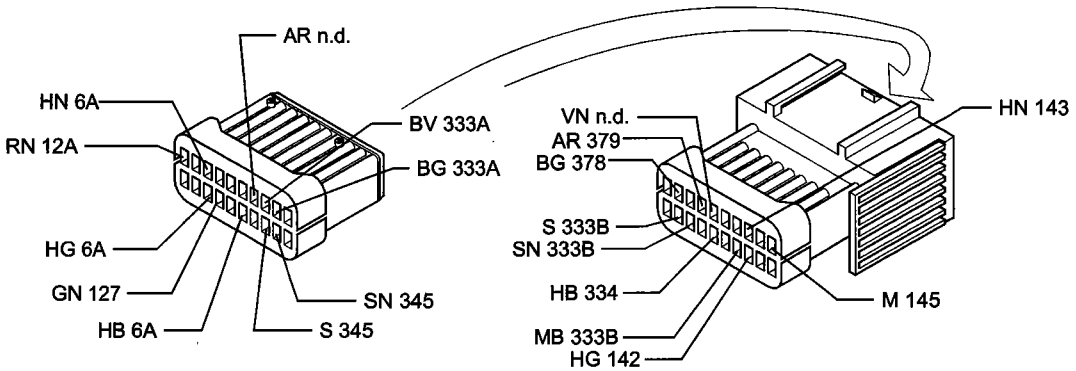
1998



4F097ML02

55 Connection between front/engine cables

JTD

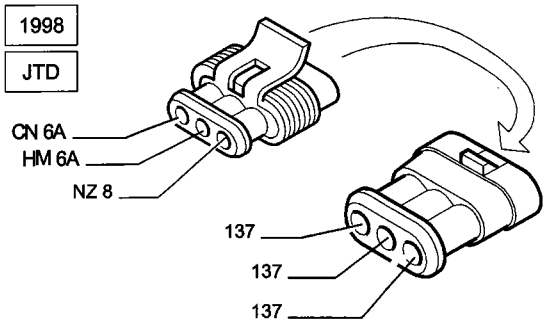


4F097ML03

55C Connection between front/engine cables

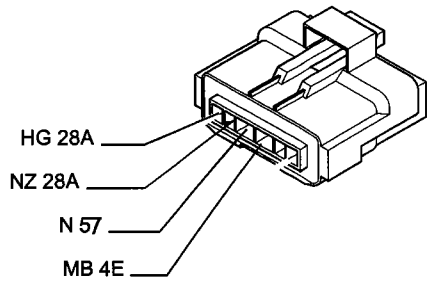
1998

JTD



4F097ML04

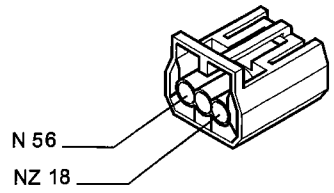
56 Fuel gauge unit



4F097ML05

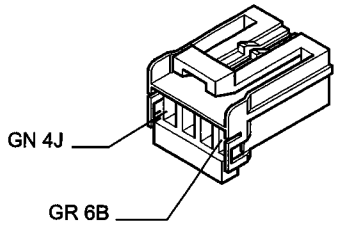
55.

57 Inertia switch



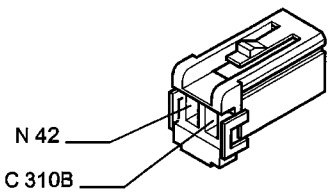
4F098ML01

58 Control panel light dimmer



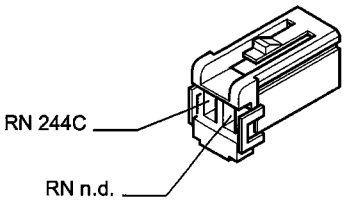
4F098ML02

64 Glove compartment light bulb with built in switch



4F098ML03

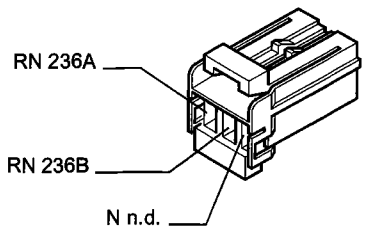
65 Luggage compartment light



Marea

4F098ML04

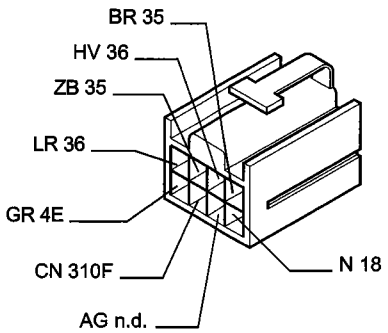
65 Luggage compartment light



Marea Weekend

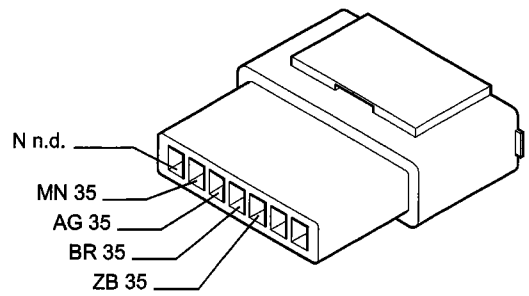
4F098ML05

66 Electrically-adjustable door mirror control buttons



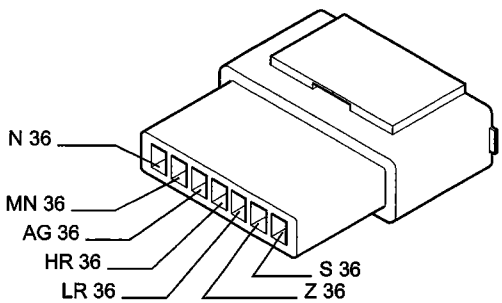
4F098ML06

67 Left door mirror



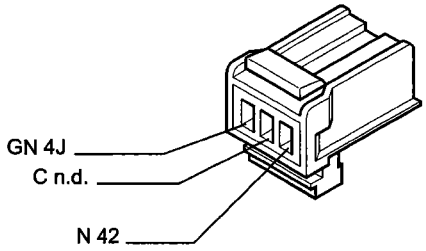
4F098ML07

68 Right door mirror



4F098ML08

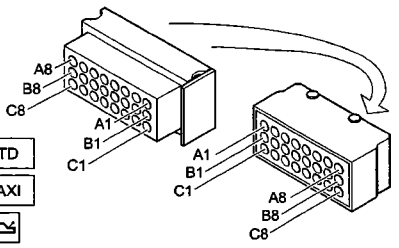
69 Cigar lighter



4F099ML01

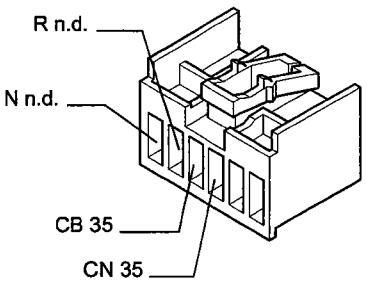
70 Connection between dashborad/front cables

A1	RN 4C	B1	M 29	C1	AN 4C			A1	RN 120	B1	M 310C	C1	AN 120				
A2	VG 127	B2	V 328	C2	HR 100B			A2	VG 120	B2	V 28A	C2	HR 28B				
A3	H 100B	B3	AG n.d.	C3	HN 100B			A3	H 6B	B3	AG 4J	C3	HN 28B				
A4	HL 6A	B4	LB n.d.	C4	HG 100B			A4	HL120	B4	AB 4I	C4	HG 28B				
A5	CB 100A	B5	BN 375	C5	HV 100B			A5	CB 28A	B5	BN 120	C5	HV 28B				
A6	S 100B	B7	AN 4C	C7	GV 335	JTD		A6	R n.d.	B6	B 117	C7	GV 6B	JTD			
A7	A 100A	B6	B 375	C8	RB 307	TAXI		A7	A 34A	B7	AN 120	C8	RB 312	TAXI			
A8	N 8	B8	MN n.d.	C8	GN 195A			A8	N 312	B8	RN 315	C8	GN 6B				



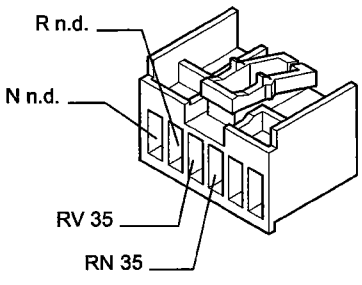
4F099ML05

73A Front electric window control buttons on left armrest



4F099ML03

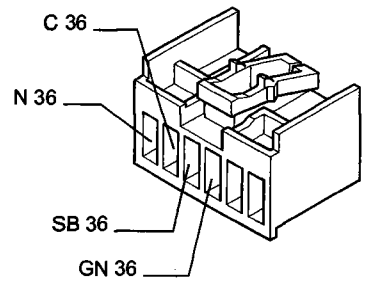
73B Front electric window control buttons on left armrest



4F099ML04

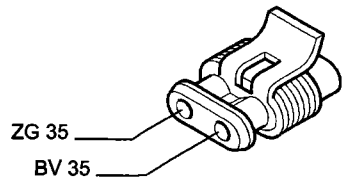
55.

74 Right front electric window control buttons on right armrest



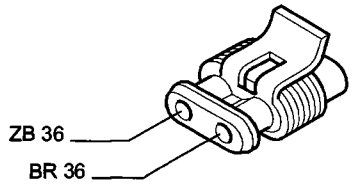
4F100ML01

76 Left front window motor



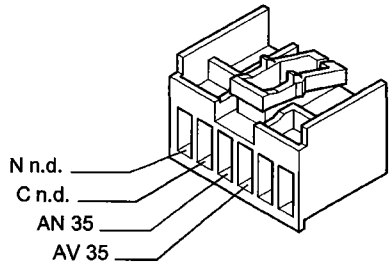
4F100ML02

77 Right front window motor



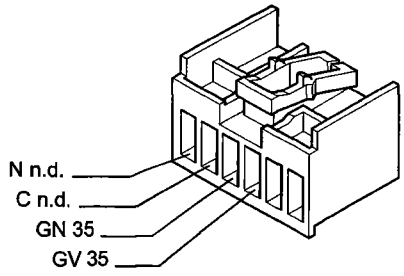
4F100ML03

78A Rear electric window control buttons on left front door



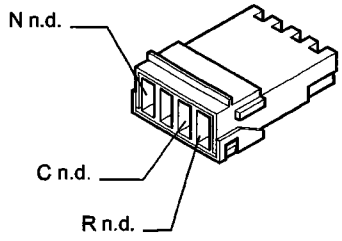
4F100ML04

78B Rear electric window control buttons on left front door



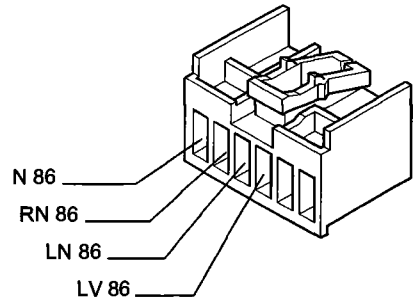
4F100ML05

80 Rear electric window inhibition switch



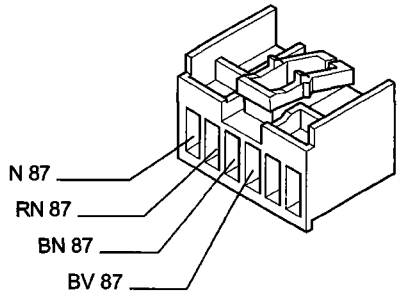
4F100ML06

82 Left rear electric window control buttons on left rear door



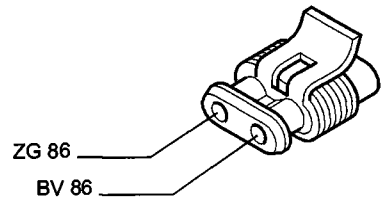
4F100ML07

83 Right rear electric window control buttons on right rear door



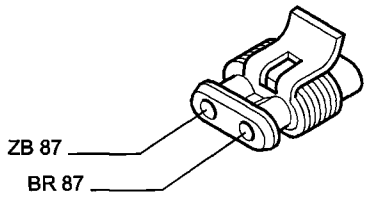
4F100ML08

84 Left rear electric window motor



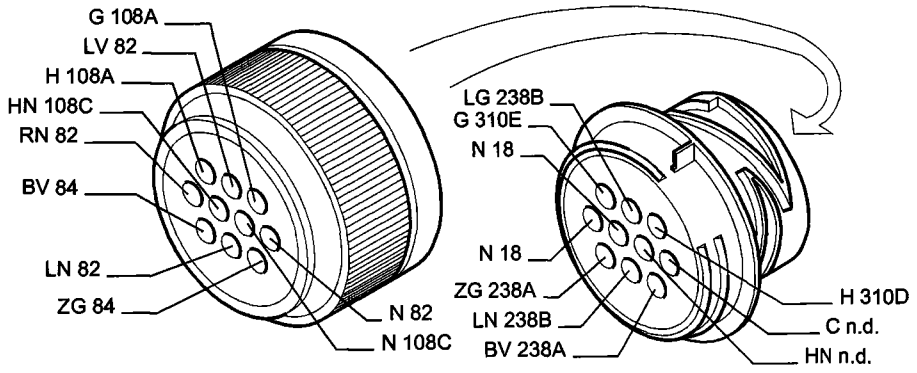
4F101ML01

85 Right rear electric window motor



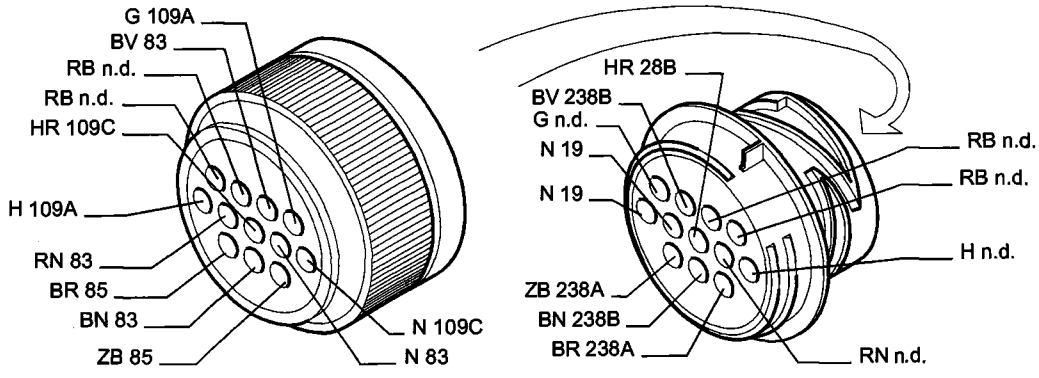
4F101ML02

86 Connection between rear/left rear door cables



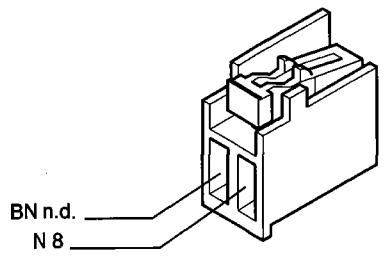
4F101ML03

87 Connection between rear/right rear door leads



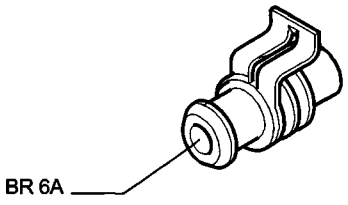
4F101ML04

88 Insufficient brake fluid level sensor



4F101ML05

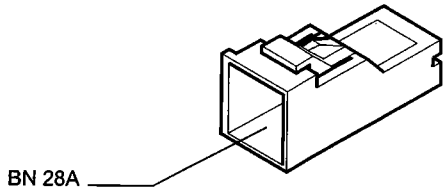
89A Left brake pad wear sensor cable connection



4F101ML06

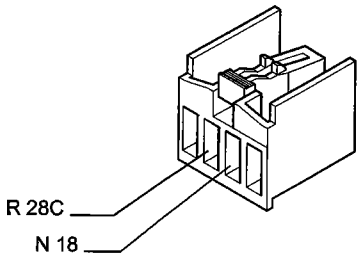
55.

90 Switch signalling handbrake applied



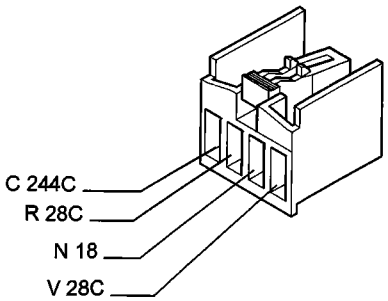
4F102ML01

92A Electric sun-roof lead connection



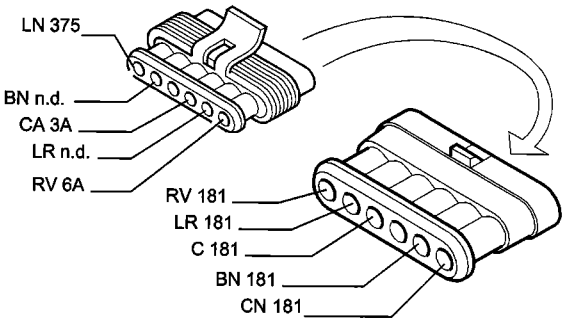
4F102ML02

92A Electric sun-roof lead connection



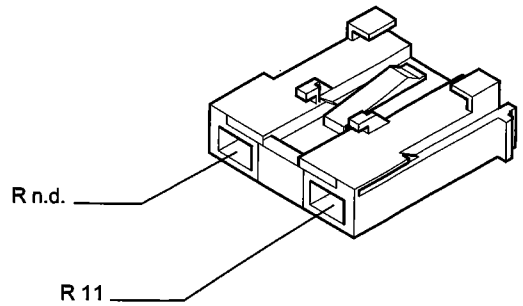
4F102ML03

95 Connection between front cables/anti-lock brakes A.B.S.



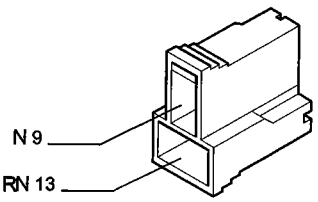
4F102ML04

95 Power fues protecting anti-lock brakes A.B.S.



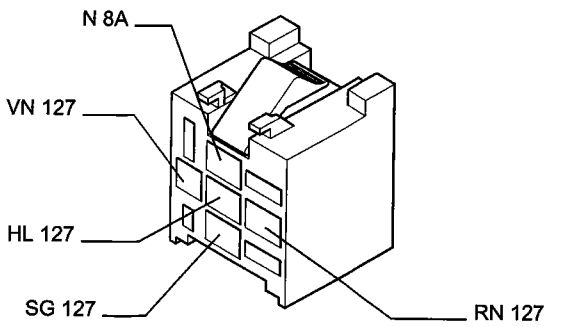
4F102ML05

97 Electric headlamp washer pump



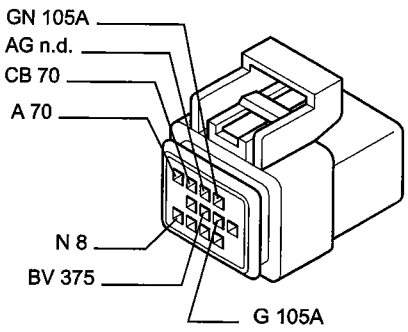
4F102ML06

98 Headlamp washer intermittent function



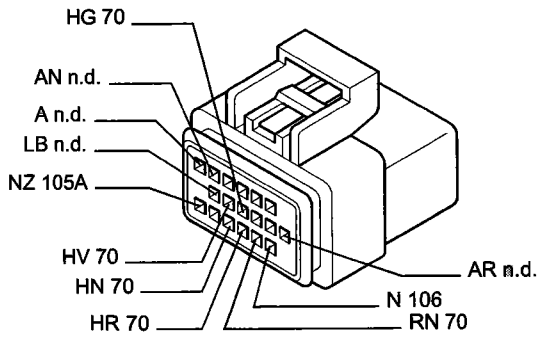
4F102ML07

100A Alarm electronic control unit



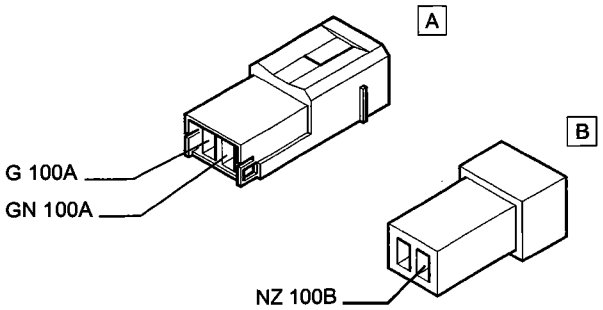
4F102ML08

100B Alarm electronic control unit



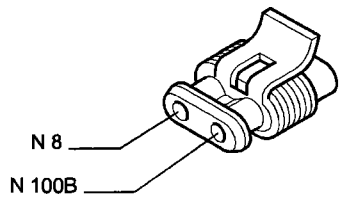
4F103ML08

105 Alarm deactivation switch



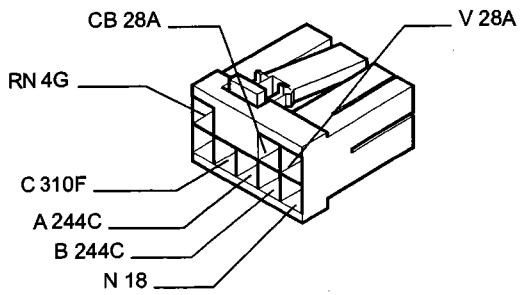
4F103ML02

106 Alarm switch on bonnet



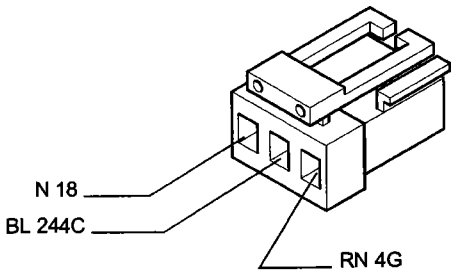
4F103ML03

107A Door lock remote control receiver



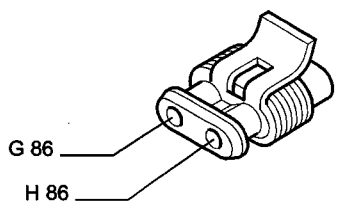
4F103ML04

107B Door lock remote control receiver



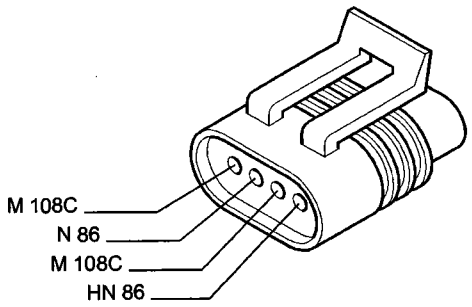
4F103ML05

108A Left rear door lock



4F103ML06

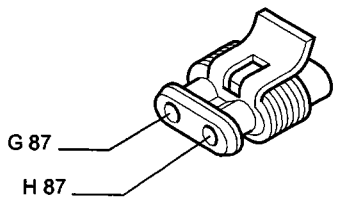
108C Left rear door lock



4F103ML07

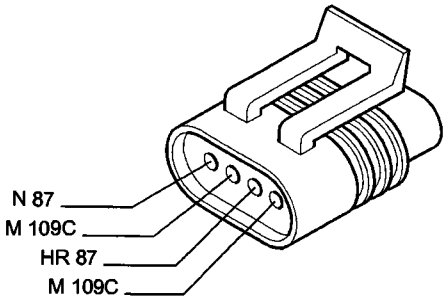
55.

109A Right rear door lock



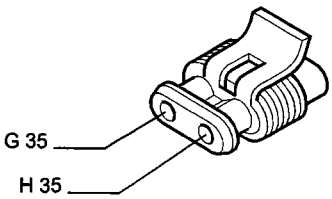
4F104ML01

109C Right rear door lock



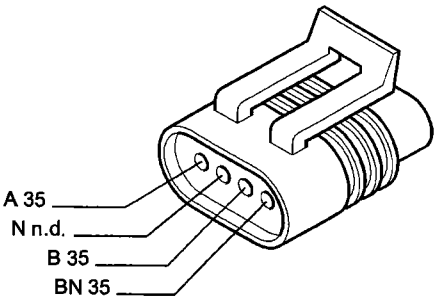
4F104ML02

110A Left front door lock



4F104ML03

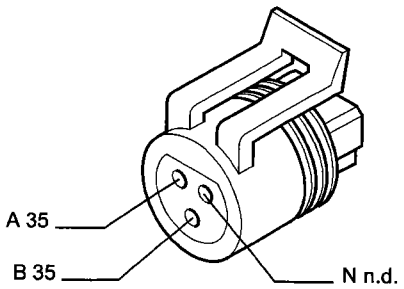
110B Left front door lock



With automatic window closure

4F104ML04

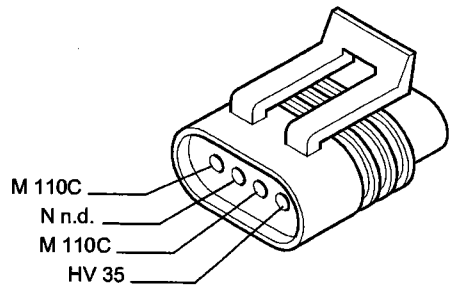
110B Left front door lock



Without automatic window closure

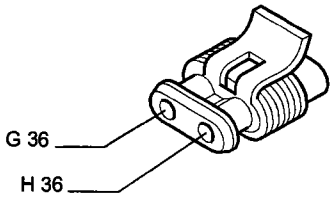
4F104ML05

110C Left front door lock



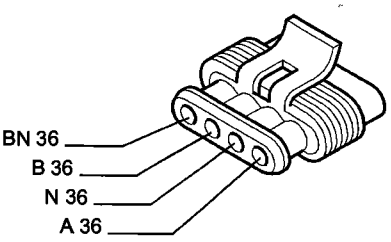
4F104ML06

111A Right front door lock



4F104ML07

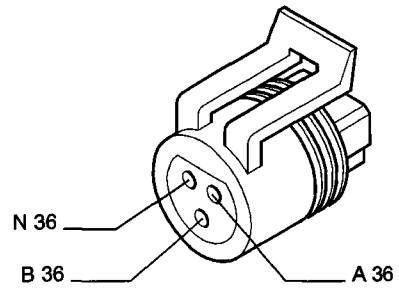
111B Right front door lock



With automatic window closure

4F104ML08

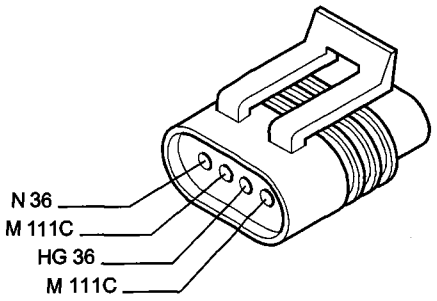
111B Right front central locking



Without automatic window closure

4F105MIL01

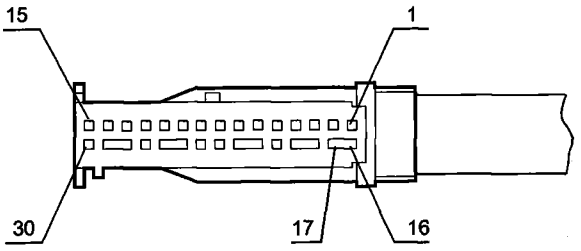
111C Right front central locking



4F105MIL02

114 Air bag electronic contol unit

1	LN 231	11	VN 239
2	L 231	13	C 117
3	GN 115	14	N 354
4	G 115	15	R 117
6	M 240	30	N n.d. (•)
7	MN 240		
9	B 117		
10	V 239		



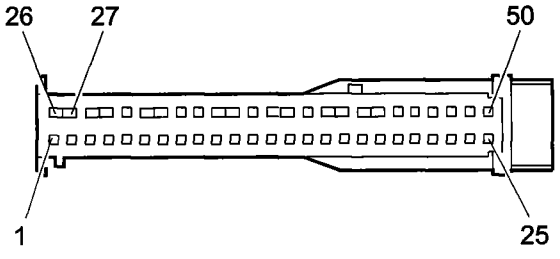
Without Side Bag

(•)With passenger Air Bag fitted

4F105MIL03

114 Air bag electronic contol unit

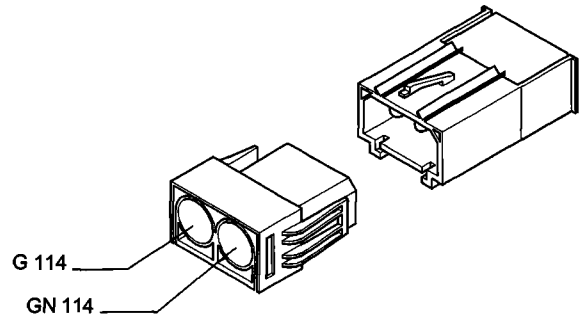
1	LN 231	15	R 117	40	N n.d.
2	L 231	16	HB 352		
3	GN 115	17	HL 352		
4	G 115	18	HG 353		
6	N 240	19	HL 353		
7	MN 240	22	ZB 355		
9	B 117	25	V 355		
10	V 239	33	C 117		
11	VN 239	34	N n.d.		



Without Side Bag

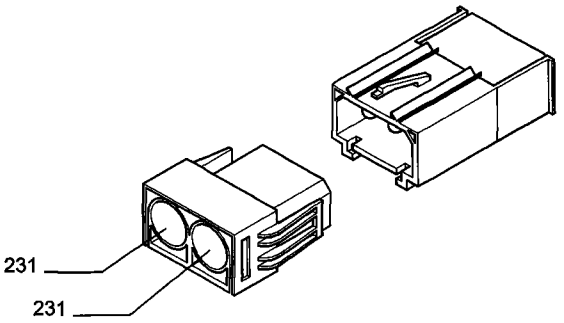
4F105MIL04

115 Passenger Air Bag



4F105MIL05

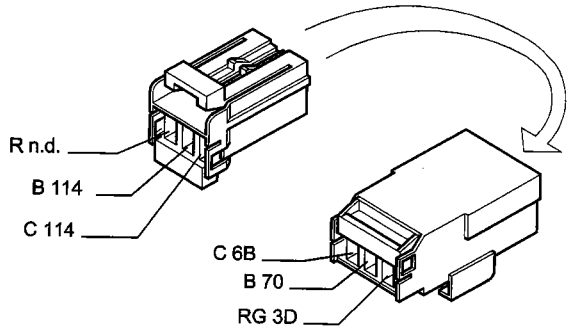
116 Driver's Air Bag



4F105MIL06

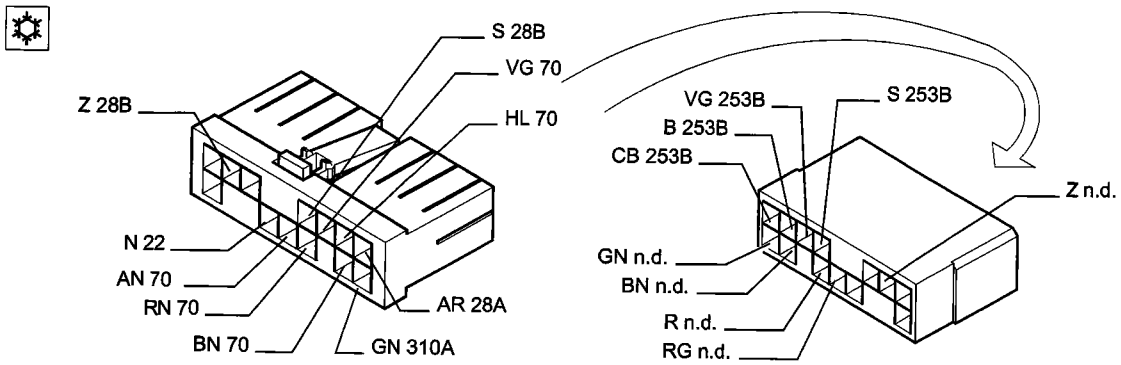
55.

117 Air Bag/dashboard connection



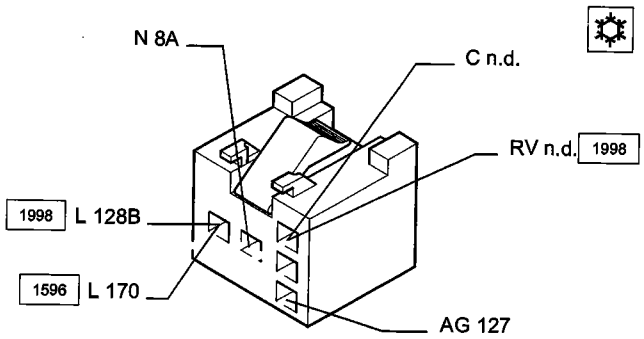
4F106ML01

120 Connection for air conditioning unit cables



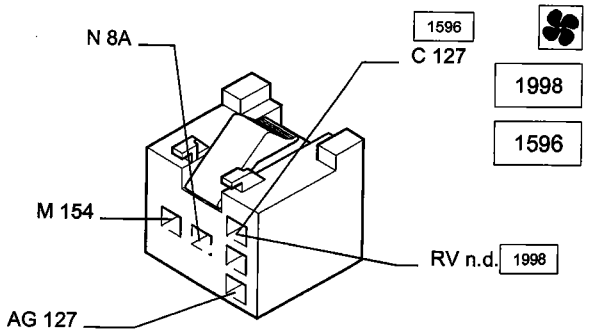
4F106ML02

122 Engine cooling fan low speed relay



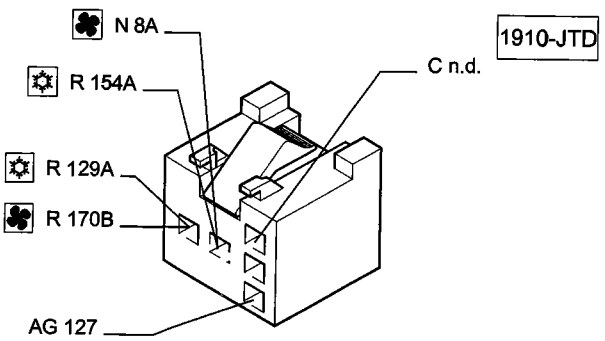
4F106ML03

122 Engine cooling fan low speed relay



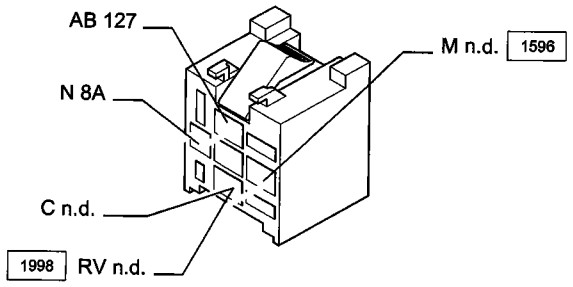
4F106ML04

122 Engine cooling fan low speed relay



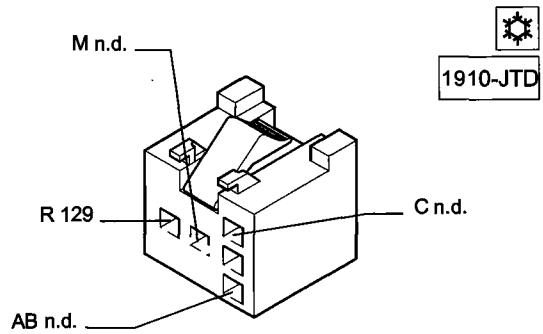
4F106ML05

123 Engine cooling fan high speed relay



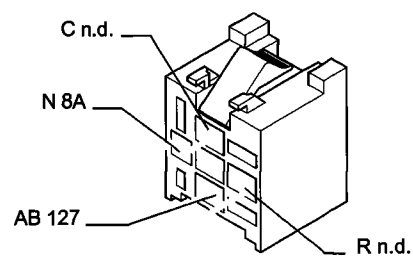
4F106ML06

123 Engine cooling fan high speed timer



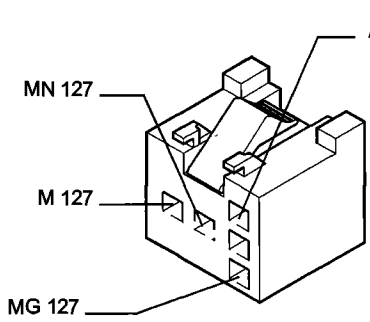
1910-JTD

123 Engine cooling fan high speed timer



1910-JTD

124 Air conditioning compressor relay feed

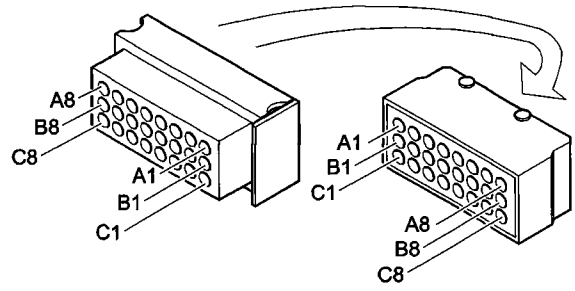


1596
JTD
1998

127 Connection between front left cable/cable on relay holder bracket

1596

A2 RN 13	B2 AN n.d.
A4 AB 195A	B3 MG 195A
A5 AG 195A	B4 S 195A
A6 M 3A	B5 VN 3A
A7 MN 13	B6 B 195A
A8 C n.d.	B7 VG 70
	C2 BN 195A
	C3 HL n.d.
	C4 SG n.d.

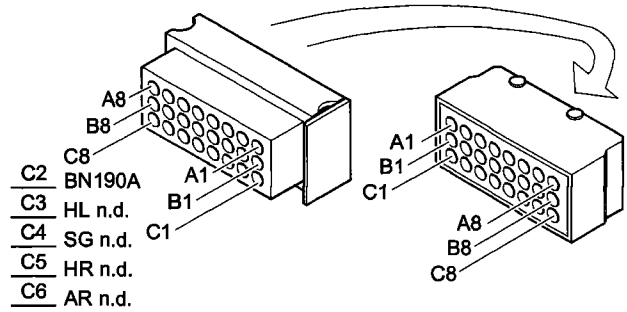


A2 RN 98	B2 AN 124
A4 AV 123	B3 MG 124
A5 AG 122	B4 S 365
A6 M 124	B5 VN 98
A7 MN 124	B6 B 365
A8 C n.d.	B7 VG 365
	C2 BN 365
	C3 HL 98
	C4 SG 98

127 Connection between front left cable/cable on relay holder bracket

1998

A1 R n.d.	B1 MB 4C	C2 BN190A
A2 RN 13	B2 AN n.d.	C3 HL n.d.
A3 BG 190A	B3 MG 190A	C4 SG n.d.
A4 AB 190A	B4 S 190A	C5 HR n.d.
A5 AG 190A	B5 VN 3A	C6 AR n.d.
A6 M 3A	B6 B 190A	C7 G 190A
A7 MN 55	B7 VG 70	C8 C n.d.
A8 RV n.d.	B8 R n.d.	



A1 R n.d.	B4 S 365
A2 RN 98	B5 VN 98
A3 BV 151	B6 B 365
A4 AB 123	B7 VG 365
A5 AG 122	B8 R 150
A6 M 124	C2 BN 365
A7 MN 124	C3 HL 98
A8 RV n.d.	C4 SG 98
B1 MB 151	C5 HR 152A
B2 AN 124	C5 AR 152B
B3 MG 124	C7 G 150
	C8 C n.d.

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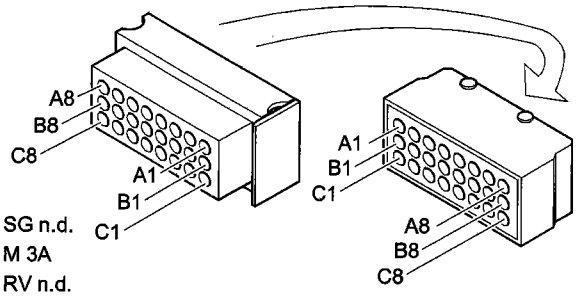
127 Connection between front left cable/cable on relay holder bracket

JTD

A1	BR n.d.	B1	RN 13	C1	SG n.d.
A3	MN 13	B2	HL n.d.	C2	M 3A
A3	AR n.d.	B3	S 333A	C3	RV n.d.
A4	MG 333A	B4	B 333A	C4	AB 333A
A5	GN 55	B5	VG 70	C8	R n.d.
A3	AR n.d.	B6	N 8		
A7	AG 333A	B7	BN 333A		
A8	RG 289	B8	VN 3A		

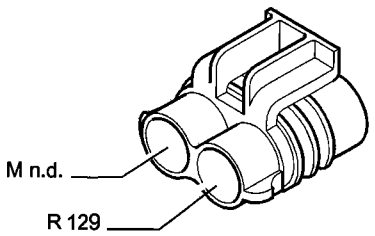


A1	BR 303	B4	B 365		
A2	MN 124	B5	VG 365		
A3	AR 124	B6	N 365		
A4	MG 124	B7	BN 365		
A5	GN 304	B8	VN 98		
A6	HN 304	C1	SG 98		
A7	AG 122	C2	M 124		
A8	RG 304	C3	C n.d.		
B1	RN 98	C4	AB n.d.		
B2	HL 98	C8	R 152		
B3	S 365				

4F108ML01

128A Connection between front/radiator cables

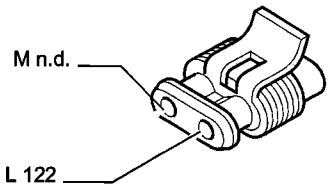
1998



4F108ML02

128B Connection between front/radiator cables

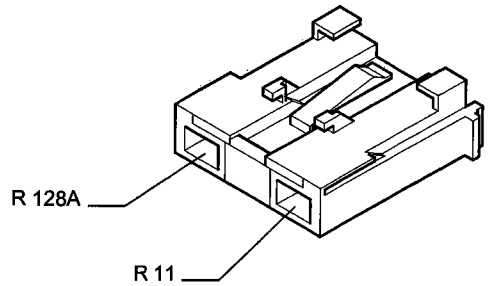
1998



4F108ML03

129 Power fuse protecting engine cooling fan

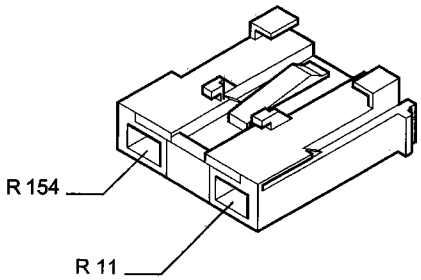
1998



4F108ML04

129 Power fuse protecting engine cooling fan

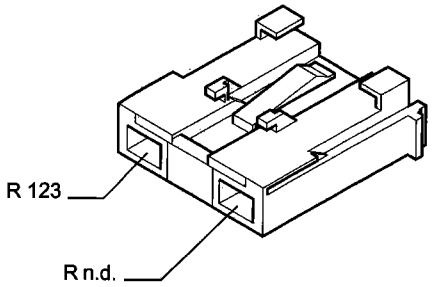
1998
1596



4F108ML05

129 Power fuse protecting engine cooling fan

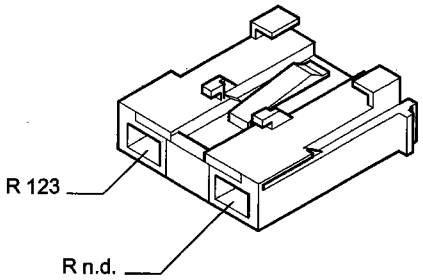
1910-JTD



4F108ML06

129A Power fuse protecting engine cooling fan

1910-JTD



4F108ML07

131 Fiat-CODE electronic control unit

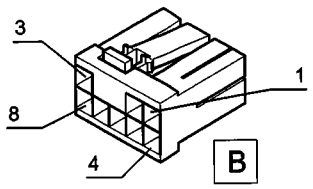
2 MN 6A

8 RV n.d.

4 N 55 [1998] N 193 [1596] [JTD]

8 GV 190A [1998] G 333A [JTD] GV 195A [1596]

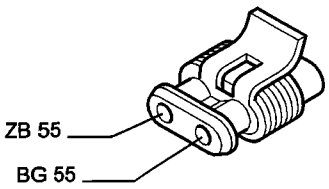
8 CB n.d.



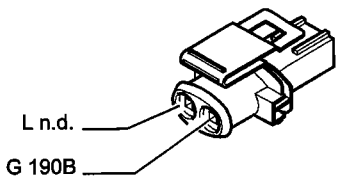
4F109ML01

132 Petrol vapours cut-out solenoid valve

1596

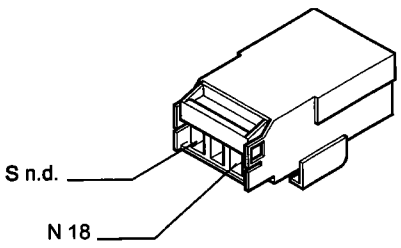


1998



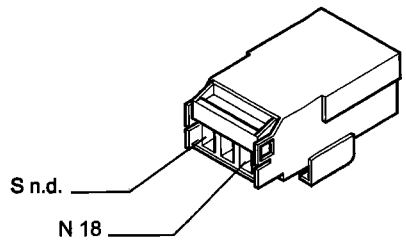
4F109ML02

134 Connection between rear/driver's heated seat cables



4F109ML03

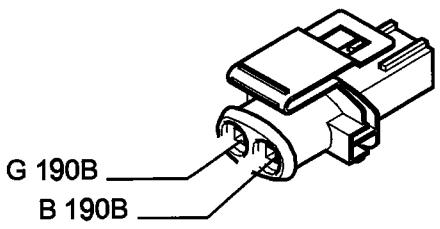
135 Connection between rear/passenger heated seat cables



4F109ML04

136A 2# Detonation sensor

1998



4F109ML05

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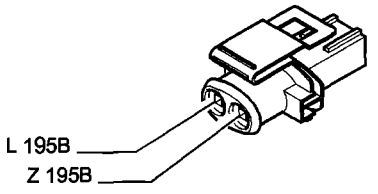
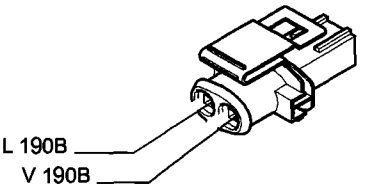
136 Detonation sensor

1596



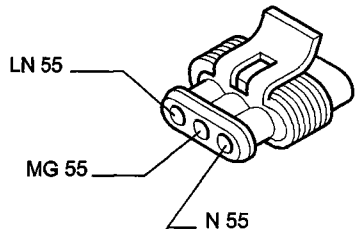
1998



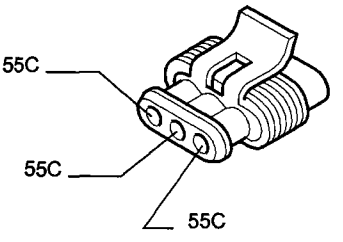
4F110ML01

137 Vehicle speed sensor

1596



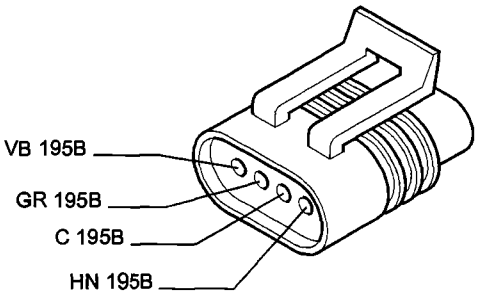
1998
JTD



4F110ML02

138 Idle adjustment actuator

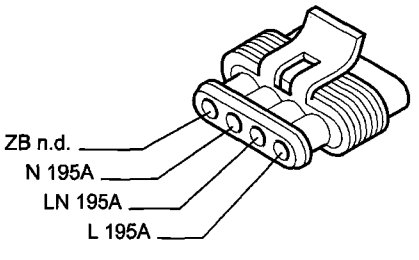
1596



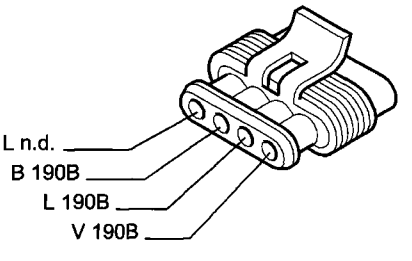
4F110ML03

141A Heated Lambda sensor (upstream of cat.)

1596



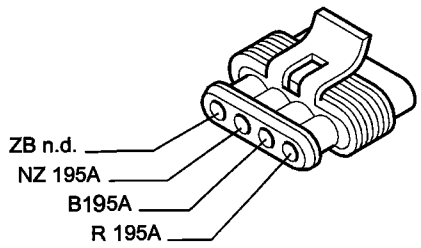
1998



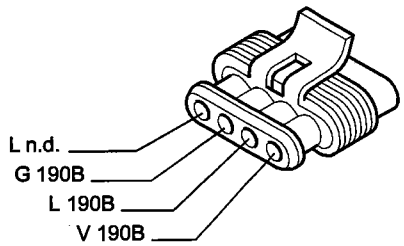
4F110ML04

141 B Heated Lambda sensor (downstream of cat.)

1596

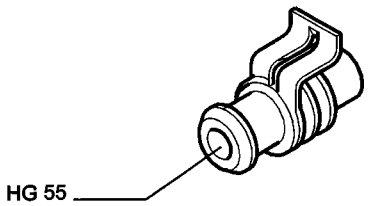


1998



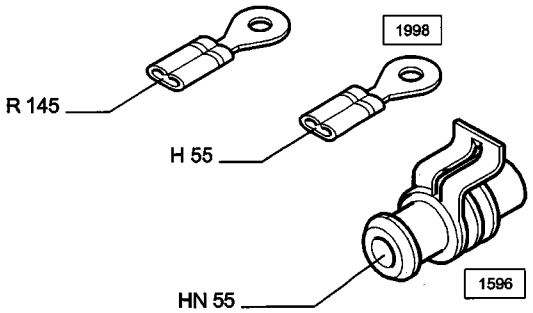
4F111ML01

142 Switch signalling insufficient engine oil pressure



4F111ML02

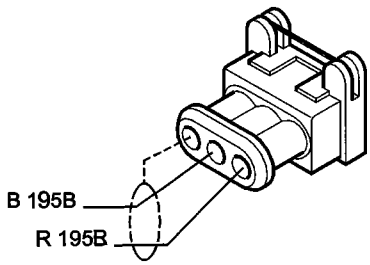
143 Alternator



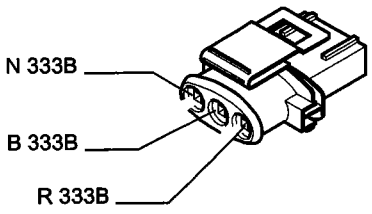
4F111ML03

144 Rpm and TDC sensor

1596

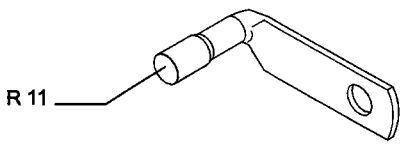


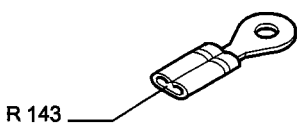
JTD



4F111ML04

145 Starter motor





4F111ML05

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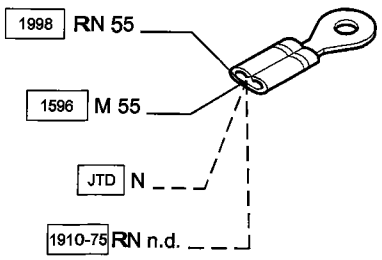
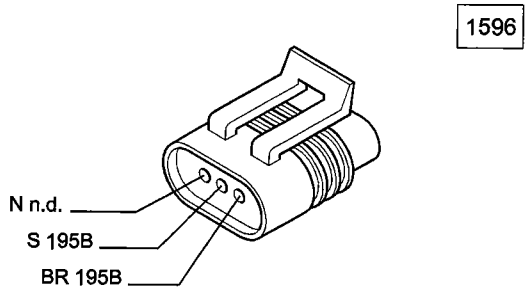
145A Starter motor



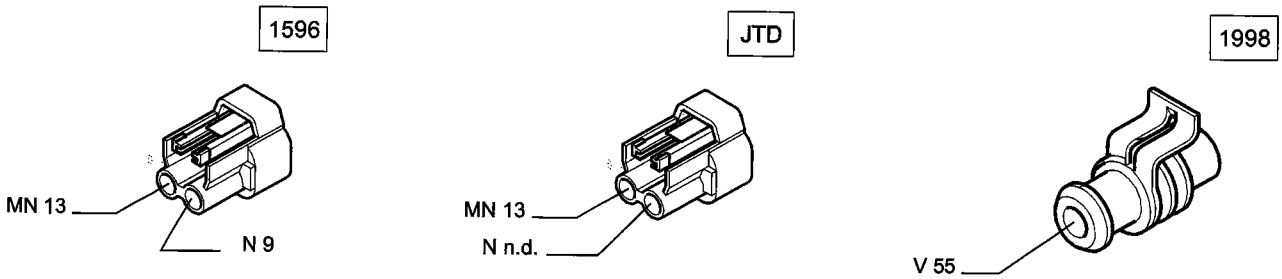
4F112ML01

146 Throttle valve potentiometer



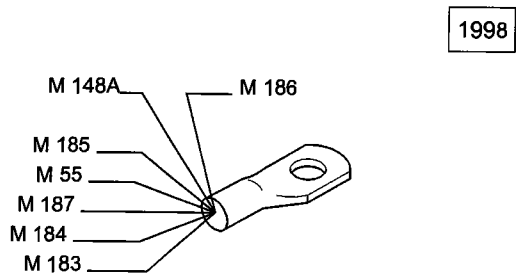
4F112ML02

147 Compressor for air conditioning



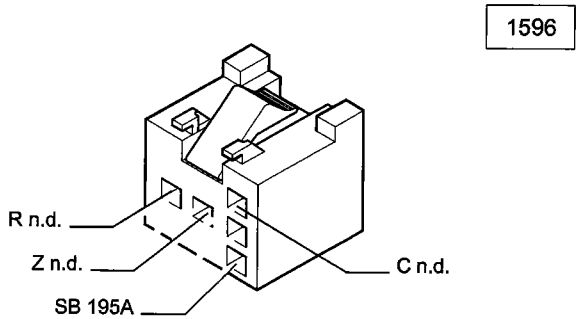
4F112ML03

148 Earth for electronic injection



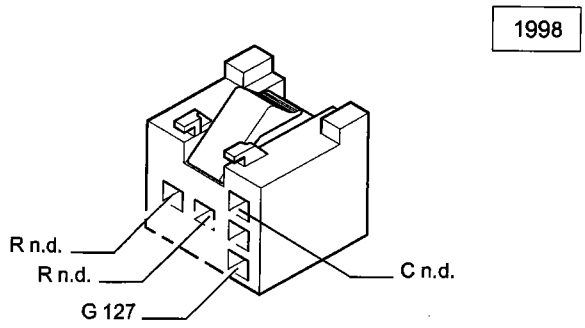
4F112ML04

150 Injection system relay feed



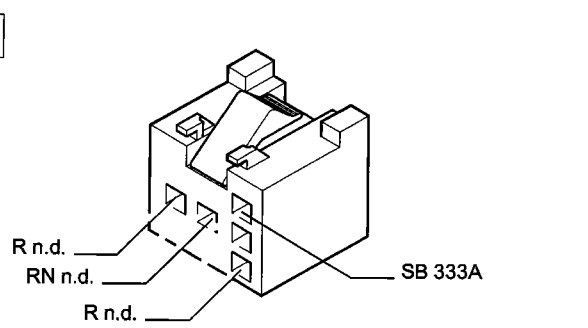
4F112ML05

150 Injection system relay feed



4F112ML06

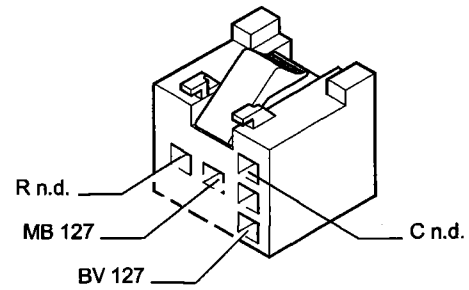
150 Injection system relay feed



4F112ML07

151 Relay feed for Lamda sensor, electric fuel pump, injectors

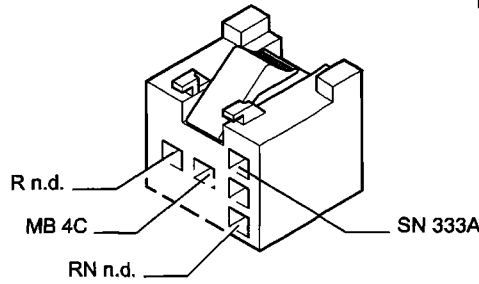
1998



4F113ML01

151 Relay feed for Lambda sensor, electric fuel pump, injectors

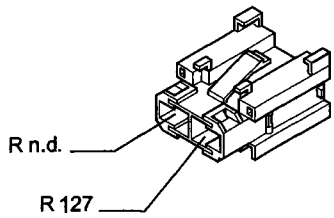
JTD



4F113ML02

152 Injection system protective fuse

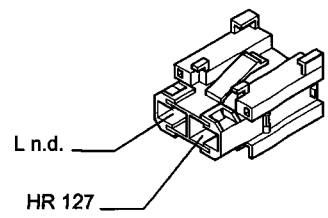
JTD



4F113ML03

152A Injection system protective fuse

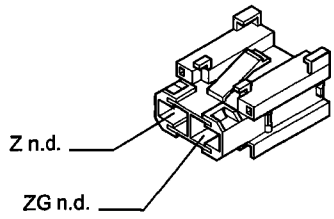
1998



4F113ML04

152B Injection system protective fuse

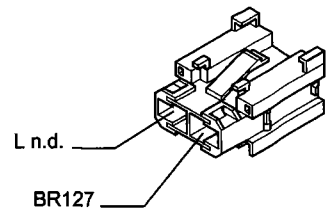
1596



4F113ML05

152B Injection system protective fuse

1998

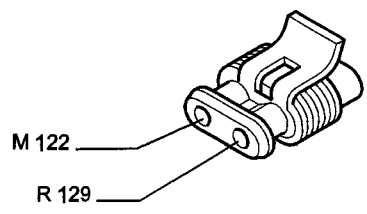


4F113ML06

154 Engine cooling fan

1596

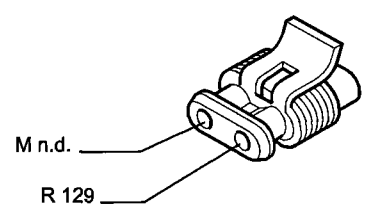
1998



4F113ML07

154 Engine cooling fan

1596



4F113ML08

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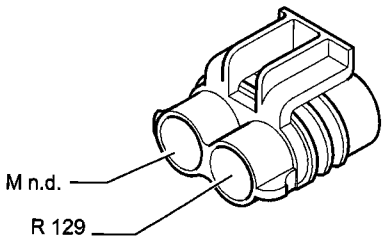
154 Engine cooling fan

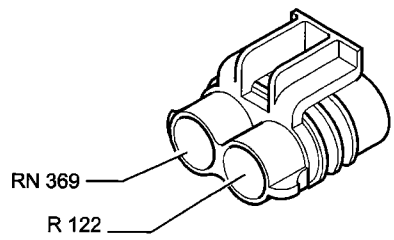
1910-JTD



4F114ML01

154 Engine cooling fan

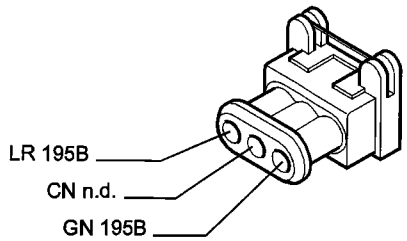
1910-JTD



4F114ML02

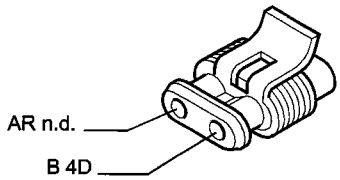
155 Ignition coil unit

1596



4F114ML03

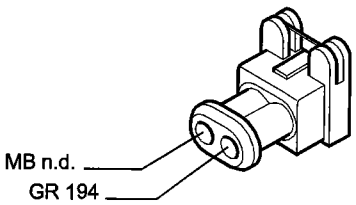
159 Reversing lights control switch



4F114ML04

162 Injectors (1)

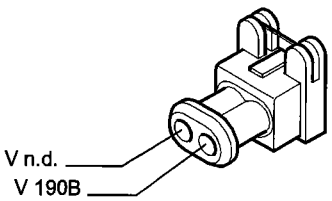
1596



4F114ML05

162 Injectors (1)

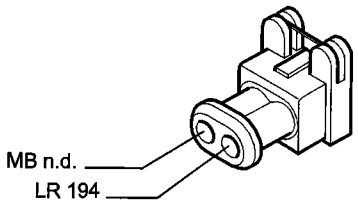
1998



4F114ML06

163 Injectors (2)

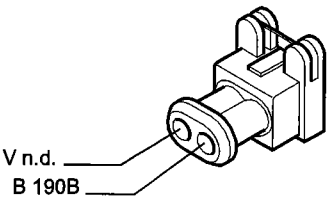
1596



4F114ML07

163 Injectors (2)

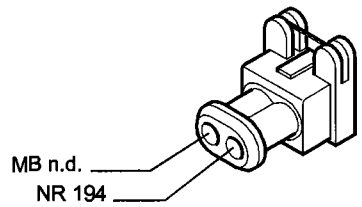
1998



4F114ML08

164 Injector (3)

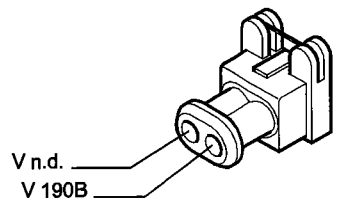
1596



4F115ML01

164 Injector (3)

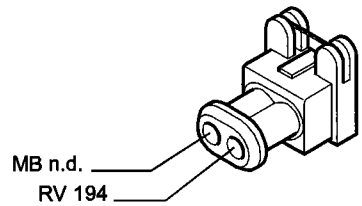
1998



4F115ML02

165 Injector (4)

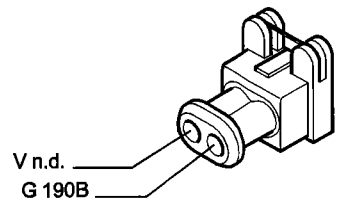
1596



4F115ML03

165 Injector (4)

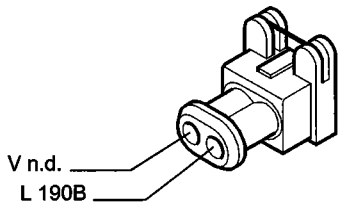
1998



4F115ML04

165A Injector (5) (1998)

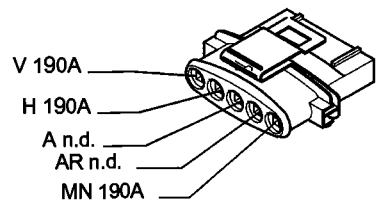
1998



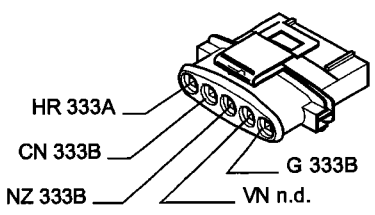
4F115ML05

167 Air flow meter

1998



JTD

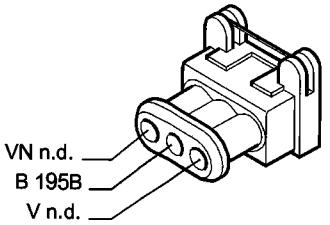


4F116ML06

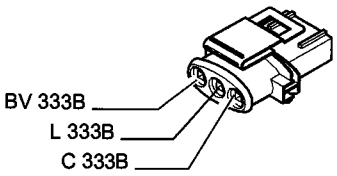
55.

168 Timing sensor

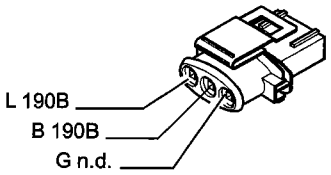
1596



JTD



1998

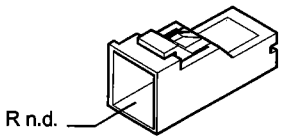


4F116ML01

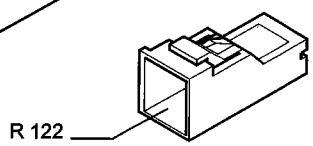
170 Resistance for engine cooling fan

1910-JTD

A



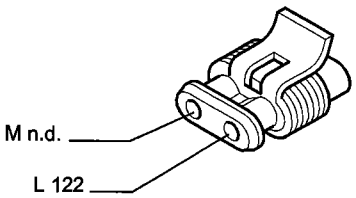
B



4F116ML02

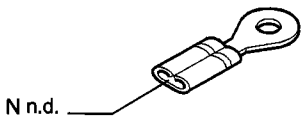
170 Resistance for engine cooling fan

1596



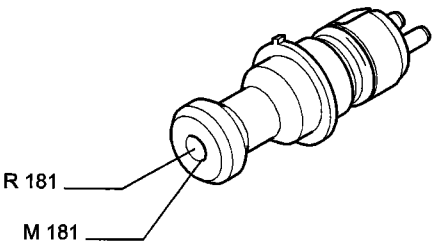
4F116ML03

174 Power earth for A.B.S.



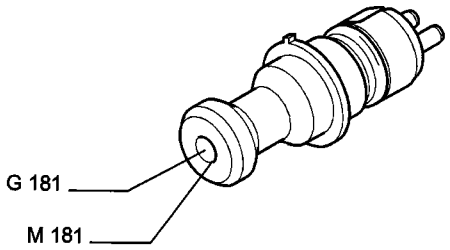
4F116ML04

177 Sensor on left front wheel for A.B.S.



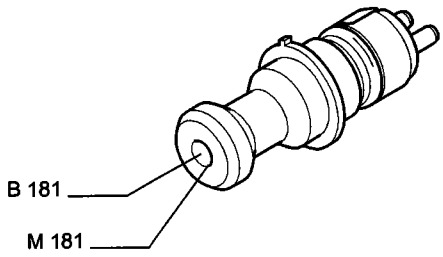
4F116ML05

178 Sensor on left rear wheel for A.B.S.



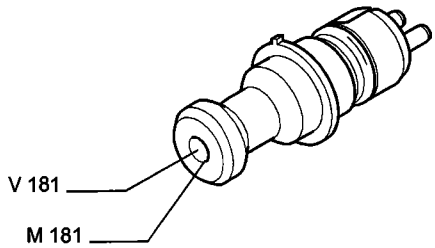
4F116ML06

179 Sensor on right front wheel (A.B.S.)



4F117ML01

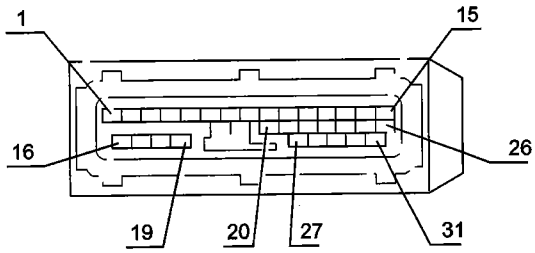
180 Sensor on right rear wheel (A.B.S.)



4F117ML02

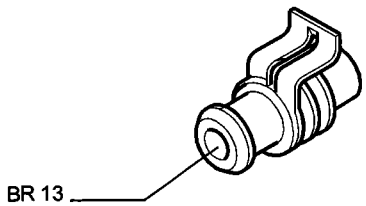
181 ABS hydraulic control unit

9	M 180	18	N n.d.
10	V 180	19	R n.d.
11	LN 95	20	RV 95
12	M 179	21	BN 95
13	B 179	22	M 178
14	M 177	23	G 178
15	C 95	24	LR 95
16	N n.d.	25	R 177
17	R n.d.		



4F117ML03

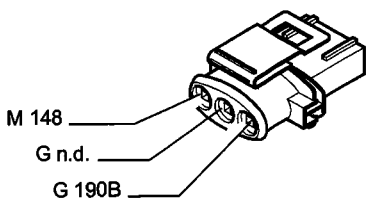
182A Right brake pad wear sensor cable connection



4F117ML04

183 Ignition coil (1°)

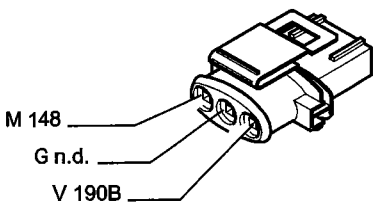
1998



4F117ML05

184 Ignition coil (2°)

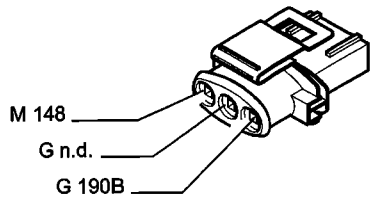
1998



4F117ML06

185 Ignition coil (3°)

1998

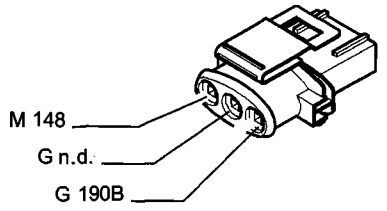


4F117ML07

55.

186 Ignition coil (4°)

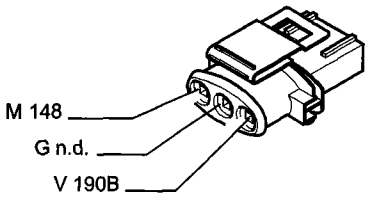
1998



4F118ML01

187 Ignition coil (5°) (1998)

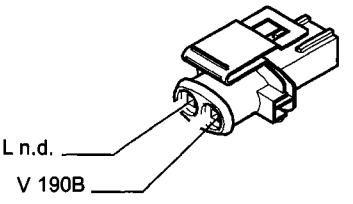
1998



4F118ML02

189 Phase transformer solenoid valve

1998

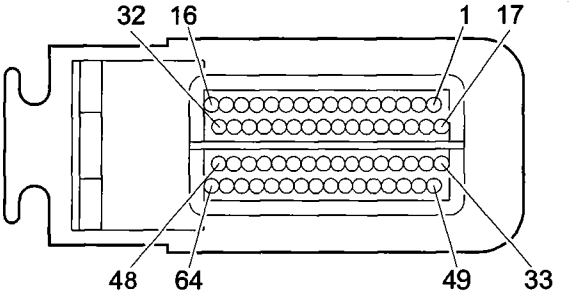


4F118ML03

190A Injection/ignition electronic control unit (1998)

1998

3	GV 131	22	GN 6A	41	BN 127	57	V 167
6	S 127	24	ZB 291	44	VB 6A	59	SB 292
7	AN 291	25	A n.d	46	LN 6A	62	AB 127
8	GN 291	27	RN n.d.	47	C n.d	63	H 167
9	B 127	30	BG 127	48	BV n.d		
13	MG 127	31	G 127	50	AG 127		
15	RV n.d.	32	BV n.d	53	BR 375		
16	BV n.d	35	L 6A	54	MN 167		
21	VG 376	40	HB 291	56	ZN 291		

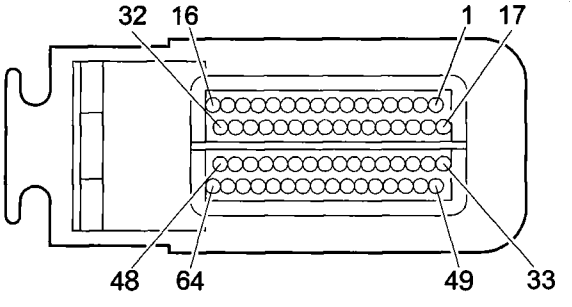


4F118ML04

190B Injection/ignition electronic control unit (1998)

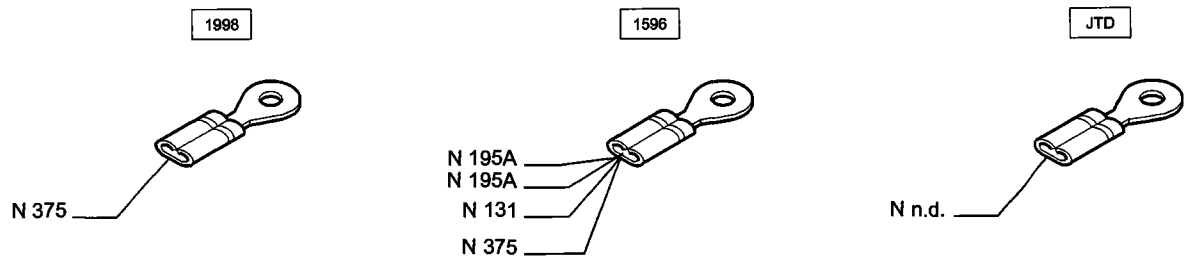
1998

1	G n.d.	17	V n.d.	32	V 184	52	L 165A
2	G 141B	19	V 162	33	B n.d.	54	L 136
3	G 165	20	V 164	34	B 141A	55	L 141
4	G 189	22	V 136	35	B 163	58	L 364
5	G 132	23	V 141A	36	B 363	59	L 223
6	G 136A	24	V 364	38	B 136A	60	L 141B
10	G 223	25	V 334	40	B 364		
14	G 185	26	V n.d.	42	B 168		
15	G 186	28	V 141B	49	L n.d.		
16	G 183	31	V 187	51	L 168		



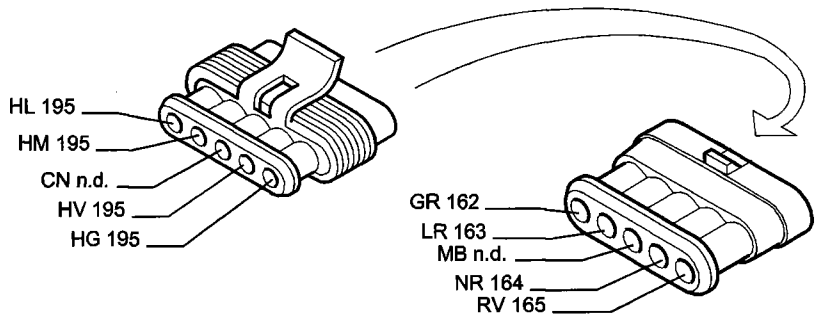
4F118ML05

193 Earth for electronic injection



4F119ML01

194 Injection/injector braid lead connection

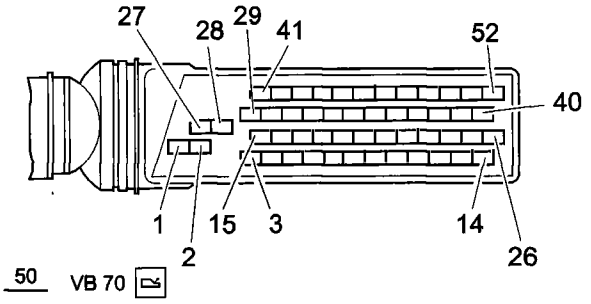


4F119ML02

195A Injection/ignition electronic control unit (1596)

1596

1	N 141A	20	L 141A	29	RN n.d.	50	VB 70
2	NZ 141B	21	BN 127	35	B 127	50	VB 6A
4	L 6A	23	GN 6A	36	LR 252	52	RG 55
5	V 252	23	GN 70	40	AG 127		
9	LN 141A	24	B 141B	41	MG 127		
12	R 141B	25	BR n.d.	44	V n.d.		
13	GV 131	25	BR 375	46	BG 268		
14	AB 127	26	LN 6A	47	C n.d.		
15	SB 150	27	N 193	48	S 127		
16	GN 252	28	N 193	49	NZ 252		

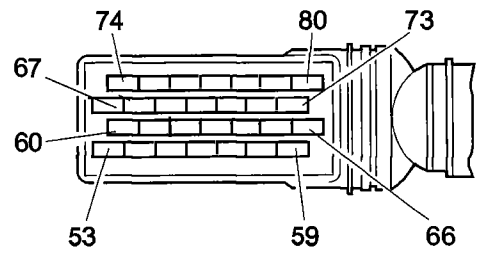


4F119ML03

195B Injection/ignition electronic control unti (1596)

1596

53	R 144	65	VB 138	77	NZ n.d.
54	N n.d.	66	LR 155	78	HM 194
55	ZB 278	67	B 144	79	HV 194
56	L 136	68	V 278		
57	C 138	69	B 168		
58	HN 138	70	Z 136		
59	GN 155	71	HG 194		
60	S 146	72	HL 194		
62	SN 339	75	RN 278		
64	GR 138	76	BR 146		

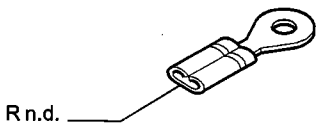


4F119ML04

55.

201 A Heater plugs control unit

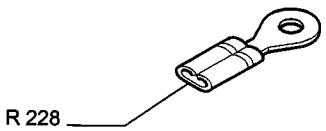
JTD



4F120ML01

201 C Heater plugs control unit

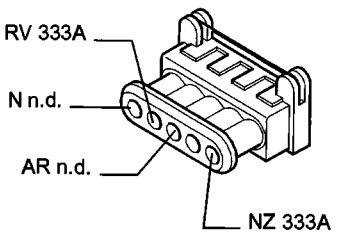
JTD



4F120ML02

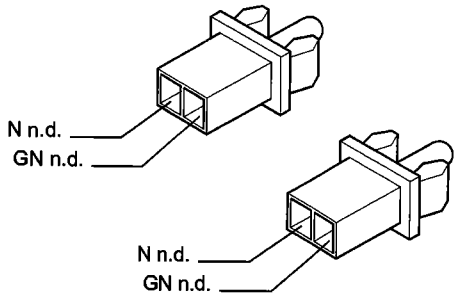
201 C Heater plugs control unit

JTD



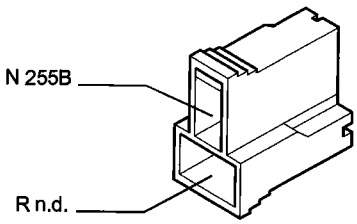
4F120ML03

202 Heater/air conditioning unit symbol lighting bulbs



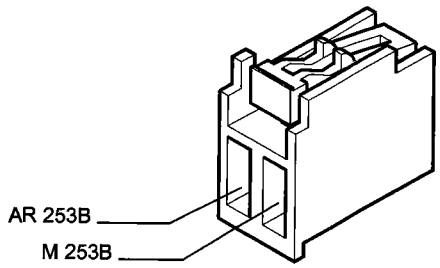
4F120ML04

206 Car interior climate control fan



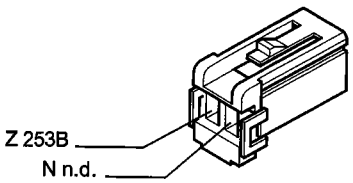
4F120ML05

209 Air intake flap control actuator



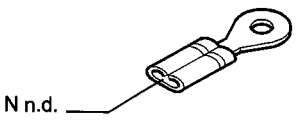
4F120ML06

211 Frost sensor



4F120ML07

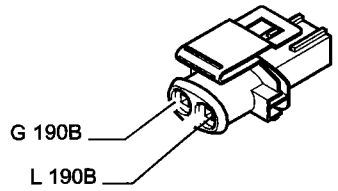
222 Earth for climate control system



4F120ML08

223 Rpm sensors

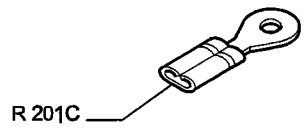
1998



4F121ML01

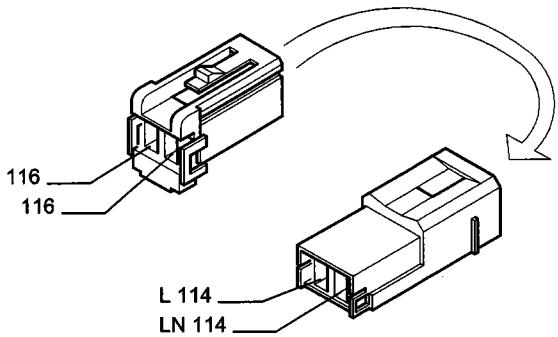
228 Heater plugs

JTD



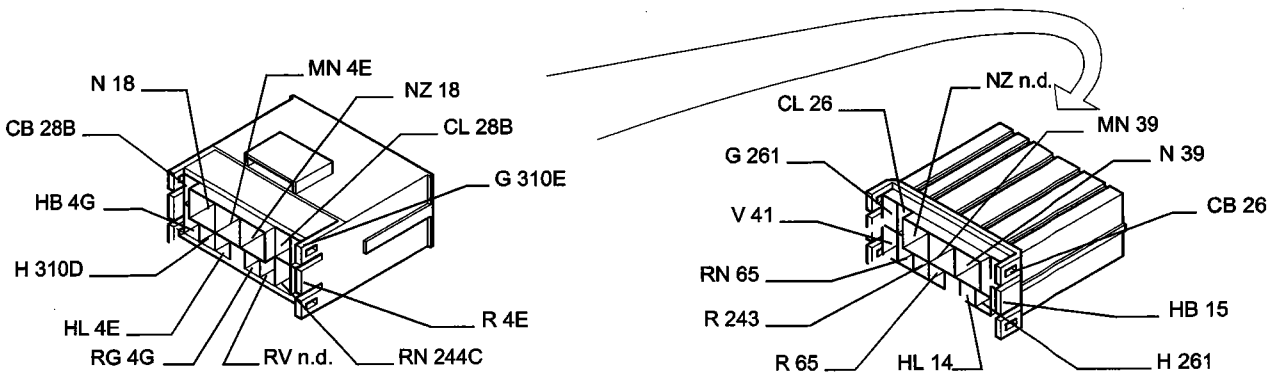
4F121ML02

231 Connection between rear/clock spring cables



4F121ML03

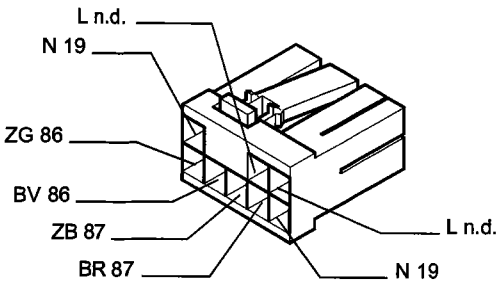
236 Connection betwen rear lead and tail-gate



4F121ML04

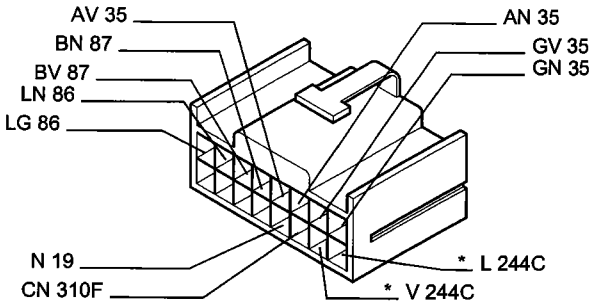
55.

238A Electric windows control unit rear



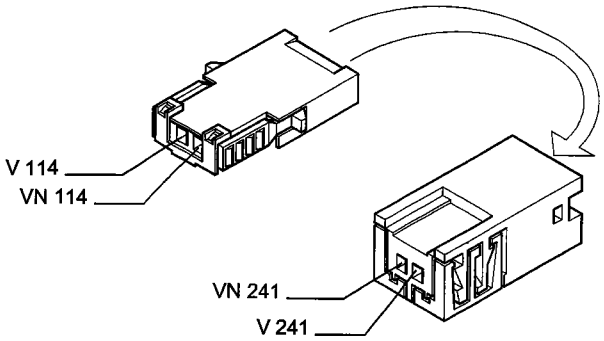
4F122ML01

238B Electric windows control unit rear



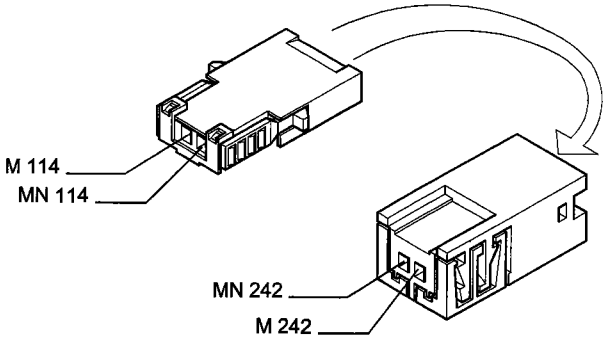
4F122ML02

239 Connection between Air Bag/ left pretensioner cables



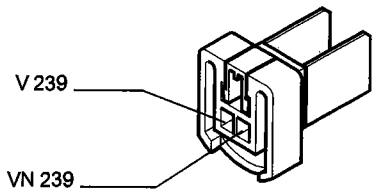
4F122ML03

240 Connection between Air Bag/right pre-tensioner cables



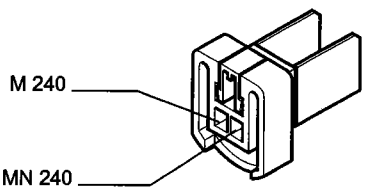
4F122ML04

241 Left pretensioner



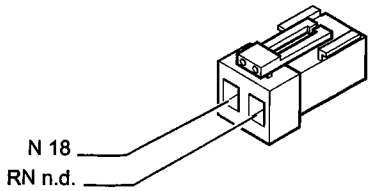
4F122ML05

242 Right pretensioner



4F122ML06

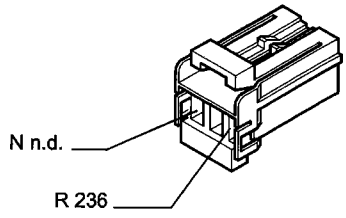
243 Luggage compartment light button



Marea

4F122ML07

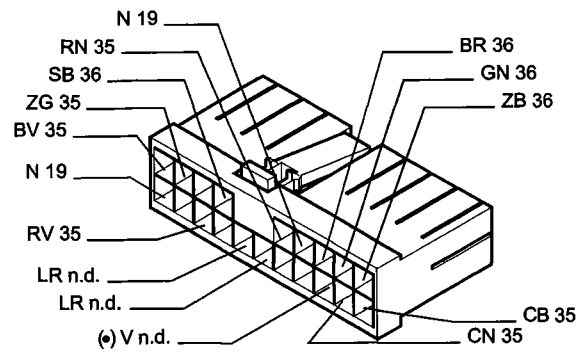
243 Luggage compartment light button



Marea Weekend

4F122ML08

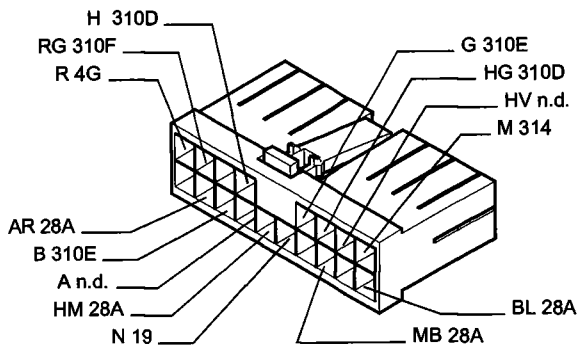
244A Integrated services control system



(●) Automatic window closure

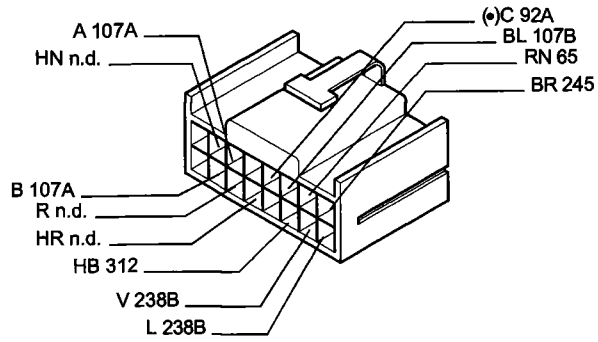
4F123ML01

244B Integrated services control system



4F123ML02

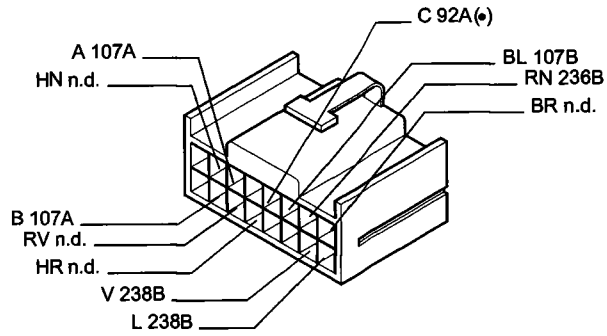
244C Integrated services control system



Marea
(●) Automatic window closure

4F123ML03

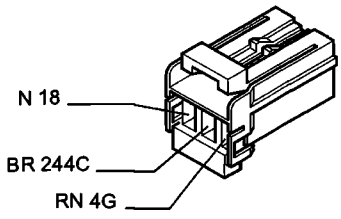
244C Integrated services control system



Marea Weekend
(●) Automatic window closure

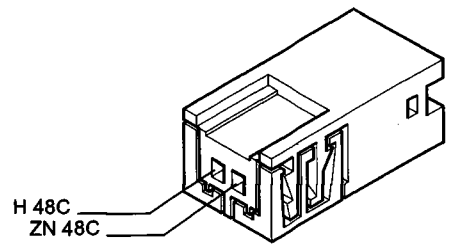
4F123ML04

245 Rear courtesy lgiht



4F123ML05

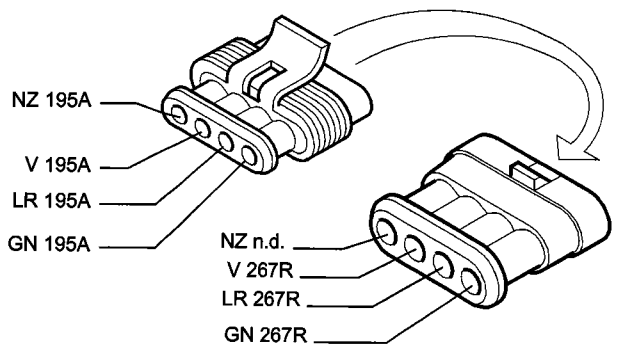
248 Radio controls on steering wheel



4F123ML06

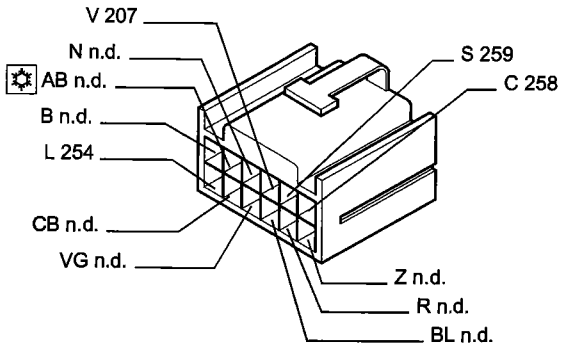
55.

252 Connection between automatic transmission and engine cables



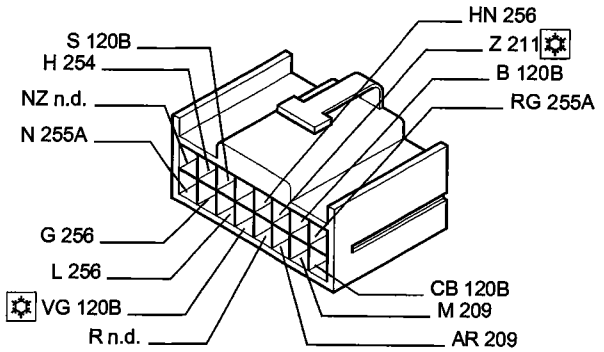
4F124ML01

253A Air conditioner control unit



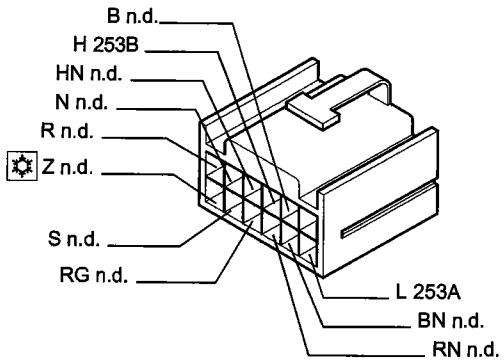
4F124ML02

253B Air conditioner control unit



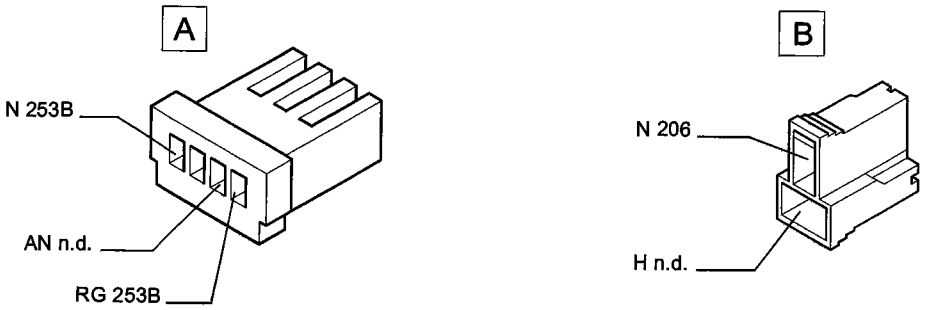
4F124ML03

254 Climate control system controls with passenger compartment temperature



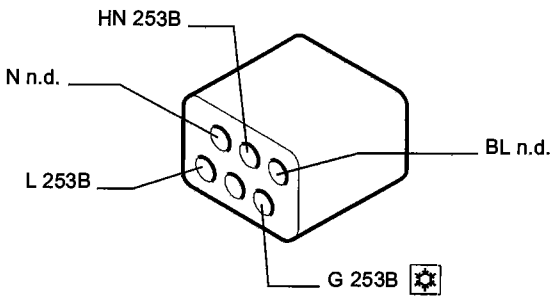
4F124ML04

255 Electronic speed governor for climate control fan



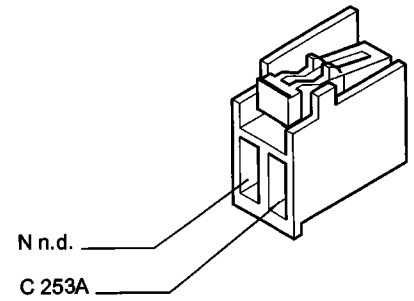
4F124ML05

256 Mixture air control actuator



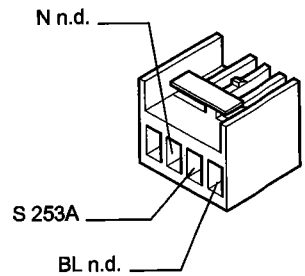
4F124ML06

258 Treated air temperature sensor



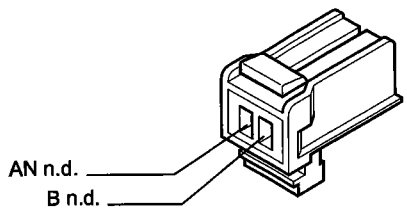
4F125ML01

259 Required temperature adjustment switch



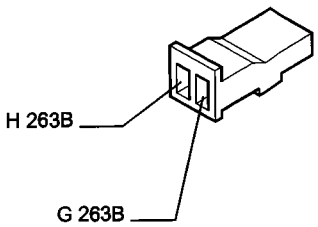
4F125ML02

260 MAX-DEF microswitch



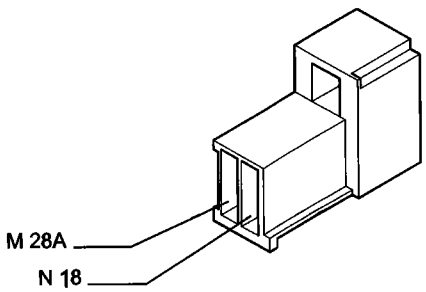
4F125ML03

261 Tailgate locking/unlocking actuator



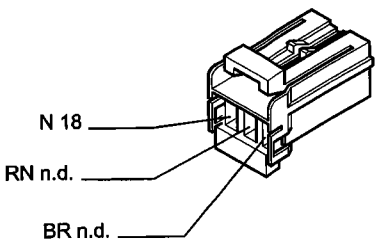
4F125ML04

262 Seat belts warning light switch



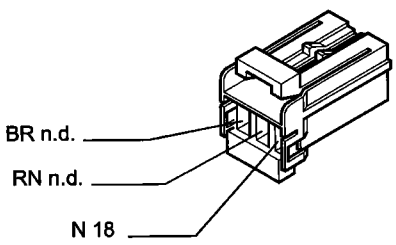
4F125ML05

264 Left rear vehicle interior courtesy light



4F125ML06

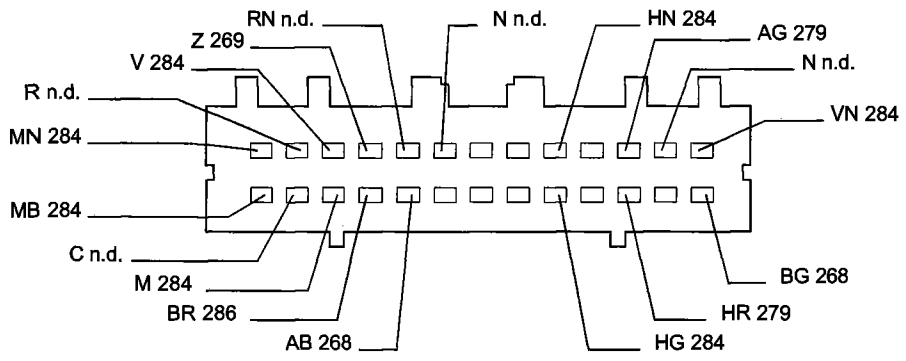
265 Right rear vehicle interior courtesy light



4F125ML07

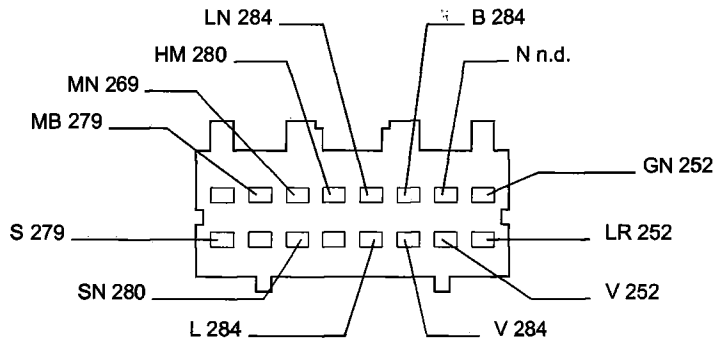
55.

267L Automatic transmission control unit



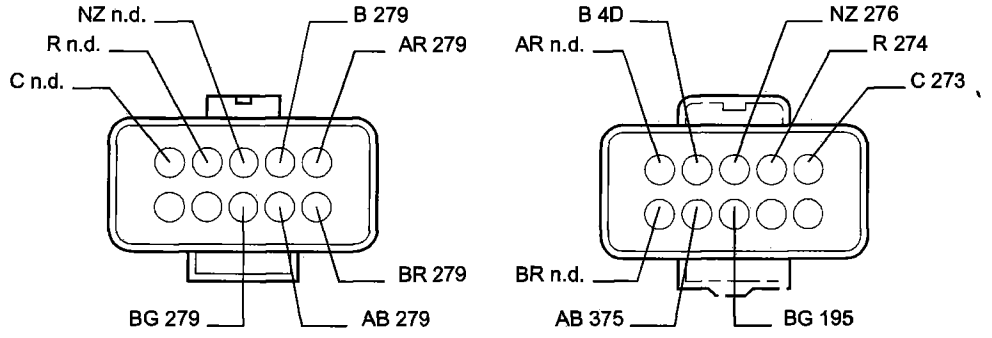
4F126ML01

267R Automatic transmission control unit



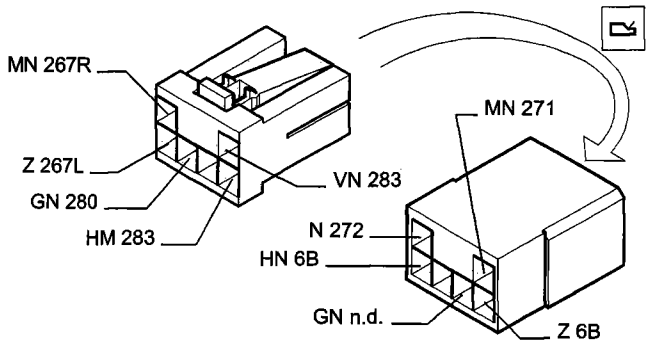
4F126ML02

268 Connection between automatic transmission/front cables



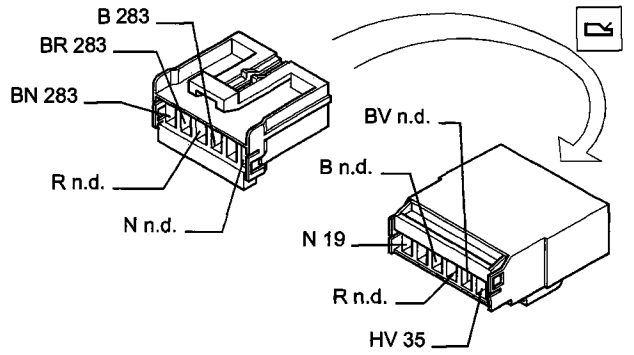
4F126ML03

269 Connection between automatic transmission/dashboard cables



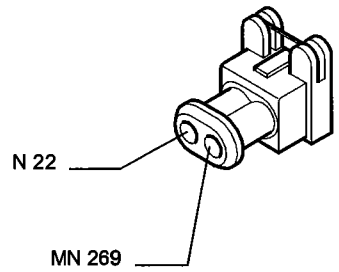
4F126ML04

270 Connection between automatic transmission/rear cables



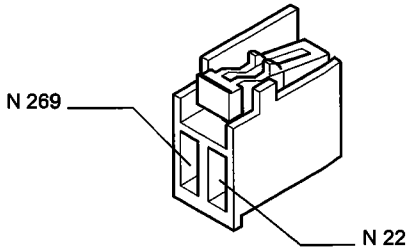
4F126ML05

271 Kick-down switch



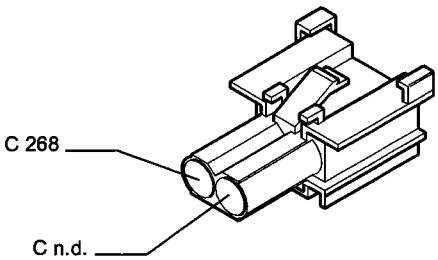
4F127ML01

272 Ignition switch solenoid



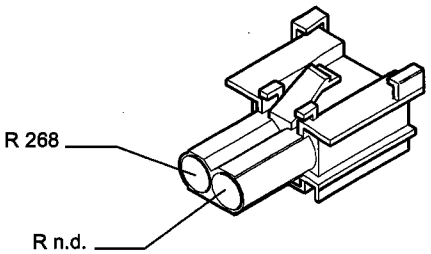
4F127ML02

273 Automatic transmission system protective fuse



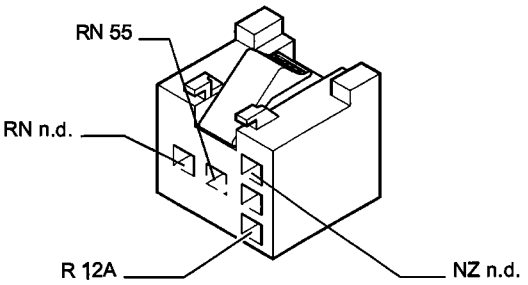
4F127ML03

274 Automatic transmission system protective fuse



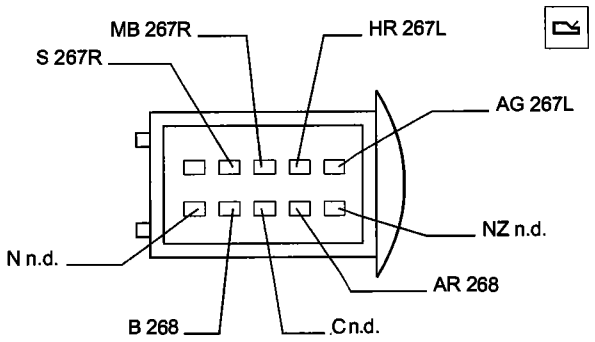
4F127ML04

276 Starter enablement relay



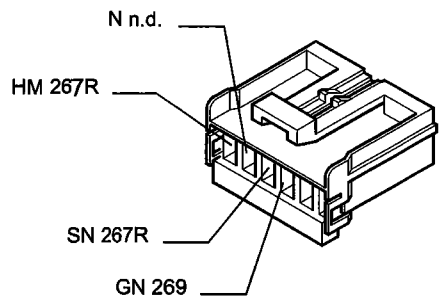
4F127ML05

279 Automatic transmission gear selector



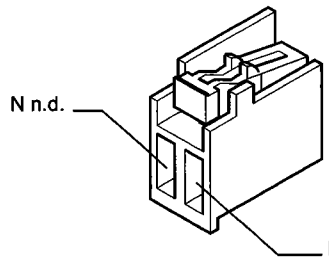
4F127ML06

280 ICE/SPORT selector for automatic transmission



4F127ML07

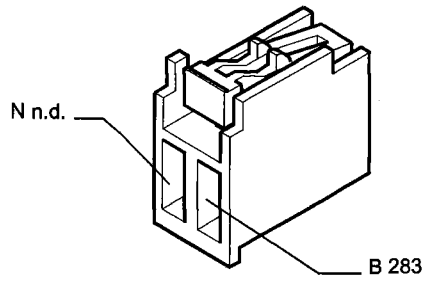
281 Shift Lock solenoid



4F127ML08

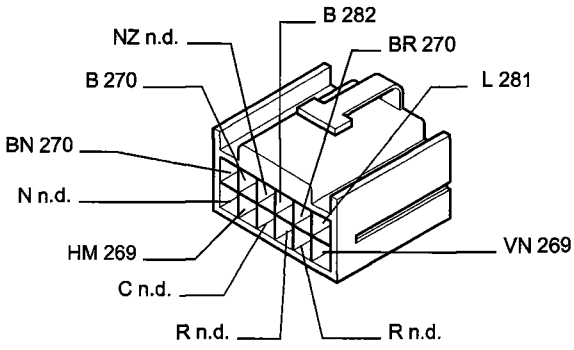
55.

282 Additional PARK cut out for automatic transmission



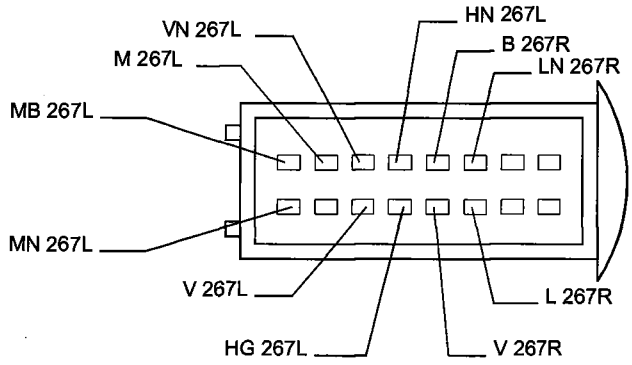
4F128ML01

283 Safety control unit for automatic transmission



4F128ML02

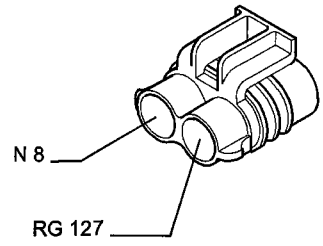
284 Automatic transmission connection on gearbox



4F128ML03

290 Heater coil (PCT)

JTD

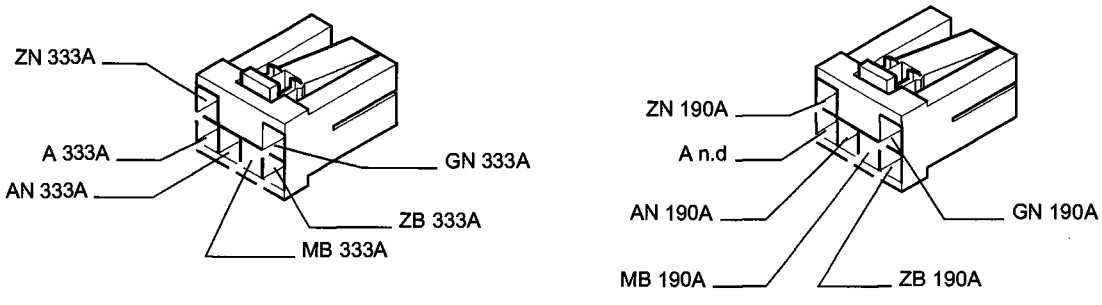


4F128ML04

291 Potentiometer on accelerator pedal

JTD

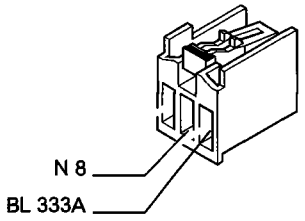
1998



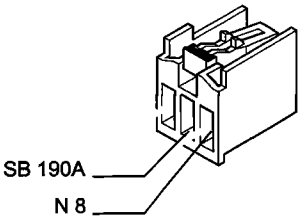
4F128ML05

292 Clutch pedal switch

JTD



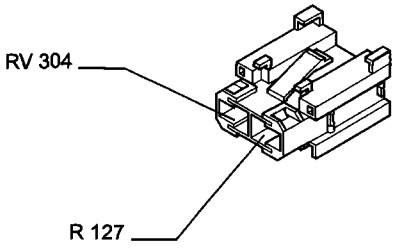
1998



4F129ML01

303 Fuse protecting diesel preheating

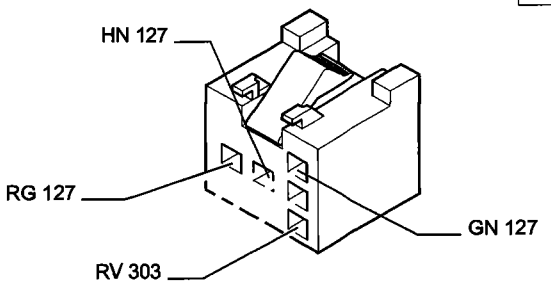
JTD



4F129ML02

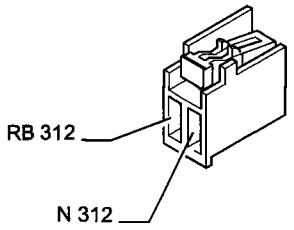
304 Diesel preheating protection relay

JTD



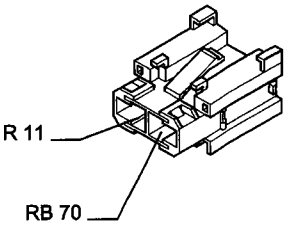
4F129ML03

306 Coupling for TAXI radio preparation



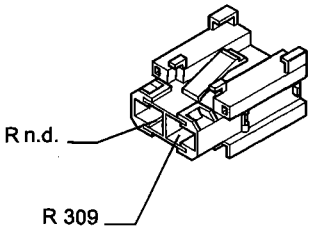
4F129ML04

307 Protective fuse for TAXI radio



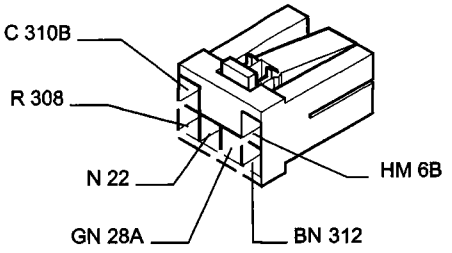
4F129ML05

308 Taxi meter protective fuse



4F129ML06

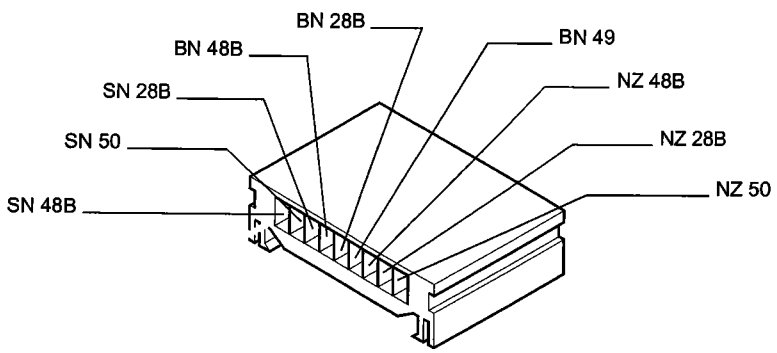
309 Taxi meter



4F129ML07

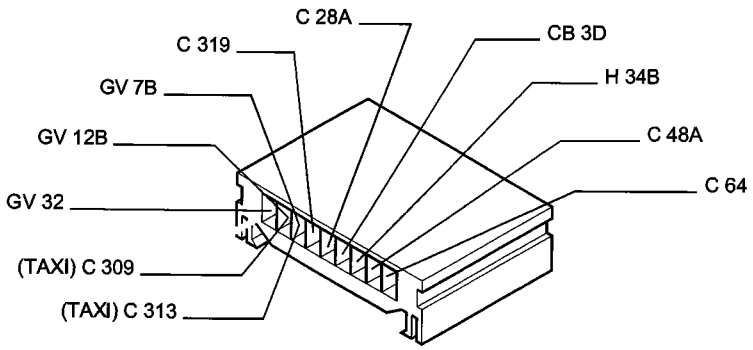
55.

310A Connection shunt



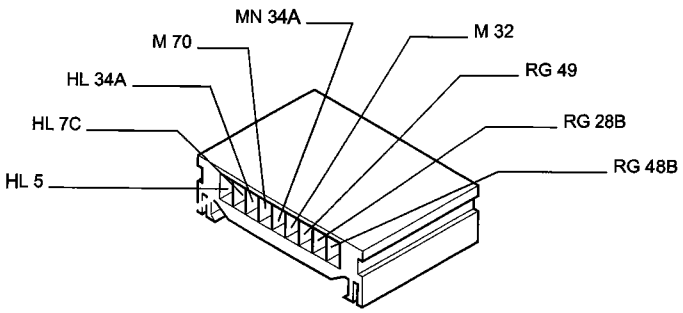
4F130ML01

310B Connection shunt



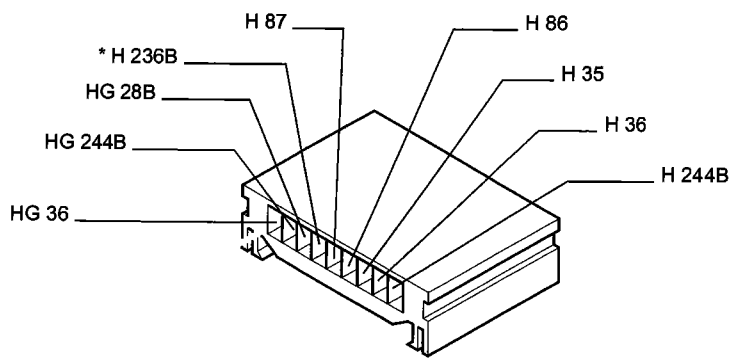
4F130ML02

310C Connection shunt



4F130ML03

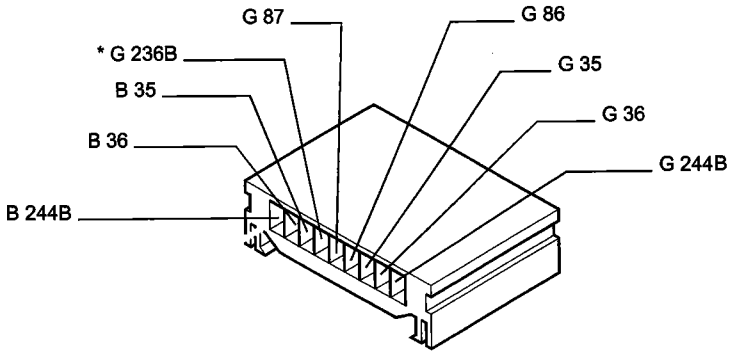
310D Connection shunt



* Marea Weekend

4F130ML04

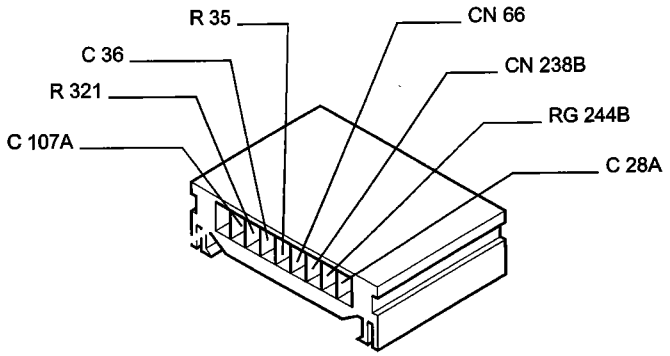
310E Connection shunt



* Marea Weekend

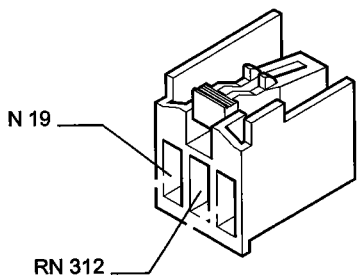
4F131ML01

310F Connection shunt



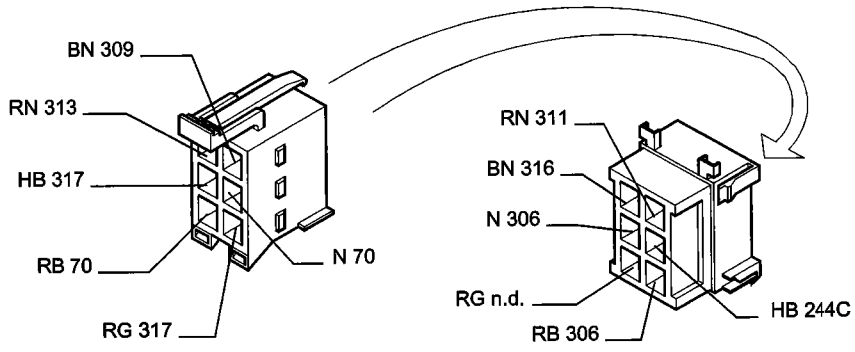
4F131ML02

311 Current socket in luggage compartment



4F131ML03

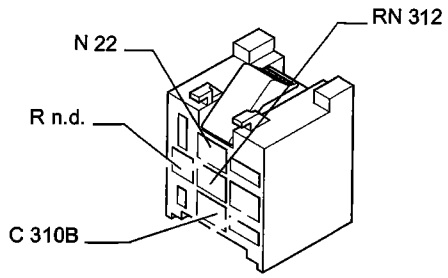
312 Coupling for rear cables/TAXI dashboard



4F131ML04

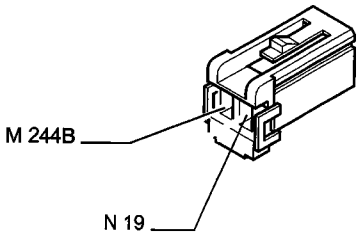
55.

313 Current socket relay



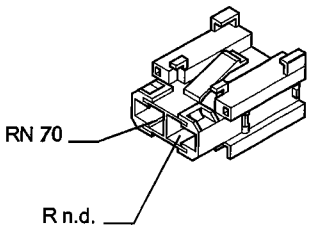
4F132ML01

314 Right rear door opening switch



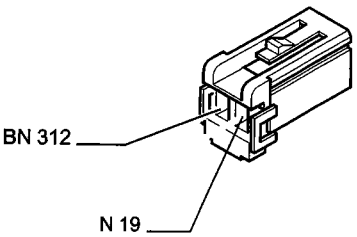
4F132ML02

315 Current socket fuse



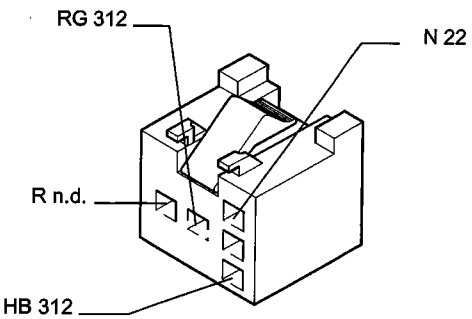
4F132ML03

316 TAXI sign light



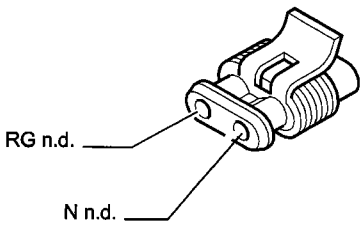
4F132ML04

317 Right rear door relay feed



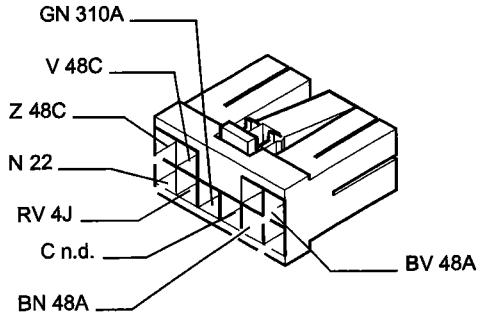
4F132ML05

318 Rear door opening actuator right



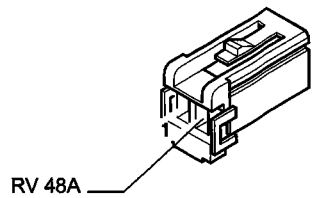
4F132ML06

319 Connection for car phone



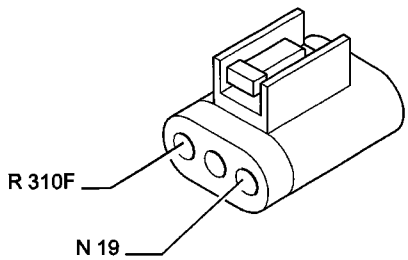
4F133ML01

320 Aerial feeder



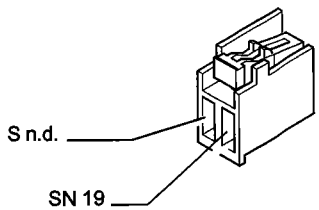
4F133ML02

321 TELEPASS connection



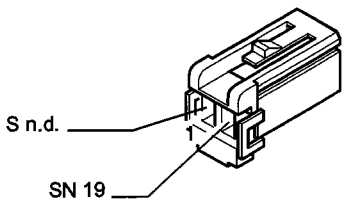
4F133ML03

322 Seat height adjustment connection



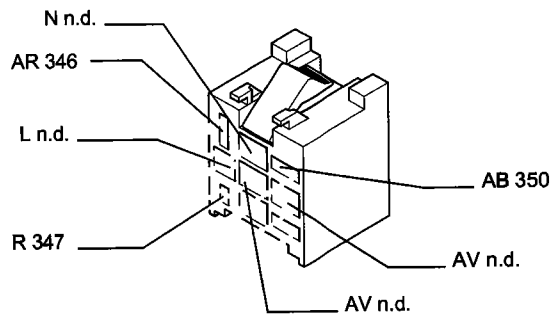
4F133ML04

323 Seat lumbar adjustment connection



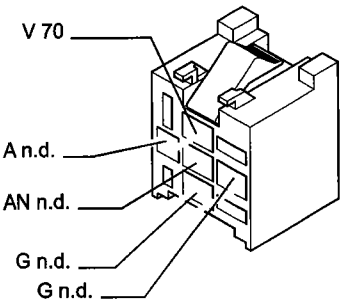
4F133ML05

326 Additional heater control unit



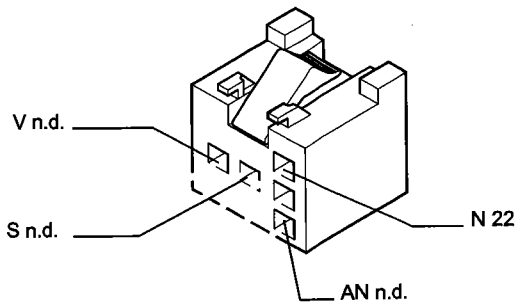
4F133ML06

328 Hazard warning lights relay



4F133ML07

332 Ignition activated power relay



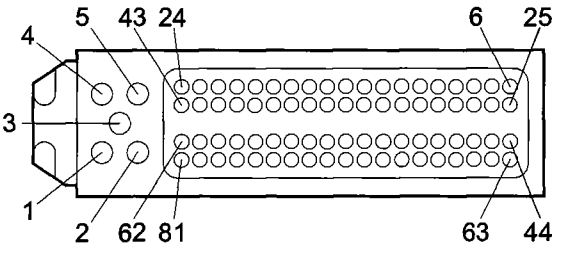
4F133ML08

55.

333A Injection control unit (JTD)

JTD

1	N n.d.	16	BV 55	48	BR 375	76	ZB 291
2	N n.d.	17	CR 377	49	VB 6A	77	GN 291
3	N n.d.	18	MG 127	51	BN 127	78	ZN 291
4	R n.d.	19	AB 127	52	B 127	79	A 291
5	RN n.d.	20	AG 127	58	CB n.d.	80	MB 291
11	GV 131	21	LN 6A	59	LR n.d.	81	AN 291
13	SB 150	22	RV 201B	60	S 127		
14	CL 6A	24	SN 151	61	BL 292		
15	BG 55	47	L n.d.	62	NZ 201B		

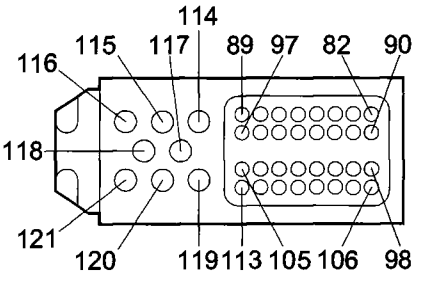


4F134ML01

333B Injection control unit (JTD)

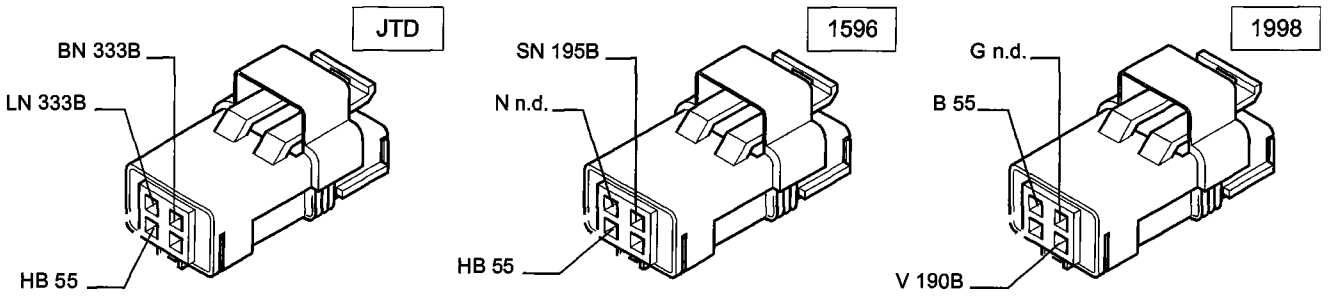
JTD

82	SN 55	92	H 342	103	L 168	120	V 337
83	S 55	93	LR 343	104	C 168	121	MV 338
84	BN 334	94	HM 343	108	CB 341		
85	LN 334	95	HN 343	109	HB 341		
86	G 167	97	CN 167	111	MB 55		
88	NZ 167	99	R 144	114	VB 339		
89	HR 167	100	B 144	117	VN n.d.		
90	LG 342	101	N 144	118	NV n.d.		
91	HV 342	102	BV 168	119	NL 336		



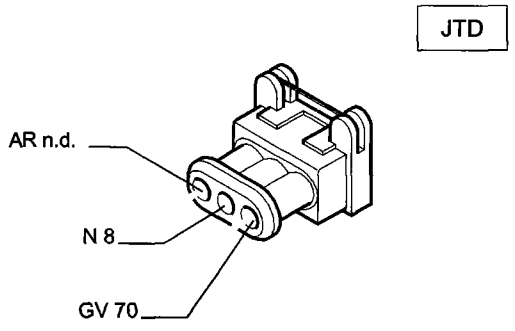
4F134ML02

334 Engine temperature dual sender unit



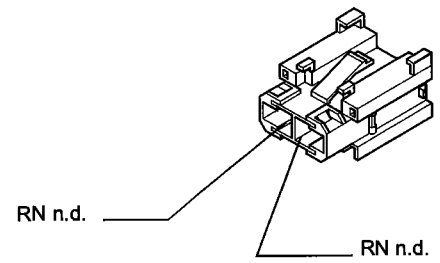
4F134ML03

335 Water in diesel filter sensor



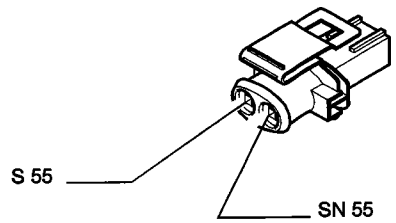
4F134ML04

336 Injector cyl. 1 (JTD)



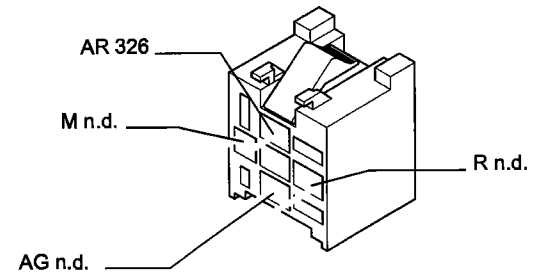
4F136ML01

337 Injector cyl. 2 (JTD)



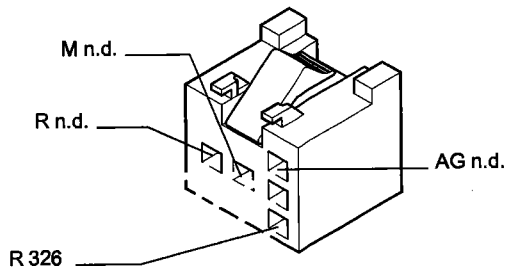
4F136ML02

338 Injector cyl. 3 (JTD)



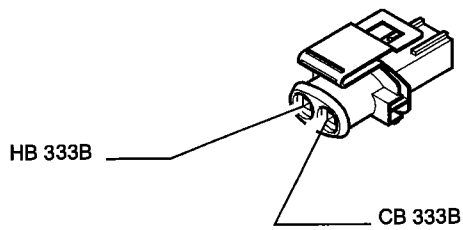
4F136ML03

339 Injector cyl. 4 (JTD)



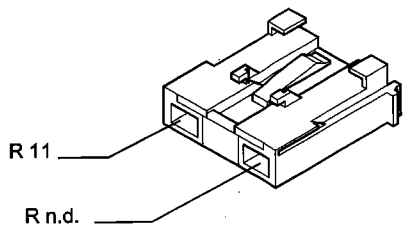
4F136ML04

341 Fuel pressure regulator (JTD)



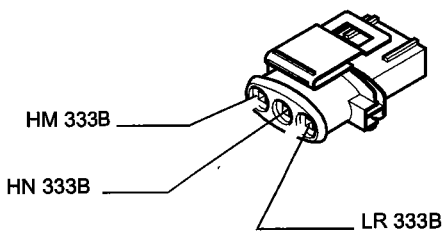
4F135ML05

342 Fuel pressure sensor (JTD)



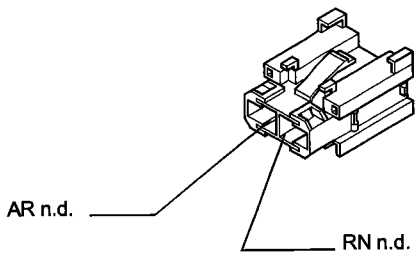
4F136ML06

343 Turbo pressure sensor (JTD)



4F135ML07

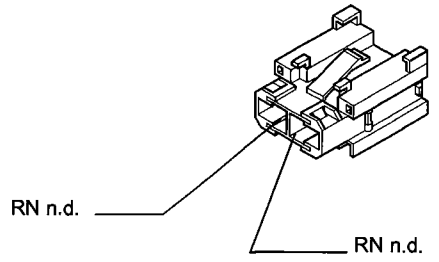
344A I.E. protective fuse (JTD)



4F135ML08

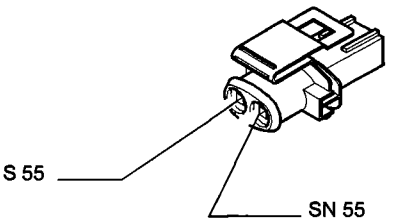
55.

344B I.E. protective fuse (JTD)



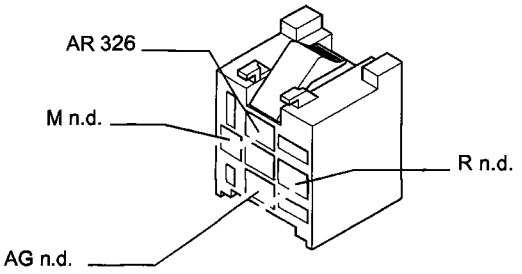
4F136ML01

345 Fuel temperature sensor (JTD)



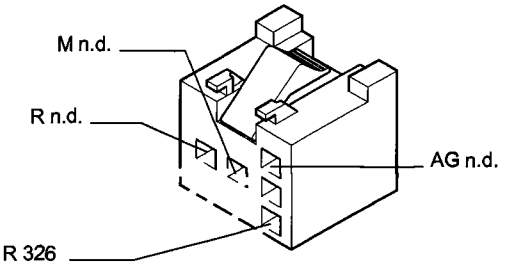
4F136ML02

346 Additional heater relay



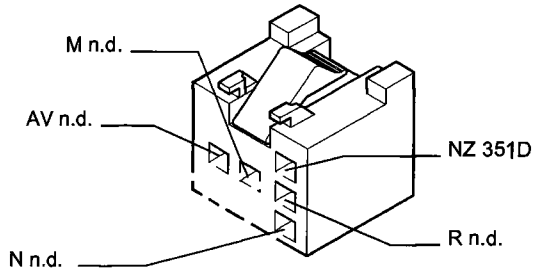
4F136ML03

347 Additional heater relay



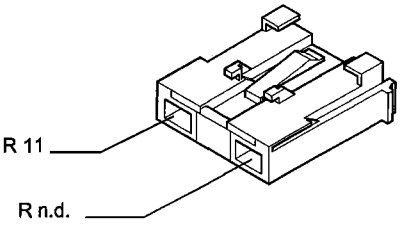
4F136ML04

348 Additional heater remote control swictch



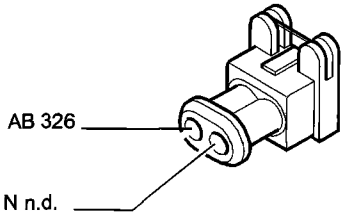
4F136ML05

349 Additional heater protection fuse



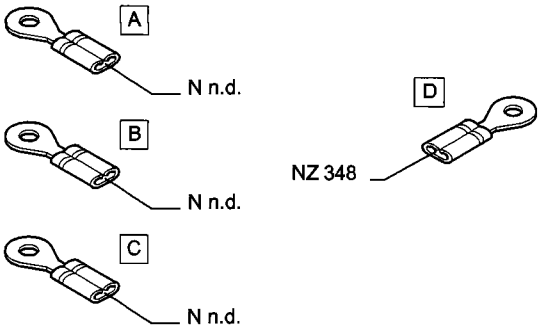
4F136ML06

350 Additional heater sensor



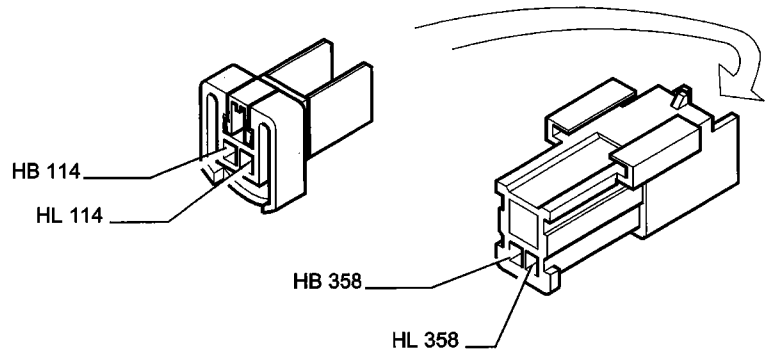
4F136ML07

351 Additional heater spark plugs



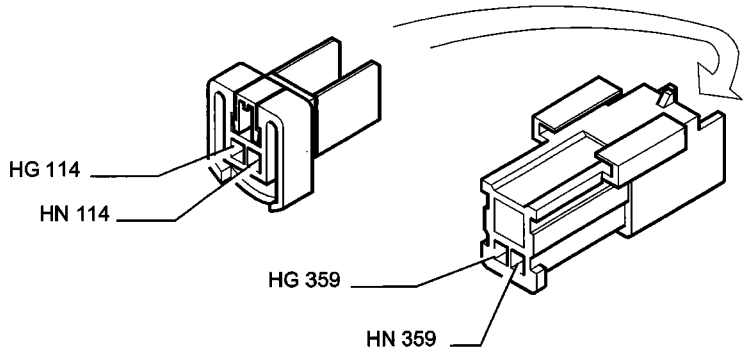
4F136ML08

352 Left Side Bag connection



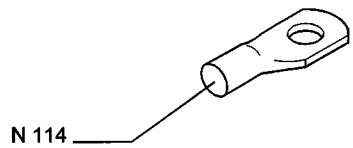
4F137ML01

353 Right Side Bag connection



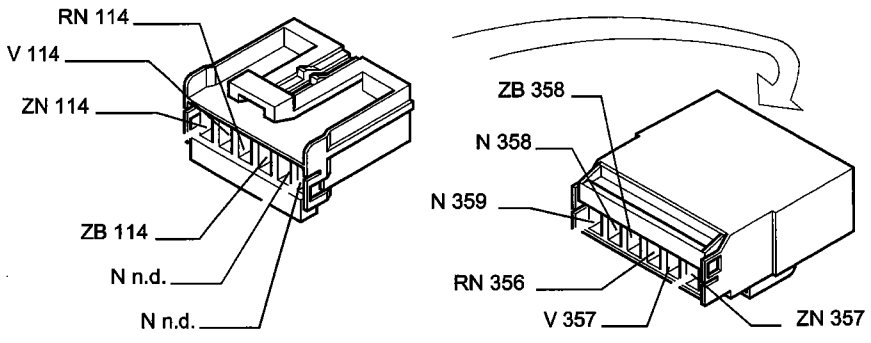
4F137ML02

354 Air Bag earth



4F137ML03

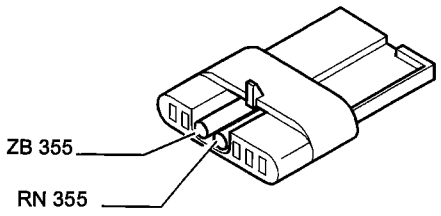
355 Pretensioners connection



4F137ML04

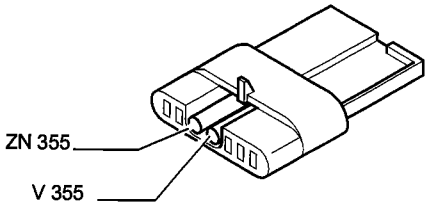
55.

356 Left Side Bag sensor



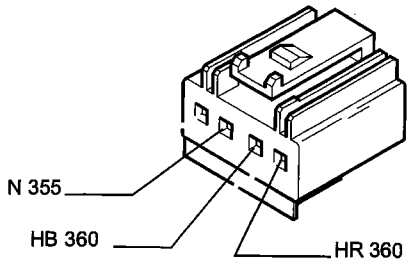
4F138ML01

357 Right Side Bag sensor



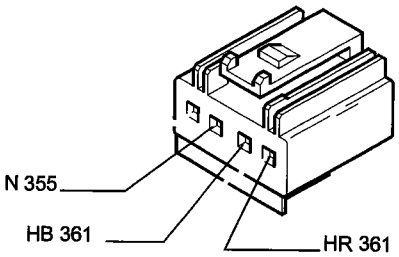
4F138ML02

358 Left Side Bag



4F138ML03

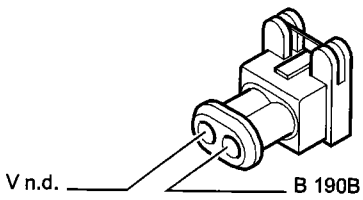
359 Right Side Bag



4F138ML04

363 Phase transformer actuator (1998)

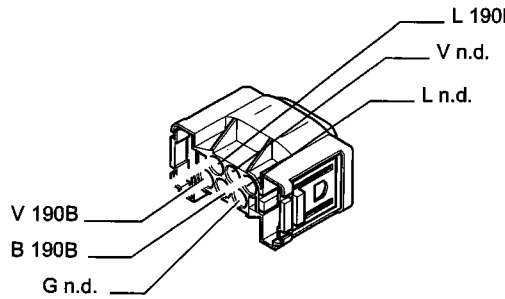
1998



4F138ML05

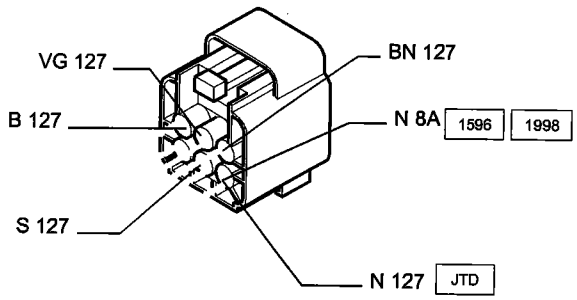
364 Motorized throttle body

1998



4F138ML06

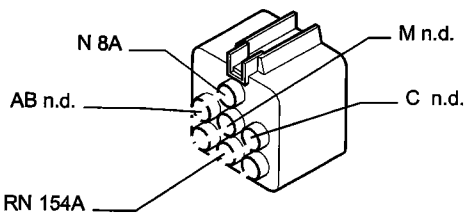
365 4 stage pressure switch



4F138ML07

369 Remote control switch for engine cooling fan

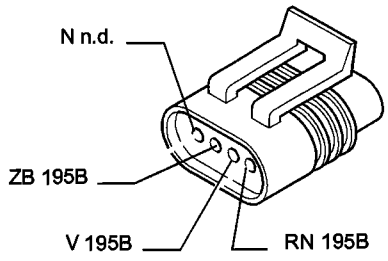
1910-JTD



4F138ML08

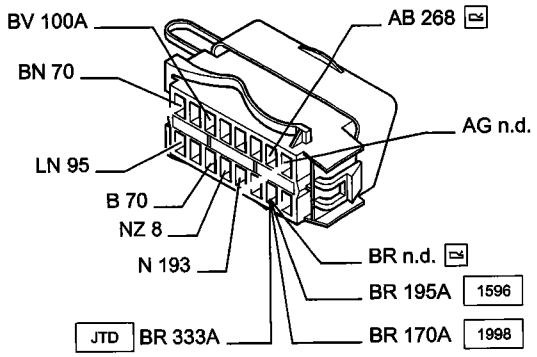
373 Air temperature and pressure sensor

1596



4F139ML01

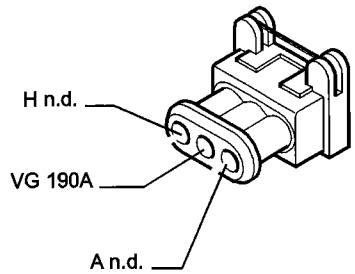
375 Standardized diagnostic socket



4F139ML02

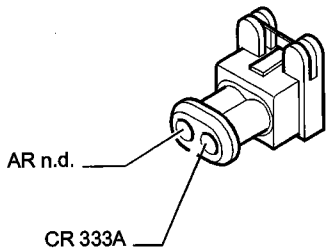
376 Acceleration sensors

1998



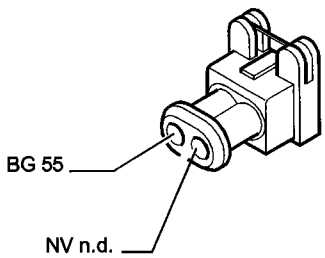
4F139ML03

377 Variable geometry solenoid valve



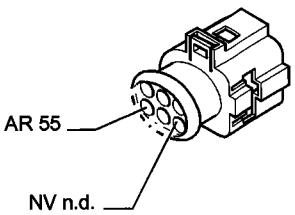
4F139ML04

378 Throttle adjustment solenoid valve



4F139ML05

379 EGR solenoid



4F139ML06

Component key

1 Left front light cluster
2 Right front light cluster
3 Power fusebox
4 Junction unit
5 Dipped headlamps relay feed
6 Instrument panel
7 Steering column switch unit
8 Left front earth
9 Right front earth
10 Engine battery earth
10A Bodyshell battery earth
11 Battery
12 Ignition switch
13 Connection between right/left front cables
14 Left number plate light bulb
15 Right number plate light bulb
16 Left rear light cluster
17S Right rear light cluster
18 Left rear earth
19 Right rear earth
20 Left front side direction indicator
21 Right front side direction indicator
22 Left facia earth
23 Hazard warning lights switch unit
24 Windscreen wiper motor
25 Electric windscreen/rearscreen washer pump
26 Windscreen wiper motor
28 Connection between dashboard/rear cables
29 Connection between front/fog light cables
30 Left fog light
31 Right fog light
32 Fog lamp control relay
34 Switch control panel
35 Connection between dashboard/left front door cables
36 Connection between dashboard/right front door cables
39 Heated rear windscreen
40 Brake lights control switch
41 Additional brake light
42 Right dashborad earth
43 Left headlamp alignment corrector actuator
44 Right headlamp alignment corrector actuaor
45 Headlamp alignment control unit
46 Left low tone horn
47 Right high tone horn
48 Radio receiver with clock
49 Left front tweeter speaker
50 Right front tweeter speaker
52 Speaker in right front door
53 Left rear speaker
54 Right rear speaker
55 Front/engine lead connection
56 Fuel gauge unit
57 Inertia switch
58 Control panel light dimmer
64 Glove compartment light bulb with built in switch
65 Luggage compartment light
66 Electrically-adjustable door mirror contro buttons
67 Left door mirror
68 Right door mirror
69 Cigar lighter
70 Connection between dashborad/front cables
73 Pushbutton unit for front electric windows on left arm-rest
74 Pushbutton unit for right front electric windows on right arm-rest
76 Left front electric window motor
77 Right front electric window motor
78 Pushbutton unit for rear electric windows on left front door
80 Rear electric window inhibition switch
82 Pushbutton unit for left rear electric windows on left front door
83 Pushbutton unit for right rear electric windows on right rear door
84 Left rear electric window motor
85 Right rear electric window motor
86 Connection between rear/left rear door cables
87 Connection between rear/right rear doo cables
88 Insufficient brake fluid level sensor
89A Left brake pad wear sensor cable connection
90 Switch signalling handbrake applied
92A Electric sun-roof lead connection
93A Electric sun roof control unit
95 Connection between front/anti-lock brakes A.B.S. cables
96 Power fuse for anti-lock brakes A.B.S.
97 Electric headlamp washer pump
98 Headlamp washer intermittence
100 Alarm electronic control unit
105 Alarm deactivation switch
106 Alarm switch on engine bonnet
107A Door remote control receiver
107B Vehicle interior front courtesy light
108 Left rear central locking
109 Right rear central locking
110 Left front central locking
111 Right front central locking
114 Air bag electronic contol unit
115 Passenger Air Bag
116 Driver's Air Bag
117 Air Bag/facia cables connection
120 Connection for air conditioning unit cables
121 Three stage pressure switch
122 Engine cooling fan low speed relay
122 Engine cooling fan low speed relay
123 Engine cooling fan high speed relay feed
124 Air condiitoning compressor control relay
127 Connection between front left cable/cable on relay holder bracket

128 Connection between front/radiator cables
129 Engine cooling fan protection power fuse
129A Power fuse protecting engine cooling fan no.2
131 Fiat-CODE electronic control unit
132 Petrol vapours cut-out solenoid valve
134 Connection between rear/heated driver's seat cables
135 Connection between rear/heated passenger seat cables
136 Detonation sensor
136A 2nd Detonation sensor
137 Vehicle speed sensor
138 Idle adjustment actuator
139 Tester socket for injection system
141A Heated Lambda sensor (upstream of cat.)
141B Heated Lambda sensor (downstream of cat.)
142 Switch signalling insufficient engine oil pressure
143 Alternator
144 Rev and TDC sensor
145 Starter motor
146 Throttle valve potentiometer
147 Compressor for air conditioning
148 Earth for electronic injection
150 Injection system relay feed
151 Relay feed for Lambda sensor, electric fuel pump, injectors
152 Fuse protecting injection system
152A Fuse protecting injection system
152B Fuse protecting injection system
154 Engine cooling fan
155 Ignition coil unit
156 Spark plugs
159 Reversing lights control switch
162 Injector (1)
163 Injector (2)
164 Injector (3)
165 Injector (4)
165A Injector (5) (1998)
166 Idle adjustment actuator
167 Air flow meter
168 Timing sensor
170 Resistance for engine cooling fan
174 Power earth for A.B.S.
177 Sensor on left front wheel for A.B.S.
178 Sensor on left rear wheel for A.B.S.
179 Sensor on right front wheel for A.B.S.
180 Sensor on right rear wheel for A.B.S.
181 A.B.S. hydraulic control unit
182A Right brake pad wear sensor cable connection
183 Ignition coil (1°)
184 Ignition coil (2°)
185 Ignition coil (3°)
186 Ignition coil (4°)
187 Ignition coil (5°) (1998)
189 Variable valve timing
190 Injection/ignition electronic control unit (1998)
193 Earth for electronic injection
194 Injection/injector braid lead connection
195 Injection/ignition electronic control unit (1596)
199 FIAT CODE aerial
201 Heaer plugs control unit
202 Heater/air conditioning unit symbol lighting bulbs
206 Car interior climate control fan
209 Intake air flap control actuator
211 Frost sensor
222 Climate control system earth
223 RPM sensor
228 Heater plugs (TD)
231 Clock spring connector
236 Connection betwen rear lead and tail-gate
238 Rear electric windows control unit
239 Connection between Air Bag/left pretensioner cables
240 Connection between Air Bag/right pretensioner cables
241 Left pretensioner
242 Right pretensioner
243 Luggage compartment light button
244 Integrated services control system
245 Rear courtesy light
248 Radio controls on steering wheel
252 Connection between automatic transmission/engine cables
253 Air conditioner control unit
254 Climate control system controls with passenger compartment temperature sensor
255 Electronic speed governor for climate control fan
256 Air mixture control actuator
257 Fuel pump relay feed
258 Treated air temperature sensor
259 Required temperature adjustment switch
260 MAX-DEF microswitch
261 Tailgate locking/unlocking actuator
262 Seat belts warning light switch
264 Left rear vehicle interior courtesy light
265 Right rear vehicle interior courtesy light
267 Automatic transmission control unit
268 Connection between automatic transmission/front cables
269 Connection between automatic transmission/dashboard cables
270 Connection between automatic transmission/rear cables
271 Kick-down switch
272 Ignition switch solenoid
273 Automatic transmission system protective fuse

274 Automatic transmission system protective fuse
276 Starter enablement relay
279 Automatic transmission gear selector
280 ICE/SPORT selector for automatic transmission
281 Shift Lock solenoid
282 Additional PARK cut out for automatic transmission
283 Safety control unit for automatic transmission
284 Automatic transmission connection on gearbox
290 Heater coil (PCT)
291 Potentiometer on accelerator pedal
292 Clutch pedal switch
303 Fuse protecting diesel preheating
304 Diesel preheating protective relay
306 TAXI radio preparation coupling
307 TAXI radio protective fuse
308 Taxi meter protective fuse
309 Taxi meter
310A Connection shunt
310B Connection shunt
310C Connection shunt
310D Connection shunt
310E Connection shunt
310F Connection shunt
311 Current socket in luggage compartment
312 Coupling for rear/TAXI dashboard cables
313 Current socket relay
314 Right rear door opening switch
315 Current socket fuse
316 TAXI sign light
317 Right rear door relay feed
318 Right rear door control actuator
319 Connection for car phone
320 Aerial feeder
321 Connection for TELEPASS
322 Seat height adjustment connection
323 Seat lumbar adjustment connection
325 Additional heater connection
326 Additional heater control unit
328 Hazard warning lights relay
332 Ignition activated power relay.
333 Injection control unit (JTD)
334 Dual engine temperature sender unit
335 Water in diesel filter sensor
336 Injector 1 cyl (JTD)
337 Injector 2 cyl (JTD)
338 Injector 3 cyl (JTD)
339 Injector 4 cyl (JTD)
341 Fuel pressure regulator (JTD)
342 Fuel pressure sensor (JTD)
343 Turbo pressure sensor (JTD)
344 Protection fuse ie. (JTD)
345 Fuel temperature sensor (JTD)
346 Additional heater relay
347 Additional heater relay
348 Additional heater remote control swictch
349 Additional heater protective fuse
350 Additional heater sensor
351A Additional heater spark plug
351B Additional heater spark plug
351C Additional heater spark plug
352 Left Side Bag connection
353 Right Side Bag connection
354 Air Bag earth
355 Pretensioner connection
356 Left side bag sensor
357 Right Side Bag sensor
358 Left Side Bag
359 Right Side Bag
363 Phase transformer actuator (1998)
364 Motorized throttle body
365 4 stage pressure switch
369 Engine cooling fan remote control switch
373 Air temperature and pressure sensor
375 Standardized diagnostic socket
376 Acceleration sensor
377 Variable geometry solenoid valve
378 Throttle adjustment solenoid valve
379 EGR solenoid

N.A. Ultrasound welding taped in cable loom

Cable colour code

B White
BG Beige
C Orange
G Yellow
H Grey
L Dark blue
M Brown
N Black
R Red
S Pink
V Green
Z Purple